United States Environmental Protection Agency

Fugitive Dust Control at TSCA PCB Cleanup Sites

November 2024

EPA 530-R-24-005

Disclaimer
This document is intended to be used as an informal reference, and as such, is not a complete statement of all applicable polychlorinated biphenyls (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 C.F.R. Part 761 for specific regulatory requirements. In case of conflict between this document or portion(s) thereof and any PCB regulatory requirement, the TSCA PCB regulations supersede this document. Also, as indicated by the use of non-mandatory language such as "may," "should," and "can," these materials identify a suite of practices and provide suggestions and do not create any new legal obligations or limit or expand obligations under any federal, state, tribal, or local law.

Disclaimer
This document was developed with support from the U.S. Army Corps of Engineers (as part of/under the umbrella of) EPA Region 9 Interagency Agreement DW096959406.

Executive Summary

The TSCA PCB regulatory program is not delegable to states and the management and enforcement of the program is currently under the exclusive authority of the EPA. This Fugitive Dust Control at TSCA PCB Cleanup Sites manual was developed as a resource to provide a suite of practices for PCB cleanup actions that, if implemented, will help ensure PCBs in fugitive dust releases to ambient air present no unreasonable risk of injury to health or the environment. The manual's content is modeled after local fugitive dust rules adopted in certain areas of California, Nevada, and Arizona that require stringent dust control measures (DCMs). While activities capable of generating fugitive dust at PCB cleanup sites are similar across the country, approaches to effectively control fugitive dust may vary in different areas depending on a number of factors, e.g., climate, soil. This should be taken into account when applying the manual's content to PCB cleanup sites in various locations.

Remedial and other activities at cleanup sites have the potential to generate dust, and uncontrolled PCB-contaminated fugitive dust releases to ambient air potentially result in unacceptable risks to human health. The increased health risk is a consequence of the combined, or co-exposure to various fractions of particulate matter, and the hazard of PCBs. As a result, effective fugitive dust prevention, monitoring, and control practices are necessary to protect human health. Ecological protection may also require dust control provisions.

This document contains DCMs and air monitoring protocols, including an approach that uses a health-based air monitoring trigger (i.e., action) level to guide implementation of dust-generating activities and DCMs during the cleanup, in order to ensure protection of public health. It also specifies time-critical response actions to address acute or gross fugitive releases or conditions that could increase the likelihood of such releases. The Appendix A language can be tailored to site-specific activities. Appendix B is a checklist that can be used to comprehensively identify any dust-generating activities that could occur at a particular PCB cleanup site. It can also be used to indicate whether there are sensitive uses on or adjacent to the site, such as a school or daycare center, that warrant extra dust control precautions.

This document is a resource on dust controls for TSCA Project Managers (PMs) reviewing cleanup plans and working with Responsible Parties (RPs) managing PCB-contaminated sites or media subject to PCB regulations under 40 CFR 761.61. It is intended to: (1) Facilitate EPA approvals that are sufficiently comprehensive regarding site-specific dust controls to consistently protect public health and the environment during cleanup of sites pursuant to 40 CFR 761.61; (2) Inform PMs on what may be needed for effective dust controls at PCB cleanup sites for various dust-generating activities; (3) Increase efficiency of communications between PMs and RPs; and (4) Streamline EPA's review when dust control best practices are included by RPs in TSCA submittals.

RPs may choose to not use the appendix tools, as this document does not create, limit, or expand obligations under any federal, state, tribal, or local law. If EPA determines that particular dust controls are required for a site and that the dust controls submitted to EPA are inadequately protective, EPA's approval can contain site-specific approval conditions related to dust controls, including the examples provided in Appendix A. EPA retains all authority to modify proposed or approved dust controls if needed to prevent unreasonable risk to public health or the environment.

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Acronyms

CAA – Clean Air Act

CFR – Code of Federal Regulations

DAS – Data Acquisition System

DCMs – Dust Control Measures

DCPs – Dust Control Plans

EPA – United States Environmental Protection Agency

HEPA – High Efficiency Particulate Air

IDW – Investigation-Derived Waste

LCRD - Land, Chemicals, and Redevelopment Division

$\mu g/m^3$ – Microgram per Cubic Meter

MPH – Miles Per Hour

NAAQS – National Ambient Air Quality Standards

PCBs – Polychlorinated Biphenyls

PMs – Project Managers

PM_{10} – Particulate Matter < 10 microns

ppm – Parts Per Million

RfD – Reference Dose

RPs – Responsible Parties

SCAQMD – California's South Coast Air Quality Management District

SIP – State Implementation Plan

SWPPP – Storm Water Pollution Prevention Plan

TSCA – Toxic Substances Control Act

1. INTRODUCTION & DISCUSSION

1.1 Purpose

This document discusses the need for dust controls and provides example language for DCMs to prevent or minimize fugitive releases that could potentially contain PCBs, paired with ambient monitoring of PM_{10} and oversight methods to verify the effectiveness of DCM implementation. It is designed to help RPs develop and implement content for Dust Control Plans (DCPs) for PCB cleanup sites subject to TSCA and to help EPA PMs evaluate this content in TSCA submittals. Specifically, it informs dust control content for inclusion in 40 CFR part 761.61(a) Notifications and 40 CFR 761.61(c) Applications. EPA PMs may use the Appendix A language to prepare comments on TSCA submittals or incorporate it into conditions of approval for Applications that do not contain adequate measures to control dust, in order to assure no unreasonable risk of injury to health or the environment. Once approved by EPA, the commitments to implement DCMs contained in a TSCA Application or Notification pursuant to 40 CFR 761.61 are enforceable by EPA.

A compilation of example DCMs is provided in Appendix A as a tool for RPs to use in their development of DCPs and for PMs in their evaluation of the adequacy of DCPs proposed for PCB cleanup sites. The DCMs discussed herein would not supersede federal, state, or local regulations for the prevention and minimization of fugitive dust.[1] However, implementing the DCMs in Appendix A may involve additional or more stringent dust control practices relative to those contained in local fugitive dust regulations, particularly those that apply in areas that have historically attained the federal PM_{10} standard.

1.2 Applicability

This document is designed to address any dust-generating activities that could disturb PCBs that are known to or may be contained in soils, sediments, aggregate, or pavement located at sites subject to 40 CFR 761.61. DCMs for removal and renovation of building materials containing PCBs described on the following EPA webpages should be utilized:

- Steps to Safe PCB Abatement Activities
- Steps to Safe Renovation and Repair Activities

The DCMs in this document are categorized according to activities that could generate fugitive dust, a subset of which are relevant to any given PCB cleanup site. Thus, when developing content to include in a DCP, first determine which of the listed dust-generating activities in Section 3.2 are applicable to a particular PCB cleanup site, then utilize the language in Appendix A to identify DCMs associated with these activities.

