

# Chapter 173-340 WAC

## MODEL TOXICS CONTROL ACT—CLEANUP

### *PART I—OVERALL CLEANUP PROCESS*

<b>WAC</b>		<b>Page</b>
173-340-100	Purpose .....	1
173-340-110	Applicability .....	1
173-340-120	Overview .....	1
173-340-130	Administrative principles .....	3
173-340-140	Deadlines .....	5

### *PART I—DEFINITIONS AND USAGE*

173-340-200	Definitions .....	5
173-340-210	Usage .....	15

### *PART III—SITE REPORTS AND CLEANUP DECISIONS*

173-340-300	Site discovery and reporting .....	15
173-340-310	Initial investigation .....	16
173-340-320	Site hazard assessment .....	17
173-340-330	Hazardous sites list .....	18
173-340-340	Biennial program report .....	19
173-340-350	State remedial investigation and feasibility study .....	20
173-340-360	Selection of cleanup actions .....	21

### *PART IV—SITE CLEANUP AND MONITORING*

173-340-400	Cleanup actions .....	26
173-340-410	Compliance monitoring requirements .....	29
173-340-420	Periodic review .....	30
173-340-430	Interim actions .....	30
173-340-440	Institutional controls .....	32
173-340-450	Releases from underground storage tanks .....	33

### *PART V—ADMINISTRATIVE PROCEDURES FOR REMEDIAL ACTIONS*

173-340-500	Determination of status as a potentially liable person .....	36
173-340-510	Administrative options for remedial actions .....	37
173-340-520	Consent decrees .....	37
173-340-530	Agreed orders .....	39
173-340-540	Enforcement orders .....	41
173-340-550	Payment of remedial action costs .....	41
173-340-560	Mixed funding .....	44

### *PART VI—PUBLIC PARTICIPATION*

173-340-600	Public notice and participation .....	45
173-340-610	Regional citizens' advisory committees .....	50



**PART VII—CLEANUP STANDARDS**

<b>WAC</b>		<b>Page</b>
173-340-700	Overview of cleanup standards .....	51
173-340-702	General policies .....	54
173-340-704	Use of method A.....	54
173-340-705	Use of method B.....	55
173-340-706	Use of method C.....	56
173-340-707	Analytical considerations .....	57
173-340-708	Human health risk assessment procedures.....	57
173-340-710	Applicable state and federal laws.....	62
173-340-720	Ground water cleanup standards .....	63
173-340-730	Surface water cleanup standards .....	71
173-340-740	Soil cleanup standards .....	74
173-340-745	Soil cleanup standards for industrial properties.....	81
173-340-750	Cleanup standards to protect air quality.....	87
173-340-760	Sediment cleanup standards .....	89

**PART VIII—GENERAL PROVISIONS**

173-340-800	Property access .....	89
173-340-810	Worker safety and health.....	90
173-340-820	Sampling and analysis plans .....	91
173-340-830	Analytical procedures .....	91
173-340-840	General submittal requirements .....	93
173-340-850	Recordkeeping requirements.....	93
173-340-860	Endangerment.....	94
173-340-870	Project coordinator .....	94
173-340-880	Emergency actions.....	94
173-340-890	Severability.....	94

**DISPOSITION OF SECTIONS FORMERLY  
CODIFIED IN THIS CHAPTER**

173-340-010	Purpose. [Statutory Authority: Chapter 70.105B RCW. 88-13-036 (Order 88-40), § 173-340-010, filed 6/8/88.] Repealed by 90-08-086, filed 4/3/90, effective 5/4/90. Statutory Authority: Chapter 70.105D RCW 173-340-020.
173-340-020	Definitions. [Statutory Authority: Chapter 70.105B RCW. 88-13-036 (Order 88-40), § 173-340-020, filed 6/8/88.] Repealed by 90-08-086, filed 4/3/90, effective 5/4/90. Statutory Authority: Chapter 70.105D RCW.
173-340-030	Emergency actions. [Statutory Authority: Chapter 70.105B RCW. 88-13-036 (Order 88-40), § 173-340-030, filed 6/8/88.] Repealed by 90-08-086, filed 4/3/90, effective 5/4/90. Statutory Authority: Chapter 70.105D
173-340-040	Settlement procedures. [Statutory Authority: Chapter 70.105B RCW. 88-13-036 (Order 88-40), § 173-340-040, filed 6/8/88.] Repealed by 90-08-086, filed 4/3/90, effective 5/4/90. Statutory Authority: Chapter 70.105D RCW.
173-340-050	State conducted remedial action-Notice. [Statutory Authority: Chapter 70.105B RCW. 88-13-036 (Order 88-40), § 173-340-050, filed 6/8/88.] Repealed by 90-08-086, filed 4/3/90, effective 5/4/90. Statutory Authority: Chapter 70.105D RCW.



