

## Integrating the Sediment Management Standards and Model Toxics Control Act Rules

### Issue

---

**What rule revisions are needed (if any) to clarify processes and terminology for sediment cleanup actions under the Sediment Management Standards (SMS) and the Model Toxics Control Act (MTCA)?**

### Problem Statement

---

The SMS were adopted in 1991 to implement Ecology's responsibilities under several laws, including the MTCA (70.105D RCW) and the Water Pollution Control Act (90.48 RCW). Part V of the SMS rule establishes requirements for sediment cleanup standards. This part of the rule defines several administrative processes for implementing the cleanup requirements.

Sediment cleanup actions conducted under a MTCA order, agreed order or consent decree must comply with requirements in both the SMS rule and the MTCA Cleanup Regulation (Chapter 173-340 WAC). Establishing site-specific requirements that comply with both rules is confounded by several factors. These are described briefly then presented in tabular format for further detail.

- **Terminology:** The two rules use different terms to define similar concepts. Examples are provided in the table below. Differences in terminology occur in two main areas, criteria and report names.
- **Criteria:** Definitions and use of terms including cleanup standards, cleanup levels and remediation levels differ between SMS and the MTCA rule.
- **Report Names:** SMS and the MTCA rule have different names for required documents that have the same function.
- **Definitions:** The addition and updating of definitions will aid in clarifying the SMS.
  - **Bioassay:** This definition needs to be clarified to include test procedures or field analyses that measure the condition and/or response of living plants, animals, tissues, and other aquatic organisms to sediment. This includes biological toxicity tests and benthic community analysis.
  - **Biological Toxicity Test:** A definition needs to be added to include acute and chronic biological tests not including benthic community analysis. This would replace the commonly referred to term "bioassay."

- Chronic Bioassays: This definition needs to be added to clarify the term chronic and include both benthic community analysis and biological toxicity tests.
  - Acute Bioassays: This definition needs to be added to clarify the term acute and include both benthic community analysis and biological toxicity tests.
  - Sediment: A more comprehensive definition of sediment needs to be added to include marine, freshwater, and ephemeral conditions.
  - Surface Sediment: This definition needs clarification to exclude the more comprehensive definition of sediment.
  - Contaminated Sediment: This definition needs clarification to include the more comprehensive definition of sediment.
- **Cleanup Standards:** The SMS and MTCA rules both include methods and policies for establishing cleanup standards that are designed to protect human health and the environment. As noted above, the two rules use different terms for similar factors. However, the two rules also contain different decision-making frameworks that make it awkward to comply with both rules at the same time.
    - **SMS:** The SMS framework for developing site specific concentrations (protective of biota) for cleanup is based on a two tier structure, where the concentrations are established between the desired no-effects level and an upper bound of minor adverse effects. Under SMS, these levels are established (together with selecting the remedial alternative) giving consideration to cost, technical feasibility, and net environmental benefits.
    - **MTCA:** The MTCA rule specifies that cleanup standards must be based on an excess cancer risk of  $1 \times 10^{-6}$ .<sup>1</sup> Cost and technical feasibility are not considered when setting cleanup standards.
  - **Remedy Selection:** The two rules establish requirements for cleanup actions. In the SMS rule, these requirements are located in WAC 173-340-580 (Cleanup Action Decision). In the MTCA rule, the remedy selection requirements are located in WAC 173-340-360 (Selection of Cleanup Actions). The two rules contain overlapping requirements that are summarized in the table below. The most important difference is compliance with the statutory requirement that Ecology give preference to permanent solutions to the maximum extent practicable (RCW 70.105D.030(1)(b)). The MTCA rule includes this provision; the SMS rule does not.
  - **Cleanup Time Frame:** The SMS needs to be clarified regarding what cleanup goal must be met within a specified time frame. This includes clarification that the SQS is the cleanup goal with certain caveats by harmonizing the following sections:

---

<sup>1</sup> The risk levels described in MTCA rule are  $1 \times 10^{-6}$  for any one carcinogenic chemical and single exposure pathway, and  $1 \times 10^{-5}$  for all of the carcinogenic chemicals combined and/or multiple exposure pathways, and a hazard quotient of 1 for single non-carcinogens and single exposure pathway, and a hazard index of 1 for multiple non-carcinogenic chemicals and/or multiple pathways. WAC 173-340-705 (2).

- WAC 173-204-580(3)(a)(ii) refers to a time frame of meeting cleanup standards within ten years.
- WAC 173-204-580(3)(b) allows for an extended time frame if certain conditions are met.
- WAC 173-204-570(3) requires that the minimum cleanup level is the maximum concentration of a contaminant allowed at the site by year ten after the cleanup action.
- WAC 173-204-570(2) requires that the cleanup objective must be the SQS as defined in WAC 173-204-320 through 340.
- WAC 173-204-570(4) allows for a cleanup standard to be set as close as practicable to the SQS but not to exceed the minimum cleanup level within a preferred 10 year time frame.

