

Minnesota Pollution Control Agency Voluntary Investigation and Cleanup Guidance Document #9

Voluntary Investigation and Cleanup Program Guidance for Investigating and Remediating Asbestos Containing Waste Materials

1.0 Purpose and Introduction

This guidance document summarizes MPCA Voluntary Investigation and Cleanup (VIC) Program requirements associated with investigation and remediation of sites with buried asbestos containing waste materials. Asbestos containing materials are a common waste product encountered at former dumps and within fill at VIC Sites and must be handled in accordance with the appropriate federal and state regulations. The scope of VIC Projects includes threatened or known releases to the environment under the Minnesota Environmental Release and Liability Act (MERLA), and includes releases or threatened releases of buried asbestos containing materials. This guidance is designed to supplement the MPCA VIC Fact Sheet “Asbestos Containing Waste Materials at VIC Sites,” the MPCA’s Superfund Section’s Risk Based Site Evaluation Guidance, other MPCA VIC Guidance Documents pertaining to site investigations and remediation, and the guidance provided through the MPCA’s Asbestos Compliance Program (Asbestos Program). This guidance emphasizes the VIC Program’s and the Asbestos Program’s coordinated role in ensuring that the appropriate regulations are followed, public health and safety are protected, and long term environmental risks are properly managed. Asbestos abatement from buildings and building demolition activities are not within the scope of VIC projects and the MPCA Asbestos Program staff should be contacted for questions related to these activities (see contact information at the end of this document).

2.0 Asbestos Occurrence and Hazards

2.1 Types and Uses of Asbestos Containing Material

Asbestos is a common hazardous substance encountered at abandoned dumps and in fill material. The term “dump” refers broadly to buried mixed municipal waste, refuse and demolition wastes. Abandoned dumps will be discussed in more detail in the soon to be revised VIC Guidance Document #19. Asbestos is a naturally occurring substance comprised of separable fibers and occurs in two different forms as part of two mineral groups– serpentine and amphibole. The U.S. Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) recognize six asbestos minerals: chrysotile (the type of serpentine mineral with long and flexible fibers); and five amphibole minerals (with relatively short brittle fibers), which are actinolite, tremolite, anthophyllite, crocidolite, and amosite asbestos.

Asbestos has been used extensively in industry due to its durability, ability to be woven, and heat resistant properties. The term “Asbestos Containing Material” (ACM) refers to materials that contain at least 1% asbestos. ACM may be found in a variety of building materials including: floor and ceiling tile, floor tile mastic, pipe insulation, adhesives, gaskets, roofing materials, friction products (automobile parts, i.e. in clutches, brakes and transmissions), asbestos cement products (i.e. transite), corrugated ACM paper (referred to sometimes as “air cell”), duct wrap,

and vermiculite (used in insulation and as a soil amendment). Thermal System Insulation (TSI) includes the broad class of friable ACM products applied to pipes, fittings, boilers, tanks, ducts or other structural components to prevent heat loss or gain (sometimes referred to as "mag"). Transite is the name for ACM cement boards and pipes and is typically gray, dense, and easily broken. Chrysotile makes up 90% to 95% of all asbestos used in building materials in the U.S, although the percentage of amphibole asbestos minerals may be high in some ACM. Frequently used definitions pertaining to ACM include the following:

Asbestos Containing Waste Material (ACWM) – generally refers to ACM that is no longer in use but rather occurs as waste products and typically is encountered in subsurface fill at remediation Sites. Buried ACM is more typically referred to as ACWM.

Category I Nonfriable ACM – includes asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos that cannot be crumbled to powder by hand pressure. Category I ACM is considered pliable rather than brittle, breaks by tearing rather than fracturing, and does not easily release asbestos fibers upon breaking.

Category II Nonfriable ACM – refers to any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Transite is an example of Category II ACM. Category II ACM is not pliable, breaks by fracturing rather than tearing, and does release some asbestos fibers upon breaking.

Friable ACM – refers to ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable materials may become friable during grinding, cutting, burning, crushing, and similar operations, including some types of building demolition which may generate and release asbestos fibers.

Nonfriable Asbestos Containing Material – refers to ACM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable asbestos may be either Category I or Category II ACM.

Regulated Asbestos-Containing Material (RACM) – refers to (a) Friable ACM, (b) Category I ACM that has become friable, (c) Category I ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or facility renovation.

