

**Fugitive Dust Control at TSCA**
**PCB Cleanup Sites**

**Appendix A – Dust Control Example Language**

**EPA 530-R-24-005 Appendix A**

# General Project Information[[1]](#footnote-2)

At a minimum, the Dust Control Plan (DCP) will include the following general project information:

1. Project name, address and/or coordinates, and the applicable EPA project ID number;
2. Name, address, telephone number, and email address of owner or operator;
3. Name, telephone number, and email address of the Dust Control Supervisor(s);
4. Site description and any sensitive land uses[[2]](#footnote-3) near the site;
5. Information on the measured or expected concentrations of PCBs in site soils and/or other materials;
6. A schedule of the estimated start and completion dates for each phase of remedial work;
7. A list of each applicable dust-generating activity;
8. A map of the specific remedial worksites with dust-generating activities that indicates the area(s) containing PCB-impacted soil and/or other materials;
9. A map of the specific planned locations of PM10 monitors, weather station or on-site meteorology monitor, and windscreens; and
10. A copy of the local dust control rule or permit (if applicable).

The DCP will include the following specific Dust Control Measures (DCMs), Air Monitoring trigger levels, procedures, and methods, and the following specific provisions for a Dust Control Supervisor, Signage, Recordkeeping, and Compliance and Reporting.

# Dust Control Measures

The following DCMs and Definitions will be included in the DCP. The DCMs will be implemented at the site consistent with the Definitions provided.

### Sitewide

1. **Restrict Access:** Access to the property and each remedial worksite will be restricted to authorized vehicles and personnel.
2. **Install Windscreens:** Earth-Moving will not be conducted in a remedial worksite area unless the worksite area is surrounded by fencing that is at a minimum 6 feet tall and at least 6 inches taller than the tallest stockpile (if applicable), with a windscreen with a porosity of 50 ± 5% or a mesh windscreen that has a shade value or opacity of 85 ± 5%.
3. **Minimize Disturbed Area:** Vehicle traffic and disturbance of soils peripheral to the area of contaminated soil/materials removal will be limited to what is minimally necessary with the use of fencing, barriers, barricades, and/or wind barriers.
4. **Minimize Vehicle Speed:** Signs will be posted at all entrances to the site to designate the speed limit as 15 miles per hour (mph) in advance of the initiation of any Earth-Moving Activity from a remedial work area(s) from which soil will be removed and transported onsite or offsite.
5. **Restrict Use of Mechanical Blowers:** Mechanical blowers will not be used on any surfaces within the Remedial Worksite or on any equipment or vehicles that have come into contact with soil or other media originating from the Remedial Worksite.
6. **Cease Operations During High Winds:** Earth-Moving Activities will cease when there are wind gusts that exceed 25 mph or if the wind speed is greater than 15 mph averaged over a 15-minute period, except water trucks/pulls which will continue to operate unless wind conditions are such that the continued operation of watering equipment cannot reduce fugitive dust emissions or that continued equipment operation poses a safety hazard. All stockpiles (of soil/media/materials) will be immediately covered with a plastic sheeting at least 10 mil thick that overlaps a minimum of 24 inches and anchored and secured so that no portion of the soil is exposed to the atmosphere.
7. **Restrict Visible Dust Plumes:[[3]](#footnote-4)** No person will cause or permit the handling (including Earth-Moving), transportation, or storage of soil or other material in a manner that:
	1. Allows a visible dust plume to extend more than one hundred (100) feet, horizontally or vertically, from the point of origin; or
	2. Allows a visible dust plume to cross the property boundary. If the TSCA Cleanup Site extends to an adjacent property, this provision will be interpreted to apply to the adjacent property’s boundary when the PCB remedial activity is taking place on the adjacent property.
8. **Comply with Local Fugitive Dust Regulations:** The requirements of all locally applicable fugitive dust control rules will be followed.
9. **Project Phasing:**[[4]](#footnote-5) Remedial activities will be conducted in phases to minimize the amount of disturbed area at one time.

### Excavating, Trenching, and Other Earth-Moving Activities

1. **Pre-Water:** Prior to disturbance, Dust Suppressant will be applied to Adequately Wet to the depth of the Earth-Moving Activities allowing time for penetration.
2. **Maintain Moisture:** During Earth-Moving and handling of material, Dust Suppressant will be applied to Adequately Wet at frequencies to prevent the generation of visible dust plumes.
3. **Stabilize or Cover:** When Earth-Moving Activities are not occurring, Dust Suppressant will be applied to maintain a Stabilized Surface in the Disturbed Surface Area, or the Disturbed Surface Area will be covered with plastic sheeting at least 10 mil thick that overlaps a minimum of 24 inches and is anchored and secured so that no portion of the soil is exposed to the atmosphere.

### Stockpiling

1. **Stockpile Placement:**[[5]](#footnote-6) Stockpiles will be placed on plastic sheeting in such a way that spillage of materials that could contaminate other surfaces of the site will be avoided or will only be placed on top of soil or other media that will be removed for disposal as part of the PCB remediation plan.
2. **Stockpile Maintenance:** Stockpiles will be maintained to avoid steep sides and faces that exceed the angle of repose.
3. **Stockpile Size Restriction:** Stockpiles will not exceed a volume of 400 cubic yards.
4. **Stabilize or Cover:**[[6]](#footnote-7)Dust Suppressant will be applied to the stockpile to maintain a Stabilized Surface, or the stockpile will be covered with plastic sheeting at least 10 mil thick that overlaps a minimum of 24 inches and is anchored and secured so that no portion of the soil is exposed to the atmosphere.
5. **Stockpile Daily Inspection:** Stockpiles will be inspected at a minimum of once per day to verify that the stockpiles are either stabilized or covered. Covered stockpile inspections will include a visual inspection of all seams and plastic cover surfaces to ensure that no portion of the stockpile is exposed to the atmosphere.
6. **Stockpiles with PCB Concentrations >** **50 parts per million (ppm):**[[7]](#footnote-8) Stockpiles with PCB concentrations > 50 ppm will adhere to the following additional practices:
	1. **Placement:** Stockpiles will be placed on plastic sheeting in such a way that spillage of materials that could contaminate other surfaces of the site will be avoided.
	2. **Covering – End of Day:** At the end of each day, stockpiles will be covered with a 10 mil thick plastic sheeting that overlaps at a minimum of 24 inches. The sheeting will be anchored and secured so that no portion of the soil is exposed to the atmosphere.
	3. **Temporary Storage:** The stockpile will be tightly wrapped in sheet plastic for temporary storage on-site prior to proper off-site disposal.