**Table 1. TERMINOLOGY** – Comparison of terminology between the SMS and MTCA. The same terms in both rules may have different definitions. In addition, different terms in both rules can represent the same function.

<b>SMS</b>	<b>MTCA</b>	<b>Explanation</b>
<p><b>Sediment Quality Standard which is also the Sediment Cleanup Objective</b></p> <p>Narrative, chemical and biological criteria that identify sediments that have no acute or chronic adverse effects on biological resources and no significant health risk to humans. The SQS serves as the Sediment Cleanup Objective for all sediment cleanup actions.</p>	<p><b>Cleanup Level</b></p> <p>The concentration of a hazardous substance in soil, groundwater or surface water or sediment that is determined to be protective of human health under specified exposure conditions.</p>	<p>These terms identify the no adverse effects goal for a cleanup action under SMS and MTCA. MTCA specifies protection for human health at <math>1 \times 10^{-6}</math> excess cancer risk. The SMS narrative standard for human health does not specify a protection level. Both are established without consideration of costs or feasibility. Under MTCA, the Cleanup Level is the final concentration that must be achieved. Under SMS, the cleanup objective is the goal, but does not necessarily need to be achieved at the site if certain conditions are met.</p>
<p><b>Cleanup Standard</b></p> <p>Site specific concentration for a contaminant for which an exceedance triggers remedial action. Established between SQS and MCUL/CSL based on consideration of cost, technical feasibility and net environmental benefits.</p>	<p><b>Cleanup Standard</b></p> <p>Consist of the following: (a) Cleanup levels for hazardous substances present at the site, (b) The location where these cleanup levels must be met (point of compliance), and (c) ARARs - Other regulatory requirements that apply.</p>	<p>These terms represent similar concepts of establishing a final concentration to be achieved at the site. Under the SMS, consideration of cost and feasibility is allowed when developing the SMS Cleanup Standard. Cost and feasibility are not considered in setting the MTCA Cleanup Standard.</p>
	<p><b>Remediation Level</b></p> <p>Site specific concentration of a hazardous substance in soil, water, air, or sediment above which a particular cleanup action component will be required.</p>	<p>Achieving a remediation level at a site does not necessarily mean that the cleanup is complete.</p>

<b>SMS</b>	<b>MTCA</b>	<b>Explanation</b>
<b>Minimum Cleanup Level (MCUL)</b>		Under SMS, the MCUL (or CSL) serves as an upper bound on adverse effects on benthic biota allowed after a cleanup. MTCA does not have a similar upper bound.
<b>Human Health –</b> Narrative - “...no significant health risk to humans”	<b>Human Health –</b> $10^{-6}$ risk level and a hazard quotient $\leq 1$	MTCA states the upper bound of risk while the SMS narrative standard is less specific.

**Table 2. COMPARISON OF REQUIREMENTS AND REPORTING DOCUMENTS UNDER SMS AND MTCA CLEANUP PROCESSES.** The SMS and MTCA processes for decision-making are shown side-by-side, arranged by major function. This underscores the difference between the required deliverables and at what point cost is considered in developing a cleanup action under each rule.

	<b>Sediment Management Standards 173-204 WAC</b>	<b>SMS</b>	<b>MTCA</b>	<b>Model Toxics Control Act 173-340 WAC</b>
<b>Report Names</b>	<i>Sediment Cleanup Study</i> SCS <sup>2</sup>  <i>Sediment Cleanup Report</i> SCR <sup>2</sup>			<i>Public Participation Plan</i> PPP <sup>3</sup> <i>Remedial Investigation</i> RI <sup>4</sup> <i>Feasibility Study</i> FS <sup>4</sup> <i>Cleanup Action Plan</i> CAP <sup>5</sup>
<b>Public Participation</b>	SCS must specify what, when, how public participation will occur. <sup>2</sup>	SCS	PPP	340-600 is more specific about how public participation will be done, including a site-specific public participation plan, site register, public meetings.
<b>Site Investigation</b>	Site info and site map. Existing data and field investigations. Sediment Contaminant Sources Evaluate human health risk. <sup>2</sup>	SCS	RI	Site info and site map. Existing data and field investigations. Site conceptual model. Sources. Evaluate the following media: soil, ground water, surface water, air, sediment for each contaminant and exposure pathway. <sup>4</sup>
<b>Setting Cleanup Levels (Cleanup Standards)</b> Note there is a difference in terminology.	Based on human health risk assessment <sup>2</sup> and SQS criteria. Based on cost and feasibility, allows cleanup levels up to MCL for benthic toxicity. <sup>6</sup> Cost is considered when setting Cleanup Standards for sediments.	SCS	RI	Develop risk levels and hazard quotients for each chemical of concern using one of the following <sup>7</sup> : Method A – Uses tables & ARARs for simple sites. Method B – Universal method uses equations to calculate risk & hazard. May modify equations for site-specific parameters. Method C – Conditional – results in institutional controls

