



Fugitive Dust Control Methods

MDEQ – Air Quality Division

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Reasons to Manage Fugitive Dust

- Regulatory requirements
- Equipment maintenance
- Conserve material
- Potential health impacts
- The State Farm principle

Managing Fugitive Dust

- Assess facility/site for areas w/ potential sources of fugitive dust
- Implement a fugitive dust management plan
 - Select control measure to use
 - Implement the plan
- Keep records of dust management measures

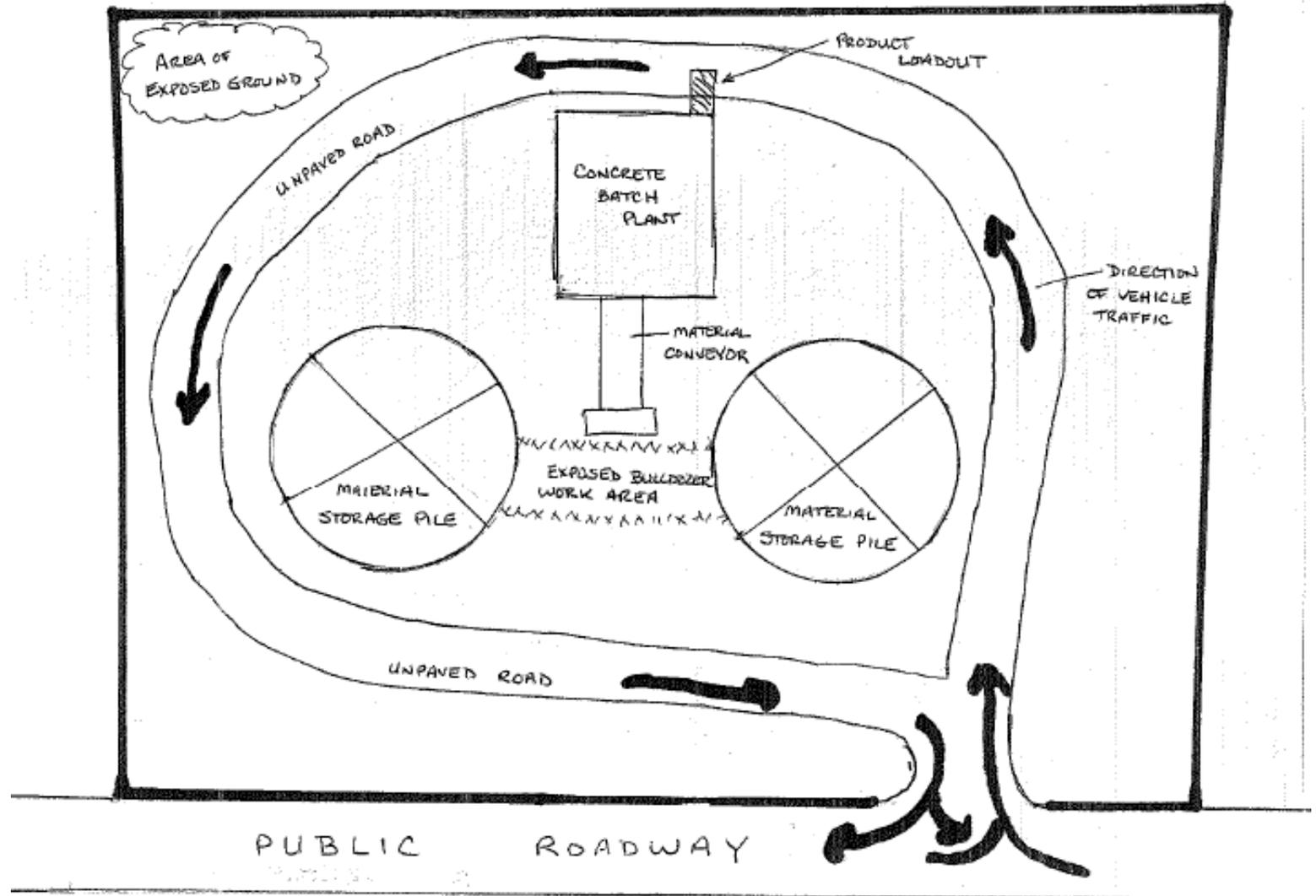
Assess facility/site

- Identify potential sources of dust on property
- Analyze traffic patterns
- Decide on dust control measures
- Determine frequency of dust control

