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Asphalt Roofing

A Guide to Air Quality Regulations

The asphalt roofing industry manufactures asphalt-saturated felt rolls, fiberglass and organic (felt-based) shingles and surfaced and smooth roll roofing.

Asphalt roofing manufacturing facilities emit substances that are regulated as air pollutants by the Colorado Department of Public Health and Environment, Air Pollution Control Division (APCD). The two main pollutants that come from asphalt roofing production are particulate matter (PM) and volatile organic compounds (VOC).

Particulate matter is a name used to describe small particles suspended in the air. PM is divided into two (2) categories: Total Suspended Particulate (TSP) and PM-10 (particles smaller than 10 microns in diameter). PM-10 is dangerous to human health because when particles this small are inhaled they tend to stay in the lungs for a long time. Most of the PM from asphalt roofing production is recondensed asphalt fume.

VOC is a name for evaporative substances which react in the air to form ozone. When asphalt is heated VOCs are released.

Both PM and VOC can be dangerous to human health and the environment. Both are emitted from asphalt storage tanks, coater-mixer tanks and coaters. Asphalt and filler heaters are sources of combustion products from natural gas or other fuels.

Environmental Areas of Concern:

Colorado is divided into attainment and nonattainment areas.

Attainment means the area is in compliance with the Federal Clean Air Act.

Nonattainment means that an area has exceeded the National Ambient Air Quality Standard for a regulated pollutant. Currently, there are 11 areas of nonattainment in Colorado including many of the major metropolitan areas. Nonattainment areas have stricter air pollution rules than attainment areas.



Information on attainment and nonattainment areas can be obtained by contacting the Division at 303 692-3150.

New Source Performance Standards (NSPS):

CFR 40, Subpart UU - Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture

Asphalt roofing manufacturing facilities are subject to a set of rules called NSPS. These are industry-specific federal rules and are enforced by the State of Colorado. There is an NSPS that applies to asphalt roofing manufacture, as follows:

Any saturator or mineral handling and storage system constructed after November 18, 1980 and located at a roofing plant must meet the requirements of the NSPS.

Subject to the NSPS are any asphalt storage tank or blowing still constructed after November 11, 1980 and used to produce materials for roofing only, or for roofing and other purposes, and any saturator or blowing still constructed after May 26, 1981 used only for non-roofing material production.

This NSPS rule also applies to asphalt storage tanks and asphalt blowing stills located at asphalt processing plants and petroleum refineries.

Standards for Particulate matter:

The NSPS rule contains limits on the amount of particulate matter that an asphalt roofing facility can emit. They are far too numerous to list here. They are also much too detailed to paraphrase. The standards include limits on emissions from saturators, blowing stills, asphalt storage tanks and mineral handling and storage facilities. The standards include limits on the concentration of particulate matter in the exhaust gases. They also include limits on the opacity of the exhaust gases.

A copy of Subpart UU is included in this document. Refer to Section 60.472 - Standards for Particulate Matter.

Section 60.474 explains the specific tests which must be performed to verify that the plant meets the particulate matter emission standards.

Source Testing:

Asphalt roofing facilities subject to Section UU, of the NSPS rule are required to perform a number of emissions tests to verify that they meet the standards for particulate matter. Testing is included as a condition on the initial approval permit. The facility must show that it is meeting all of the standards before the final approval permit can be issued.

60 days prior to testing a "Test Protocol" must be submitted to the Air Division for approval. Among other information, the protocol explains who will perform the tests, how the tests will be done and when the tests will take place.

Reporting Requirements:

APEN (Air Pollutant Emission Notice):

An APEN is a form used to report a facility's emissions. Operators of asphalt roofing production facilities are required to submit an APEN to the Air Pollution Control Division under the following conditions:

All plants **subject to the NSPS rule** must submit an APEN to the Air Pollution Control Division (APCD) prior to operating the plant, regardless of the plant's level of emissions.

For plants that are **not subject to the NSPS rule** the following emission levels will require an APEN:

In nonattainment areas an APEN is required if uncontrolled* emissions of VOC equal or exceed one ton per year. For PM emissions, an APEN is required if uncontrolled* emissions of either TSP or PM-10 equal or exceed one ton per year.

* "Uncontrolled emissions" refers to the amount of emissions that occur prior to the use of air pollution control measures, such as bagfilters.

In attainment areas you must file an APEN if uncontrolled emissions of VOCs or PM (either TSP or PM-10) equal or exceed 2 tons per year.

Significant Changes

A Revised APEN must be filed with the Division anytime there is a significant change in emissions. A significant change is an increase of one ton per year over the amount previously reported on an APEN or 5 percent, whichever is greater.

Exceeding A Permit Limit

An APEN must be filed whenever a permit emission limit is exceeded.

Air Pollution Emission Permits:

A permit defines the type of air pollution control measures that a business will use, the kinds and amounts of materials that a business will consume and any other operating limits that apply to the particular facility and that have an affect on the facility's air emission levels.

In the State of Colorado, Air Pollution Emission Permits (also called "Construction Permits") are issued for both minor and major sources of air pollution. A minor source emits less than 100 tons (uncontrolled) of any one pollutant in a nonattainment area, or less than 250 tons per year (uncontrolled) in an attainment area. If a facility exceeds these limits it is classified as a Major Source.