<sup>2</sup> WAC 173-204-560

<sup>3</sup> WAC 173-340-600

<sup>4</sup> WAC 173-340-350

<sup>5</sup> WAC 173-340-380

<sup>6</sup> WAC 173-204-570

<sup>7</sup> WAC 173-340-700 to WAC 173-340-760

	<b>Sediment Management Standards 173-204 WAC</b>	<b>SMS</b>	<b>MTCA</b>	<b>Model Toxics Control Act 173-340 WAC</b>
				including future use restrictions. Cost is not considered until the selection of alternatives for a site.
<b>Developing Alternatives</b>	Can use site units with individual cleanup standards. Alternatives may include a sediment recovery zone. May use a phased approach for screening and selecting alternatives.	<i>SCS</i>	<i>FS</i>	Must include permanent alternative for comparison. <sup>4</sup> Process for using remediation levels in developing cleanup alternatives. <sup>8</sup> Quantitative risk assessment of cleanup action alternatives to determine if protective of human health and the environment. <sup>9</sup>
<b>Selection of Alternatives</b>	Requirements <sup>10</sup> : <ul style="list-style-type: none"> <li>• Protect human health and the environment</li> <li>• Comply with site cleanup standards</li> <li>• Comply with state and federal laws</li> <li>• Provide adequate monitoring</li> <li>• Consider public concerns</li> <li>• Provide landowner review</li> <li>• Provide reasonable time frame for completion of cleanup action</li> </ul> Consider net environmental effects, relative cost-effectiveness of alternatives, technical effectiveness and reliability. <sup>10</sup>  In SCS evaluation of cleanup actions	<i>SCR</i>	<i>CAP</i>	Minimum requirements <sup>11</sup> : <ul style="list-style-type: none"> <li>• Protect human health and the environment</li> <li>• Comply with cleanup standards</li> <li>• Comply with state and federal laws</li> <li>• Provide for compliance monitoring</li> </ul> Select action that will: <ul style="list-style-type: none"> <li>• Use <b>permanent solutions to maximum extent practicable</b> (Disproportionate Cost Analysis).</li> <li>• Provide reasonable restoration time frame</li> <li>• Consider public concerns</li> </ul> In DCA, consider protectiveness, permanence, cost, effectiveness over the long-term, management of short-term risks, technical and administrative implementability, and public concern.

<sup>8</sup> WAC 173-340-355

<sup>9</sup> WAC 173-340-357

<sup>10</sup> WAC 173-204-580

<sup>11</sup> WAC 173-340-360

	<b>Sediment Management Standards 173-204 WAC</b>	<b>SMS</b>	<b>MTCA</b>	<b>Model Toxics Control Act 173-340 WAC</b>
	must consider: overall protection of human health and environment, time to attain cleanup standard, short-term effectiveness, long-term effectiveness, ability to be implemented, cost, community concerns, waste minimization, and environmental impacts. <sup>2</sup>			

## Overview

---

Decisions for sediment cleanup sites must comply with both the SMS and MTCA rules. Differences in the two rules cause confusion about how to comply with both. Ecology is considering revising the SMS and MTCA rules to clarify how to proceed at sediment cleanup sites. Some of the areas that are being considered include:

- Terminology - Including definitions and terms used for cleanup standards, required documents, and clarifying definitions.
- Cleanup Standards - Process for setting sediment cleanup standards at the site. How cost and feasibility are considered when setting sediment cleanup standards.
- Remedy Selection - Alignment of the process and requirements for remedy selection at sediment cleanup sites.
- Cleanup Time Frame - Time frame required for sediment cleanup levels to be met.
- Minor Housekeeping for Rule - Remove typos and clarify wording.