[1] See 40 CFR 761.50(a)(6) stating that any person storing or disposing of PCBs is also responsible for determining and complying with all other applicable Federal, State, and local laws and regulations. Also, the DCMs must be selected and implemented in a manner that complies with all applicable TSCA PCB requirements for storage of PCB waste, including that any person who holds PCB waste must store it in accordance with § 761.65. See 40 CFR 761.50(c).

The Appendix A language does not address stormwater pollution prevention controls. Applying water to control fugitive dust can have implications on stormwater runoff pollution prevention. It is advisable for RPs to utilize water hoses with nozzles that permit the use of a fine, low-pressure spray or mist such that water doesn't pool and/or run off from the remedial worksite area. Most sites involving excavating, grading, or clearing activities must adopt a State-or EPA-approved Storm Water Pollution Prevention Plan (SWPPP)[2] to prevent sediment-containing runoff from entering surface water or storm drains.

TSCA requirements for decontamination of surfaces[3] that come into contact with PCB remediation waste can be found in 40 CFR 761.79. Decontamination activities can closely interconnect with DCMs designed to prevent off-site track-out of fugitive dust from haul trucks or equipment used at a cleanup site. Appendix A DCMs for Track-out Prevention and Control include footnotes mentioning decontamination considerations for cleaning soil from tires and undercarriages. However, this document does not otherwise address TSCA decontamination requirements, and RPs should ensure compliance with 40 CFR 761.79 for decontamination of surfaces with PCB contamination.

1.3 Human Health Framework

United States Environmental Protection Agency's (EPA's) regulatory authority under the Toxic Substances Control Act (TSCA) is critical for the protection of human health and the environment. Human exposure to dust-generating activities at sites contaminated with hazardous constituents can pose an increased risk to public health. Because uncontrolled releases of fugitive dust entrained with toxic constituents potentially represent an unacceptable risk to human health and the environment, the effective prevention and mitigation of fugitive dust is critical during TSCA regulated activities. The increased health risk is primarily a consequence of the combined inhalation hazard of dust – as measured by various fractions of particulate matter – and the toxicity of the polychlorinated biphenyls (PCBs).

Chronic human exposure to particulate matter results in a wide range of adverse human health impacts. Both EPA and state agencies, such as California EPA (CalEPA), have characterized the relationships between the myriad of cardiovascular and respiratory adverse health effects of, and the magnitude of human exposure to various particulate matter fractions. Those relationships underline the fundamental scientific basis by which federal and state ambient air quality standards for particulate matter have been established.

The concentration of the California ambient air quality standard for the $\leq$ 10 micron fraction of particulate matter is 50 micrograms per cubic meter ($\mu g/m^3$), and various air quality authorities apply this concentration as an action or trigger level to control routine nuisance and fugitive dust releases. The concentration of the National Ambient Air Quality Standards (NAAQS) for the $\leq$ 10 micron fraction of particulate matter is 150 $\mu g/m^3$ per 40 CFR part 50. Neither health-based

[2] An EPA-approved SWPPP is only needed in areas where the State or Tribal agency is not authorized to implement EPA's National Pollutant Discharge Elimination System. EPA guidance on developing a SWPPP can be accessed on EPA's website: https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp.

[3] E.g., truck beds, tires, and undercarriages, earth-moving equipment buckets, tires, and undercarriages, etc.

standard was derived, nor is considerate of, the additional health hazard posed by particulate matter co-contaminated with PCBs.

PCBs represent a large and diverse family of synthetic organic compounds that are probable carcinogens and have been demonstrated to cause a variety of adverse, systemic health impacts. The health hazards of the more highly chlorinated members of the PCB family – when identified as discrete Aroclor fractions – have been well characterized by EPA. The Agency has established quantitative estimates which characterize the carcinogenic potency, and the non-cancer hazards posed by exposure to PCBs. The PCB Reference Dose (RfD) represents the amount of daily PCB exposure that is acceptable over a lifetime. However, like air quality standards for particulate matter, EPA's PCB RfD was not derived, nor is considerate of the additional health risk conferred by concurrent exposures with particulate matter.

Because PCBs have a wide-range of volatility (semi-volatile organic compounds [SVOCs]), they have been identified in both vapor (gaseous) and particulate-bound fractions in ambient air. Vapor-phase (gaseous) fractions tend to include the lower molecular weight or lower-chlorinated members of the PCB family, while the more highly chlorinated and high molecular-weight members of the PCB family enjoy increased adsorption affinity with particulate matter.

Direct inhalation of various fractions of particulate matter, combined with both vapor and particle-bound fractions of PCBs, represents the dominant route of human exposure during typical dust-generating activities at TSCA sites. Because airborne PCBs cannot currently be measured by real-time, direct-reading instrumentation, the fraction of fugitive dust that constitutes particulate matter $\leq$ 10 microns in size (PM_{10}) can be used as an effective proxy or surrogate for estimating the concentration of respirable particulate matter containing PCBs.

Because the PM_{10} fraction of fugitive dust is not visible to the naked eye, the ability to observe a visible dust release with PCB constituents approaching property boundaries is highly uncertain. Buoyant fugitive releases tend to become less visible with increasing ambient dilution and, under some conditions, a downwind stationary PM_{10} monitor at a property boundary may not capture actual PM_{10} emissions escaping the site boundary. The objective of fugitive dust controls and associated monitoring at PCB cleanup sites is to ensure that PCB-entrained dust does not leave site boundaries. This warrants a multi-faceted, dynamic approach to address dust-generating activities, including: (1) implementing prescribed DCMs designed to proactively prevent the initial generation of fugitive dust releases; (2) high wind and visible plume restrictions; and (3) ambient PM_{10} monitoring at the property boundary, or alternatively, at the remedial worksite perimeter, along with protective response actions.

1.4 Regulatory Overview

Toxic Substances Control Act

Enacted in 1976, TSCA gives EPA authority over chemical substances and mixtures. This statute specifically addresses lead-based paint, asbestos, and PCBs. The PCB regulations, 40 CFR part 761, were promulgated to implement TSCA requirements regarding the production, use, and disposal of PCBs. Within these TSCA PCB regulations, 40 CFR 761.61 contains provisions for the cleanup and disposal of PCB remediation waste. 40 CFR 761.61(a), "Self-implementing on-site cleanup and disposal of PCBs," (Notification), 40 CFR 761.61(b), "Performance-based

disposal," and 40 CFR 761.61(c), "Risk-based disposal approval," (Application) are options for cleanup of PCB remediation wastes. PCB remediation waste is defined in 40 CFR 761.3. Examples of PCB remediation waste can also be found in *EPA's PCB Facility Approval Streamlining Toolbox*, May 2017.