2.2 Health Risks Associated With Asbestos

The health risks associated with asbestos result from the inhalation of microscopic asbestos fibers that become airborne due to the disturbance of ACM. Asbestos is a recognized human carcinogen and its exposure can lead to lung cancer and mesothelioma, which is cancer of the pleural membrane of the lung. No known safe level of exposure to asbestos fibers is known.

Asbestosis is a disease caused by scarring of the lung tissue due to inhalation of asbestos fibers. Although less common, medical evidence suggests that ingesting asbestos may result in cancers of the esophagus, larynx, oral cavity, stomach, colon and kidney.

2.3 Asbestos Air Standards

Due to the ability of asbestos fibers to be transported easily in air, fibers are found in ambient air at concentrations ranging from 0.00001 to 0.0001 fibers per milliliter (fiber/mL). OSHA has set a time weighted average (TWA) permissible exposure limit for working conditions at 0.1 fibers per cubic centimeter (f/cc or f/mL) averaged over a 30 minute period. The Minnesota Department of Health (MDH) has set the Clean Indoor Air Standard for Minnesota at 0.01 f/cc. Although these standards apply to working conditions, they may be also be used as a guide in the evaluation of asbestos air emissions during air monitoring at remediation sites. Neither the MPCA nor the U.S. EPA has, however, specified an acceptable exposure or ambient air standard for asbestos.

2.4 Asbestos Detection Methods

The most accurate method to detect asbestos and estimate concentrations that may become airborne typically combines the use of polarizing light microscopy (PLM), electron microscopy, and energy dispersive X-ray analysis. PLM also is the recommended detection method specified in the federal regulations for abandoned waste sites (see Section 3). Although transmission electron microscopy (TEM) is extensively used in research to identify smaller concentrations of asbestos fibers, it is not currently in widespread use or required for use in soil and air sampling at remediation sites.

2.5 Buried Asbestos Containing Materials

Asbestos Containing Waste Material (ACWM) is waste ACM that has been removed from buildings and is commonly encountered within demolition materials buried as part of former abandoned dumps or within fill. Abandoned dumps may be identified as part of routine Phase I Investigations, although in many cases buried ACWM is associated with smaller undocumented dumping areas or granular fill containing ACWM rather than large former municipal dumps. Many properties in urban areas were constructed and graded several decades ago using imported fill from undocumented sources. Such fill may contain varying amounts of debris and ACWM.

Demolition debris and other solid waste encountered in dumps or fill are also considered as solid waste that has been improperly disposed of, whether ACWM is present or not. Voluntary parties and their consultants need to investigate such sites carefully, following both VIC and Asbestos Program requirements, to avoid exacerbating site hazards and regulatory enforcement.

3.0 Regulatory Background

3.1 Federal NESHAP Standard

A property on which the disturbance and excavation of ACWM takes place is strictly regulated through National Emission Standards for Hazardous Air Pollutants (NESHAP), as codified in Title 40 Code of Federal Regulations Part 61. NESHAP was established in accordance with Section 112 of the Clean Air Act, which required the U.S. EPA to develop and enforce regulations to protect the general public from exposure to airborne contaminants that are known to be hazardous to human health. These regulations were first developed in 1973 and subsequently, have been amended several times.

The purpose of NESHAP is to protect the public health by minimizing the release of asbestos when facilities that contain ACM are demolished or renovated. The MPCA considers a property that has buried ACWM incorporated as part fill or debris as an Inactive Waste Disposal Site under NESHAP. Disturbance or excavation of buried ACWM at Inactive Waste Disposal Sites is considered a renovation under NESHAP. In addition, historically approved disposal sites that have not accepted ACWM within the past year and unpermitted dumps containing ACM are considered an Inactive Waste Disposal Site.

The Federal NESHAP standards are adopted by reference into Minnesota Rules in Minnesota Rules, part 7011.9920. The MPCA Asbestos Program is the delegated authority in Minnesota to enforce federal NESHAP regulations. The method specified in NESHAP for asbestos detection (Appendix E, subpart E, 40 CFR part 763, section 1) is PLM.

3.2 Regulated Nature of ACWM

All buried ACWM at VIC Sites is considered by the MPCA to be Regulated Asbestos Containing Material (RACM). RACM includes ACM that may have been used within buildings as non-friable Category I or Category II ACM but has now been incorporated into waste or fill and buried. Whether asbestos was friable or nonfriable, waste ACM may have been crumbled, abraded, pulverized, or powdered by the original demolition activities or through the act of dumping or burial. Once ACWM is identified within debris, all ACM and impacted demolition debris or solid waste materials are regarded as RACM and regulated by the NESHAP.

