

# DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

## Air Quality Care Commission

### REGULATION NO. 16

### STREET SANDING EMISSIONS

#### 5 CCR 1001-18

#### I. Street Sanding Materials Specifications

##### I.A. Applicability

The provisions of this Section I shall apply to street sanding materials purchased after October 1, 1991 or used after June 1, 1992 by: any governmental entity; any employee, official, representative, or agent of such governmental entity; and any person who contracts with such governmental entity for the purpose of applying street sanding material in the AIR program area, as defined in Section 42-4-307(8) C.R.S. This Section I shall also apply to all suppliers of street sanding materials to be used by these governmental entities.

##### I.B. Definitions

- I.B.1. "Percent Fines" means the percent material passing a #100 sieve as determined by the American Society for Testing Materials' (ASTM) "Standard Method for Sieve Analysis of Fine and Coarse aggregates", designation C136-84a (1988) (American Association of State Highway and Transportation Officials designation T27-88.)
- I.B.2. "Durability Index" means the percent loss of weight as determined using ASTM "Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine". Designation C131-89.
- I.B.3. "High Degree of Angularity" means that grains exhibit sharply intersecting, planar faces over entire surface.
- I.B.4. "Street Sanding Material(s)," when used in Section I, Street Sanding Materials Specifications, means natural geologic materials, excluding salt and other de-icing chemicals, used to provide increased traction on roadways or paved areas.
- I.B.5. "Recycled Street Sanding Material" means previously used street sanding material which has been collected from roadways or paved areas and is then re-used as is, after washing, or after blending with new street sanding material.
- I.B.6. "Full Deployment" means that all roadways targeted for treatment during a snow/ice event are sanded.
- I.B.7. "Independent Laboratory" means a facility capable of performing the specified tests in a competent, professional, and unbiased manner with no financial, family, or personal connection to the supplier or user of street sanding materials.
- I.B.8. "User(s)" means any governmental entity, and any employee, official, representative, or agent of such governmental entity responsible for the

application of street sanding materials, and any person who contracts with such governmental entity for the purpose of applying street sanding material.

I.C. Street Sanding Material Standards

I.C.1. Material Standards

All street sanding material, whether new or recycled, shall equal or exceed either of the following standards:

I.C.1.a. less than 2% fines and less than 45% durability index or;

I.C.1.b. less than 4% fines, less than 33% durability index, and a high degree of angularity exhibited by the majority of the grains.

I.D. Testing Requirements

I.D.1. General

Testing of street sanding material covered by this regulation shall consist of the determination of:

I.D.1.a. the percent fines;

I.D.1.b. the durability index; and

I.D.1.c. the high degree of angularity exhibited by the majority of the grains.

I.D.2. Supplier Requirements

I.D.2.a. Suppliers of street sanding material covered by this regulation shall perform at least one test to determine the percent fines each week on the material as it is produced.

I.D.2.b. Suppliers shall have one test per month performed by an independent laboratory to determine the percent fines on a representative sample of their street sanding material. This shall be performed each month in which street sanding material is produced.

I.D.2.c. Suppliers shall have one test performed by an independent laboratory to determine the durability index on a representative sample from the pit source between July 1 and September 30 each year in which they sell street sanding material covered by this regulation.

I.D.2.d. If Section C.1.b. applies, supplier shall furnish once per month of production, a signed statement certifying that a visual examination for angularity was performed on the street sanding material and the results of that visual exam.

I.D.3. User Requirements

Users shall have a test performed by an independent laboratory to determine the percent fines index on all recycled materials at least once for the first 250 tons of recycled material used each winter and at least once for every 500 tons of recycled material thereafter.

#### I.D.4. Division Audit Authority

The Air Pollution Control Division (Division) may enter the site of any supplier or user of sanding material covered by this regulation for the purpose of obtaining a sample of material to determine if the material meets the applicable standards.