## PART I—OVERALL CLEANUP PROCESS

**WAC 173-340-100 Purpose.** This chapter is promulgated under the Model Toxics Control Act. It establishes administrative processes and standards to identify, investigate, and cleanup facilities where hazardous substances have come to be located. It defines the role of the department and encourages public involvement in decision making at these facilities.

The goal of this chapter is to implement the policy declared by chapter 70.105D RCW. This chapter provides a workable process to accomplish effective and expeditious cleanups in a manner that protects human health and the environment. This chapter is primarily intended to address releases of hazardous substances caused by past activities although its provisions may be applied to potential and ongoing releases of hazardous substances from current activities.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-100, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-110 Applicability.** (1) This chapter shall apply to all facilities where there has been a release or threatened release of a hazardous substance that may pose a threat to human health or the environment. Under this chapter, the department may require or take those actions necessary to investigate and remedy these releases.

(2) Nothing herein shall be construed to diminish the department's authority to address a release or threatened release under other applicable laws or regulations. The cleanup process and procedures under this chapter and under other laws may be combined. The department may initiate a remedial action under this chapter and may upon further analysis determine that another law is more appropriate, or vice versa.

(3) If a hazardous substance remains at a facility after actions have been completed under other applicable laws or regulations, the department may apply this chapter to protect human health or the environment.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-110, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-120 Overview.** (1) Purpose. This section provides an overview of the cleanup process that typically will occur at a site where a release of a hazardous substance has been discovered. If there are any inconsistencies between this section and any specifically referenced sections, the referenced section shall govern.

(2) Site discovery. Site discovery includes:

(a) Release reporting. A reporting program is established to help identify potential hazardous waste sites. Owners and operators who know of or discover a release of a hazardous substance due to past activities must report the release to the department within ninety days of discovery, under WAC 173-340-300. Most current releases of hazardous substances must be reported to the department under the state's hazardous waste, underground storage tank, or water quality laws. The term "hazardous substance" includes a broad range of substances as defined by chapter 70.105D RCW.

(b) Initial investigation. Within ninety days of learning of a hazardous substance release, the department will conduct an initial investigation of the site under WAC 173-340-310. For sites that may need further remedial action, an early notice letter will be sent to the owner and operator informing them of the department's decision.

(3) Site priorities. Priorities for further remedial action are set by the following process:

(a) Site hazard assessment. Based on the results of the initial investigation, a site hazard assessment will be performed if necessary, under WAC 173-340-320. The purpose of the site hazard assessment is to gather information to confirm whether a release has occurred and to enable the department to evaluate the relative potential hazard posed by the release. If the department decides that no further action is required, it will notify the public of that decision through the site register.

(b) Hazardous sites list. The department will maintain a list of sites that require further remedial action. Sites will be listed after the completion of a site hazard assessment. Sites placed on the list will

be ranked using the department's hazard ranking method. The department may remove a site from the hazardous sites list if the cleanup action at the site has achieved the cleanup standards and all remedial actions except conformational monitoring have been completed. See WAC 173-340-330.

(c) Biennial program report. Every even-numbered year, the department will prepare a biennial program report for the legislature. The hazard ranking, along with other factors, will be used in this report to identify the projects and expenditures recommended for appropriation. See WAC 173-340-340.

(4) Detailed site investigations and cleanup decisions. The following steps will be taken to ensure that the proper method of cleanup is chosen for the site.

(a) Remedial investigation and feasibility study.

A state remedial investigation/feasibility study will be performed at ranked sites under WAC 173-340-350. The state remedial investigation/feasibility study defines the extent of the problems at the site and evaluates alternative cleanup actions.

(b) Selection of cleanup action. The department will evaluate the remedial investigation/feasibility study, establish cleanup levels and the point or points at which they must be complied with in accordance with the procedures provided for in WAC 173-340-700 through 173-340-760 and select a cleanup action that will protect human health and the environment and meet the other requirements of WAC 173-340-360. At some sites, restrictions on the use of the land and resources (institutional controls) will be required to insure continued protection of human health and the environment. See WAC 173-340-440. The cleanup action will be set forth in a draft cleanup action plan that addresses cleanup requirements for hazardous substances at the site. After public comment on the draft plan, a final cleanup action plan will be issued by the department. (See WAC 173-340-700 for additional overview discussion of these requirements.)

(5) Site cleanup. Once the appropriate cleanup action has been selected for the site, the actual cleanup will be performed.

(a) Cleanup actions. WAC 173-340-400 describes the design and construction requirements for implementing the cleanup action plan.

(b) Compliance monitoring and review. The cleanup action must include compliance monitoring under WAC 173-340-410 and in some cases periodic review under WAC 173-340-420 to ensure the long-term effectiveness of the cleanup action.

(6) Interim actions. Under certain conditions it may be appropriate to take early actions at a site prior to completing the process described in subsections (2) through (5) of this section. WAC 173-340-430 describes when it is appropriate to take these early or interim actions and the requirements for such actions.