Assess facility/site



Facility Map



Common Dust Management Measures

Start with preventative measures

- Minimize size of disturbed/exposed area
- Adjust work schedule (limit dusty work on windy days)
- Clean up dusty spills
- Eliminate trackout
- Apply dust suppressants
- Get everyone at the site involved

Dust Control Measures for Occasional Use Areas

- Vegetative ground cover
- Wind erosion controls
(e.g. bushes, fence, wind breaks)
- Apply dust suppressant

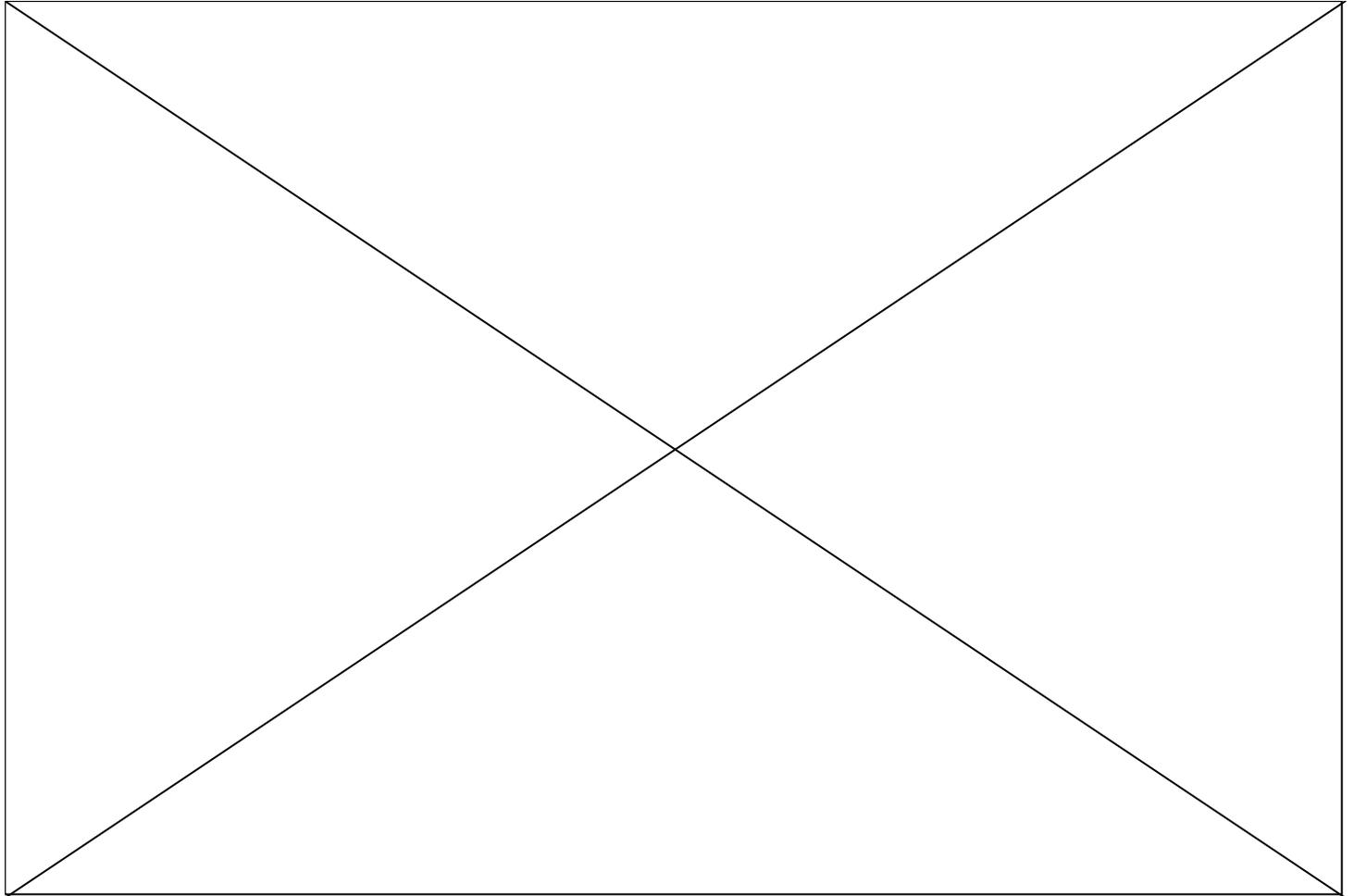
Common Fugitive Dust sources

- Material storage piles
- Material handling operations
- Material processing
- Construction/demolition activities
- Roadways and unpaved areas