#### I.E. Reporting Requirements

##### I.E.1. Suppliers Requirements

I.E.1.a. Suppliers shall submit to the Division a monthly report that contains a summary of the results of all percent fines tests performed by the supplier and independent laboratories as required by the provisions of Section I.D.2.a. and b. For material conforming to Section I.C.1.b., suppliers shall submit monthly certification that visual examination of angularity of grains has been performed and the results of that visual exam.

I.E.1.b. For every year that street sanding material is produced, the supplier shall submit to the Division a copy of the results of the annual durability index test performed by independent labs as required by Section I.D.2.c. no later than 60 days after the test is conducted.

I.E.1.c. Prior to, or upon, delivery of street sanding material, suppliers shall provide users of street sanding material covered by this regulation with a report demonstrating that the supplier has met all testing requirements of this regulation applicable to the time period in which deliveries are made

##### I.E.2. Users Requirements

I.E.2.a. Users of recycled street sanding material shall submit to the Division copies of the results of testing conducted according to Section D.3. no later than 30 days after the tests are conducted.

I.E.2.b. Within 7 calendar days of awarding a contract for the purchase of street sanding material to a supplier, the user shall notify the Division of the supplier's name and the location of the aggregate pit(s) from which the material will be supplied.

I.E.2.c. The user shall maintain on file reports received under the provisions of Section E.1.c. for a period of three (3) years.

##### I.E.3. Division Audit Authority

All records generated under the provisions of this regulation shall be made available for inspection upon request by the Division.

#### I.F. Alternative Test Methods and Standards

Alternative percent fines and durability index test procedures for percent fines and durability may be approved by the Division and EPA should they be determined to provide a measure that is equivalent to the test procedures of this regulation.

#### I.G. Alternative Sanding Materials

Experimentation with new street sanding materials may be approved by the Division and EPA provided that the impact of such experiments or tests does not contribute appreciably to air quality degradation.

## II. Street Sanding Requirements Specific to the Denver PM10 Attainment/Maintenance Area

### II.A. Applicability

II.A.1. The provisions of this Section II shall apply to any governmental entity and any employee, official, representative, or agent of such governmental entity responsible for applying street sanding material to any roadway in the Denver PM10 Attainment/Maintenance area as defined in the AQCC Ambient Air Standards Regulation (effective date: July 30, 1991). The provisions of this Section II shall also apply to any person who contracts with such governmental entity for the purpose of applying street sanding material to any roadway in the Denver PM-10 Attainment/Maintenance area.

### II.B. Additional Definitions

II.B.1. "Base Sanding Amount" is the average amount of street sanding material applied per lane mile driven by maintenance trucks during snow and ice removal operations. The base sanding amount shall be calculated using 1989 data. If reliable 1989 data is not available, another base year period may be used after approval by the Division.

II.B.2. "Street Sanding Material(s)," when used in Section II, Street Sanding Requirements Specific to the Denver PM10 Attainment/Maintenance Area, means natural geologic material, including sand and sodium chloride rock salt, but excluding other de-icing chemicals, used to provide increased traction or de-icing on roadways.

II.B.3. "Foothills Area" refers to the area defined as follows:

The western edge of the Denver PM10 attainment/maintenance area from the southern Jefferson County line to the northern Boulder County line;

the northern Boulder County line east to the western edge of US Highway 36;

the western edge of US Highway 36 from the northern Boulder County line south to the Boulder City limits;

the western edge of the Boulder City limits south to CO Highway 93;

the western edge of CO Highway 93 south to the Golden City limits;

the western edge of the Golden City limits south to US Highway 40;

the western edge of US Highway 40 southwest to CO Highway 26;

CO Highway 26 south to US Highway 93;

US Highway 93 south to the Morrison City limits;

the western and southern edge of the Morrison City limits to Highway C-470;

the western edge of C-470 south to South Platte Canyon Road;

the western edge of South Platte Canyon Road south to Kassler Road;

the western edge of Kassler Road to the southern edge of Douglas County Road 7;

the southern edge of Douglas County Road 7 east to the western edge of Douglas County Road 5;

the western edge of Douglas County Road 5 south to Roxborough Park Road;

proceeding on a line from the intersection of Douglas County Road 5 and Roxborough Park Road to the intersection of Colorado Highways 67 and 105 (Perry Park Road);

south along the western edge of Perry Park Road to the southern Douglas County line;

and

west along the southern Douglas & Jefferson County lines to the western edge of the Denver PM10 attainment/maintenance area.