NESHAP requires that if RACM is removed from an Inactive Waste Disposal Site, the removal must be conducted by a licensed asbestos abatement contractor using an MPCA-approved Emissions Control Plan. The MPCA Asbestos Program must review and approve, in advance, any Emission Control Plans prepared to fulfill NESHAP requirements for proposed activities at VIC Sites. Further guidance related to the Emission Control Plan requirement is provided in Sections 4 and 5 in this document.

3.3 Other Applicable Regulations Pertaining to ACWM

Asbestos work is regulated by several state programs to ensure that the public is protected. Asbestos associated with subsurface soils through past disposal or filling is considered to be a

hazardous substance under the Minnesota Environmental Response and Liability Act (MERLA). Proper management and handling of ACWM during site work is required in order to remain eligible for MPCA VIC Program assurances under MERLA.

The MPCA Asbestos Program has prepared the “Asbestos Guidance on Excavation Projects,” dated July 1999, which must be followed if a site contains RACM and is considered to be an Inactive Waste Disposal Site under the NESHP. Prior to a renovation or demolition, all buildings must be evaluated by an asbestos inspector certified by the Minnesota Department of Health (MDH) under the Asbestos Hazardous Emergency Response Act (AHERA). Parties are required to submit the completed “Notification of Intent To Perform A Demolition” form to the MPCA Asbestos Program staff a minimum of 10 working days prior to conducting a building demolition. Asbestos monitoring and sampling conducted at sites regulated under the NESHP must be conducted by an MDH/AHERA-certified asbestos inspector (Asbestos Inspector). Remedial excavation or reconsolidation activities of suspect ACWM must be conducted by a MDH/AHERA-licensed asbestos contractor (Asbestos Contractor).

The Asbestos Unit of the Division of Environmental Health at the MDH specifies work practices to identify and manage asbestos, and to safely remove, encapsulate, or enclose asbestos-containing materials. MDH is responsible for the licensing of asbestos contractors and the certification of asbestos workers, site supervisors, inspectors, management planners, and project designers to ensure that properly trained personnel perform asbestos work or management. The “Notifications of Asbestos Air Monitoring” within structures must be provided to the MDH Asbestos Unit at least 5 calendar days prior to beginning a project. The “Notification of Asbestos Related Work” must be provided to both the MDH and the Asbestos Coordinator of the MPCA within 10 working days of the beginning of work.

County and city environmental departments may have additional regulations or ordinances pertaining to asbestos or solid waste. Parties conducting response actions are responsible for contacting the appropriate county and city representatives before initiating a remediation project involving asbestos or solid waste to determine whether additional requirements exist.

The Minnesota Department of Labor and Industry is responsible for administering the federal OSHA requirements to protect workers from asbestos exposure. The OSHA Construction Standard for Asbestos is 29 CFR 1926.1101.

U.S. EPA’s Worker Protection Rule, 40 CFR 763, Subpart G, extended the OSHA standard to state and local employees who perform asbestos work and who are not covered by the OSHA Asbestos Standards, or by a state OSHA plan. The OSHA Standard is incorporated by reference. People who plan to renovate or remove asbestos from a building of a certain size, or who plan to demolish any building, are required to notify the appropriate federal, state and local agencies, and to follow all federal, state, and local requirements for removal and disposal of RACM.

4.0 Investigating VIC Sites With Suspected ACWM

4.1 Phase I Investigations

A Phase I Investigation is required for most sites for which technical assistance is sought and is an explicit requirement if the voluntary party is pursuing a No Action Determination or a Certificate of Completion. The purpose of a Phase I Investigation is to determine, whether, based upon a physical site survey and research of available historical documents and environmental databases, the site may have been the subject of a release or threatened release of a hazardous substance, pollutant, or contaminant. The Phase I Investigation also determines the types of additional inquiry that should be included in the Phase II Investigation Work Plan. The Voluntary Party is requested to refer to VIC Guidance Document #8, for guidance on preparation of Phase I Investigations.