Fugitive Dust Management Storage Piles



Fugitive Dust Management Storage Piles



Fugitive Dust Management Storage Piles

- Limit pile size
- Enclose storage and handling areas
- Cover piles when not in use, or dust suppressant
- Use pneumatic conveying/telescopic chutes, minimize drop distance
- Keep ground at base of pile clear of spills



COVER STORY

PET COKE: Pile storage flap shifts to River Rouge site

FROM PAGE 1A
off the four-story-tall pet coke piles that coated homes, cars and lungs. Nearby factories at the River Rouge site include U.S. Steel, a DTE power plant and various facilities on nearby Zug Island.

But the new site also features residential neighborhoods less than a half-mile away, and River Rouge's popular Belanger Park on the riverfront is only about a quarter-mile away.

Harry Marx and Bob Griggs grew up nearby in Wyandotte and said they have recreated on this stretch of the Detroit River all their lives. Both said they remember last year's clashes over the pet coke piles in Detroit, and they don't welcome that coming to their neighborhood.

"I don't want that at all," said Marx, 51, as he and Griggs launched a boat from Belanger Park for some chilly perch fishing Friday. "That dust blowing into the water? The river is finally coming back."

Added Griggs, 52, "We have one of the best walleye fisheries here. And look at all those birds," he said, sweeping his arm toward a huge flock of nearby Canada geese, swans and an occasional bald eagle.

"If that stuff gets on the water, they and the fish will ingest it. And what happens if it makes it to the bottom of the river?"

Detroit Bulk Storage Vice President Noel Frye said the company has long used the parcel, storing materials such as limestone, salt and trap rock. It also stored petroleum coke there for a few years in the early to mid-2000s, he said, until its customer at the time, Holcim Cement, closed its plant in Dundee around 2009.

"I haven't had a complaint at that facility, as far as environmental goes, in all the time that we've been there," he said. "We've been there for 30 years and most people don't even know we exist down there."



Bob Griggs, right, and Harry Marx are on their way to perch fishing leaving from Belanger Park in River Rouge on Friday. "I opposed to this," says Marx about Detroit Bulk Storage wanting to store petroleum coke nearby. PHOTOS BY RICHARD BLANQUARD



Detroit Bulk Storage has applied for a permit with the Michigan Department of Environmental Quality to store petroleum coke at its headquarters in River Rouge. A formal hearing held on the permit request this spring.

ery that is used as a relatively dirty-burning fuel. The local pet coke piles come from Marathon's Detroit refinery, which completed a four-year, \$2.2-billion expansion in 2012 allowing it to process heavy crude piped here from western Canada. The refinery's new coker generates about 600,000 tons

the river last year by Koch Carbon and shipped back to Canada on the East Coast at a power plant in Nova Scotia, Frye said. Frye said the company would have piles up to 30 feet at the River Rouge site, and would ship about 300,000 tons "of a whole bunch of different

...the company will use sprayed water to reduce dust during loading and conveyor belt use...

...Loading would be suspended when winds exceed 30 mph...

...piles stored for more than 45 days would be sealed with an epoxy solution...

...piles stored longer than 150 days would be covered with a tarp...



Former locations of petroleum coke mounds
Zug Island
RIVER ROUGE
"They may to contain it," said Tlaib, D. "I are going to asked a number need to have

between trucks and river barges. Loading would be suspended when winds exceed 30 m.p.h. or gusts of 45 m.p.h. The coke piles stored for more than 45 days would be sealed with an epoxy solution, and piles stored longer than

to get out of River on edged that on all sides that should allow the said.



Storage Pile Management





Incorporating Storage Piles Into Your Plan

1.0 Storage Piles

As a limestone crushing operation, the facility will have storage piles of limestone of various sizes. There will be an average of six storage piles at the facility. The stone will be loaded into the piles from conveyors. The stone discharged to the piles will have been wetted in the process by the water mist sprays. Storage piles will be wetted when weather conditions are such that fugitive emissions are likely to occur, at a minimum of once per week. Wetting of the storage piles will take place through the use of a hose attached to the water tank truck. Water will be sprayed for approximately 10 to 15 minutes per pile. A log sheet will be kept that will record the pile wetting schedule. The actual moisture content of the piles is not known, but must be maintained at a level so that the product will meet the customer's specifications. Free fall from front end loaders will be minimized to 2 feet, where possible. Watering schedules will be adjusted if, after a site visit and written notification, the Michigan Department of Environmental Quality's (MDEQ) Air Quality Inspector determines that fugitive dust regulations are not being met utilizing the current schedule.

