Remediation Division General Policy

This General Policy applies to sites in the MPCA's Remediation Division. It describes the principles that guide the work of the Remediation Division and provides an overview of the processes used in common by its programs to address impacts to human health and the environment from contaminated sites. There may be program-specific requirements that must be followed when conducting work at a site in one of the Remediation Division programs. This document is not intended to replace or supersede program- or site-specific requirements. See other Divisional and program-specific guidance documents for further information.

Different programs sometimes use different terms to describe similar processes and actions, frequently based on applicable Statutory language or historical usage. Terms used in this document were chosen for broadest applicability and understanding to describe general processes and actions. For example, the term "response" here encompasses corrective actions, mitigation actions, and remedial actions.

Introduction

The Remediation Division oversees the investigation of contaminated sites and evaluates risks from identified contamination, with the goal of protecting human health and the environment. The environmental investigation gathers data from different media, as needed, to define the extent and magnitude of contamination and to evaluate all relevant potential exposure pathways. Sampled media may include soil, groundwater, soil vapor, surface water, and sediment. To further evaluate potential exposure to site contaminants, samples of drinking water, indoor air, or ambient air may be collected. The Remediation Division's oversight of indoor air quality is limited to potential impacts related to vapor intrusion and does not include impacts caused by sources inside the building. Ambient air sampling is done only in connection with evaluating specific cleanup actions.

In general, the Remediation Division implements a risk-based approach, based on current and anticipated future land use, for managing contamination at sites. The primary focus is on identifying human health risks from exposure to contaminated soil, drinking water, and indoor air. When contamination is found above health-based guidance values with a completed exposure pathway, action is taken to resolve the contamination exposure. For example, soil may be excavated or engineered systems may be installed to clean up contaminated soil or groundwater to the extent practicable. Vapor mitigations systems are commonly installed in buildings to prevent indoor air impacts from vapor intrusion. In cases where human health and environmental risks are low, the approach is often to monitor the contamination over time and rely on natural attenuation for some contaminants for long-term risk reduction. Cleanup of contamination source areas can accelerate the natural attenuation process and help limit the potential for future exposures or migration of the contamination, while reducing long-term operation and maintenance costs in certain cases. Where contamination poses a risk, the response plan will generally include a targeted cleanup of the contamination source area.

Remediation Division mission

To fully understand contamination and its sources, apply the best practices available to protect human health and the environment, and to develop and support our employees.

Guiding principles

Remediation Division work is guided by the following principles, which are consistent with stated MPCA values, MPCA Strategic and Long-Term goals, and the Remediation Division Mission Statement.

Risk-Based Decisions based on Data

Data, along with risk-based human health and ecological guidance values, inform mitigation and response decisions to address human health and environmental risks.

Program Operation

Clear and predictable processes, consistency of decisions, and documentation of actions and decisions are important for effective program operation.

Meaningful Stakeholder Involvement

We strive to facilitate involvement of those potentially affected by investigation and responses, to ensure people have an opportunity to participate in decisions that may affect them.

Environmental Justice

We recognize the disproportionate impacts of pollution on people with low income and communities of color, and we prioritize work on sites located in these communities.