Particularly useful resources for accessing the potential of ACWM at properties include: aerial photographs that may identify past dumping activities; evidence of historic areas of lower topography which may have been filled; areas of higher topography that may contain excess fill; city directories describing past businesses; insurance maps documenting past building and property details; documentation of past on-site building demolition; facility inspection reports; and interviews with former employees. The historical practice of demolishing buildings and burying most of the materials in-place is one of the most common sources of buried ACWM. Old utility lines made of transite or wrapped with asbestos material may be indicated on old city records, building plans or fire insurance maps. Records of buried dumps or fill material on a property also are common indications that asbestos may be present.

4.2 Phase II Investigations

Properties where buried ACWM is suspected should undergo a thorough Phase II Investigation to determine the nature, type and distribution of the ACWM present in the subsurface, and whether the ACWM will be disturbed or left on-site. Phase II Investigations should be conducted in accordance with an MPCA approved Phase II Investigation Work Plan. The MPCA VIC Program staff will consider all properties that contain fill with debris or refuse, even at low percentages, to have the potential for ACWM to be encountered or present in the subsurface. For such suspect properties, a Phase II Investigation should be designed and conducted to determine the amount, type and distribution of the debris at the site and the presence of pollutants, contaminants or hazardous substances, including ACWM. To appropriately evaluate debris and ACWM, test pits or test trenches should be conducted rather than or in addition to the use of soil borings to delineate the lateral and vertical extent of fill impacted by debris (including ACWM). The number of test pits/trenches required will vary depending on the aerial extent of the fill, the thickness, and the heterogeneity of the type of debris and distribution of ACWM. It is important that a sufficient number of exploratory test pits/trenches and sampling be conducted to characterize and document the variety and distribution of waste through the aerial and vertical extent of the fill.

The Phase II Investigation Work Plan should take into account the nature of the proposed property use or redevelopment plans, and the remedial objectives and closure requirements. If the involved parties do not desire to use institutional controls to manage residual contamination on-site, then the investigation must be designed to ensure that the full extent of the on-site waste is determined and fully characterized. The location of proposed green spaces, paving areas, building footprints, and the type of access future workers and the public will have to the site represent information that better describes potential exposure scenarios, which, if known, can assist in focusing the Phase II Investigation.

If ACWM is suspected at a site but has not yet been confirmed and soils are proposed to be disturbed and temporarily excavated through the use of test pits, test trenches, or surface grading activities, an Asbestos Inspector must be involved in the project to inspect the site wastes for the presence of ACWM. If suspect ACWM is identified, the Asbestos Inspector must collect samples of the waste or suspect soils to confirm the presence, the type and the amount of asbestos present in the materials. The MPCA VIC staff also may require representative samples of soil or debris associated with suspect ACWM to be collected and analyzed. Soil associated with identified or suspect ACWM must also be treated as if it contains ACWM, and the Asbestos Inspector should evaluate such soils visually. If friable asbestos has been identified, the Asbestos Inspector should also collect and analyze soil samples.

A Phase II Investigation Work Plan must include a Contingency Plan, if test pits, test trenches or other exploratory excavations are proposed and the potential to encounter ACWM exists. In general, the greater the likelihood of encountering ACWM during an investigation, the more likely the MPCA VIC Program shall require that an Emissions Control Plan be submitted and approved in advance as part of the Phase II Investigation Work Plan (see Section 5.2). In the event ACWM is encountered during investigatory excavation activities and no appropriate contingencies have been approved in advance by the MPCA, excavation activities should cease and the MPCA VIC Project and Asbestos Program staff should be contacted as soon as possible to determine the appropriate waste management procedures. Once ACWM is confirmed, the property and all subsequent excavation activities are regulated under NESHAP as an Inactive Waste Disposal Site and must follow the appropriate regulations.

Soil and debris temporarily excavated from test trenches and pits may be stockpiled and covered adjacent to the excavation during Phase II Investigations if conducted in accordance with an approved work plan and the oversight of an environmental consultant and an Asbestos Inspector. Response actions involving excavation of soil and debris for off-site disposal or on-site reconfiguration, however, may be conducted only under the direction of an Asbestos Contractor.

Exploratory excavations conducted during Phase II Investigations without a certified Asbestos Contractor should: a) be approved in advanced by the MPCA; b) be conducted only if appropriate wetting procedures are proposed and implemented; c) replace and cover all excavated wastes back in the excavation during the same working day; and d) ensure all temporary stockpiles are placed on and are covered with plastic during the excavation activities. If wastes excavated are of limited volume, localized and can be easily disposed, the MPCA VIC or Asbestos Program staff may require that an Asbestos Contractor be involved and that the wastes not be replaced in the excavation, but be properly disposed.