II.B.4. "Uncontrolled levels of wintertime street sand and road dust emissions" shall be calculated using historical 1989 data.

## II.C. Requirements

- II.C.1. Each user shall establish and document its base sanding amount. Documentation of the base sanding amount shall be submitted to the Division and the Regional Air Quality Council (RAQC) by September 30, 1993.
- II.C.2. Except as otherwise provided in sections II.C.4, II.C.5 and II.C.6; each user shall achieve a 30% reduction of uncontrolled levels of wintertime street sand and paved road dust emissions on roadways within their jurisdiction in the PM10 attainment/maintenance area, excepting those roadways within the foothills area.
- II.C.3. Each user shall achieve a 20% reduction from uncontrolled levels of wintertime street sand and paved road dust emissions on those roadways within the foothills area of their jurisdiction.
- II.C.4. The City and County of Denver shall achieve a 72% reduction from uncontrolled levels of wintertime street sand and paved road dust emissions on roadways in the central business district (CBD). The CBD is defined as the area bounded by and inclusive of Colfax Avenue, Speer Boulevard, Wynkoop Street, 20th Street, and Broadway.
- II.C.5. The Colorado Department of Transportation (CDOT) shall achieve a 54% reduction from uncontrolled levels of wintertime street sand and paved road dust emissions from Interstate 25 and its entrance/exit ramps between 6th Avenue and University Boulevard.
- II.C.6. The City and County of Denver and CDOT shall achieve a 50% reduction from uncontrolled levels of wintertime street sand and paved road dust emissions on roadways within the area bounded by, and including, Federal Boulevard, Downing Street, 38th Avenue, and Louisiana, except as otherwise provided by sections II.C.4 and II.C.5.

## II.D. Recordkeeping and Reporting

- II.D.1. No later than June 30, 2001 and each year thereafter, users of street sanding material covered by this section shall submit a report to the Division and the RAQC containing the following information for the preceding twelve months or the preceding calendar year:
- II.D.1.a. the total number of miles driven by maintenance trucks during snow and ice removal operations;
  - II.D.1.b. the total amount of sanding material (both new and recycled), salt, and other de-icing chemicals used;
  - II.D.1.c. the number and dates of full deployment episodes;
  - II.D.1.d. the number of lane miles typically sanded during each full deployment;
  - II.D.1.e. the percent of the sanded roadways swept within 4 days of a sanding event; and
  - II.D.1.f. the type of street sweeping equipment used.
- II.D.2. Those entities with roadways in the foothills area shall provide two reports with the information listed in Section II.D.1. One report shall contain the information for roadways in the foothills area and the other for roadways within the remainder of their jurisdiction.
- II.D.3. The City and County of Denver and CDOT shall provide two reports with the information listed in Section II.D.1. One report shall contain the information for roadways in the areas described in Sections II.C.4 and II.C.5, and the other for other roadways in their jurisdictions within the Denver PM10 attainment/maintenance area.
- II.D.4. Beginning June 30, 2002, the City and County of Denver and the CDOT shall provide an additional report of information listed in Section II.D.1. for the area bounded by, and including, Federal Boulevard, Downing Street, 38th Avenue, and Louisiana Avenue, as described II.C.6.

## II.E. Compliance Methodology

- II.E.1. The calculation of the percent reduction from uncontrolled levels of wintertime street sand and paved road dust emissions shall be based on the reduction in street sand from the base sanding amount, the percent of roadways swept within four days of a sanding event, and the latest data on the emission benefits of street sanding materials, de-icing agents, and street sweeping equipment, which is consistent with the methodology used for the 2001 PM10 maintenance plan.