For purposes of this document, "TSCA submittal" refers to Notifications submitted to EPA pursuant to 40 CFR 761.61(a) or Applications submitted to EPA pursuant to 40 CFR 761.61(c). Both Notifications and Applications are subject to EPA review, which may include EPA requesting more information. EPA final action may include issuance of an approval, disapproval, or conditional approval.[4]

Clean Air Act

The Clean Air Act, as amended, 42 USC § 7401 et seq. (CAA) is the comprehensive federal law regulating air emissions. Among other things,[5] the law authorizes EPA to establish NAAQS for six common air pollutants, including particulate matter, and to regulate emissions of air pollutants considered harmful to public health and the environment. States are required to develop state implementation plans (SIPs) to meet and maintain the NAAQS. With the implementation of SIPs, states were required to designate air quality control regions within the state. EPA must designate areas as meeting (attainment) or not meeting (nonattainment) for each NAAQS. SIPs contain air pollution measures, but due to differences in the air quality and mix of air pollution sources among regions, the measures may vary largely between states and within a state between air quality control regions. In some areas, e.g., the South Coast Air Basin (California), Clark County (Nevada), and the Phoenix metropolitan area (Arizona), SIPs include fugitive dust rules adopted by local air quality management agencies as a key component of a regional strategy to attain or maintain one or more of the NAAQS that address particulate matter.

Local Dust Control Rules

Local rules and/or permit requirements governing fugitive dust generated at soil-disturbing, construction, and demolition projects may apply in the area where a PCB cleanup site is located. Local dust rule and permit requirements must be followed when conducting dust-generating activities, as enforced by local regulatory agencies. Compliance with a local fugitive dust rule that applies outside of a federal PM_{10} nonattainment or maintenance area and that is not designed to address toxic contaminants such as PCBs may be insufficient to control dust from PCB cleanup sites regulated under TSCA. Local dust rules adopted for inclusion in SIPs that address the federal PM_{10} standard generally establish more stringent requirements than most, e.g., in terms of coverage, clarity, replicable standards and test methods, recordkeeping, dust control oversight, and enforceability. Furthermore, one local fugitive dust rule in California specifically

[4] See 40 CFR 761.61(a)(3)(ii) and 40 CFR 761.61(c)(1). Subsection 761.61(a)(3)(ii) contains information concerning regulatory timeframes for EPA's approval, disapproval, or request for additional information on Notifications.

[5] The CAA has specific requirements for hazardous air pollutants, which include PCBs. See Section 112(b)(1) of the CAA, 42 USC § 7412(b)(1). This document does not provide guidance on the CAA.

addresses toxic contaminants, including PCBs, in soils: SCAQMD Rule 1466, "*Control of Particulate Emissions from Soils with Toxic Air Contaminants*.[6]

Fugitive Dust and Particulate Matter

Fugitive dust is a form of particulate matter or other fine materials that have become airborne by wind or mechanical disturbance. This dust can be composed of toxic substances such as asbestos, heavy metals, pesticides, PCBs, and/or other harmful contaminants. The degree to which dust or material becomes "fugitive" depends on many factors such as soil/material characteristics, soil/material moisture content, current/past site activities, and current weather conditions. Fugitive dust emissions generated from soil-disturbing activities at any given site are dependent on the site activities, exposed surface area, wind exposure, moisture content of the materials on-site, and other characteristics of the material on-site.

The regulation and mitigation of fugitive dust as a source of particulate matter pollution is based upon scientific findings that dust particles are easily inhaled and smaller particle fractions (e.g., $\leq$ 10 microns in size) are deposited and impact critical junctures of the pulmonary system. Numerous scientific studies have linked particulate matter exposure to multiple adverse health impacts, including premature death in subgroups with heart or lung disease, nonfatal heart attacks, aggravated asthma, and increased respiratory distress syndrome.[7] Fugitive dust releases entrained with toxic constituents elicit an increased health risk because of the multiple hazards that are specific to each contaminant or family of contaminants. Fugitive dust fractions laden with a toxic contaminant(s) that mobilize off-site can potentially pose a health threat to human and the environment whether airborne or upon deposition.

2. DUST CONTROL PLANS

2.1 Dust Control Plan Elements in TSCA Submittals

EPA strongly recommends that cleanup plans submitted to EPA pursuant to TSCA contain a description of dust prevention and suppression methods that will be used to control fugitive releases associated with cleanup of PCB remediation waste without generating unreasonable amounts of runoff, and a description of real-time ambient air fugitive dust monitoring activities – including applicable site-specific dust action levels.[8] PM_{10} can be used as an effective proxy or surrogate for estimating the concentration of respirable particulate matter containing PCBs.

The PCB regulations in 40 CFR 761.61(c) require that a determination of no unreasonable risk of injury to health or the environment be made by EPA in connection to its risk-based cleanup approvals. Failure to include detailed and comprehensive dust control provisions in a PCB cleanup plan may result in EPA incorporating specific dust control provisions as a condition of approval of a submitted 40 CFR 761.61(c) Application. The contents of TSCA submittals approved by EPA are legally binding, including specific actions proposed by the RP to prevent

[6] SIPs do not typically include rules that address hazardous air pollutants in fugitive dust.
[7] https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm.

[8] EPA PCB Facility Approval Streamlining Toolbox, May 2017.

fugitive dust releases, as well as any conditions in 40 CFR 761.61(c) approvals. Such conditions may require the RP to implement a specific set of fugitive dust control measures and protocols for PM_{10} monitoring, should adequate measures not be included in the submitted TSCA Application.

A comprehensive DCP should include content addressing the following elements:

1. General Project Information that will be included in the DCP
2. A Detailed Description of DCMs that will be Implemented for Each Dust-Generating Activity
3. Air Monitoring Protocols and Trigger Level(s)
4. Methods that will be Employed to Ensure DCMs and Air Monitoring Protocols Are Effectively Implemented:
    a. On-Site Dust Control Supervisor (including specific authorities and responsibilities to direct the actions of on-site personnel involved in both dust-generating activities and dust control activities)
    b. On-Site Signage
    c. Recordkeeping
    d. Compliance and Reporting

Appendix A contains example language for the above listed elements of comprehensive DCPs. RPs may choose to not use the appendix tools as this document does not create, limit, or expand obligations under any federal, state, tribal, or local law. It is an informational manual only; site-specific considerations may warrant additional or alternative dust control provisions. This example language is designed so that PMs can share and discuss it with RPs during early engagement when the RP is developing a PCB cleanup site workplan for submittal to EPA in a TSCA Notification or Application. This same language can be utilized by EPA PMs to evaluate the dust controls identified in a TSCA Notification or Application, to insert into correspondence regarding a submitted TSCA Notification or Application, or to develop site-specific approval conditions in a 40 CFR 761.61(a) self-implementing disposal approval letter or a 40 CFR 761.61(c) risk-based disposal approval for a PCB cleanup site.