5.0 Requirements for Excavation or Disturbance of ACWM

5.1 Excavation Requirements based on the NESHAP

The Asbestos Program at the MPCA has prepared the “Asbestos Guidance on Excavation Projects” (NESHAP Guidance) to summarize the requirements which must be followed when ACWM is excavated at Inactive Waste Disposal Sites. The Asbestos and VIC Program strongly encourage the party to utilize qualified environmental consultants and technicians to ensure that appropriate regulations are followed and hazardous emissions are prevented during site investigation and remediation activities.

The VIC Program strongly encourages environmental consultants to closely coordinate with the Asbestos Program staff to ensure that the NESHAP is appropriately followed. A summary of these requirements is briefly outlined below:

- A “Notification of Asbestos Related Work” (Notice) must be completed and submitted to the Asbestos Program within 10 working days of initiating the project. The advance notice may be waived, if RACM unexpectedly is encountered during an excavation in progress.
- An Emission Control Plan (ECP) must be prepared and submitted to the Asbestos Program for review and approval pursuant to 40 CFR 61.145. The minimum requirements for an ECP are summarized in Section 6.0.
- The area of proposed asbestos excavation must be secured and clearly marked by asbestos warning signs that are visible at all entrances and exits to the area.
- RACM must be adequately wetted to minimize emissions during excavations and loaded into trucks or containers lined and covered by polyethylene. If excess water is generated due to the required wetting of the soil, ensure that wastes transported off-site to the landfill do not contain any free liquids. The shipments must be properly manifested and must contain a waste generator label and warning signs.
- Stockpiling of ACWM impacted soils should be done on-site and within the zone of contamination.
- If ACWM is present at the surface, trucks/excavation equipment must be decontaminated prior to leaving the zone of contamination or clean granular fill must be placed over the area.
- Off-site disposal of RACM is only allowed at approved landfills that are permitted by the MPCA to accept RACM as part of their Solid Waste Management Plan.
- The excavated area of the site must be visually inspected by an Asbestos Inspector. Inspection frequency, though at the discretion of the Inspector, should be sufficiently frequent to thoroughly inspect the excavation area and the materials excavated.

An Asbestos Contractor should be retained and be present for on-site coordination of all excavation activities where ACWM is known to exist or is suspect. If excavation activities are being conducted through use of an MPCA approved Contingency Plan the Asbestos Contractor may not be required to be on-site during excavation activities at locations where Phase II

Investigation results indicate that ACWM is not present. The Asbestos Contractor, must, however, be on call to respond to observations of an on-site Asbestos Inspector.

Excavating ACWM without the use of an approved ECP, contrary to an approved ECP, or without oversight from an Asbestos Contractor may be considered to be a significant violation of NESHAP and MPCA requirements and may lead to enforcement actions and the levying of fines.

5.2 Emissions Control Plan Requirements

An ECP must be prepared and approved by the MPCA Asbestos Program staff before RACM can be excavated from an Inactive Waste Disposal Site. The regulated party may provide this ECP directly to the Asbestos Program staff for review or may coordinate this review through the VIC Project staff. Approved ECPs utilized at a VIC Project form an integral component of the project's work plan or response action plan.

Many ECPs have very similar formats and content, however, each ECP will require site specific project details. Every ECP must, at a minimum, include the following:

Project and Site Description

Include a detailed description of the project with the name of project, the address, a site location map, an estimate of the amount of RACM present at the site and the amount of RACM to be excavated. The site map should have an accurate scale and include a location map of the area impacted by RACM and the area proposed to be excavated or disturbed. The project description should briefly describe the nature of the project (emergency response action, redevelopment proposed, utility work, etc.) and the proposed schedule, including the proposed start date. Indicate in this section when the "Notification of Asbestos-Related Work" was or will be submitted to the MPCA Asbestos Compliance Program staff. General site information should describe the slope of the site surface, the site's lateral proximity to surface water, the vertical depth to ground water, and a description of on-site and surrounding land use and potential receptors.

Description of the Waste/RACM

Provide a narrative description of the type of RACM and other waste to be encountered, including representative test pit/trench or soil boring logs. Include information regarding any other known or suspected contamination associated with the waste/RACM and/or other risk factors (i.e. volatile vapors, methane gas, heavy metals, etc.) and how these issues are being addressed as part of the project.

