

Air Program Fact Sheet

Fugitive Dust Emissions Management

October 2017

Wisconsin's Department of Natural Resources (DNR) regulates sources of dust, smoke and fumes as particulate matter (PM) emissions under chapter NR 415, Wis. Adm. Code. This summary explains a facility's responsibilities for minimizing PM emissions released as fugitive dust. "**Fugitive dust**" is a term used to describe PM emissions released through any means other than a stack or duct.

Who is affected by this rule?

Any business creating enough dust, smoke or fumes to be a noticeable source of air pollution must control those emissions. The following are examples of activities that would create fugitive dust regulated under ch. NR 415:

- large trucks transporting materials along private drives and other unpaved roadways within a facility's property
- large trucks driving on unpaved parking lots
- earth-moving activities
- crushing and screening
- discharging dry materials where exhaust is not directed to a collection device, such as to a baghouse, cyclone, wet scrubber, etc.
- storing piles of materials on site, like grain, coal, sand or
- scrap abrasive blasting used to remove paint and other contaminants from a surface

This is a short list of the possible activities that create fugitive dust; there are many other possible sources.

What are the requirements for controlling fugitive dust?

Any business that creates fugitive dust must to the extent practicable control those emissions and keep them from escaping into the environment. The following are a few suggestions based on the type of activity. In addition, some best management practices recommended by industry experts are provided.

- For **roads or storage piles**, use water or dust reducing chemicals, such as calcium chloride, to prevent dust plumes. Paving roads also reduces dust as a long term solution. Storage piles can be kept within a three-sided building to minimize emissions.
- Where possible, enclosing **processing equipment** or otherwise capturing dust and using mechanical collection devices (i.e. cyclones and dry filters) are effective ways to control particulate matter emissions.

Best management practices (BMPs)

In 1998, in coordination with the Transportation Builders Association and Aggregate Producers Association, DNR's Air Program developed a list of recommended practices for reducing PM from nonmetallic mining operations. These BMPs can be applied to similar material handling operations, like grain facilities, to reduce fugitive dust. Depending on the moisture in a material, these practices may or may not be necessary to reduce the dust sufficiently to avoid being considered a nuisance to neighbors. For example, grain direct from a field has a higher moisture content than grain that has been mechanically dried; however, the percent of moisture will vary based on the needs of the final product.

A summary of the best management practices for reducing fugitive dust is provided below.

General

- Operate and maintain dust control equipment in a manner consistent with good practices for minimizing emissions.
- Stabilize stockpiles.
- Apply mineral oil or other suppressants to grain piles.
- Cover stockpiles when not in use.
- Install windbreaks and barriers.
- Keep drop or pile height as low as possible.
- Add or remove grain from downwind portion of stockpiles.

General (continued)

- Maintain grain piles to avoid steep sides or faces.
- Keep the yard and surrounding open area, including ditches and curbs, clean to prevent the accumulation of rotting grain or windblown grain dust and chaff.
- Wash equipment at the end of the day or prior to site removal.
- Wet sweep public and private thoroughfares.
- Cover open trucks while travelling.
- Where practical, provide a buffer zone between fugitive dust activities and residential areas.

Grain unloading and loading

- One of the main ways dust is generated is when a falling stream of grain hits the receiving pit. Allow the grain to form a cone around the receiving grate (known as “choke unloading”) to decrease the distance the grain falls.
- Enclose the receiving area as much as possible. An optimal receiving shed has closed doors at both ends. A receiving shed with no doors (or doors always open) may create a “wind tunnel” effect that is worse than no shed. Alternately, consider curtains or a shroud around the receiving pit.
- Prevent grain from falling as much as possible at loadout. Use dead boxes, socks, or drop-down spouts or sleeves that extend at least six inches below the sides of the receiving container to minimize grain free-fall distance.
- Restrict the flow of the grain when the receiving container is empty or only partly full.
- Consider wind speed and direction. Limit grain handling when the wind will cause neighbors to receive excessive amounts of dust or chaff. Winds are stronger and windy days are more common in the spring and fall – the same time of year more grain is handled.
- Conduct grain oiling at the dump pit before transferring to bin storage. Check that the oil is dispersed well. As little as ½ gallon of oil per thousand bushels of grain can reduce dust by up to 80 percent.
- If storing grain in outdoor piles, store for the shortest amount of time possible and keep piles tarped.

Hauling

- Post speed limits of 15 mph for on-site vehicles.
- Keep paved travelled areas swept and/or watered.
- Control fugitive dust emissions from travelled areas on an as needed basis by applying water, asphalt millings, calcium chloride, or other acceptable control methods.

Grain handling equipment

Equipment, such as bucket elevators or legs, scale hoppers, conveyors, turn heads, scalpers, cleaners, trippers, headhouses, and other structures, can also be a source of dust or particulate emissions.

- Keep grain handling equipment clean and in good condition.
- Enclose or seal grain handling equipment.
- Control the speed of grain handling equipment. Keep conveyor belts at the minimum speed necessary.
- Use aeration fans as little as possible when loading grain into storage bins.
- Locate and configure equipment so the building helps block windblown dust.
- When buying new cleaning and processing equipment, choose dust-tight equipment, lip-type shaft seals for bearings on conveyors and other equipment housings, and flanged inlets and outlets for spouting, transitions and miscellaneous hoppers.

Housekeeping checklist

- Identify all potential fugitive dust emission sources.
- Develop a facility site-plan map and record all paved and unpaved haul roads, stockpiles, material transfer points, parking lots, staging areas and any other areas subject to wind erosion. Study daily traffic volumes and determine whether roads and open areas are used frequently or occasionally.
- Check air pollution control devices daily and clean as necessary to ensure proper operation.
- Record all dust control activities on a checklist, along with the daily weather information, such as wind speed and direction, temperature and rainfall.
- Monitor dust control efforts on a regular basis to ensure that the measures taken are adequately controlling fugitive dust.
- Complete a self-inspection checklist on a daily basis to help incorporate the routine tasks of fugitive dust control into the facility’s schedule. The checklist will also serve as a daily reminder and a record of efforts to keep dust problems to a minimum.

- Enclose storage and handling areas if dusty materials are frequently loaded and unloaded.
- Prevent transport of dusty material off-site by rinsing vehicles before they leave the property and tightly covering loaded trucks.
- Water and/or sweep often enough to ensure that vehicle traffic is not picking up dust to be blown and/or carried off-site. Fewer treatments are necessary in cool, wet weather.
- Apply chemical surfactants to yard and roadways for more permanent dust control.
- When feasible, pave driveways and yard.

Fugitive dust plan

Any facility with fugitive dust must prepare and follow a fugitive dust plan, which can include many of these actions mentioned above. DNR templates are available for material handling operations, such as crushers, that may be used as guides to preparing a fugitive dust plan for other operations:

- http://dnr.wi.gov/cias/guidance/guidanceexternal/FileView.aspx?OBJECT_SEQ_NO=15833
- http://dnr.wi.gov/cias/guidance/guidanceexternal/FileView.aspx?OBJECT_SEQ_NO=6512

A facility with a fugitive dust plan needs to track activities conducted under the plan. The following template for crushing plants may be a helpful guide for other operations:

http://dnr.wi.gov/cias/guidance/guidanceexternal/FileView.aspx?OBJECT_SEQ_NO=1755.

For more information

- <https://dnr.wi.gov/topic/smallbusiness/resources/grainhandling.html>
- Contact the Small Business Environmental Assistance Program at 855-889-3021 or DNRsmallbusiness@wisconsin.gov.

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