The Appendix A language reflects DCMs contained in EPA-approved rules adopted in current or former PM_{10} nonattainment areas in EPA Region 9, as well as SCAQMD Rule 1466 *"Control of Particulate Emissions from Soils with Toxic Air Contaminants."* RPs may use Appendix A, but it may be necessary for language to be more stringent in order to be protective in some situations, particularly in areas with little propensity for fugitive dust generation. DCPs that fully incorporate the Appendix A content (customized to reflect site-specific dust-generating activities and air monitoring trigger levels) should be more than adequate to comply with most local dust control rule requirements.[9]

[9] For PCB cleanup sites located within the jurisdiction of the South Coast AQMD, Rule 1466 requirements may apply depending on the applicability criteria in Rule 1466. There are a few differences in Appendix A language with respect to PM_{10} air quality monitoring and trigger levels relative to Rule 1466. Also, there may be additional requirements in Rule 1466 not incorporated into the Appendix A language. However, the PM_{10} trigger level in Appendix A may be more stringent than Rule 1466, depending on site-specific PCB levels. Implementing the

While the substantive content of all dust control provisions (e.g., measures, methods, protocols, action levels, and planned locations[10] of monitors and wind screens) proposed by the RP should be provided in the TSCA submittal to EPA, the DCP itself can be completed following EPA's approval of the Notification or Application.[11] Ultimately, RPs typically create the DCP as a separate document containing general project information, DCMs, air monitoring protocols, site signage, and oversight methods for distribution to personnel implementing the cleanup.

Sections 3, 4, and 5 of this document describe the content contained in Appendix A and provide instructions for how to customize the Appendix A language to reflect site-specific conditions where appropriate.

3. DUST CONTROL MEASURES

3.1 Dust Control Measures as a Component of Dust Control Plans

DCMs are one component of DCPs to be included in TSCA submittals to EPA. To facilitate more consistent review of DCMs by PMs, and discussion of possible DCMs with RPs to ensure that appropriate site-specific DCMs are identified and implemented to prevent the generation of fugitive dust at PCB cleanup sites, Appendix A of this document provides example language for standardized DCMs for a variety of dust-generating activities, along with standardized definitions of terms used in the DCM descriptions.

The language presented in Appendix A for DCMs and definitions of terms used in DCM descriptions together provide for a high degree of dust control upon proper implementation. The definitions, in combination with the DCMs, provide clarity both for applicability and for confirming the effectiveness of the dust controls implemented. When utilizing the Appendix A language, the definitions can either be incorporated separately as presented in Appendix A or integrated into the language of the DCMs. DCM language pulled from other sources, such as local dust rules that apply in areas that have always attained the federal PM_{10} standard, may appear similar but not provide for as effective dust control relative to the Appendix A definitions and DCM language.

The definition of "Stabilized Surface" reflects language drawn from SCAQMD Rule 1466, which references test methods contained in other SCAQMD rules to demonstrate a stabilized surface. Two of these test methods are provided in Attachment 1 of Appendix A, with minor text additions/clarifications. Because both the definition of a stabilized surface and the relevant test

Appendix A DCMs would not be expected to pose any conflicts with meeting Rule 1466 requirements. See also footnote 5, above.

[10] For example, a map can be provided showing the general locations at which the upwind and downwind PM_{10} monitors, weather station or on-site meteorology monitor, and wind screens will be placed in relation to the remedial worksite area(s) with PCB-containing media.

[11] Note that the specific dust control provisions contained in an EPA-approved 40 CFR 761.61(a) Notification or 40 CFR 761.61(c) Application must be implemented at the site, along with any related conditions in EPA's approval, and thus the RP incorporates all these provisions into the DCP in order to facilitate and demonstrate compliance with EPA's approval.

methods are, together, important components of DCMs designed to create and maintain a stabilized surface, they should be included (or specifically referenced) in the description of such DCMs and incorporated into DCPs as needed.

While the DCM language in Appendix A is standardized for use across PCB cleanup sites, which DCMs are incorporated into a TSCA submittal and subsequent DCP depends upon the dust-generating activities to be carried out at the PCB cleanup site. DCMs for dust-generating activities that are not relevant to a particular cleanup site can be deleted when referencing or using Appendix A (see Section 3.2 for a list of potential dust-generating activities by category). Other aspects of the Appendix A example language intended to be customized are indicated with *italicized text*.

Site-specific circumstances not referenced here may also warrant use of modified DCM language. For example, Appendix A includes a DCM providing for the remedial worksite area to be surrounded by 6-foot-tall fencing that meets specific parameters; however, if one side of a remedial worksite area is bounded by a solid wall at least 6 feet high, the DCM may propose to utilize the solid wall as a wind break in lieu of fencing on the applicable side of the remedial worksite area.

3.2 Potential Dust-Generating Activities

The following is a list of dust-generating activities for which standardized DCMs and associated definitions are provided in this document. The list of dust-generating activities addressed in Appendix A encompass activities that commonly occur at PCB cleanup sites:

1. Sitewide[12]
2. Excavating, Trenching, and Other Earth-Moving Activities
3. Stockpiling
4. Truck Loading, Unloading, and Transport
5. Track-out Prevention and Control
6. Disturbed Surface Areas
7. Unpaved Roads, Haul Routes, and Parking Areas
8. Pavement Removal
9. Paving/Subgrade Preparation
10. Clearing or Cleaning Foundations and Slabs
11. Storm Drain Sediment Cleanup
12. Investigation-Derived Waste
13. Other Dust-Generating Activities and Dust Control Measures[13]

Both Appendix A and Appendix B of this document are designed to inform a comprehensive approach to assessing activities at a PCB cleanup site that have the potential to generate fugitive dust. Appendix A includes DCMs for the potential dust-generating activities listed in this

[12] This category includes dust control measures that apply sitewide to various earth-moving activities (versus a single type of dust-generating activity) and to miscellaneous sources.

[13] This category can be utilized by PMs or RPs to insert other site-specific miscellaneous dust-generating activities or DCMs.

section[14] and may be tailored to remove DCMs for activities that are not applicable/relevant to a particular PCB cleanup site. Appendix B "Dust-Generating Activity & Sensitive Use Example Checklist" can be used to identify dust-generating activities and sensitive uses that are applicable to a specific PCB cleanup site.

3.3 Investigation-Derived Waste

Investigation-Derived Waste (IDW) can be generated from soil sampling (e.g., drill cuttings) and from installing groundwater monitoring wells (soil removed to make space for the wells). Groundwater well installation can result in two to three 55-gallon drums of IDW per well installed. IDW can be generated during site characterization activities prior to submittal of a TSCA notification or application to EPA or it can be generated in tandem with an approved cleanup action or as a post-cleanup action. Appendix A contains standardized DCMs for IDW that can be applied, as needed, in the pre-approval, approval, and/or post-approval project phase.

The PCB regulations require soil to be characterized for disposal based upon in situ PCB concentrations. If PCB levels in soil are unknown/uncharacterized at the time IDW is generated, the IDW should be managed so as to prevent generation of fugitive dust, not comingled with IDW from other sampling locations, and placed in a sealed container(s) until laboratory results for PCBs become available.

