

KEEP IT CLEAN  Bowling Green	Bowling Green, Kentucky Stormwater Best Management Practices (BMPs) Good Housekeeping Practices (GHPs)	GHP-16			
	Activity: Dust Control and Tracking (DC)				
PLANNING CONSIDERATIONS: Training: No Inspection Frequency: As needed Implementation Cost: Medium Monthly Maintenance: Low					
	Target Pollutants				
	Significant ♦	Partial ♦	Low or Unknown ♦		
	Sediment ♦	Heavy Metals ♦	Nutrients ♦	Oxygen Demanding Substances ♦	Toxic Materials ♦
	Oil & Grease ♦	Bacteria & Viruses ♦	Floatable Materials ♦	Construction Waste ♦	
Description	Dust control measures are used to stabilize soil from wind erosion and reduce dust generated by construction activities. This temporary measure—an intermediate treatment between disturbance in construction, paving, or vegetation, reduces the amount of eroded material exposed to stormwater runoff.				
Approach	➤ Clearing and grading activities. ➤ Construction vehicle traffic on temporary or unpaved roads or construction site access paths. ➤ Drilling and blasting activities. ➤ Sediment tracking onto paved roads. ➤ Soil and debris storage piles. ➤ Batch drop from front end loaders. ➤ Areas with unstabilized soil. ➤ Final grading/site stabilization usually is sufficient to control post-construction dust sources. ➤ Dust control should be practiced at all construction sites by performing phased clearing and grading operations, using temporary stabilization methods, and/or placing undisturbed vegetative buffers of at least 50 ft. (15 m) length between areas being graded and those areas to remain undeveloped. ➤ Dust control is particularly important in windy or wind-prone areas.				

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(cont'd)**

- Schedule construction activities to minimize exposed area by clearing only areas where phased construction is to take place.
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction. See [SMP-02](#) and [-03](#).
- Minimizing the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Dust control BMP's generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. Table [GHP-16-1](#) shows which Dust Control BMPs apply to site conditions which cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel or asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching and sand fences can be employed for areas of occasional or no construction traffic.
- Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic to 15 miles per hour, and controlling the number and activity of vehicles on a site at any given time.
- Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean-up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize unpaved haul roads, parking and staging areas. Reduce speed and trips on unpaved roads.
- Implement dust control measures for material stockpiles.
- Prevent drainage of sediment-laden stormwater onto paved surfaces.
- Stabilize abandoned construction sites using vegetation or chemical stabilization methods.
- For the chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. The types of chemicals available and recommendations for their use are tabulated in [Table GHP-16-2](#), Commonly Used Chemicals for Dust Control.

Selection of Methods

Selection of dust control agents should be based primarily on cost-effectiveness and environmental hazards.

Chemical methods are dust suppressant or binding agents that are used on the soil surface to bind finer particles together. Chemical dust control agents must be environmentally benign, easily applied, easily maintained, economical and not significantly detrimental to traffic ability.

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Approach (cont'd)	Approximately three-quarters of chemical dust control agents are inorganic compounds which are compatible with soil and biota. After application, the compounds dampen and penetrate into the soil; a hygroscopic reaction pulls moisture from the atmosphere into the surface and adheres fines to aggregate surface particles. The compounds may not penetrate soil surfaces made up primarily of silt and clay, so soil tests are required. Key factors in determining the method include the following: ➤ Soil types and surface materials - both fines and moisture content are key properties of surface materials. ➤ Properties of the agents - the five most important properties are penetration, evaporation, resistance to leaching, abrasion, and aging. ➤ Traffic volumes – the effectiveness and life span of dust control agents decreases as traffic increases. For high traffic areas, agents need to have strong penetrating and stabilizing capabilities. ➤ Climate – some hygroscopic agents lose their moisture-absorbing abilities with lower relative humidity, and some may lose resilience. Under rainy conditions, some agents may become slippery or even leach out of the soil. ➤ Environmental requirements – the primary environmental concern is the presence and concentration of heavy metals in the agent that may leach into the immediate ecosystem, depending on the soil properties. ➤ Frequencies of application – rates and frequencies of application are based on the type of agent selected, the degree of dust control required, sub grade conditions, surface type, traffic volumes, types of vehicles and their speeds, climate, and maintenance schedule. <i>Application of Methods</i> For dust control agents, once all factors have been considered, the untreated soil surface must first contain sufficient moisture to assist the agent in achieving uniform distribution (except when using a highly resinous adhesive agent). The following steps should be followed in general: ➤ Ideally, application should begin in late spring, after seasonal rains - not during or just before heavy rainfall- so that sub grade and surface materials will not have dried. ➤ If the surface has minimal natural moisture, the area to be protected must be pre-wetted so that the chemicals can uniformly penetrate the surface. ➤ In general, cooler and/or more humid periods result in decreased evaporation, increased surface moisture, and thus significant increase in control efficiency. However, chemical and organic agents should not be applied under frozen conditions, rainy conditions, or when the temperature is below 40° F. Tar and bitumen agents should not be applied in fog or in rain or below 55°F. ➤ More than one treatment with salts or organic compounds per year is often necessary, although the second treatment should probably be significantly diluted. Maintenance ➤ Most dust control measures require frequent, often daily, attention. ➤ The primary maintenance requirement is the reapplication of the selected dust control agent at intervals appropriate to the agent type. High traffic areas shall be inspected on a daily basis, and lower traffic areas shall be inspected on a weekly basis.

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Checklist**

- ☐ Water is applied daily to reduce dust.
- ☐ Trucks hauling soil or rock have dust covers over materials.
- ☐ Material stockpiles have fabric, mulch or ground cover to provide sediment control.

TABLE GHP-16-1 DUST CONTROL BMPs FOR GIVEN SITE CONDITIONS

	DUST CONTROL BMPs								
SITE CONDITION	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt Surfacing	Silt or Sand Fences	Temporary Gravel Construction Entrances/ Equipment Wash Down	Haul Truck Covers	Minimize Extent of Area Disturbed
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X				X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X					X
Truck Traffic on Unpaved Roads			X	X	X			X	
Mud/Dirt Carry-Out					X		X		

TABLE GHP-16-2 COMMONLY USED CHEMICALS FOR DUST CONTROL

	SALTS	ORGANIC, NON PETROLEUM-BASED	PETROLEUM BASED PRODUCTS ¹
CHEMICAL TYPES	· Magnesium Chloride · Natural Brines	· Calcium Lignosulfonate · Sodium Lignosulfonate · Ammonium Lignosulfonate	· Bunker Oil · Asphalt Primer · Emulsified Asphalt
LIMITATIONS	Can lose effectiveness in dry periods with low humidity. Leaches from road in heavy rain. Not recommended for gravel road surfaces with low fines. Recommended 10-20% fines.	Not affected by dry weather and low humidity. Leached from road in heavy rain if not sufficiently cured. Best performance on gravel roads with high surface fines (10-30%) and dense compact surface with loose gravel.	Generally effective regardless of climatic conditions may pothole in wet weather. Best performance on gravel roads with 5-10% fines.
COMMENTS	Calcium Chloride is popular. May become slippery when wet on gravel surfaces with high fines.	Ineffective on gravel surfaces low in fines. May become slippery when wet on gravel surfaces with high fines content.	Creates a hardened crust.

¹ Motor oils and oil treatments are not recommended due to adverse effects on plant life and groundwater. They should only be applied in areas that will soon be paved.