A major source must obtain a construction permit **and** an Operating Permit. An operating permit is a permit issued under Title V of the 1990 Clean Air Act Amendments that includes all the individual sources of emissions at a plant into one all-inclusive permit. Operating permits usually require more monitoring and reporting of emissions than

construction permits. Operating permits often contain operating and equipment maintenance plans.. For more information about Colorado's Operating Permit Program, call Jim King at (303) 692-3207.

When you file an APEN, the Air Pollution Control Division will use the information to determine if a permit is required. If a permit is required, the conditions on the permit will be based on the information which you submitted on the APEN.

All plants **subject to the NSPS rule** must obtain a construction permit from the Air Pollution Control Division (APCD) regardless of the plant's level of emissions.

For plants that are **not subject to the NSPS rule** the following emission levels will require a permit:

In nonattainment areas, if uncontrolled emissions of VOC or PM (either TSP or PM-10) equal or exceed two tons per year a permit will be required.

In attainment areas, you will need a permit if uncontrolled emissions of VOC or PM (either TSP or PM-10) equal or exceed 2 tons per year.

"Potential to Emit":

Potential to Emit (**PTE**) comes into play when determining if a facility is a major source. PTE is based on the maximum production levels possible if the equipment is operated at the maximum hourly rate 24 hours a day 365 days a year.

The equipment's PTE is often calculated by multiplying the emissions associated with the maximum hourly production rate times 8760 hrs (8760 = 24 hours a day X 365 days per year).

A source with PTE exceeding 100 tons of VOC or Particulate Matter is considered to be a major source unless the operator obtains a Synthetic Minor Permit. A Synthetic Minor Permit contains limits that restrict production rates or operating parameters so that emissions are maintained below major source thresholds.

Initial & Final Approval:

In Colorado, emission permits (also called Construction Permits) are issued in two phases: Initial Approval and Final Approval.

Initial Approval allows the plant to be constructed and begin operation.

Final Approval is issued after the owner certifies that the business is in compliance with the conditions of the Initial Approval Permit. From the date when the Initial Approval permit is issued the owner / operator of the facility has 180 days in which to certify for Final Approval. You can obtain the self-certification form for Final Approval by calling the Air Division at (303) - 692-3150, or the Small Business Assistance Program (See phone numbers below.)

Sources of Emissions:

There are numerous sources of emissions at an asphalt roofing facility. Emissions of both VOC and PM are emitted from asphalt storage tanks (loading in and out and tank standing losses), blowing stills, saturators, coater-mixing tanks, coaters, sealant strip and laminant applicators, fuel combustion and material handling, filler and aggregate storage bins and truck haul roads.

How to Meet Emission Limits:

Pollution Prevention (P2):

Traditional methods of controlling pollution involve "end-of-pipe" technology. This means that after the pollutants are released they are then routed through some kind of pollution control device such as an incinerator. P2 refers to the practice of eliminating pollution "up front" by changing materials or processes so that the pollution is not created in the first place. One of the great advantages of this approach is that it almost always results in saving money. For example, a company using P2 may eliminate or reduce the amount of waste that is generated, thus saving money on waste hauling. The use of pollution prevention practices may even get you out of reporting or permit requirements - also a money saver.

Air Pollution Control Devices:

Emissions from asphalt storage, blowing stills and saturators and wet loopers are vented to knock-out boxes and then to control devices such as bagfilters or scrubbers. Emissions from storage and handling of filler and aggregate are controlled by using complete or partial enclosures. conveyor transfer points on storage and handling systems are usually completely enclosed and vented to a control device. Emissions from saturator and coater operations are controlled through emission capture hoods vented to a control device. Emissions from asphalt blowing stills are vented to incinerators.

Typical control devices for asphalt roofing operations include low voltage ESPs, mist eliminators, afterburners, wet scrubbers and baghouses.

Calculations:

You will probably be required to calculate your annual emissions when you file an APEN. The most common method used for calculating emissions from an asphalt roofing facility is to refer to the emission factors in EPA's air pollution engineering manual AP-42. AP-42 contains emission factors for calculating emissions from all the various processes that are involved in the manufacture of asphalt roofing materials. A copy of AP-42, Section 11.2 - Asphalt Roofing is included in this document.

Small Business Assistance:

In 1992 Colorado created the Small Business Assistance Program (SBAP). The purpose of the SBAP is to help you understand the air quality regulations, to provide you with technical assistance and to provide you with an advocate in cases where you have an issue or disagreement with the Air Pollution Control Division.

The people in our program can explain the regulations in plain English, help you figure out what your company has to do to be in compliance, help you to file any required forms, help you complete the "final approval certification" process for your permit, help you to calculate your emissions, present a workshop for your company or for your industry and a host of other free and confidential services.

For assistance & information call any of the numbers below:

Small Business Assistance Program

Chuck Hix	303-692-3148
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Doug Ryder	303-692-3144
Julie Wrend (Supervisor)	303-692-3111

Colorado Ombudsman Program

Cathy Heald (Ombudsman)	303-692-2034
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