If a significant amount of IDW is anticipated to be generated, e.g., enough to fill more than one 55-gallon drum, the EPA PM should ensure the sampling workplan or monitoring well installation workplan submitted to EPA for approval or concurrence contains specific dust control measures addressing the IDW to be generated. This is particularly important when the IDW will be generated from areas known to contain PCB-impacted soil.

3.4 Sensitive Uses

Appendix A includes a few additional DCMs for PCB cleanup sites on which an anthropological sensitive use[15] is located or adjoining to the site. The purpose is to provide extra dust control precautions to protect sensitive receptors, such as children and the elderly, in close proximity to the cleanup site.

The DCMs for sensitive uses in Appendix A are drawn from Section (e)(15) of SCAQMD Rule 1466 which apply to schools, joint use agreement properties, and adjacent athletic areas. However, the Appendix A language expands applicability of the DCMs from Rule 1466 Sections (e)(15)(C) and (e)(15)(D) to daycare centers and senior care centers. Definitions associated with sensitive uses can be found in Appendix A "Dust Control Measures Definitions."

The Appendix B example checklist includes sensitive uses that account for ecological receptors, e.g., aquatic species. Appendix A does not include specific DCMs to address ecological receptors that may be impacted by deposition of PCB-impacted particulate matter released in

[14] As noted in Section 1.4 "Applicability", Appendix A does not include DCMs for building materials that contain PCBs.

[15] A facility (indoor or exterior area) occupied by sub-populations that may be particularly vulnerable to airborne particulates.

fugitive dust plumes. However, PCB cleanup sites located on or in close proximity to ecologically sensitive uses may warrant full implementation of DCMs and PM_{10} monitoring provisions in this manual to prevent fugitive dust generation.

4. AIR MONITORING

4.1 Air Monitoring as a Component of Dust Control Plans

Air monitoring protocols represent a critical component of site-specific DCPs, and their description should be included in TSCA submittals. Appendix A provides standardized language for air monitoring protocols that can be generally applied across a wide range of PCB sites. In limited circumstances, EPA PMs may determine that air monitoring is unnecessary in consideration of several site-specific factors, such as small site or remedial worksite dimensions, small quantity of soil to be disturbed, low maximum PCB concentration identified, and whether special equipment with high effectiveness for fugitive dust control will be utilized. In such cases, other components of DCPs should still be implemented, including DCMs and visual observations to check for the presence of dust plumes.

This manual recommends an approach that incorporates a default PM_{10} trigger level of 25 $\mu g/m^3$ because of the increased human health hazard posed by inhalation of both PCBs and particulate matter fractions. Furthermore, when PCB media concentrations equal or exceed 1,200 parts per million (ppm), Appendix A contains a methodology for deriving a more protective and site-specific trigger level which incorporates EPA's PCB RfD. The RfD represents the amount of total daily PCB exposure that is acceptable, and the recommended approach for derivation of concentration-dependent trigger levels is provided in Section 4.2 of this document.

The monitoring section of Appendix A (Section III) contains *italicized text* indicating where customization of text is needed, for example, to reflect the appropriate PM_{10} trigger level for the site, as derived consistent with Section 4.2 below.

Appendix A specifies that the PM_{10} monitors will be placed as close to the property line as feasible, or alternatively, at the remedial worksite perimeter. Thus, flexibility is provided to RPs that opt to place the PM_{10} monitors at the remedial worksite perimeter. At larger sites, placing the monitors at the remedial worksite perimeter may better enable the RP to document PM_{10} concentrations associated with worksite operations versus other potential sources of PM_{10} concentrations. Appendix A provides for a minimum of one PM_{10} monitor upwind and one monitor downwind of the area(s) of on-site Earth-Moving Activity or Dust-Generating Activity. Proposed placement of PM_{10} monitors - whether at the remedial worksite perimeter or property boundary – and the number of monitors to gauge PM_{10} concentrations should be informed by site-specific circumstances and supported by an adequate rationale.

Appendix A specifies that the PM_{10} monitors will be operated with the heated sampler inlet on. This is to ensure that humidity does not affect the PM_{10} results, and all instruments are operating in a consistent manner while producing results that are as accurate as possible.

4.2 Air Monitoring Trigger Level

Uncontrolled dust releases to ambient air from PCB contaminated media can pose an increased hazard to human health. The combined, or co-exposure, to both dust – as measured by particulate matter – and PCBs in fugitive releases increases the likelihood of unacceptable risks to human health. Because the PCBs encompass a broad range of synthetic constituents with a wide range of volatility (Semi-Volatile Organic Compounds), they have been identified in both vapor (gaseous) and particulate-bound fractions in ambient air. Ambient air vapor-phase (gaseous) fractions tend to include the lower molecular weight or lower-chlorinated members of the PCB family, while the more highly chlorinated and high molecular-weight members of the PCB family enjoy increased absorption affinity given the substantial surface area of particulate matter.

Current health-based standards are not considerate of the additional human health hazard posed by particulate matter containing PCBs (e.g., California Ambient Air Quality Standard for the 10 micron fraction of particulate matter is 50 $\mu g/m^3$. The NAAQS for the 10 micron fraction of particulate matter is 150 $\mu g/m^3$). In addition, airborne PCBs cannot currently be measured by real-time, direct reading instrumentation, therefore the fraction of fugitive dust that constitutes PM_{10} can be used as an effective proxy or surrogate for estimating the concentration of respirable particulate matter containing PCBs. Because of the additional health risk from the combined, or co-exposures, between particulate matter and PCBs, this manual recommends an approach that incorporates a default trigger level for PM_{10} of 25 $\mu g/m^3$ as protective when maximum PCB media concentrations are less than 1,200 ppm.