### Truck Loading/Unloading and Transport

1. **Designated Loading/Unloading Areas:** Truckloading/unloading areas will be established adjacent to or otherwise outside of the remedial excavation area(s) to avoid haul truck travel on soils containing PCBs.
2. **Pre-Water:** Dust Suppressant will be applied to soil and/or other materials prior to loading. Apply Dust Suppressant to soil and/or other materials prior to unloading.
3. **Maintain Moisture:** Dust Suppressant will be applied to Adequately Wet material during loading and unloading activities at frequencies to prevent the generation of visible dust plumes.
4. **Drop Height:** Drop height from the loader bucket will be minimized and the loader bucket will be emptied slowly so that no visible dust plumes are generated.
5. **Spilled Material**: Prior to loading activities, plastic sheeting will be placed on the surface beneath the trucks to collect any spilled material (e.g., soil). Any spilled material collected on the plastic sheeting during loading activities will be removed such that truck tires do not come into contact with it.
6. **Freeboard Space:** At least 6 inches of space between the soil and the top of the truck bed and trailer (freeboard) will be maintained while transporting within a site.
7. **Load Covering:** The truck bed and trailer will be completely covered prior to leaving the site with a secured tarp to prevent material from blowing, dropping, leaking, or otherwise escaping from the vehicle.

### Track-out Prevention and Control

1. **Use of Paved Surfaces for Trucks & Equipment:**[[8]](#footnote-9) Operations of haul trucks will be restricted to paved surfaces, as well as support equipment not directly involved in the remedial excavation.
2. **Track-out Control:**[[9]](#footnote-10)The soil from the wheels and undercarriage of haul trucks and trailers will be cleaned, without the use of forced air, prior to the vehicles leaving the site.
3. **Track-out Control Devices:**[[10]](#footnote-11)At least one of the following track-out control devices will be installed and maintained in effective condition at all vehicle egress points where paved and unpaved access or travel routes intersect. Traffic patterns will be established and enforced to route traffic over the selected track-out control device(s).
	1. **Gravel Pad:** Installation and utilization of a pad consisting of washed gravel (minimum size 1 inch), maintained in a clean condition, to a depth of at least 6 inches extending at least 30 feet wide and at least 50 feet long. Re-screen, wash, or apply additional rock in gravel pad to maintain effectiveness.
	2. **Wheel Shaker:** Installation and utilization of a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 30 feet wide. Clean wheel shaker on a regular basis to maintain effectiveness.
	3. **Wheel Washer:** Installation and utilization of a wheel washer to remove soil from tires and vehicle undercarriages**.** Maintain wheel washer on a regular basis to maintain effectiveness (Note:water contaminated with PCBs will be decontaminated (40 CFR § 761.79(b)(1)) or otherwise managed in accordance with the PCB regulations at 40 CFR Part 761.)
	4. **Paved Surface:** Enforcement of motorized vehicles to only operate on paved surfaces.
4. **Deposition Limit:** Deposition of track-out over 25 feet or more in cumulative length onto a paved road will not be allowed and track-out will not be allowed to accumulate to a depth greater than 0.25 inch on a paved road.
5. **Deposition Removal:** All accumulations of track-out on curbs, gutters, sidewalks, or paved roads will be removed at a minimum frequency of once each day using a vacuum equipped with a HEPA filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles. All track-out will be removed by the end of the workday.
6. **Track-out Daily Inspection:** Track-out conditions on paved surfaces at each vehicle egress point where paved and unpaved access or travel routes intersect will be inspected at a minimum of once per day.

### Disturbed Surface Areas

1. **Access Prevention:** Unauthorized access to the site will be prevented using fencing, berms, ditches, vegetation, or another barrier.
2. **Stabilize:** Dust Suppressant will be applied to create and maintain a Stabilized Surface in the Disturbed Surface Area.

### Unpaved Roads, Haul Routes, and Parking Areas

1. **Designated Haul Route(s):** Unpaved haulroutes will be established adjacent to or otherwise outside of the remedial excavation area(s) to avoid haul truck travel on soils containing PCBs.
2. **Stabilize:** Dust Suppressant, paving, or gravel will be applied to create and maintain a Stabilized Surface on all unpaved roads, haul routes, and parking areas subject to vehicular traffic.
3. **Vehicle Speeds:** Vehicle speeds will be limited to 15 miles per hour on all unpaved roads, haul routes, and parking areas.

### Pavement Removal

1. **Pre-Water:** Dust Suppressant will be applied immediately prior to crushing or cutting into the paved material.
2. **Maintain Moisture:** Dust Suppressant will be applied to Adequately Wet material during crushing or cutting activities at frequencies to prevent the generation of visible dust plumes.
3. **Stabilize:**
	1. Dust Suppressant will be applied to crushed material to form a Stabilized Surface immediately following crushing.
	2. Dust Suppressant will be applied to surfaces underlying removed concrete to create a Stabilized Surface.

### Paving/Subgrade Preparation

1. **Pre-Water:** Dust Suppressant will be applied to subgrade surface until Optimum Soil Moisture content is reached and maintained.
2. **Maintain Moisture:** Dust Suppressant will be applied to Adequately Wet material during activities until Optimum Soil Moisture content is reached and maintained.
3. **Stabilize Adjacent Soils:** Dust Suppressant will be applied following paving activities to adjacent disturbed soils to create and maintain a Stabilized Surface.

### Clearing or Cleaning Foundations and Slabs[[11]](#footnote-12)

Foundations and slabs will be cleared or cleaned of soil or debris using water spray or water spray in conjunction with hand tools (e.g., shovels, brooms) or an industrial vacuum equipped with a High Efficiency Particulate Air (HEPA) filter(s) rated by the manufacturer to achieve a 99.97% capture efficiency for 0.3 micron particles.