## Options

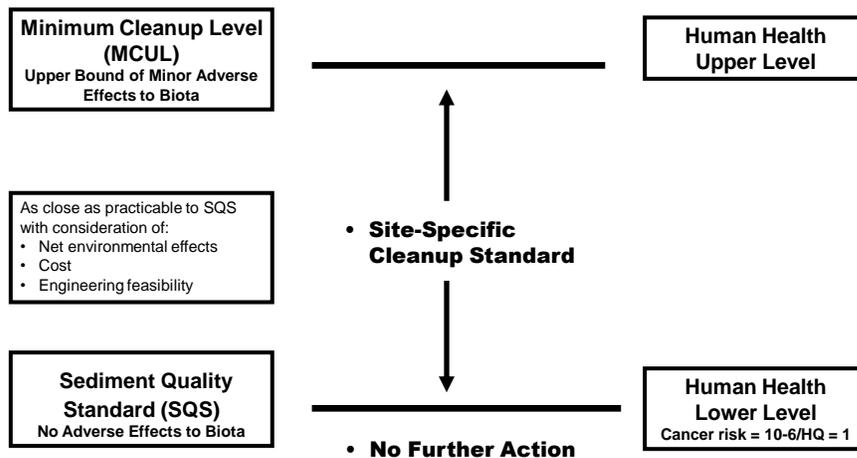
---

- **Terminology:** Ecology has identified several options for dealing with differences in terminology:
  - Do nothing. Continue using the combined SMS and MTCA applicability.
  - Revise both SMS and the MTCA rules. Aligning the two rules could be accomplished by primarily focusing revisions in the SMS. Then the SMS would better reflect MTCA's use of document names and terms and more closely mirror the MTCA framework for setting standards and selecting remedial alternatives. This would still require revisions to the MTCA rule to clarify where and how MTCA defers to SMS.
- **Cleanup Standards:** Ecology has identified several options for harmonizing the cleanup standard methods and policies in the two rules:
  - Do nothing. Continue to use the SMS approach for establishing benthic toxicity cleanup standards (concentrations) between the SQS and MCUL criteria, then overlaying human health considerations on a case-by-case basis.
  - Develop guidance on how to implement the SMS ecological standards with the MTCA human health standards. For example, determine a site specific sediment concentration that protects human health at the default MTCA risk level of  $1 \times 10^{-6}$  (or background or PQL, whichever is highest). That value serves as the equivalent of the SQS (cleanup objective) for human health and is then carried into the SMS decision process. SMS requires selecting a site specific standard as close as practical to the SQS and not greater

than the upper bound of MCUL for benthic toxicity criteria (there is no similar upper bound for human health criteria).

- Decision Framework using a Single Concentration. This would entail establishing levels of protection for human health that reflect the MTCA standard and serve as a parallel to the SQS for benthic receptors. For protection of human health, concentrations may be lower than background, requiring methods discussed in the Human Health and Background Issue Papers to select this number (e.g., highest of  $1 \times 10^{-6}$  excess cancer risk, background or PQL). These concentrations will serve as the objective for remedial actions and are determined without consideration of cost or feasibility. The selection of site specific cleanup concentrations and remedial alternatives would strive to achieve these, using a tool such as a Disproportionate Cost Analysis for considering cost, feasibility and net environmental benefits.
- Decision Framework using a Range of Concentrations. Similarly to the SMS benthic toxicity criteria, a range of effects would be established for protection of human health and selection of a site specific cleanup concentration would have to be within that range. The decision framework for selection of a sediment cleanup concentration would require overlaying the current range for ecological criteria (SQS to MCUL) and the range for human health (human health lower level, to human health upper level) to ensure the value selected is at or below the lower of the human health upper level or MCUL (see figure below).

### Decision Framework using a Range



- **Remedy Selection:** Ecology has identified several options for harmonizing the remedy selection requirements in the two rules and the MTCA statute:
  - Do nothing. Continue to integrate the requirements in the two rules using an approach similar to the approach used in the cleanup action plan for the Whatcom Waterway sediment cleanup.

- Revise the SMS rule to incorporate the MTCA statutory preference for permanent solutions to the maximum extent practicable. Under this option, WAC 173-204-580 would include the preference for permanent solutions to the maximum extent practicable. This could be done in combination with revisions to the MTCA rule that state that compliance with the revised SMS requirements represents compliance with the MTCA rule requirements in WAC 173-340-360.
- Revise the MTCA rule to incorporate requirements that are specific to sediment cleanup actions. Under this option, WAC 173-340-360 would include the several sediment specific requirements (e.g. landowner review). This could be done in combination with changes to WAC 173-204-580 that specify that compliance with the MTCA rule provisions represents compliance with the SMS rule requirements for cleanup action decisions.

## Factors to Consider When Selecting an Option

---

The development of the amendments will involve the consideration and balancing of a number of issues and interests. The proposed options will also be developed to satisfy several, sometimes conflicting, regulatory goals, including the following:

- Whether the option provides for the selection of cleanup actions that protect human health and the environment.
- Whether the option provides for developing scientifically and legally defensible cleanup standards.
- Whether the option provides consistent standards and methodologies for assessing and managing risk.
- Whether the option provides flexibility to address site-specific factors.
- Whether the option promotes efficient and cost-effective cleanup of contaminated sites.
- Whether the option provides enhanced opportunities for public involvement.
- Whether the option improves the clarity and usability of the rule.
- Whether the option complies with key requirements of the Administrative Procedures Act.