Project Contacts Information

List names, contact information, and responsibilities for the site owner, the site project manager, the licensed asbestos inspectors and contractors, and the disposal facility involved in the project. Also, provide a list of regulatory contacts (i.e. VIC staff, Asbestos Program staff, as well as city, county, and MDH staff, if applicable) associated with the site.

Site Security

Describe the required signs that will be used to demarcate the area contaminated by RACM. Discuss how site security will be established, so that access to the site will be restricted to authorized personnel during excavation activities and when RACM is potentially accessible or exposed.

Emission Control Procedures

Provide a detailed description of the type of emission control procedures to be utilized during all phases of the work or when site conditions may generate emissions. Such conditions include the following: a) RACM is exposed at the surface; b) digging of test pits or test trenches; c) active excavation activities or site grading of soils containing RACM; d) loading of RACM into containers or trucks; and e) removal of RACM from trucks for disposal at a permitted landfill. This section must include the wetting practices that will be used to minimize emissions.

Excavation/Removal Activities

Discuss the portion of the site, upon which excavation or removal activities will take place. Describe the methods and type of equipment to be used during excavation and loading activities and how such equipment will be decontaminated. Trucks and equipment must be decontaminated prior to leaving the zone of contamination.

Air Monitoring

Describe the type of air monitoring proposed for the project and list the personnel conducting this work.

Containerization/Transport

Describe the type of containers to be used for storage and for transport of RACM off-site to an approved disposal facility. The ECP should describe the type of signs the transport trucks shall display during loading/unloading of the RACM. In addition, the container must be lined with plastic and covered during transport.

Description of Residual RACM/Waste

Provide detailed information regarding the type, amount and location of any and all RACM proposed to be left on-site, any vertical buffers proposed, and the type of institutional controls (such as restrictive covenants or an affidavit) proposed to document and/or restrict access to this material.

Transport/Disposal Information

Provide the name, address and contact information for the transportation contractor and the landfill or other disposal facility accepting the RACM and the type of manifests utilized during the transport.

Other Project Specific Details

The requirements provided above are not meant to be exhaustive, but should form the core component of every ECP. Other information, that should be provided, if pertinent, includes identified community concerns, other known site hazards, or any other factors that the Asbestos Program or VIC staff should be aware of prior to initiation of the project.

5.3 Perimeter Air Monitoring Requirements

Air monitoring of ambient air along the perimeter of sites or work areas may be required, if the project activities have the potential for generating fugitive dust containing asbestos fibers. Such activities may include Phase II Investigations involving the digging of test pits, site grading activities, and excavation of suspect ACWM as part of response actions. The use of a properly designed ECP should minimize or prevent the emission of asbestos fibers from excavation projects dealing with ACWM. Depending on the volume of materials disturbed or the nature of the waste, the MPCA may require perimeter air monitoring for asbestos, which would consist of collecting potential fibers on a filter and analyzing the fibers with PLM. In such cases, air monitoring plans will be a required component of the RAP.

6.0 Cleanup Requirements for Sites with ACWM

A Response Action Plan (RAP) must be prepared and submitted to the MPCA for review and approval prior to conducting ACWM excavation activities that involve off-site disposal or on-site reconsolidation or reburial of ACWM waste. A RAP is a detailed report specifying remedial objectives, how the objectives will be achieved, and remedial design specifications. The detailed elements of the remedial design may be submitted separate from a more conceptual RAP; however, an approved RAP is required prior to initiating remedial actions at VIC Sites.

If a RAP is required and implemented, a RAP Implementation Report or documentation report must be submitted and approved in order for the VIC Program to issue either a No Action Determination or a Certificate of Completion. Refer to VIC Guidance Document #18 for future guidance pertaining to preparation of a RAP and a RAP Implementation Report. If ACWM excavation and disturbance is a component of the remedial actions, the approved ECP will be considered a component of the RAP and should be appended to the RAP. A Focused Feasibility Study (FFS) should be completed as an interim step, prior to developing a RAP, particularly at complex sites or when several potentially acceptable remedial options are available.

Contingency Plans are required as a component of the RAP, if site redevelopment or excavation activities have the potential to encounter ACWM. The Contingency Plan should clearly indicate under what conditions the ECP is to be utilized. The ECP will address emission control requirements; however, the RAP must describe measures that will be taken to segregate, stockpile and properly characterize suspect materials that may contain asbestos, other contaminated soil, suspect debris or other hazardous materials. Compliance with a Contingency Plan should allow construction to continue while suspect materials are characterized.