EPA PMs consider site-specific factors in determining air monitoring protocols that are sufficiently protective. EPA Regions may also account for regional and site-specific factors to assess whether an alternative trigger level is sufficiently protective. The default trigger level (25 $\mu g/m^3$) is protective when maximum PCB media concentrations are less than 1,200 ppm. To remain protective of public health when maximum PCB media concentrations equal or exceed this threshold, RPs may derive a site-specific trigger level (Cda) which incorporates EPA's RfD for PCBs. The PCB RfD should be specifically modified to accommodate a child receptor as this derivation results in dust trigger levels that are more protective of a wide range of sensitive subgroups. Refer to Figure 1 for graphical representation utilizing the following approach:

Step 1: Derive the PCB Reference Concentration suitable for a "default" child:

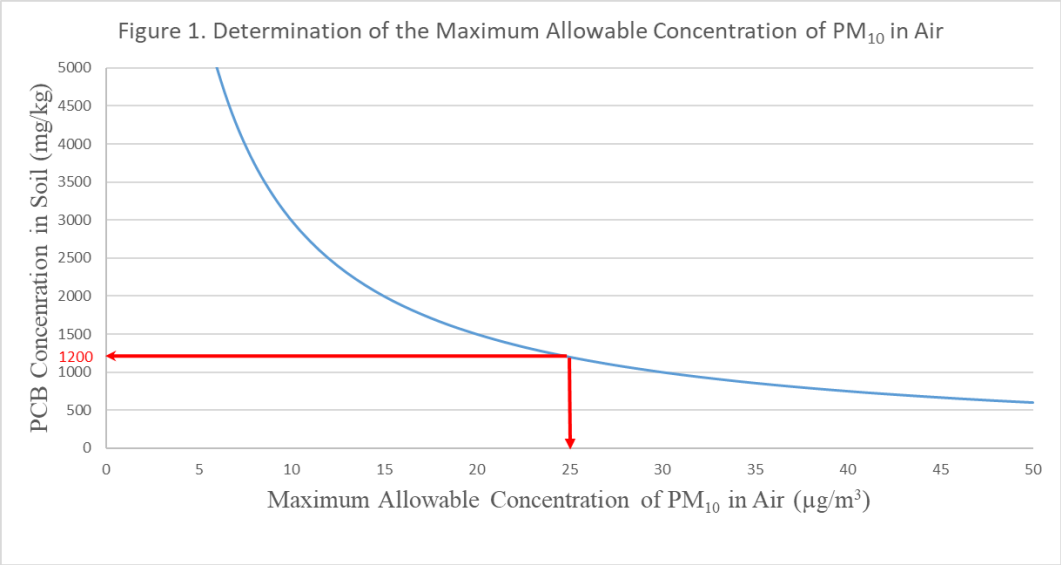
$$RfC = RfDo \times BW / IR$$

Step 2: Determine PCB Site-specific trigger level for PM_{10} in air using:

$$Cda = RfC \times (1.0E+09) / Cca$$

Cda = Maximum allowable concentration of PM_{10} in air ($\mu g/m^3$)
RfC = Inhalation reference concentration (mg/m^3)
Cca = Maximum PCB concentration in soils, sediments, or other disturbed material (e.g., concrete) (mg/kg)
1.0E+09 = Unit conversion factor (µg/kg)
RfDo = Oral reference dose (2E-5 mg/kg-day)
BW = Body weight (15kg)

IR = Inhalation rate ($10m^3$/day)



4.3 Exceedances of Trigger Level

Appendix A provides standard language for addressing an exceedance of the ambient air monitoring trigger level for a 120-minute rolling average period. The PM_{10} concentration is calculated by subtracting the results of the upwind monitor(s) from the downwind monitor(s) for the same averaging period. If the trigger level is exceeded, all dust-generating activities are to cease, and additional DCMs are to be implemented. Once PM_{10} concentrations are less than the applicable trigger level averaged over 30 minutes, site activities can resume. SCAQMD's Rule 1466 is the source reference for both the aforementioned 120-minute averaging period and 30-minute averaging period. If an off-site source is suspected as the cause of an exceedance and the trigger level continues to be exceeded despite full application of all relevant DCMs, it is advisable to document the suspected cause and consult with the EPA PM to determine the best course of action.[16]

Consistent with SCAQMD Rule 1466, Appendix A specifies that PM_{10} monitors include a Data Acquisition System capable of logging continuous direct-reading, near real-time data in 1-minute averages. Some models allow users to send data to a cell phone and receive notifications if the average PM_{10} concentration exceeds a specified value. This enables the dust control supervisor(s) to closely monitor PM_{10} concentrations and to direct implementation of additional dust suppression methods to avoid an exceedance of the trigger level over a 120-minute average period.

[16] Note that proper placement of the upwind PM_{10} monitor(s) should capture PM_{10} levels contributed by upwind off-site sources, which are subtracted from PM_{10} levels measured by the downwind monitor(s).

5. OTHER DUST CONTROL PLAN COMPONENTS

Other important components of a DCP include appointing a dust control supervisor(s), posting publicly visible site signage and contact information, recordkeeping, and compliance and reporting. The substantive content of these DCP components should be described in TSCA submittals.

5.1 Dust Control Supervisor

A dust control supervisor(s) is a person(s) assigned with the responsibility of observing and overseeing dust control activities at the site. The dust control supervisor should always be present when dust-generating activities occur at the site and given full authority to ensure that the DCMs are being implemented and the specified air monitoring protocols and stipulations for action levels are being followed. This authority should include inspections (e.g., checking for the presence of visual dust plumes, checking stockpiles and disturbed surfaces for stabilization), recordkeeping, and shutdown or modification of dust-generating activities.

The dust control supervisor may be an employee, contractor, or subcontractor of the site owner or operator. The same individual responsible for overseeing PM_{10} air monitoring at the site may also serve as the dust control supervisor, provided they have the authority to direct on-site personnel to cease earth-moving operations should the PM_{10} trigger level be exceeded and to increase the frequency and/or quantity of DCMs being implemented at the site as needed.

The name and contact information of the dust control supervisor does not need to be identified in the TSCA submittal to EPA; following EPA's approval, the dust control supervisor's name should be identified in the DCP prepared/utilized for the remedial action.

5.2 Site Signage

In order to inform the general public and provide a means for concerned residents or others to report visible dust leaving the site, posting signs at the site's entrance and other visible locations along the site perimeter is advised. Appendix A contains the following boilerplate text for signage:

"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 italicized text should be customized to indicate which site media contain(s) PCBs and to add contact information for the site owner/operator and the EPA Region PM for the site.

5.3 Recordkeeping

Appendix A contains example language that may be used for recordkeeping related to daily self-inspections to document compliance with the DCP for each phase of remedial work. Recordkeeping provisions in Appendix A extend to specifics concerning the dust suppression

equipment utilized, the type of dust suppressant applied for each dust-generating activity, the results of visual inspections, e.g., for dust plumes, track-out, and stockpiles, data results associated with wind and PM_{10} monitoring, performance checks, and maintenance, exceedances of PM_{10} trigger levels and response actions taken, and any complaints called in.

5.4 Compliance and Reporting

Appendix A contains example language that may be used for compliance and reporting, including maintaining a complete copy of the DCP on site at all times during remedial activities, providing copies of the DCP to all appropriate on-site workers, as well as making available the DCP and daily recordkeeping documents for inspection by EPA during site visits.

The Appendix A example language also provides for the final DCP, along with records related to daily self-inspections, to be submitted to EPA in the Cleanup Completion Report.

6. REFERENCES

California Air Resources Board "Inhalable Particulate Matter and Health (PM2.5 and PM10)".

California Environmental Protection Agency (CalEPA), 2011. Guidance for Conducting Emergency Debris, Waste and Hazardous Material Removal Actions Pursuant to a State or Local Emergency Proclamation, October 2011.