### Storm Drain Sediment Cleanup[[12]](#footnote-13)

1. **Wetting:** Sediment will be thoroughly wetted prior to removal, e.g., utilizing hydro-jetting or a water hose with a high-pressure nozzle.
2. **Dry Removal:** Any dry sediment removal will be conducted using a High Efficiency Particulate Air (HEPA)-equipped vacuum truck.

### Investigation-Derived Waste (IDW)

1. **Pre-Water:** Prior to disturbance, Dust Suppressant will be applied to the soil in each sampling location allowing time for penetration.
2. **Maintain Moisture:** During soil removal and handling, Dust Suppressant will be applied to Adequately Wet at frequencies to prevent the generation of visible dust plumes.
3. **IDW Storage:** IDW generated during investigations or well installations (e.g., drill cuttings) will be placed in containers (e.g., 55-gallon drums) as soon as possible after sampling. Containers will be covered with 10 mm thick plastic sheeting or the container lids secured during times of inactivity to prevent the generation of windblown fugitive dust. At the end of each workday, the plastic sheeting or container lids will be secured so that no portion of the IDW is exposed. No IDW will be left on-site uncontained at the end of a workday.

### Other Dust-Generating Activities and Dust Control Measures

*[Insert Other Dust-Generating Activities not included in the example language provided.]*

*[Insert other Dust Control Measures that may be feasible for the site cleanup.]*

### Dust Control Measures Definitions

**Adequately Wet:** The condition of being sufficiently mixed with water to prevent the release of particulates or visible emissions. The process by which an adequately wet condition is achieved is by using a dispenser or water hose with a nozzle that permits the use of a fine, low-pressure spray or mist.

**Adjacent Athletic Area:** Any outdoor athletic field or park where youth organized sports occur that is in physical contact with or is separated solely by a public roadway or other public right-of-way to a school.

**Adjoining:** In physical contact with or separated solely by a public roadway or other public right-of-way.

**Clearing or Cleaning Foundations and Slabs:** The clearing of PCB-contaminated soil, sediment, and/or other debris that lies on top of a paved foundation or slab.

**Cover:** The installation of a temporary cover material on top of disturbed soil surfaces or stockpiles, such as netting, mulch, wood chips, gravel, or other materials capable of preventing wind erosion.

**Crusting:** The forming processes and the consequences of a thin layer at the soil surface with reduced porosity and high penetration resistance. Crusting can be demonstrated using the Soil Crust Test in Attachment 1.

**Daycare Center:** An establishment providing supervision of and care for preschool children during the day.

**Disturbed Surface Area:** Portion of the earth’s surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for fugitive dust. This definition excludes those areas which have been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions; been paved or otherwise covered by a permanent structure; or sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days. It also excludes any Unpaved Road, Haul Route, or Parking Area that has a Stabilized Surface according to these Definitions.

**Dust-Generating Activity:** Process, method, operation, action, or land use that creates emissions of fugitive dust or causes off-property or off-vehicle transport.

**Dust Suppressant:** Water, hydroscopic material, solution of water and chemical surfactants, [[13]](#footnote-14) non-toxic chemical stabilizer, or other dust palliative material which is not prohibited for ground surface application by EPA or any applicable law or regulation, as treatment material for reducing fugitive dust emissions.

**Earth-Moving Activity:** Any process that involves land clearing, disturbing soil surfaces, excavating, trenching, backfilling, earth cutting and filling operations, moving, uncovering, loading, unloading, adding to or removing from stockpiles, dredging, grading, or handling of earth, dirt, soil, sand, sediment, aggregate, or similar materials, and vehicular movement associated with these activities.

**Enclosure:** Either temporary or permanently installed structures or barriers that completely surround a source(s) of fugitive dust emissions.

**Fugitive Dust:** Any solid particulate matter that is in contact with ambient air and has the potential to become airborne, other than solid particulate matter that is emitted from an exhaust stack.

**Joint Use Agreement Property:** A shared public facility in which a formal agreement exists between a school and another government entity setting forth the terms and conditions for shared use.

**Optimum Soil Moisture Content:** The water content at which soil can be compacted to the maximum dry weight by modified compactive effort using ASTM D 1557 for Optimum Soil Moisture Content/Maximum Density.

**Owner or Operator:** Any firm, business establishment, association, partnership, corporation or individual, whether acting as principal, agent, employee, contractor, or in any other capacity.

**Particulate Matter 10 (PM10):** Particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

**Paved Road:** Public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal, or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

**Paving/Subgrade Preparation:** The subgrade preparation for paving streets, parking lots, or any other paved surface.

**Property Boundary:** The boundaries of a property subject to TSCA for which a Responsible Party has the legal use or possession of the property.Where such property is divided into one or more sub-tenancies, the property line(s) will refer to the boundaries dividing the areas of all sub-tenancies.

**Remedial Worksite:** An area within a TSCA Cleanup Site where remedial activities are planned, occurring, or have occurred to remove or clean up PCBs. There may be one or more remedial worksites on a property.

**School:** Any public or private education center, including juvenile detention facilities with classrooms, used for the education of more than 12 children at the education center in kindergarten through grade 12. A school also includes an Early Learning and Developmental Program by the U.S. Department of Education or any state or local early learning or development programs such as preschools, Early Head Starts, Head Start, First Five, and Child Development Centers. A school does not include any private education center in which education is primarily conducted in private homes A school includes any building or structure, playground, athletic field, or other area of school property.

**Senior Care Center:** An establishment providing care for older adults including residential care facilities, assisted living facilities, and nursing homes.

**Stockpile:** Any accumulation of bulk materials that contain particulate matter being stored for future use or disposal. This includes backfill materials and storage piles for soil, sand, dirt, mulch, aggregate, straw, chaff, or other materials capable of producing dust.