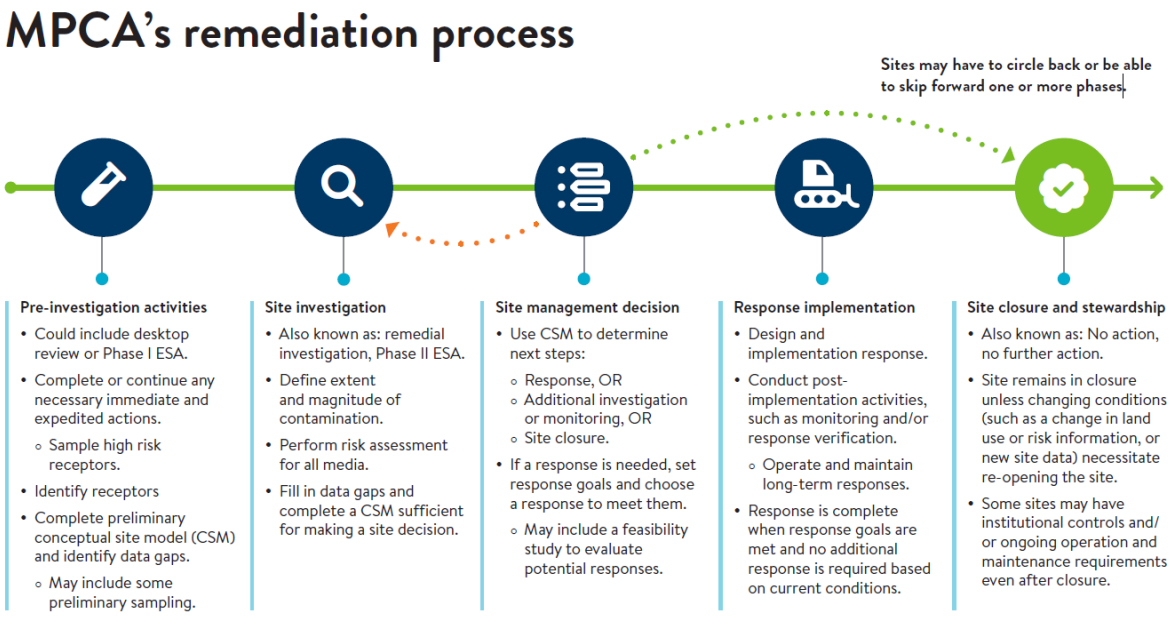
Climate Change

We act on opportunities in our work to help increase the resiliency of communities and the environment to the impacts of climate change.

General remediation process

Most contaminated sites in the Remediation Division use the General Remediation Process shown below. The process is shown here as a linear progression, but in practice it is an iterative process that may require circling back to a previous step, especially when new issues emerge. At some sites, not each of the steps or each of the activities within a step is necessary. However, in every case the process begins with a recognition that contamination does or could exist. This is followed by gathering data to document the extent and magnitude of contamination and deciding on the need for a response action. The process ends with a decision that no additional work is needed based on current conditions (i.e., site closure).

MPCA's remediation process



Effective public communication is an essential aspect of Remediation work, particularly when conducting drinking water and indoor air monitoring – which can take place at any phase of the project. The public communication includes promptly communicating potential health risks, areas where contamination investigations are planned or underway, and areas where mitigation has been installed. Effective communication is needed, in part, to secure access for drinking water sampling or a vapor intrusion investigation. Staff promptly inform well owners and building owners of monitoring results and next steps and provide written documentation of drinking water and indoor air monitoring results in a timely manner.

I. Pre-investigation activities

Pre-investigation activities include evaluation of available information about current and historical uses and conditions of a site. This may be an informal "desktop review" or a more formal process up to and including completion of a Phase I Environmental Site Assessment compliant with American Society for Testing and Materials (ASTM) standards. One important purpose for this initial data-gathering is to inform the planning of the Site Investigation by identifying: actual or potential contaminant sources, receptors that could potentially be impacted by the contamination, and other site-specific characteristics that may influence the type and location of sampling.

Pre-investigation activities must always include identification of any conditions that require immediate or expedited action.

Immediate or expedited action is needed when a fast and effective response can minimize environmental and human impact and/or the overall cost for investigation and response, or when known contamination presents potential for imminent human health risk. When immediate action is needed, the MPCA Emergency Response Program should be contacted, and in most cases will be the site lead for the duration of the emergency.

Identifying human health risks in drinking water and indoor air is a top priority. The primary goal of drinking water well sampling and vapor intrusion work is to identify human health risks so they can be promptly addressed. Drinking water well and vapor intrusion monitoring has a secondary benefit of providing data that may help define the area of contamination.

Conceptual Site Model (CSM) development starts in the pre-investigation phase by using pertinent data gathered in this phase. It continues throughout the life of the project, adjusted as additional data is gathered and data gaps are filled. The CSM is the basis for evaluating exposure pathways and provides justification for the site management decision. The CSM answers: where is the contamination, how is it behaving, and what is or might be impacted by it now and in the future.