## III. Statements of Basis, Specific Statutory Authority and Purpose

- III.A. May 20, 1999 This Statement of Basis, Specific Authority, and Purpose complies with the requirements of the Administrative Procedures Act, section 24-4-103 C.R.S. and the Colorado Air Pollution Prevention and Control Act, section 25-7-110.5, C.R.S.

Basis

The "Colorado State Implementation Plan (SIP) for Particulate Matter (PM-10); Denver Metropolitan Nonattainment Area Element" signed into law on May 31, 1995 and subsequently approved by the U.S. Environmental Protection Agency includes in Chapter XI.B.3.d the primary PM-10 emissions budget for mobile sources in the metro area.

As amended by § 25-7-105 (1) (a) (III) , C.R.S. (1998), the metro area's mobile source PM-10 emissions budget for the purposes of federal transportation conformity is 54 tons per day from 1998 - 2005 and 60 tons per day in 2006 and beyond.

Currently, in order to demonstrate conformity of regional transportation plans with the established mobile source emissions budgets for the area, the Denver Regional Council of Governments (DRCOG) obtains letters of commitment from city, county, and state agencies to reduce PM-10 emissions through improved street sanding and sweeping programs that go beyond what is currently required by Regulation 16. The emissions reduction achieved through this proposed "state-only" revision to Regulation 16 can be utilized for conformity purposes and will eliminate the need for DRCOG to seek commitment letters in the future.

Also, the provisions of section 25-7-105 (1) (a) (III) include a 44 ton per day mobile source emissions budget which applies exclusively under reserved state authority pursuant to the provisions of C.R.S. 25-7-105 (1). Section 25-7-105 (1) (a) (III) also states that: "Any entity with authority to adopt a transportation plan required under section 43-1-1103, C.R.S., shall consider any mobile source emissions budgets in effect under this article in the development of transportation improvement programs for federal purposes." This includes consideration of the 44 ton per day mobile source emissions budget established under state law in Section V.C.4 of the Colorado Ambient Air Quality Standards Regulation.

As part of the development of the metro area's first comprehensive, long-range air quality plan, called the Blueprint for Clean Air, the Regional Air Quality Council (RAQC), evaluated the costs, benefits, and feasibility of achieving a 44 ton per day mobile source emissions budget as a state-only requirement. The modifications to Regulation 16 proposed in this action will implement the RAQC's final recommendation in the Blueprint for Clean air which, based on current data, will maintain mobile source PM-10 emissions in the budget area at no more than 45 tons per day through 2020.

Maintaining mobile source PM-10 emissions at 45 tons per day through 2020 will ensure the region stays in compliance with EPA's health-based standard for PM-10. Additionally, the emission reductions achieved through this regulatory modification will reduce fine particulate (PM-2.5) levels, providing a margin of safety against future violations of EPA's new standard for this pollutant.

#### Authority

General and specific authority for revising Air Quality Regulations is contained in the Colorado Air Pollution Control Act, Section 25-7-102, 25-7-109, 25-7-109 (1), and 25-7-109 (2) (a&b).

#### Purpose

The purpose of this regulatory modification is to prevent significant increases in mobile source PM-10 emissions in the metro Denver non-attainment area as the number of vehicle miles traveled continues to grow in the future. Adopting this rule as a state-only requirement means that it will not modify the existing State Implementation Plan, nor will these requirements be federally enforceable. However, the emission reductions achieved through implementation of the regulation will provide the region with a margin of safety against future violations of the National Ambient Air Quality Standards for PM-10 and PM-2.5.

The emission reductions proposed in this regulatory modification are already being achieved by most state and local agencies in the area. This state-only regulation will ensure that the emission reductions currently being achieved will be maintained into the future.

#### Findings

The Air Quality Control Commission makes the following findings pursuant to C.R.S. Section 25-7-110.8.