**Stabilized Surface:** A stabilized surface is:

1. Any previously disturbed surface area or stockpile, which through the application of a dust suppressant, shows visual or other evidence of surface crusting and is resistant to wind driven fugitive dust, and is demonstrated to be stabilized. Stabilization can be demonstrated using the Soil Crust Test in Attachment 1. (Using a dust suppressant to maintain soil in a sufficiently damp condition such that loose grains of soil are prevented from becoming dislodged when the Soil Crust Test is conducted is acceptable evidence of a stabilized surface).
2. Any unpaved road, haul route, parking lot, or equipment storage area that shows visual evidence of stabilization through the application of a dust suppressant, pavement, or gravel, and is demonstrated to be stabilized. Stabilization can be demonstrated using the Silt Content Test in Attachment 1.

**TSCA Cleanup Site:** The areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of a cleanup of PCB remediation waste, regardless of whether the site was intended for management of waste.[[14]](#footnote-15)

 **Track-Out:** Any soil that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that has been released onto a paved road and can be removed by a vacuum sweeper under normal operating conditions.

**Unpaved Road, Haul Route, or Parking Area:** Unpaved surfaces upon which vehicles (including light-duty, medium-duty, and heavy-duty on-road or off-road equipment or trucks) are operated or parked.

**Wet Suppression:** Use of water, including water combined with a chemical surfactant or binding agent, to prevent the entrainment of dust into the air from fugitive dust sources.

**Wheel Shaker:** A device capable of spreading the tread on tires and shaking the wheels and axles of vehicles for the purpose of releasing mud, soil, and rock from the tires and undercarriage to prevent tracking those materials onto paved surfaces.

**Wheel Washer:** A station or device, either temporary or permanent, that utilized a bath or spray of water for the purpose of cleaning mud, soil, and rock from the tires and undercarriage of vehicles to prevent tracking those materials onto paved surfaces.

**Wind Gust:** The maximum instantaneous wind speed as measured by an anemometer.

### *[Use if applicable to site]*Sensitive Uses: Additional DCMs for TSCA Cleanup Sites Located at or Adjoining a School, Joint Use Agreement Property, Adjacent Athletic Area, Daycare Center, or Senior Care Center

1. **Operation Hours:** Earth-Moving Activities will only be conducted outside of the hours between 7:30am and 4:30pm on days when the School/Daycare Center/Senior Care Center/Joint Use Agreement Property is in session.
2. **Operation:** Earth-Moving Activities will not be conducted if there is a School/Daycare Center/Senior Care Center/Joint Use Agreement Property sponsored activity or youth organized sports taking place at the site or on an Adjacent Athletic Area.
3. **Excavated Soil Handling:** Excavated soils containing PCBs will be handled by:
	1. Immediately placing soil in a leak-tight container whereby any contained solids or liquids are prevented from escaping or spilling out;
	2. Directly loading soil in truck beds, trailers, or bins for transport, applying dust suppressants, and completely covering prior to transporting; or
	3. Stockpiling, pursuant to the Stockpiling DCMs, in a fenced area that is not accessible to the general public and locked when not in use.
4. **Excavated Soil Removal:** Within five days of excavation, the excavated soil will be removed from the site.

# Air Monitoring

Before Earth-Moving Activities or other Dust-Generating Activities begin on each workday and throughout the duration of the Earth-Moving Activities or other Dust-Generating Activities, continuous, direct-reading near-real time ambient monitoring of PM10 concentrations will be conducted. A minimum of two ambient PM10 monitors will be used that are identical in make and model, settings, and configuration. At least one PM10 monitor will be placed upwind and one PM10 monitor downwind of the area(s) of on-site Earth-Moving Activity or Dust-Generating Activity. The monitors will be placed as close to the property line as feasible, or alternatively, at the remedial worksite perimeter.

Monitors will be operated, maintained, and calibrated in accordance with appropriate EPA-published documents for PM10 and manufacturer’s instructions.

### Equipment Specifications

Ambient PM10 monitoring will be conducted in accordance with PM10 monitors that meet the following physical and performance requirements:[[15]](#footnote-16)

1. PM10 monitors will be continuous direct-reading near-real time monitors and will monitor particulate matter less than 10 microns.
2. PM10 monitors will be equipped with:
	1. Omni-directional heated sampler inlet;
	2. Sample pump with active flow control mechanism;
	3. Enclosure;
	4. Data logger capable of logging each data point with average concentration, time/date, and data point number; and
	5. Conductive tubing that minimizes particle loss for any external tubing used to carry sampled air prior to measurement.
3. PM10 monitors will meet the minimum performance standards:
	1. Range: 0 – 1,000 µg/m3;
	2. Sensitivity 3 µg/m3;
	3. Accuracy, determined against an EPA Federal Reference Method or Federal Equivalent Method:
		1. ± 5% of reading precision; or
		2. Coefficient of determination (R2) of ≥ 0.95 through simple linear regression;
	4. Resolution: 1.0 µg/m3;
	5. Flow control accuracy of ± 5% of factory setpoint; and
	6. Measurement Cycle: User selectable (30 minute and 2 hour).
4. The PM10 monitor user will include and document the appropriate QA/QC:
	1. Instrument calibration;
	2. Instrument maintenance;
	3. Operator training; and
	4. Daily instrument performance checks.
	5. Weekly instrument flow checks.

### Monitoring Procedures and Methods

The PM10 monitors will be operated with the heated sampler inlet on. The PM10 data will be collected with a Data Acquisition System (DAS) that is capable of logging direct-reading near-real time data providing the date, time, and PM10 concentration in micrograms per cubic meter (µg/m3) every 1 minute or less.

Prior to conducting any on-site Earth-Moving Activities or other Dust-Generating Activities, and weekly thereafter, intra-instrument precision tests with the PM10 monitors will be conducted in accordance with Attachment 2 (Procedures to Demonstrate Intra-Instrument Precision).

Each day prior to conducting on-site Earth-Moving Activities or other Dust-Generating Activities, a passing zero check on each PM10 monitor will be conducted in accordance with:

* Steps 4 and 5 of Attachment 2 demonstrating an average PM10 concentration of 0 ± 3 µg/m3; or
* Manufacturer’s instructions if a monitor is operated using an auto-zero check procedure that directs filtered particle-free air into the measurement chamber.