6.1 Overview of Cleanup Alternatives

The best alternative for remediation of an abandoned dump, when financially and technically feasible, is to dig up the dump or refuse materials and dispose of the waste in a permitted landfill. Due to the expense and potential risks of excavating large volumes of impacted refuse, risk-based site closures that involve leaving ACWM on-site may be more practicable. Generally there are two types of cleanups that are conducted at properties with ACWM: a) complete removal of the asbestos materials with disposal at an approved landfill; and b) risk-based closure in which

residual ACWM is left on-site in the subsurface and long term management and risks are largely addressed through the combined use of engineering controls, institutional controls, and a Contingency Plan. For Sites with smaller volumes of localized ACWM whose lateral and vertical extent can be determined a complete removal may be the preferred option. For such removal actions the Asbestos Inspector should inspect the excavation and collect soil samples for analysis to document that no asbestos fibers remain in the soil.

6.2 Risk-Based Closures at Sites Containing ACWM

It may not be practicable for all ACWM to be excavated and removed from all sites, especially at sites containing large volumes of waste or on which ACWM is very deeply buried. The VIC Program may allow some or all ACWM to remain on-site if appropriate vertical separation distances and institutional controls are utilized. Residual ACWM waste remaining at a site must be managed in a manner consistent with the “Guidance on Incorporation of Planned Property Use into Site Decisions” (Property Use Guidance), which forms part of the MPCA’s Risk Based Site Evaluation (RBSE) Manual. The two principal requirements are the use of institutional controls and the appropriate use of vertical separation distances between the surface soils and the buried waste. Other considerations that are discussed below are recommendations on the physical segregation of wastes, mechanical sorting of debris that may contain ACWM, reconfiguring and reuse of wastes, and long term maintenance requirements at sites where ACWM is suspect.

Institutional Controls

Minnesota Statute, § 115B.02, subd. 9a defines institutional controls as legally enforceable restrictions, conditions, or controls on the use of real property, ground water, or surface water located at or adjacent to a facility where response actions are taken. Institutional Controls include real property notification, affidavits, contractual agreements (including consent orders), easements, and environmental restrictive covenants.

The MPCA allows the use of institutional controls, in addition to treatment, containment, or removal of contaminants, as part of an overall site remedy. Institutional controls are intended to ensure that the response (cleanup) actions remain protective of public health and the environment. Institutional Controls document the presence of contamination at a particular parcel and provide notice through recording in official property records so that interested parties become aware of residual contamination and any accompanying property use conditions and restrictions. Institutional Controls may also include easements to ensure access to property for purposes such as maintaining response actions or long-term monitoring.

MPCA continues to prefer measures that reduce the need for use restrictions and long-term monitoring/maintenance activities. General guidance on the application of the institutional controls that are within MPCA’s authority to require or seek is summarized in “Guidance on Incorporation of Planned Property Use Into Site Decisions” (Property Use Document) which is a component of the MPCA’s Risk Based Site Evaluation Manual.

An acceptable site remedy, which incorporates long term management of buried ACWM, requires the use of institutional controls – either a Declaration of Restrictions and Covenants (Restrictive Covenant) or a Real Property Affidavit (Deed Notice). The type of institutional control required will depend upon the proposed land use and the volume, characteristics, and depth of burial of the

ACWM. If the remedial objectives at a site require unrestricted future use of the property (e.g. residential use) then long term management of buried ACWM will not be considered an acceptable remedy.

Vertical Separation Requirement

ACWM waste or impacted fill remaining on-site as part of remedial design must be buried an appropriate depth beneath the surface. This burial depth, or vertical separation distance, will depend upon the proposed land use for the site and on whether the waste materials are buried beneath an engineering control or not. An engineering control is a relatively impervious structure that is utilized as a component of a RAP to assist in restricting direct access to subsurface soils and reducing the potential for erosion of the cover. Common engineering controls include pavement, sidewalks, building footprints, and engineered caps. The soil within this vertical separation must not pose an unacceptable human health risk as determined by the RBSE Manual. The burial of ACWM waste allows the potential risks to be decreased to acceptable levels by an appropriate depth of burial and use of institutional controls and engineering controls. Minimum vertical separation distances considered appropriate for industrial and restricted commercial properties with little or no slope are as follows:

Beneath Green Space	4-feet
Beneath Paving and Sidewalks	2- to 4-feet
Beneath Building Floors	1- to 2-feet

The above vertical separation distances correspond to the approximate vertical intervals of the “accessible zone” as described in the Property Use Document. The accessible zone is considered the interval that is considered most likely to be accessed in the future. A range in distances is provided because what represents the “accessible zone” may vary between sites. If the ACWM is buried deep enough to be considered a remotely accessible depth (see Property Use Guidance), a Deed Notice and not a Restrictive Covenant possibly may be used as the institutional control.