Clark County Department of Air Quality (CCDAQ), 2000. Construction Activities Notebook including the Section 94 Handbook, August 2000.

CCDAQ, 2020. Air Quality Regulations Section 94 – Permitting and Dust Control for Construction Activities. January 2020.

CCDAQ, 2014. Air Quality Regulations Section 92 – Fugitive Dust from Unpaved Parking Lots and Storage Areas. May 2014.

Environmental Protection Agency (EPA), 2022. List of Designated Reference and Equivalent Methods, June 15, 2022.

EPA, 2011. Exposure Factors Handbook: 2011 Edition.

EPA "NAAQS Table".

EPA Polychlorinated Biphenyls (PCBs); CASRN 1336-36-3, Integrated Risk Information System, Chemical Assessment Summary.

EPA, 2005. Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA), November 2005.

EPA, 2017. PCB Facility Approval Streamlining Toolbox: A Framework for Streamlining PCB Site Cleanup Approvals, May 2017.

EPA, 2008. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, March 2008.

South Coast Air Quality Management District (SCAQMD), 2005. Rule 403, Fugitive Dust, June 2005.

SCAQMD, 2007. Rule 403 Implementation Handbook., June 2007.

SCAQMD, 2021. Rule 1466, Control of Particulate Emissions from Soils with Toxic Air Contaminants, June 4, 2021.

SCAQMD, 2021. Preliminary Draft Staff Report - Proposed Amended Rule 1466 - Control of Particulate Emissions from Soils with Toxic Air Contaminants, February 2021.

Appendix A - Dust Control Example Language

This is an informational tool that does not create, limit, or expand legal obligations. The dust control example language presented in this tool may not be applicable in all situations.

1. General Project Information[17]

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

a) Project name, address and/or coordinates, and the applicable EPA project ID number;
b) Name, address, telephone number, and email address of owner or operator;
c) Name, telephone number, and email address of the Dust Control Supervisor(s);
d) Site description and any sensitive land uses[18] near the site;
e) Information on the measured or expected concentrations of PCBs in site soils and/or other materials;
f) A schedule of the estimated start and completion dates for each phase of remedial work;
g) A list of each applicable dust-generating activity;
h) A map of the specific remedial worksites with dust-generating activities that indicates the area(s) containing PCB-impacted soil and/or other materials;
i) A map of the specific planned locations of PM_{10} monitors, weather station or on-site meteorology monitor, and windscreens; and
j) 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.

2. 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

[17] **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.

[18] For example, daycare centers, senior care centers, hospitals, schools, wetlands, endangered species habitats, etc.

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:**[19] No person will cause or permit the handling (including Earth-Moving), transportation, or storage of soil or other material in a manner that:

    a. Allows a visible dust plume to extend more than one hundred (100) feet, horizontally or vertically, from the point of origin; or

    b. 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.

[19] 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.

9. **Project Phasing:**[20] 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:**[21] 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:**[22] 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

[20] This DCM may only be relevant to larger sites with multiple remediation areas.
[21] 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").

[22] Id.

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):**[23] Stockpiles with PCB concentrations ≥ 50 ppm will adhere to the following additional practices:

    a. **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.

    b. **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.

    c. **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:** Truck loading/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.

[23] See 40 CFR 761.65 for TSCA requirements applicable to storage for disposal of PCBs at concentrations ≥ 50 ppm.

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:**[24] 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:**[25] 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:**[26] 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).
    a. **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.
    b. **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.
    c. **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.)
    d. **Paved Surface:** Enforcement of motorized vehicles to only operate on paved surfaces.

[24] This DCM is only relevant to sites with paved surfaces in close proximity to the remedial worksite and that extend to the site exit.

[25] 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.

[26] 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.

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 haul routes 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:**

This is an informational tool that does not create, limit, or expand legal obligations. The dust control example language presented in this tool may not be applicable in all situations.

a. Dust Suppressant will be applied to crushed material to form a Stabilized Surface immediately following crushing.

b. 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[27]

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[28]

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.

[27] 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)).

[28] Ibid.

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, [29] 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.

[29] 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.

Particulate Matter 10 (PM_{10}): 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.[30]

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.

[30] 40 CFR 761.3.

Appendix A - Dust Control Example Language

This is an informational tool that does not create, limit, or expand legal obligations. The dust control example language presented in this tool may not be applicable in all situations.

[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:
    a. Immediately placing soil in a leak-tight container whereby any contained solids or liquids are prevented from escaping or spilling out;
    b. Directly loading soil in truck beds, trailers, or bins for transport, applying dust suppressants, and completely covering prior to transporting; or
    c. 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.

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3. 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 PM_{10} concentrations will be conducted. A minimum of two ambient PM_{10} monitors will be used that are identical in make and model, settings, and configuration. At least one PM_{10} monitor will be placed upwind and one PM_{10} 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 PM_{10} and manufacturer's instructions.

Equipment Specifications

Ambient PM_{10} monitoring will be conducted in accordance with PM_{10} monitors that meet the following physical and performance requirements:[31]

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

[31] Note that the South Coast AQMD has published a list of pre-approved PM_{10} 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.

b. Instrument maintenance;
c. Operator training; and
d. Daily instrument performance checks.
e. Weekly instrument flow checks.

Monitoring Procedures and Methods

The PM_{10} monitors will be operated with the heated sampler inlet on. The PM_{10} 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 PM_{10} concentration in micrograms per cubic meter ($\mu g/m^3$) 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 PM_{10} 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 PM_{10} monitor will be conducted in accordance with:

- Steps 4 and 5 of Attachment 2 demonstrating an average PM_{10} concentration of 0 ± 3 $\mu g/m^3$; 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 PM_{10} 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[32] 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:
    a. Wind direction accuracy of ± 5 degrees and resolution of 1 degree; and
    b. 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

[32] https://www.epa.gov/sites/default/files/2021-04/documents/volume_iv_meteorological_measurements.pdf.

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 PM_{10} 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 PM_{10} Concentration

The PM_{10} 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 PM_{10} monitor to estimate impacts (if no local real-time background PM_{10} data is available $PM_{2.5}$ 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 PM_{10} 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.

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The calculated rolling average PM_{10} 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 PM_{10} data or to calculate PM_{10} 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) PM_{10} 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 PM_{10} 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 PM_{10} concentration exceeds 25 micrograms per cubic meter ($\mu g/m^3$), 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 PM_{10} concentration is equal to or less than 25 $\mu g/m^3$ averaged over 30 minutes.

Once the PM_{10} concentration is equal to or less than 25 $\mu g/m^3$ 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 PM_{10} 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 PM_{10} concentration is equal to or less than *[Fill in site-specific trigger level]* averaged over 30 minutes.

Once the PM_{10} 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.

4. 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.

5. 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:

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> "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.