### Weather Station Monitor

When conducting ambient PM10 monitoring, wind direction and speed will be monitored or collected from a local National Weather Service (NWS) monitor (or equivalent meteorological monitor) within five miles and subject to similar topography as specified in U.S. EPA’s Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements[[16]](#footnote-17) using a minimum of one stationary anemometer or wind sensor that:

1. Is sited over open, level terrain within the project site with minimal obstructions to wind flow at a sufficient height to represent prevailing wind speed and direction;
2. Meets the performance criteria from Volume IV for SLAMS/SPM or NWS monitoring of:
	1. Wind direction accuracy of ± 5 degrees and resolution of 1 degree; and
	2. Wind speed accuracy of ± or 5 percent above 5 mph of the observed windspeed, whichever is greater, and resolution of 1 mph;
3. Has a National Institute of Standards and Technology (NIST) traceability certification;
4. Is equipped with a data logger that records wind direction and speed data once every 1 minute or less and archives the recorded wind direction and speed data, including the date and time, calibrated to PST; and
5. Is operated, calibrated, and maintained in accordance with manufacturer’s specifications, but no less frequent than once every 6 months of cumulative operation.

Alternatively, an on-site meteorology monitor will be used to determine wind direction and speed that meets the performance criteria specified in 1 through 5 above or at least one properly sited windsock will be placed within the site. Approximate on-site wind direction and speed from the windsock will be visually estimated and recorded every hour. Windsock data will be compared to off-site meteorological data and used to aid in dust control decisions.

### Upwind and Downwind Air Monitor Placement

One or more air monitors will be located upwind of the area(s) of on-site Earth-Moving Activity or other Dust-Generating Activity, indicative of background PM10 levels, and not generally influenced by fugitive dust sources from the site. The monitor(s) will be designated as the “upwind monitor(s)”. The placement of the upwind monitor(s) will be determined and adjusted as needed based upon data recorded from an on-site meteorology monitor or an on-site windsock.

One or more air monitors will be located downwind of the area(s) of on-site Earth-Moving Activity or other Dust-Generating Activity. The monitor(s) will be designated as the “downwind monitor(s)”.

When there is a change in wind direction, as recorded from an on-site meteorology monitor or windsock, the upwind monitor(s) will promptly be moved to the new upwind location and the downwind monitor(s) will be moved to the new downwind location.

### Calculation of PM10 Concentration

The PM10 concentration will be calculated by subtracting the results of the upwind monitor(s) from the downwind monitor(s) for the same averaging period. When wind conditions are stagnant or highly variable and no upwind and downwind impacts can be determined, concentrations will be compared to the nearest regional background PM10 monitor to estimate impacts (if no local real-time background PM10 data is available PM2.5 data can be considered in this evaluation). If there is more than one upwind monitor, the upwind result is the average concentration of all upwind monitors for the same rolling averaging period. If there is more than one downwind monitor, the downwind result is the maximum of any of the downwind monitors for the same rolling average period.

The PM10 concentration will be calculated as a 120-minute rolling average where the initial average starts at the commencement of on-site Earth-Moving Activities or other Dust-Generating Activities and ends 120 minutes after the commencement of on-site Earth-Moving Activities or other Dust-Generating Activities. The averages subsequent to the initial average will be calculated every 1 minute and cover the previous 120-minute period.

The calculated rolling average PM10 concentrations for each 120-minute period and other monitoring information collected shall be reported to EPA according to Sections VI and VII.

In the event that a DAS fails to log ambient PM10 data or to calculate PM10 concentrations every 1 minute due to a technical issue beyond the reasonable control of the responsible party, including, but not limited to, internet connection disruptions and computer malfunctions, the following actions will be taken: (1) the DAS or data management system will be restored to working condition as soon as practicable and no later than the start of the next working day; and (2) PM10 concentrations from the monitor(s) associated with the non-operational DAS or data management system will be manually recorded every 10 minutes or less and the PM10 concentration calculated for every 120-minute rolling average until the DAS or data management system is restored.

### Air Monitoring Trigger Level

*[The text below can be incorporated as applicable (depending upon the maximum PCB concentration in soil).]*

*Earth-Moving Activities/Dust-Generating Activities in an area(s) with a maximum PCB concentration in soil of 1,200 ppm or less:*

If the 120-minute average PM10 concentration exceeds 25 micrograms per cubic meter (µg/m3), as measured and determined by protocols in Section III, all Earth-Moving Activities and other Dust-Generating Activities shall cease and dust control measures, such as applying dust suppressant to fugitive dust sources, shall be implemented as necessary until the PM10 concentration is equal to or less than 25 µg/m3 averaged over 30 minutes.

Once the PM10 concentration is equal to or less than 25 µg/m3 averaged over 30 minutes, site activities can resume. When activities resume after ceasing, the average shall start when on-site Earth-Moving Activities or other Dust-Generating Activities resume and shall end 120 minutes after on-site Earth-Moving Activities or other Dust-Generating Activities resume, and the subsequent averages are to be calculated every one minute and shall cover the previous 120-minute period.

*Earth-Moving Activities/Dust-Generating Activities in an area(s) with a maximum PCB concentration in soil of > 1,200 ppm:*

If the 120-minute average PM10 concentration exceeds *[Fill in site-specific trigger level derived in accordance with Section 4 of EPA’s Fugitive Dust Control at TSCA PCB Cleanup Sites]* as measured and determined by protocols in Section III, all Earth-Moving Activities and other Dust-Generating Activities shall cease and dust control measures, such as applying dust suppressant to fugitive dust sources, shall be implemented as necessary until the PM10 concentration is equal to or less than *[Fill in site-specific trigger level]* averaged over 30 minutes.

Once the PM10 concentration is equal to or less than *[Fill in site-specific trigger level]* averaged over 30 minutes, site activities can resume. When activities resume after ceasing, the average shall start when on-site Earth-Moving Activities or other Dust-Generating Activities resume and shall end 120 minutes after on-site Earth-Moving Activities or other Dust-Generating Activities resume, and the subsequent averages are to be calculated every one minute and shall cover the previous 120-minute period.