Dust Control Measures for Conveyors



Dust Management Measures for Conveyors

- Utilize spray system
- Telescopic chutes
- Limit drop heights
- Erect enclosures
- Screw conveyors

Truck Loading

- Empty bucket slowly
- Ensure drop height is minimized
- Install water spray bars on bucket
- Maintain vehicles to prevent leakage or spillage
- Do not overload!

Fugitive Dust Control Earth Moving

- Conduct activity on less windy days
- Reduce wind effects with windbreaks where practicable
- Require tarpaulins for all haul vehicles



Dust Control Measures for Roadways





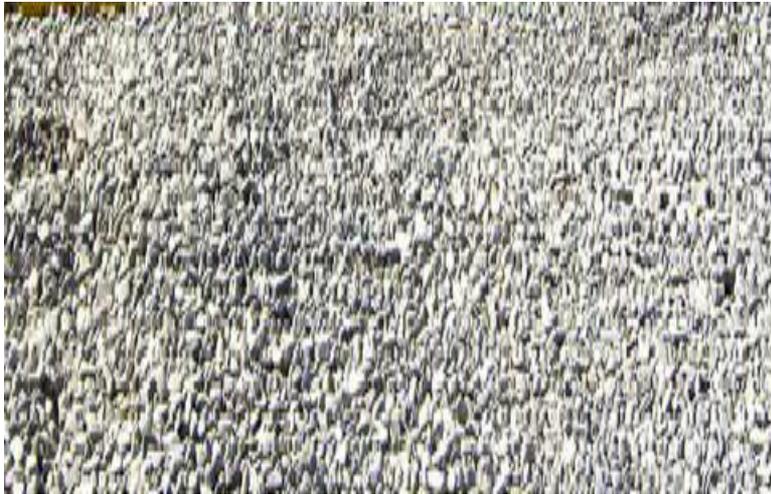
Fugitive Dust Control On-site Roadways

- Train workers- accountability
- Reduce vehicle speed on unpaved roads and lots to 10mph
- Water/sweep surfaces often
- Rinse vehicles leaving facility
- Apply dust suppressants



Fugitive Dust Control

At the Entrance/Exit



- Establish a truck and wheel wash
- Provide an area of crushed gravel/stone to assist in dislodging PM
- Sweep street regularly

Driveways



Driveways



Driveways



Truck and Wheel Wash



Control Speed Limit



Trackout



Trackout



Fugitive Dust Control

Street Sweeping



There's a sweeper here somewhere



Operate Sweeper to Capture Dust



Addressing Traffic, Roads and Trackout in Your Plan

2.0 ROADS AND TRUCK TRAFFIC

All limestone transport trucks will be tarped prior to leaving the facility and a 10 mile per hour speed limit will be posed at several locations along the plant road.

All limestone transport trucks will pass through a wheel wash system prior to leaving the facility.

A street sweeper will be operated as necessary to control the carry out that may be deposited by trucks leaving the quarry. The sweepings will occur a minimum of two times per month and records will be kept on file.

Appropriate measures will be taken when necessary to minimize the emission of water onto Two Stone Road from the trailers of trucks leaving the facility. This water may be present in the bottom of trailers and results from the stone processing and particulate emission control activities.

Dust Suppressants

Purpose: Attract moisture, bind dust particles, seal surface



Common dust suppressants

- Water
- Chloride salts
- Lignin (pulp/paper by-product)
- Vegetable-based products (e.g. SBF)
- Polymer solutions
- Emulsified asphalt or resin solutions

Watering

- Typically cheapest dust control method
- Only provides temporary control
- Weather conditions dictate reapplication frequency

Watering (cont.)

