Fugitive Dust Control Measures and Best Practices

January 2022

What is Fugitive Dust?

The term "fugitive dust", as used in this document, refers to particulate matter that enters the atmosphere without first passing through a stack or duct designed to direct or control its flow. Fugitive dust has been linked to various respiratory issues including aggravated asthma, chronic bronchitis, emphysema, and chronic obstructive pulmonary disease.

Fugitive dust management is beneficial for the environment, business, and surrounding communities!

Environment

- Reduce air and water pollution
- Minimize impacts on existing ecosystems

Business

- Comply with environmental regulations
- Prevent material loss and save money
- Improve community relationships

Communities

- Decrease health risk from resulting air pollution
- Lessen risk of private property damage

Fugitive Dust Sources

Common sources of fugitive dust include paved and unpaved roads, agricultural fields, agricultural tilling operations, unenclosed storage piles, quarries, and construction sites. Dust and particulate matter from these sources become fugitive when lifted into the air by turbulent air currents such as wind erosion, or mechanical forces such as vehicle traffic. A few examples (not a complete list) of fugitive dust generating activities, by industrial sector, include:

Agriculture

Grain Storage and Distribution: Loading and unloading grain in storage bins and silos, site maintenance, and track out

Mining

Mining and Quarries: Blasting, conveying, storage, site maintenance, load out, track out from truck and loading traffic

Construction

Industrial/Commercial Building: Equipment and truck use, soil disturbances, site and equipment maintenance, and track out

Roadway Building & Paving: Equipment and truck use, soil disturbances, site equipment maintenance and track out

Manufacturing

Hot Mix Asphalt Processing and Application: Material crushing, screening operations, aggregate storage, baghouse particulate accumulation, recycling, and track out from truck and loading traffic

Concrete batch processing and application: Material crushing, front-end hopper/bin loading, transfer conveying, aggregate storage miles, recycling and track out from truck and loading traffic

Foundries: Storage and transfer of coke and fly ash

Food and Agricultural Processing: Storage, transfer, conveying and track out

Crushing Operations (rock, glass, concrete, demolition material): Loading, off-loading, crushing, conveying and storage, site maintenance, and track out

Transportation and Utilities

Road/Bridge Maintenance and Repair: Patching, clipping, sealing, shoulder repair, sweeping, concrete sawing, abrasive blasting surface preparation, rock salt storage and site maintenance

Rail Freight Yards: Loading and off-loading of rail cars, lot maintenance, and track out

Utilities- Truck Freight Haulers/Off-loading Yards: Storage and transfer of coal and fly ash

Best Practices-Control Measures

While the examples in this document are not exhaustive, they are intended to assist facilities to comply with fugitive dust regulations and highlight several effective strategies that have been adopted by facilities. The appropriateness and effectiveness of these strategies will vary for different facilities based on many factors, including type of operation, sources of fugitive dust and local regulations. These examples are not intended to set forth a policy on a statutory, regulatory, or technical issue, or provide an interpretation of a statute or regulation.

Storage Piles

- Monitor the moisture content and size of exposed material.
- Apply water or an approved chemical dust suppressant on a regular basis.
- Cover and stabilize or enclose material piles if not frequently accessed.
- Install wind breaks or barriers around the storage pile.

Material Transfer Points

- Limit the material drop distance between the offloading point and stockpile to no more than 3 feet and restrict the flow of material using dead boxes, socks, drop down spouts/sleeves.
- Install and maintain dust curtains around material transfer points, such as vehicle loading stations, to reduce air movement and isolate dust forming operations.
- Enclose conveyor belts and use belt wipers when possible.
- Spray water or an approved dust suppressant at the conveyor feed during material transfer.
- Clean up spillage at conveyor transfer points.

Paved Roads

- Wash, sweep, or vacuum streets at a frequency necessary to eliminate material that is visible within the streets surrounding the source.
- Establish vehicle speed limits of no more than 10 mph on paved surfaces.
- Conduct inspections using visual emissions observations, such as EPA Methods 9 or 22, at least weekly while heavy trucks are using the roadway.

Unpaved Haul and Service Roads

- Apply water or an approved chemical dust suppressant on a regular basis.
- Limit vehicle speeds to 5 mph in unpaved areas.
- Pave frequented haul roads with concrete or asphalt.
- Conduct inspections using visual emissions observations such as EPA Method 9 or method 22 at least daily while heavy trucks are using the roadway.

Miscellaneous Source Best Practices

- Use good housekeeping methods to reduce the build-up of dusty materials.
- Install hoods, fans, and fabric filters where possible to enclose and vent dusty processes.
- Cover open-bodied trucks when the truck is carrying materials that can be released into the air.
- Install wheel wash stations near every vehicle exit location to minimize tracked material.
- Windbreaks, fencing and revegetation wherever practical.