# Dust Control Supervisor

The site will have an on-site dust control supervisor(s) who is employed by or contracted with the owner or operator. The dust control supervisor(s) will be designated in the DCP. The DCP will include the dust control supervisor(s)’ name, title, organization, telephone number, and email address. *[Add content addressing the dust control supervisor(s)’ qualifications.]*

The following provisions listed in this section will be included in the DCP and implemented at the site.

The dust control supervisor(s) will have full authority to ensure that the DCMs are implemented and the specified air monitoring protocols and stipulations for action levels are being followed. The authority will include inspections, recordkeeping, and shutdown or modification of dust-generating activities. A designated dust control supervisor will be present at all times when dust-generating activities occur on the site. The dust control supervisor will meet any applicable fugitive dust training qualifications established by state or local air pollution agencies.

The dust control supervisor will be responsible for confirming that all applicable DCMs are being implemented, gauging the effectiveness of the DCMs applied throughout the workday, e.g., checking for the presence of visual dust plumes and track-out, working with the appropriate construction/demolition personnel to take corrective actions as needed, and confirming that disturbed surfaces and stockpiles are stabilized or securely covered at the end of the workday.

# Signage

Prior to commencement of remedial work, proper signage will be posted and maintained on site through each phase of remedial work until completion. The signage will be posted at all entrances and at intervals of 1,000 feet along the perimeter of the site (except for any entrance(s) or interval(s) along the property line or perimeter that is not visible and not accessible to the public), with a minimum of one sign per side. The signs will be located between 6 and 8 feet above grade from the bottom of the sign and display the following information, including site-specific information, in lettering at least 4 inches tall with text contrasting with the sign background:

“THIS SITE CONTAINS SOILS [AND/OR OTHER MATERIAL] THAT CONTAIN[S] POLYCHLORINATED BIPHYNLS (PCBs). TO REPORT ANY VISIBLE DUST LEAVING THE SITE, PLEASE CALL [*SITE CONTACT AND PHONE NUMBER*] OR THE EPA REGION [1-10] PROJECT MANAGER [*NAME AND PHONE NUMBER OF SITE PROJECT MANAGER*].”

The DCP will include the plans for how signage will be posted at the site and include an example of the posted signage language.

# Recordkeeping

Records documenting compliance with the DCP will be completed for each phase of remedial work (as applicable). Records will be retained for a minimum of one year following the completion of the final phase of remedial work. The recordkeeping provisions listed in this section will be included in the DCP and implemented at the site.

At minimum, the following information will be recorded as part of daily self-inspections (as applicable):

1. Dust suppression equipment utilized (e.g., water truck, water hose) including equipment type and size or holding capacity and hours of operation;
2. Type of dust suppressant applied for each dust-generating activity (e.g., water, water combined with surfactant, chemical stabilizer);
3. Results of visual inspections for the presence of dust plumes and any corrective measures taken to reduce or eliminate the dust plume(s);
4. Track-out inspection results of track-out conditions on paved surfaces and cleanup measures taken (as applicable);
5. Inspections of all stabilized or covered stockpiles containing PCB-contaminated soils and all re-stabilization, cover repair, and label maintenance activities including dates and times the specific activities occurred;
6. Results of daily wind and PM10 monitoring, including:
	1. Rolling average ambient PM10 concentrations for each 120-minute averaging period; wind direction and speed corresponding to the rolling average PM10 concentrations; movement of monitoring instruments corresponding to wind direction changes; instrument make and model; setting; proof of valid calibration in accordance with the manufacturer’s recommended schedule; configuration; calibration, correction and correlation factors; maintenance; operator training; and daily instrument performance check records and manual zero or auto-check results; weekly zero calibration and flow check records and intra-instrument precision test data and calculation results; and all instrument logs for monitoring instruments;
	2. All instrument maintenance activities including: zero calibration, cleaning, filter replacement, and performance checks, including dates and times of the specific procedures; and
	3. Documentation of all DAS and data management system failures, including date and time of the failure, date and time of the correction, the technical issue(s) causing the failure, and activities performed to restore the failed DAS or data management system to working conditions;
7. Exceedances of PM10 trigger levels and the response actions taken; and
8. Complaints called in, including the complaint, name of complainant, contact information, date and time, activities occurring at that date and time, and actions taken.

# Compliance and Reporting

The dust control supervisor will keep a complete copy of the DCP on-site at all times during remedial activities for each phase of remedial work. Copies of the DCP, including DCMs and related maps, will be supplied in advance of the initiation of remedial activities to all contractors and subcontractors (including heavy equipment operators, water truck drivers, haul truck drivers, and consultants handling air monitoring equipment). The DCP and daily recordkeeping documents will be made available for inspection during on-site visits by the EPA.

The RP or designated representative will submit the final DCP, along with documentation listed in Section VI “Recordkeeping,” to EPA in the Cleanup Completion Report.

# STABILIZED SURFACE TESTS

## Soil Crust Test

**Summary:**

The purpose of this test is to check whether soil is sufficiently crusted to prevent generation of windblown fugitive dust from **Stockpiles and** **Disturbed Surface Areas**.

At any given site, the existence of a sufficient crust on one portion of a large remedial work area may not represent the existence or protectiveness of disturbed soil locations in other portions of the remedial work area or in other remedial work areas at the site. Repeat the Soil Crust Test as often as necessary in each remedial work area or portions thereof for an accurate assessment of soil crusting of all disturbed surfaces.

**Equipment:**

* Steel ball. Diameter: 5/8 (0.625) inches. Mass: 16-17 grams
* Measuring tape or ruler
* Optional: 1 ft by 1 ft carboard frame

**Procedure:**

1. Select a 1 ft by 1 ft survey area that is representative of the soil surface.
2. Clear blown sand away from the survey surface area.
3. Use a ruler to measure 1 ft above the surface, drop the steel ball from the 1 ft height into the survey area.
4. Pass/Fail Determination: If you answer yes to any of the below questions, the surface has failed the test. Note that if there is a slight indentation but no loose grains, the surface has passed the test.
	* Did the ball sink into the surface so that it is partially or fully surrounded by loose grains of material?
	* Has the ball sunk out of view?
	* After picking the ball up, are there loose grains of soil visible?
5. Select two additional areas within the 1 ft by 1 ft survey area and repeat Steps 2 and 3. If the material passes at least two or all three tests, the survey area is considered to have passed the test.
6. Select two additional 1 ft by 1 ft survey areas at random, making sure they are adequately spaced and representative of the soil surface being tested. Repeat Steps 2, 3, and 4.
7. If all survey areas pass the test, the surface is stable and sufficiently crusted. If one or more survey areas fail the surface is not stable. If the surface fails the test, but there are minimal loose grains, the Threshold Friction Velocity (TFV) test method contained in SCAQMD Rule 403 Handbook[[17]](#footnote-18) may be conducted. If the surface passes the TFV test, it is stable and sufficiently crusted.