First, the rule revision is based on reasonably available, validated, reviewed and sound scientific methodologies. The uncontrolled emissions estimates and emissions budgets developed by the APCD are based on published EPA guidance. Maintenance levels of emissions are supported by SIP modeling performed in accordance with published EPA guidance. Data on alternative materials and the sand fraction of paved road dust are based on manufacturer's studies and local research conducted by the Colorado Department of Transportation and are acceptable to EPA. Efficiencies used for sweeping equipment are based on EPA guidance. Provisions have been included to allow consideration of additional information in the future which could allow for the achievement of the required reductions at reduced costs.

Second, the emissions reductions required by the revision will maintain the metro area at an emissions level through 2020 that will ensure compliance with the PM-10 NAAQS as demonstrated by SIP modeling and control the growth of PM-10 emissions.

Third, the emissions reduction is cost effective and allows for flexibility of choice of control strategies to achieve the requirement. It is also equitable and fair in that all entities are required to achieve the same overall reduction, and it makes provisions for the foothills areas which are already at the limit of safely achievable and cost effective reductions.

Fourth, the emissions reduction is reasonably achievable in that most entities are presently achieving reductions greater than required. This proposal received approval from many of the effected parties who participated in the RAQC's Street Sanding Subcommittee as part of the Blueprint for Clean Air. This measure also was recommended by the full RAQC when it formally adopted the Blueprint on January 7, 1999.

#### Federal Requirements

There are no federal requirements for this revision at this time.

#### III.B. Denver metropolitan area, redesignation to attainment for PM10

Adopted: April 19, 2001

The amendments to the Regulation No. 16 are a component of the maintenance plan and redesignation request also adopted by the Commission on April 19, 2001 to redesignate the area as attainment for particulate matter less than ten microns in diameter (PM10).

The April 19, 2001 revisions to the regulations do three things. First, the revisions make federally enforceable the existing state-only requirements adopted by the Commission on May 20, 1999. The Commission adopted the state-only requirements in May 1999, which require a 20% to 30% reduction in emissions from wintertime street sand and paved road dust throughout the area, to keep emissions from exceeding the state-only emissions budget then in effect. According to the Division's air quality models, the measures will be necessary to maintain the PM10 NAAQS and, therefore, must be made part of the federally-enforceable SIP.

Second, the revisions require further reductions in road dust emissions in the central Denver area, effective October 1, 2001. The revisions require emissions to be reduced by 50% to 72% from an established baseline.

Third, the revisions reorganize and simplify the regulations by describing all requisite emission reductions in terms of 1989 data.

#### Statutory Authority

General and specific authority for revising Air Quality Regulations is contained in the Colorado Air Pollution Control Act, §§ 25-7-105(1)(a)(I), 25-7-107(2.5), 25-7-109(1), (2)(a) and (2)(b).

#### Federal Requirements

The provisions adopted by the Commission do not exceed the federal requirements. 42 USC 7505a(a) requires the maintenance plan to include control measures as may be necessary to ensure maintenance of the NAAQS for at least ten years following redesignation. The revisions adopted by the Commission are necessary to demonstrate such maintenance of the NAAQS.

#### Findings

The Air Quality Control Commission makes the following findings pursuant to § 25-7-110.8, C.R.S.

Maintenance levels of emissions are supported by SIP modeling performed in accordance with published EPA guidance. Data on alternative materials and the sand fraction of paved road dust are based on manufacturer's studies and local research conducted by the Colorado Department of Transportation and are acceptable to EPA. Efficiencies used for sweeping equipment are based on EPA guidance and testing performed in Colorado. Provisions have been included to allow consideration of additional information in the future which could allow for the achievement of the required reductions at reduced costs. The Commission believes the EPA-approved models and guidance documents are inaccurate, but federal rules require the State to use such models and guidance to demonstrate the adequacy of the maintenance plan. Thus, the rule revisions are based on the only methodology authorized for use by federal law. All methodologies and information made available by interested parties have been considered.

The record reflects that reduced use of sand on paved roadways, and the clean-up of sanding material once applied, reduces ambient concentrations of PM10 in the ambient air. Thus, evidence in the record supports the finding that the rule will result in a demonstrable reduction in air pollution.