Best Practices-Fugitive Dust Control Plan

The following represent suggested best practices and fugitive dust control plan elements but are not to be considered an exhaustive list of required plan elements. Local plan requirements may vary.

Plan Contents

- **Fugitive Dust Emission Sources** - Identify all sources of fugitive dust and briefly describe the measures and practices employed to control fugitive emissions at each source. Consider parameters such as predominant wind direction, frequency of activity, process operating parameters, control efficiency, and fugitive dust monitoring parameters (silt loading, silt content, moisture content and other relevant physical factors).
- **Operation and Maintenance Procedures** – Include operation and maintenance procedures to verify the working condition of any control measures. Specify the frequency of such procedures and keep records of any maintenance conducted.
- **Facility Layout** – Provide a drawing showing the location of each potential source of fugitive dust at the facility. Include site boundaries, linear dimensions, and site entrance/exit locations.
- **Training** – Provide training for personnel responsible for implementing the fugitive dust control plan, specifying the training contents in the plan.
- **Reporting** – Deviations from the plan and/or corrective actions required to address fugitive dust emissions should be reported to the appropriate air permitting authority, where appropriate.
- **Recordkeeping** - Identify the name and title of the person responsible for implementation of the plan. Keep records of all monitoring, inspections, maintenance and completed work practices (including the name of the person conducting the activity), weather conditions, time of observation, area or operation observed, and corrective actions taken.

Update and Review

- **Update** – Update the fugitive dust control plan periodically to account for new fugitive dust sources, process changes, or any change to the facility that would result in increased fugitive dust emissions.
- **Review** - Submit the updated fugitive dust control plan to the appropriate permitting authority for review and approval.

Fugitive Dust Control Plans and Clean Air Act Permits

- **Enforceability** – Where appropriate, the permitting authority should incorporate the fugitive dust control plan's provisions as part of the permit. Title V permits should incorporate a fugitive dust plan's provisions when the activities in the plan, including associated monitoring provisions, such as fence line monitoring (i.e., EPA Method 22), are relied upon to assure compliance with applicable requirements.
- **Permit Revisions** - Review and update the permit as necessary to reflect significant changes made to the fugitive dust control plan, such as the addition of fugitive dust sources or updated operating and maintenance procedures.

Who do I contact for more information?

United States Environmental Protection Agency

Region 5
Air & Radiation Division (AR-18J)
77 West Jackson Blvd
Chicago, Illinois 60604-3590
(312) 353-2000
R5AirPermits@epa.gov

https://www.epa.gov/caa-permitting/caa-permitting-epas-great-lakes-region

State/Tribal/Local Permitting Authorities

EPA has approved or delegated authority for the following Region 5 states and other jurisdictions to issue certain CAA permits:

- Illinois: https://www2.illinois.gov/epa/Pages/default.aspx
- Indiana: https://www.in.gov/idem/airquality/index.htm
- Michigan: https: //www.michigan.gov/egle/
- Minnesota: https://www.pca.state.mn.us/
- Ohio: https://www.epa.ohio.gov/
- Wisconsin: https://dnr.wisconsin.gov/

***DISCLAIMER**: This document aims to explain the application of certain EPA regulatory provisions using plain language. Nothing in this document revises or replaces any regulatory provisions, any other part of the Code of Federal Regulations, the Federal Register, or the Clean Air Act. Following the best practices contained herein does not equate to or guarantee compliance with the Clean Air Act, its implementing regulations, and associated state/local requirements. For more information, visit: https://www.epa.gov/caa-permitting.*

USEPA Resources

1. AP-42, CH 13.2 Fugitive Dust Sources
   https://www.epa.gov/sites/default/files/2020-10/documents/13.2_fugitive_dust_sources.pdf

2. Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures- EPA 1992
   https://nepis.epa.gov/Exe/ZyPDF.cgi/2000JCJE.PDF?Dockey=2000JCJE.PDF

3. Fugitive Emissions and Fugitive Dust Emissions- EPA 1975
   https://nepis.epa.gov/Exe/ZyPDF.cgi/91005WNB.PDF?Dockey=91005WNB.PDF

4. Particulate Control for Fugitive Dust- EPA 1978
   https://nepis.epa.gov/Exe/ZyPDF.cgi/9101DT33.PDF?Dockey=9101DT33.PDF

5. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust – 2006
   https://www.epa.gov/sites/production/files/2020-10/documents/mri_final_fine_fraction_dust_report.pdf