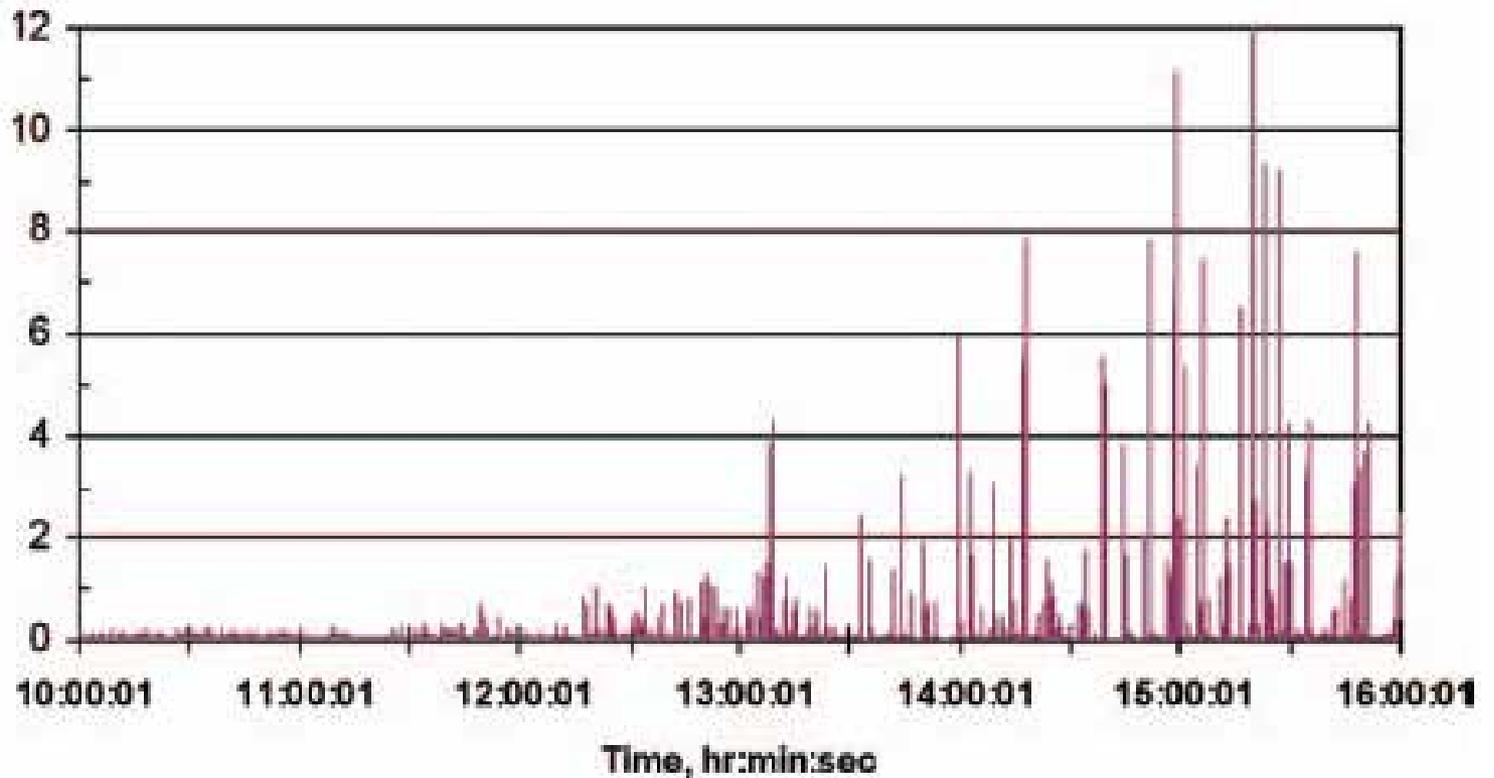


Figure 1—Instantaneous dust concentrations from haul trucks on test section of road as it is initially wetted and allowed to dry.

Effective Watering



Watering – less effective method



Watering controlling dust, but not runoff



Watering controlling dust, but not runoff (cont.)



Dust Suppressants

- Chloride solutions
 - attract moisture, reduce evaporation
 - corrosive, negative impacts on aquatic/plant life
- Vegetable-based products
 - non-corrosive, typ. non-toxic, less trackout
 - can be odorous, sticky

Dust Suppressants (cont.)

- Polymer solutions, resins and emulsified asphalt, lignin
 - binds surface dust, less trackout, long lasting
 - potentially toxic effects on surface water

Don't apply to paved surfaces



Avoid Contaminating Other Media



Use Approved Dust Suppressants

DEQ Guidance on Dust Suppressants

Dust suppressants are used to minimize fugitive dust emissions and control erosion and maintenance costs on unpaved roads and lots. The mechanisms by which suppressants abate dust vary with product type; some form crusts or protective surfaces on the soil, others act as binding agents causing particles to agglomerate together, and some attract moisture to the soil particles.