II. Site investigation

Site investigations collect data through environmental sampling to delineate the extent and magnitude of contamination in all impacted media and identify factors that affect the ability of the contamination to move in the environment. Site investigations also include filling data gaps and developing a CSM sufficient to allow a site management decision to be made.

If a completed exposure pathway is identified during a site investigation, a risk assessment is performed on identified receptors that could potentially be impacted by the contamination. The following are receptors that can be evaluated to determine if a completed exposure pathway may be present:

- Water supply wells
- Sensitive groundwater aquifers
- Vapor receptors such as basements and other habitable structures
- Utility lines
- Surface waters such as lakes, rivers, and wetlands
- Shallow soil
- Water body sediments; or
- Ecosystems

If the risks are low, no further investigation and no responses may be necessary. In some cases, however, additional investigation may be necessary to determine contaminant trends over time and to further assess the need for a plan to address the contamination.

III. Site management decision

A site management decision is made based on evaluation of the CSM. Possible site management decisions could be to conduct additional investigation, to close the site, or to complete a response. Additional investigation is conducted if the CSM has data gaps that must be filled to make a site management decision, thus circling back to the site investigation phase.

If the site management decision is to complete a response, then goals are set to address the contamination, and a response is chosen to best meet those goals. The best practice, if feasible and cost effective, is to remove the source of contamination. Some response actions can be selected through a simple, streamlined process while in other cases, because of technical or administrative requirements, a more complex process is implemented.

Streamlined process

When the administrative requirements and technical aspects allow, a streamlined response action selection process should be used. This involves choosing to implement a straightforward and well-established response action that will eliminate contamination risks, then documenting the decision.

Complex process

In the complex selection process, it is common that the site investigation, development of response action goals, and development of response action alternatives are conducted concurrently. This is beneficial because data collected in site investigations can influence the development of response action goals, which in turn affect the data needs and scope of additional studies and investigations.

To select a response action, potential response action alternatives (including a no action alternative) are evaluated in a comparative process with established evaluation criteria. The selected response action must achieve overall protection of human health and the environment and comply with applicable and appropriate standards.

Other balancing evaluation criteria are long-term effectiveness and permanence of the response action, reduction of toxicity, mobility or volume of contamination, short-term response action effectiveness, response action implementability, and cost. Additional evaluation criteria to consider are climate and sustainability considerations, and partner and community acceptance of the proposed plan. The process described here is often accomplished by preparation of a feasibility study.

IV. Response implementation

A detailed design is required for all complex response actions. The design should describe the details of how the selected action will be implemented. Implementation of a response action should include some type of effectiveness monitoring to ensure the action is meeting response goals.

Response action monitoring provides important data for evaluating effectiveness, the need for adjustments to reach a desired outcome, and site closure decisions. Response action monitoring can include soil, groundwater, or soil vapor sampling; visual inspections; measurement of remediation system operation; or measurement of closed landfill systems.

V. Site closure and stewardship

A site is complete when the MPCA concludes that the extent and magnitude of the contamination has been defined and that any remaining contamination poses a low risk to human health and the environment based on current or proposed property use. It may be referred to as file closure, no action, or no further action. Even after completion, however, there may be ongoing operation and maintenance activities or land use restrictions. Owning, or conducting activities at, a contaminated site will always require awareness of the contamination and any associated restrictions, requirements, and responsibilities. Future changes in property use, human health-based risk guidance, and legal

requirements are among factors that can result in the need for additional work at a site and reopening of the MPCA's site files.

Operation and Maintenance

Remediation systems, closed landfill systems, and contamination mitigation systems should be operated under a defined operation strategy to meet performance objectives. The operation strategy is a comprehensive plan that outlines how systems will be operated and monitored over time.

Contamination Notice and Land Use Restrictions

Property use restrictions are needed when a specific action or activity restriction is necessary to protect human health or the environment. This includes continued operation of a human health-based contamination mitigation system or prohibiting excavation in a specific area without MPCA review and approval. Property use restrictions are also needed to enforce use limitations on state bond financed property.