## Silt Content Test

The purpose of this test method is to estimate the silt content of the trafficked parts of **Unpaved Roads, Unpaved Haul Access Routes, Unpaved Parking Lots and Unpaved Equipment Storage Areas**. The higher the silt content, the greater the amount of fine dust particles entrained into the atmosphere when cars and trucks drive on unpaved surfaces.

1. Equipment needed:

(1) Set of sieves with openings of 4 mm, 2 mm, 1 mm, 0.5 mm, and 0.25 mm, along with a lid and collector pan;

(2) Small whisk broom or paintbrush with stiff bristles and a dustpan one foot wide (the broom/brush should preferably have one thin row of bristles no longer than 1.5 inches in length);

(3) Spatula without holes;

(4) Small scale with half-ounce increments (e.g., postal/package scale);

(5) Shallow, lightweight container (e.g., plastic storage container);

(6) Sturdy cardboard box or other rigid object with a level surface;

(7) Basic calculator;

(8) Cloth gloves (optional for handling metal sieves on hot, sunny days);

(9) Sealable plastic bags (if sending samples to a laboratory); and

(10) Pencil/pen and paper.

1. Look for a routinely traveled surface, as evidenced by tire tracks (only collect samples from surfaces that are not damp from precipitation or dew). This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure; it is only intended to ensure that surface testing is done in a representative manner. Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot wide) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whisk broom or paintbrush by slowly sweeping material into the dustpan, minimizing dust particle escape. Use a spatula to lift heavier elements (such as gravel). Only collect dirt/gravel to an approximate depth of 3/8 inch (1 cm) in the 1-square-foot area. If you reach a hard, underlying subsurface more than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface: in other words, only collect a surface sample of loose material down to 1 cm. To confirm samples are collected to a depth of 1 cm, lay a wooden dowel (or similar narrow object) at least 1 foot long horizontally across the survey area while holding a metric ruler perpendicular to the dowel.
2. At this point, the collected sample can be placed in a plastic bag or container and taken to an independent laboratory for silt content analysis according to the test procedure described in Volume 1, Appendix C.2.3 (“Silt Analysis”) of *Procedures for Laboratory Analysis of Surface/Bulk Loading Samples* (EPA 1995, 5th edition).
3. Place the scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing the escape of dust particles. Record the sample’s weight.
4. Stack the set of sieves in order of size opening, placing the largest size (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.
5. Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whisk broom or brush (on windy days, use the trunk or door of a car as a barricade). Cover the stack with a lid. Lift the sieve stack and shake it vigorously up, down, and sideways for at least one minute.
6. Remove the lid from the stack and disassemble each sieve separately, beginning at the top. As each sieve is removed, examine it to make sure that all material has been sifted to the finest sieve through which it can pass: i.e., the material in each sieve (besides the top one, which captures a range of larger elements) should look the same size. If this is not the case, restack the sieves and collector pan, cover the stack with the lid, and shake it again for at least one minute. (Only reassemble the sieve(s) containing material that requires further sifting).
7. After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. Do not do anything with material captured in the sieves, only that from the collector pan. Record the weight of the container with the material from the collector pan.
8. If the source is an Unpaved Road or Unpaved Haul Access Route, multiply the weight by 0.38; if the source is an Unpaved Parking Lot or Unpaved Equipment Storage Area, multiply the weight by 0.55. The resulting number is the estimated silt loading. Divide by the total weight of the sample recorded in step (b) and multiply by 100 to estimate the percent silt content.
9. Select another two routinely traveled portions of the Unpaved Road/Haul Access Route or Unpaved Parking Lot/Equipment Storage Area and repeat this test method. Once you have calculated the silt loading and percent silt content of the three samples collected, average the results.

Examine the results. If the average silt loading is less than 0.33 oz/ ft², the surface is stable. If the average silt loading is greater than or equal to 0.33 oz/ft², examine the average percent silt content. If the source is an Unpaved Road or Unpaved Haul Access Route and the average percent silt content is 6% or less, the surface is stable. If the source is an Unpaved Parking Lot or Unpaved Equipment Storage Area and the average percent silt content is 8% or less, the surface is stable. If field test results are within 2% of the standard (i.e., 4-8% silt content on an Unpaved Road or Unpaved Haul Access Route and 6–10% silt content on an Unpaved Parking Lot or Unpaved Equipment Storage Area), collect three additional samples from the source (see step (b)) and take them to an independent laboratory for silt content analysis.

# PROCEDURES TO DEMONSTRATE WEEKLY INTRA-INSTRUMENT PRECISION AND FLOW VERIFICATION

The following procedures shall be performed to demonstrate the intra-instrument precision of all PM10 monitors.