Potential environmental impacts of dust suppressants include: surface and groundwater quality deterioration; soil contamination; toxicity to soil and water biota; toxicity to humans during and after application; air pollution from volatile dust suppressant components; accumulation in soils; changes in hydrologic characteristics of the soils; and impacts on native flora and fauna populations.

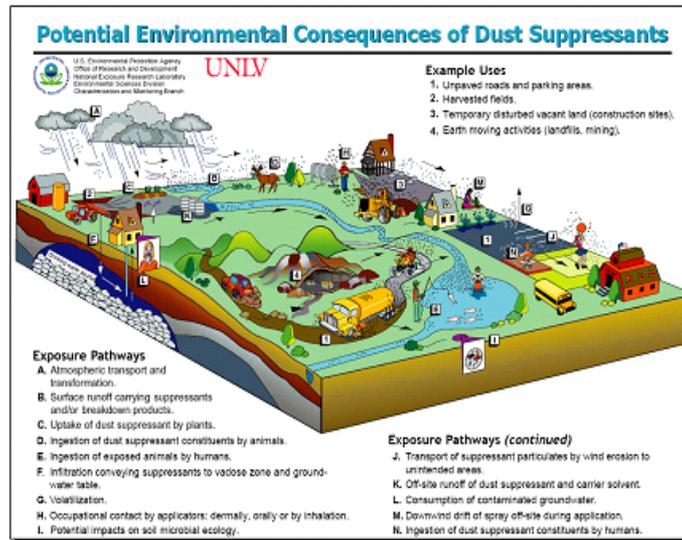


Figure 2-1: Conceptual model of the various uses of dust suppressants and the potential environmental consequences.

Source: Potential Environmental Impacts of Dust Suppressants: "Avoiding Another Times Beach," An Expert

Addressing accountability in your plan

Everyone

1. Opacity levels cannot exceed 20%. If you can see it than it is over 20%.
2. Roads must be inspected 5 days a week and documented.
3. Roads must be swept 3 times a week, weather permitting.
4. City streets are swept twice a month
5. Do not track mud onto the city roads.
6. Crane tracks should be cleaned regularly
7. Keep the magnet as close to the load as possible when it is dropped into the pile or the trailer.
8. When handling or loading material, dust suppressant must be used.
9. Finished product must be sprayed when handled. Must keep the hose on it if the spraying is not enough.





What about temporary
sources?

Construction and Demolition activities



Road Construction and Repair



Temporary Sources

Employ dust management methods for:

- Storage piles
- Active work areas
- Material transfer operations
- Concrete, asphalt batch plants
- Roadways, trackout

Fugitive Dust Control Methods

- Assess facility/site for areas w/ potential fugitive dust
 - Implement a fugitive dust control plan
- Select control measure to use
- Implement the plan
- Keep records of control measures

Fugitive Dust Control Log (cont.)

Self-Inspection Checklist: Weather Log

Date	Temperature	Wind Speed/Direction	Amt. of Rainfall	Comments
7/2	81° F at 2pm	5- 10 mph, NW	0	Last rainfall on 6/29 - water applied

Self-Inspection Checklist

Using a Self-Inspection Checklist helps you incorporate the routine tasks of fugitive dust control into your daily schedule. It serves as a job reminder on a daily basis, and as a record of your efforts to keep dust problems to a minimum. You can identify problem areas before they get out of hand, and anticipate making adjustments for seasonal changes or for any unforeseen circumstances. **Your personal involvement in reducing fugitive dust will help us all breathe a little easier!**

Prevention

- ✓ Limit Surface Area Disturbed
- ✓ Limit Work in Wind
- ✓ Apply Suppressives as Needed
- ✓ Clean up Spills Immediately

Occasional Use Areas

- ✓ Grow Groundcover
- ✓ Erect Windbreaks
- ✓ Apply Crust Chemicals

Frequent Use Areas

- ✓ Pave Roads
- ✓ Enclose Storage Areas
- ✓ Cover Storage Piles
- ✓ Water/Sweep Often
- ✓ Reduce Speed Limits
- ✓ Minimize Trips
- ✓ Limit Area Access
- ✓ Prevent Carryout Offsite
- ✓✓ **Use Your Checklist Daily!**

SUMMARY

- Conduct evaluation of site
- Be sure to address:
 - Traffic and Trackout
 - Conveyors
 - Storage Piles
 - Any activity that could generate dust
- Choose site specific control measures
- Document all activities for accountability