6. Policy Guidance on the Use of the November 1, 2006 Update to AP-42 for Re-entrained Road dust for SIP Development and Transportation Conformity -2007
   https://www.epa.gov/sites/production/files/2020-10/documents/rel13s02_memo080207.pdf

7. Fugitive Particulate Matter – 40 CFR Part 49, Section 126
   http://www.gpo.gov/fdsys/pkg/CFR-2014-title40-vol1/pdf/CFR-2014-title40-vol1-sec49-126.pdf

8. Fugitive Dust Control Demonstration Studies – EPA 1984
   https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=30001EOR.TXT

9. Investigation of Fugitive Dust: Control Strategy and Regulatory Approach – EPA 1973
   https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91005WNT.TXT

10. _Control of Open Fugitive Dust Sources: Final Report – EPA 1988
    https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=91010T54.TXT

11. Fugitive Dust Policy Sip's and New Source Review – EPA 1977
    https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20016M6E.TXT

12. Inspector's Guide For Fugitive Dust Emission Sources Causes And Control Techniques Recommendations And Examples – EPA 1984
    https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000CC6T.TXT

Region 5 State Fugitive Dust Control Resources

Illinois

1. Illinois EPA Operating Programs and Fugitive Dust Plans
   https://www.iaap-aggregates.org/uploads/1/1/0/0/110027599/eric_jones.pdf

2. 35 Ill. Adm. Code 212 Subpart K: Fugitive Particulate Matter
   https://www.ilga.gov/commission/jcar/admincode/035/03500212sections.html

3. APC-391 Operating Program for Fugitive Particulate Control form
   http://www.epa.state.il.us/air/stateforms/391-apc.pdf

4. Grain Handling Operations and Dust Control Information
   https://www2.illinois.gov/dceo/SmallBizAssistance/EnvironmentalAssistanceProgram/Documents/grain%20handling%20operations%20dust%20control.pdf

Indiana

1. Fugitive Dust
   https://www.in.gov/idem/aircompliance/fugitive-dust/
2. Title 326 Article 6 Rule 4. Fugitive Dust Emissions
   https://ars.apps.lara.state.mi.us/AdminCode/DeptBureauAdminCode?Department=Environment%2C%20Great%20Lakes%20and%20Energy&Bureau=Air%20Quality%20Division&RuleNumber=336.1372

Michigan

1. Dust and Fallout
   https://www.michigan.gov/egle/0,9429,7-135-3310_70317-11396--,00.html
2. Part 3. Emission Limitations and Prohibitions- Particulate Matter
   https://ars.apps.lara.state.mi.us/AdminCode/DeptBureauAdminCode?Department=Environment%2C%20Great%20Lakes%20and%20Energy&Bureau=Air%20Quality%20Division&RuleNumber=336.1372
3. Managing Fugitive Dust – State of Michigan -2016
   https://www.michigan.gov/documents/deq/deq-ead-caap-genpub-FugDustMan_313656_7.pdf
4. Dust: Fugitive Dust Regulations
   https://www.michigan.gov/documents/deq/deq-oea-tou-FugDustRegulations-Kelly_523016_7.pdf

Minnesota

1. Dust Control Treatments for Roads and Surfaces
   https://www.pca.state.mn.us/sites/default/files/aq1-15.pdf
2. 7011.0150 Preventing Particulate Matter from Becoming Airborne
   https://www.revisor.mn.gov/rules/7011.0150/

Ohio

1. Engineering Guide #21: BAT Requirements for Fugitive Dust Sources
   https://www.epa.ohio.gov/Portals/27/engineer/eguides/guide21.pdf?ver=7qKzG6S2Zog01onVAipPvw%3d%3d
2. Engineering Guide #24: Application of Fugitive Dust Requirements to Affected Facilities
   https://www.epa.ohio.gov/Portals/27/engineer/eguides/guide24.pdf
3. Rule 3745-17-08 Restriction of Emission of Fugitive Dust
   https://codes.ohio.gov/ohio-administrative-code/rule-3745-17-08
4. Reasonably Available Control Measures for Fugitive Dust Sources
   https://epa.ohio.gov/portals/27/engineer/racm/RACM_text_searchable.pdf
5. Engineering Guide #57 – Reasonably Available Control Measures for Fugitive Dust Emissions from Roadway Construction and Maintenance Projects
   https://epa.ohio.gov/static/Portals/27/engineer/eguides/guide57.pdf

Wisconsin

1. Air Program Fact Sheet Particulate Matter Emissions and Pollution Requirements
   https://widnr.widen.net/view/pdf/eehnodvret/AM406.pdf?t.download=true
2. NR 415.04 Fugitive Dust
   https://docs.legis.wisconsin.gov/code/admin_code/nr/400/415