**Procedure:**

1. Ensure monitors are identical in make and model, settings, and configuration.
2. Ensure monitor inlets are at the same height and located within 4 meters of each other but no less than 1 meter apart for the duration of the test.
3. Power on the monitors and turn on the heated sampler inlet. Allow the monitors to warm up per the manufacturer’s recommendations or when readings have stabilized.
4. Verify total flow of each instrument is within 5% of manufacturer’s specifications using an NIST certified flow transfer standard. If flow is outside of specifications troubleshoot and adjust accordingly.
5. For each monitor, conduct a zero calibration in accordance with the manufacturer’s instructions, then conduct a manual zero check by removing any sampling inlet and installing a filter, rated by the manufacturer to achieve a 99.97 percent control efficiency for 0.3-micron particles, on the inlet of the monitor for a minimum of 10 minutes. If the monitors are operated using an auto-zero check procedure that directs filtered particle-free air into the measurement chamber, conduct the zero check in accordance with manufacturer’s instructions.
6. Log the PM­10 concentrations reading every minute and calculate and record the average of the readings of the manual zero check. The average manual zero check readings shall be 0 ± 3 micrograms per cubic meter before proceeding to Step 7. If conducting an auto-zero check, the monitor shall pass the zero check in accordance with the manufacturer’s instructions before proceeding to Step 7. If any monitors fail either the manual zero check or the auto-zero check, the owner or operator shall conduct a zero calibration in accordance with manufacturer’s instructions and/or correct any issue(s) causing the failure, followed by conducting a passing zero check on the PM10 monitor(s) in accordance with Step 5 and 6.
7. Remove the filter and install the monitor inlet as required. After waiting 10 minutes, operate the monitors simultaneously and log the PM10 concentration reading every minute for a minimum of 60 minutes.
8. Calculate the intra-instrument precision using either of the following equations:
	1. Intra-instrument precision in relative standard deviation or correlation of variation (%) when ambient PM10 concentrations are greater than or equal to 15 micrograms per cubic meter:



Where,

 P = Intra-instrument precision (%)

Ct = Mean of the averaged PM10 concentrations readings from all tested monitors over the time *t* of testing duration

St = Standard deviation of the averaged PM10 concentration readings from all tested monitors over the time *t* of testing duration, to be calculated as:



Where,

xi = Mean of the PM10 concentration readings for a tested monitor over time *t* 0f testing duration

𝑥̅ = Mean of averaged PM10 concentration readings from all tested monitors over the time *t* of testing duration

 n = Number of tested monitors.

* 1. Intra-instrument precision in absolute value (micrograms per cubic meter) when ambient PM10 concentrations are less than 15 micrograms per cubic meter:



Where,

 P = Insta-instrument micrograms per cubic meter

St = Standard deviation of the averaged PM10 concentration readings from all tested monitors over the time *t* of testing duration

1. Record the results of the calculations.
2. If the instruments fail precision or flow evaluations, corrective action must be taken to address any potential impacts to previously collected data and to resolve discrepancies prior to being put back into service.
1. **Disclaimer:** This document is intended to be used as an informal reference, and as such, is not a complete statement of all applicable polychlorinated biphenyl (PCB) requirements. This document does not replace or supplant the requirements of the Toxic Substances Control Act (TSCA) PCB regulations. Please refer to the PCB regulations at 40 CFR part 761 for specific regulatory requirements. Also, these materials identify policies and provide suggestions and do not create any new legal obligations or limit or expand obligations under any federal, state, tribal, or local law. [↑](#footnote-ref-2)
2. For example, daycare centers, senior care centers, hospitals, schools, wetlands, endangered species habitats, etc. [↑](#footnote-ref-3)
3. These restrictions do not supersede other requirements to prevent the release of particulates or visible emissions. Rather, they serve as readily observable visual indicators of a gross fugitive dust release that must be immediately rectified to maintain compliance with the Dust Control Plan. [↑](#footnote-ref-4)
4. This DCM may only be relevant to larger sites with multiple remediation areas. [↑](#footnote-ref-5)
5. Applicable only to stockpiles containing PCB levels < 50 ppm, and consistent with the requirements of the PCB Regulations including 40 CFR 761.1(b)(5) (“No person may avoid any provision specifying a PCB concentration by diluting the PCBs, unless otherwise specifically provided”).
 [↑](#footnote-ref-6)
6. Id. [↑](#footnote-ref-7)
7. See 40 CFR 761.65 for TSCA requirements applicable to storage for disposal of PCBs at concentrations > 50 ppm.
 [↑](#footnote-ref-8)
8. This DCM is only relevant to sites with paved surfaces in close proximity to the remedial worksite and that extend to the site exit.
 [↑](#footnote-ref-9)
9. The TSCA submittal should identify specific decontamination procedures for vehicles and equipment that have come into contact with PCB remediation waste, consistent with 40 CFR 761.79. [↑](#footnote-ref-10)
10. Ibid. Note that a greywater tire wash to prevent trackout, if used as a final rinse to decontaminate vehicles before exiting a PCB cleanup site, may not facilitate compliance with the PCB regulations. This is because, to the extent the tire wash captures PCBs from vehicles egressing the site, reuse of the water could contaminate subsequent trucks moving through the wash. [↑](#footnote-ref-11)
11. Note that specific actions may be needed with respect to water and equipment (including vacuum components, such as HEPA filters) used for PCB cleanup to meet TSCA PCB regulations for decontamination and/or disposal of liquid PCB remediation waste and non-liquid PCB remediation waste (see 40 CFR §§ 761.79 and 761.61(a)(5)).
 [↑](#footnote-ref-12)
12. Ibid. [↑](#footnote-ref-13)
13. Where hydrophobic soils are present, use of a surfactant-water mixture may be needed for effective fugitive dust control. Some site circumstances may warrant consideration of whether use of surfactant could increase the risk of PCBs mobilizing into groundwater. However, because surfactant is generally only needed to facilitate permeation of water in dry, hydrophobic soils to the depth of excavation, its application in the context of PCB cleanups may be limited to sites located in arid areas that typically have deep water tables and PCB-impacted soils that will be removed for disposal. [↑](#footnote-ref-14)
14. 40 CFR 761.3. [↑](#footnote-ref-15)
15. Note that the South Coast AQMD has published a list of pre-approved PM10 monitors for Rule 1466 that meet the physical and performance requirements specified here: <https://www.aqmd.gov/home/rules-compliance/compliance/rule-1466/pre-approved-monitors>. [↑](#footnote-ref-16)
16. <https://www.epa.gov/sites/default/files/2021-04/documents/volume_iv_meteorological_measurements.pdf>. [↑](#footnote-ref-17)
17. <https://www.epa.gov/system/files/documents/2022-09/epa-approved-compiled-scaqmd-rules-regs-i-ii-iii-iv-v-vii.pdf>. See pdf pages 189-192. [↑](#footnote-ref-18)