6. 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):

a) Dust suppression equipment utilized (e.g., water truck, water hose) including equipment type and size or holding capacity and hours of operation;
b) Type of dust suppressant applied for each dust-generating activity (e.g., water, water combined with surfactant, chemical stabilizer);
c) Results of visual inspections for the presence of dust plumes and any corrective measures taken to reduce or eliminate the dust plume(s);
d) Track-out inspection results of track-out conditions on paved surfaces and cleanup measures taken (as applicable);
e) 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;
f) Results of daily wind and PM_{10} monitoring, including:
    a. Rolling average ambient PM_{10} concentrations for each 120-minute averaging period; wind direction and speed corresponding to the rolling average PM_{10} 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;

b. All instrument maintenance activities including: zero calibration, cleaning, filter replacement, and performance checks, including dates and times of the specific procedures; and
c. 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;

g) Exceedances of PM_{10} trigger levels and the response actions taken; and
h) Complaints called in, including the complaint, name of complainant, contact information, date and time, activities occurring at that date and time, and actions taken.

7. 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.

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1. STABILIZED SURFACE TESTS

1.1 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

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SCAQMD Rule 403 Handbook[33] may be conducted. If the surface passes the TFV test, it is stable and sufficiently crusted.

1.2 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.

(a) 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.

(b) 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.

[33] 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.

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(1) 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).

(c) 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.

(d) 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.

(e) 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.

(f) 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).

(g) 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.

(h) 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.

(i) 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/ ft^2, the surface is stable. If the average silt loading is greater than or equal to 0.33 oz/ft^2, examine the average percent silt

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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.

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1. PROCEDURES TO DEMONSTRATE WEEKLY INTRA-INSTRUMENT PRECISION AND FLOW VERIFICATION

The following procedures shall be performed to demonstrate the intra-instrument precision of all PM_{10} 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 PM_{10} 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 PM_{10} 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 PM_{10} concentration reading every minute for a minimum of 60 minutes.
8. Calculate the intra-instrument precision using either of the following equations:
    a. Intra-instrument precision in relative standard deviation or correlation of variation (%) when ambient PM_{10} concentrations are greater than or equal to 15 micrograms per cubic meter:

$$P = \frac{S_t}{C_t} \, x \, 100\%$$

Where,

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P = Intra-instrument precision (%)
C_t = Mean of the averaged PM_{10} concentrations readings from all tested monitors over the time *t* of testing duration
S_t = Standard deviation of the averaged PM_{10} concentration readings from all tested monitors over the time *t* of testing duration, to be calculated as:

$$S_t = \sqrt{\frac{\sum(x_i - \bar{x})^2}{(n-1)}}$$

Where,

x_i = Mean of the PM_{10} concentration readings for a tested monitor over time *t* 0f testing duration
$\bar{x}$ = Mean of averaged PM_{10} concentration readings from all tested monitors over the time *t* of testing duration
n = Number of tested monitors.

b. Intra-instrument precision in absolute value (micrograms per cubic meter) when ambient PM_{10} concentrations are less than 15 micrograms per cubic meter:

$$P = S_t$$

Where,

P = Insta-instrument micrograms per cubic meter
S_t = Standard deviation of the averaged PM_{10} concentration readings from all tested monitors over the time *t* of testing duration

9. Record the results of the calculations.
10. 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.

Appendix B – Dust-Generating Activity & Sensitive Use Example Checklist

This checklist can be used to identify site-specific dust-generating activities and sensitive uses that may be applicable to a particular PCB Cleanup Site. See Appendix A for example language (specifically, Dust Control Measures and associated Definitions) for each applicable Dust-Generating Activity Category and Sensitive Use provided in this checklist. This example checklist is not required to be used by a RP or submitted to EPA.

Site Name: Click or tap here to enter text.	EPA Site ID#: Click or tap here to enter text.
Remedial Phase[34]: Click or tap here to enter text.	Review Date: Click or tap here to enter text.

Dust-Generating Activity Category	Yes	No	Comments
1. Sitewide	X		This category applies to all PCB cleanup sites with a dust-generating activity(ies).
2. Excavating, Trenching, and/or Other Earth-Moving Activity(ies)? *(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)*	☐	☐	
3. Stockpiling?	☐	☐	
4. Truck Loading/Unloading and/or Transport?	☐	☐	
5. Track-Out Prevention and Control? *(applies to sites where there is potential for trucks, equipment, or other vehicles to accumulate soil on their tires and/or exterior surfaces prior to exiting the site)*	☐	☐	
6. Disturbed Surface Areas?	☐	☐	

[34] Use this box to indicate if there is more than one remedial phase applicable to the site (i.e., where PCB remedial activities are proposed to be carried out in separate actions taking place on different dates). If so, fill out a checklist for each remedial phase.

Appendix B – Dust-Generating Activity & Sensitive Use Example Checklist

Dust-Generating Activity Category	**Yes**	**No**	**Comments**
7. Unpaved Roads, Haul Routes, and/or Parking Areas?	☐	☐	
8. Pavement Removal?			
9. Paving/Subgrade Preparation?	☐	☐	
10. Clearing or Cleaning Foundations and/or Slabs?	☐	☐	
11. Storm Drain Sediment Cleanup?	☐	☐	
12. Investigation-Derived Waste? (e.g., more than one 55-gal drum)	☐	☐	
13. Other Dust-Generating Activities or Dust Control Measures?[35]	☐	☐	
a. [Fill in]	☐	☐	
b. [Fill in]	☐	☐	
Sensitive Use Onsite or on an Adjoining Site? [36]	**Yes**	**No**	**Comments**
1. School (including early education center)?	☐	☐	
2. Joint Use Agreement Property?	☐	☐	
3. Athletic Area adjacent to a School or Joint Use Agreement Property?	☐	☐	
4. Daycare Center?	☐	☐	
5. Senior Care Center?	☐	☐	
6. Other sensitive human use?[37]	☐	☐	
7. Sensitive ecological use?[38]	☐	☐	

[35] The "Other" category may be used to write in other sources of fugitive dust not included in the checklist, such as demolition or renovation activities involving building materials containing PCBs.

[36] See Appendix A "Dust Control Measures Definitions" for definitions applicable to Sensitive Uses.

[37] Sensitive uses identified in this checklist are important but not exhaustive examples. For a particular cleanup site it may be relevant to consider other proximate uses requiring dust control measures, such as uses that may be listed in the PCB Regulations at 40 CFR 761.61(a)(4)(vi) [residential dwellings, hospitals, schools, nursing homes, playgrounds, parks, day care centers, endangered species habitats, estuaries, wetlands, national parks, national wildlife refuges, commercial fisheries, and sport fisheries] or 40 CFR 761.61(a)(1)(i) [surface or ground waters, sediments in marine and freshwater ecosystems, sewers or sewage treatment systems, private or public drinking water sources or distribution systems, grazing lands, or vegetable gardens].