Clean cover used for vertical separation in green space areas without any impervious engineered surfaces ideally should be well vegetated only by shallow rooting plants (i.e. grasses, shrubs). Exceptions to this recommendation may be considered, if the ACWM is buried deeper than four feet below the surface.

Reconfiguring Waste

The reconfiguration or reconsolidation of solid wastes and debris is sometimes appropriate as a remedial strategy in order to reduce the aerial footprint of waste or, under certain conditions, to relocate wastes to other portions of a site. If the wastes being reconfigured include potential ACWM, the activities will require the use of an Asbestos Contractor and an approved ECP and RAP. The MPCA VIC and Asbestos Programs may allow the reconfiguration of solid waste, if it takes place within the existing footprint of the buried on-site waste or debris, meets the appropriate vertical separation distance, includes placement of a Restrictive Covenant on the property deed, and does not violate other municipal or county requirements. Placement of solid waste outside the existing footprint of a dump is not an acceptable reconsolidation solution and is considered a violation of the Minnesota solid waste rules and may result in enforcement actions. As is the case with all solid wastes, no reconsolidation of ACWM is allowed within five feet of the water table or near surface water.

Reuse and Screening of Site Waste Materials or Fill

On-site fill contaminated with ACWM cannot be reutilized as controlled fill except under very limited conditions and only with the advance approval of the MPCA. It is never appropriate to use such fill or any fill with solid waste as off-site controlled fill. Solid waste within fill can be mechanically sorted and separated by use of a bar screen. The resulting waste-free fill may be usable as controlled engineered fill on-site or for limited off-site uses, such as road aggregate.

The mechanical screening of fill with debris is allowed under certain conditions as a means of reducing the volume of debris requiring off-site disposal at a landfill. If mechanical screening is conducted, it is recommended that a bar screen with a maximum one-inch opening be used. Solid waste and fill that does not pass through the screen must be handled or disposed of properly. Mechanical screening of fill containing ACWM is not acceptable, as no practicable means of controlling asbestos emissions exists in this case. Therefore, it is very important that fill be well characterized before any mechanical screening is attempted. In such cases, a Contingency Plan and ECP containing directives for ceasing screening activities if ACWM is identified in this material must be utilized during such screening activities.

If no ACWM is found during the mechanical screening of fill and debris, the screened granular fill may be left on-site, although it will need to be buried with appropriate vertical separation distances. The need for institutional controls to restrict or document such screened fill material will be evaluated by the MPCA VIC staff on a site by site basis.

Long Term O&M Requirements

Long term operation and maintenance requirements may not be necessary if the use of a Restrictive Covenant appropriately restricts access to subsurface wastes. However, if engineering controls are used to restrict or minimize access, operation and maintenance (O&M) of the engineering controls may be required (e.g. the maintenance of paving surfaces, building floors, vegetated surfaces, or engineered caps). Contingency Plans that serve as work plans in the event of site redevelopment activities or site disturbance in the future are sometimes appropriate and may be considered a type of long term O&M. In such cases, these plans are considered to be part of an ongoing response action and may require the use of a voluntary response action agreement in order for VIC assurances to be issued.

7.0 References and Resources

MPCA's Asbestos Program Web Site:

http://www.pca.state.mn.us/programs/asbestos_p.html

MPCA's Risk Based Site Evaluation Manual

<http://www.pca.state.mn.us/cleanup/riskbasedoc.html>

MPCA VIC Program Web Site:

<http://www.pca.state.mn.us/cleanup/vic.html>

MDH's Asbestos Program Web Site:

<http://www.dehs.umn.edu/ihsd/asbestos/>

- Asbestos Program Publications:
 - Guidance for the Removal, Transport, and Disposal of Category I Asbestos-Containing Materials,” MPCA Air Quality/Asbestos Program/#4.04/December 2000;
 - “Asbestos Guidance on Excavation Projects,” Air Quality/Asbestos Program/#4.03/July 1999;
- Asbestos Program/Asbestos Hotline: 651-297-8685
- MN Department of Health: 651-215-0900