(7) Leaking underground storage tanks. Underground storage tank (UST) owners and underground storage tank operators regulated under chapter 90.76 RCW are required to perform specific actions in addition to what other site owners and operators would do under this chapter. Such additional actions include reporting of a confirmed release within twenty-four hours, follow-up investigation, free product removal and immediate assessment of the threat to human health and the environment at the site. A written report describing the site and the actions taken must be submitted within ninety days of release confirmation. Depending on the results of these actions, additional remedial actions may be required. WAC 173-340-450 describes these and other requirements for leaking underground storage tanks.

(8) Procedures for conducting remedial actions.

(a) Remedial action agreements. The department has authority to take remedial actions or to order persons to conduct remedial actions under WAC 173-340-510 and 173-340-540. However, the department encourages agreements for investigations and cleanups in appropriate cases. These agreements can be agreed orders or consent degrees reached under the procedures of WAC 173-340-520 and 173-340-530.

(b) Independent remedial actions. Persons may decide to perform investigations and cleanups without department approval under this chapter. The department will use the appropriate requirements contained herein in its evaluation of the

adequacy of any independent remedial actions performed. Nothing in this chapter prohibits persons from performing such actions before the department is ready to act at the site; however, all interim and cleanup actions must be reported to the department under WAC 173-340-300. Furthermore, independent remedial actions are done at the potentially liable person's own risk and the department may take or require additional remedial actions at these sites at any time. (See WAC 173-340-510.)

(c) Public participation. The public will receive notice and an opportunity to comment on most of the steps in the cleanup process. At many sites, a public participation plan will be prepared to provide opportunities for more extensive public involvement in the cleanup process.

These requirements are described in WAC 173-340-600.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-120, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-120, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-130 Administrative principles.** (1) Introduction. The department shall conduct or require remedial actions consistent with the provisions of this section, as typically defined by the subsequent sections.

(2) Information sharing. It is the policy of the department to make available information about releases or threatened releases with property owners or other persons with potential liability for a site in order to encourage them to conduct prompt remedial action. It is also the policy of the department to make information available to interested members of the public.

(3) Information exchange.

(a) Technical assistance. Persons are encouraged to contact the department and seek assistance on the general administrative and technical requirements of this chapter. The department may provide informal advice and assistance to potentially liable persons at any time during the development of a remedial action. Unless the department is providing formal guidance for the implementation of an order or decree any

comments by the department or its agents are advisory and not commitments or approvals binding on the department. A person may not represent this advice as an approval of a remedial action. If the person requesting the advice is seeking binding commitments or approvals an order or consent decree shall be used. The department advises persons requiring site-specific legal or technical assistance to hire an attorney or engineering consultant with the appropriate environmental expertise.

(b) Response to requests. If the department believes that responding to a request for technical assistance would involve substantial time or resources or would not be in the public interest, the department may decline to provide the requested assistance. The department shall inform the requester of its response. The department may require one or more of the following before devoting time to the request:

(i) A proposed schedule;

(ii) Payment, in advance, for its costs in responding to the request;

(iii) Other assurances that the requester is serious about carrying out the provisions of this chapter; or

(iv) Other information.

(4) Scope of public participation. The department seeks to encourage public participation in all steps of the cleanup process. The department shall encourage a level of participation appropriate to the conditions at a facility and the level of the public's interest.

(5) Scope of information. It is the department's intention that adequate information will be gathered at a site to enable decisions on appropriate actions. It is also the department's intention that decisions be made once adequate information is obtained. Studies can be performed and submittals made at varying levels of detail appropriate to the conditions at the site. For example, the department might decide that a study of a small site with minimal ground water impacts need not include as detailed an analysis of the ground water flow system as for a study of a geologically more complex site. Once the department has adequate information it will make cleanup decisions within

the framework provided in this chapter and in site-specific orders or decrees.

(6) Combining steps. Several steps in the cleanup process may be combined into fewer steps, when appropriate. For example, the department and a potentially liable person may agree that conditions at a site are such that the remedial investigation/feasibility study and remedial design and implementation steps could be combined into a single step.

(7) Routine cleanup actions. Flexibility in the scope of investigations and in combining steps may be particularly appropriate for routine cleanup actions. For example, the department may decide to approve a routine cleanup action based upon a single investigation that includes a site hazard assessment and a simplified state remedial investigation/feasibility study and engineering design plan.

(a) A cleanup action may be considered routine if the following criteria are met:

(i) It involves an obvious and limited choice among cleanup methods;

(ii) It uses a cleanup method that is reliable and has proven capable of accomplishing cleanup standards;

(iii) Cleanup standards for each hazardous substance addressed by the cleanup are obvious and undisputed, and allow an adequate margin of safety for protection of human health and the environment;

(iv) The department has experience with similar actions; and

(v) The action does not require an environmental impact statement.

(b) Routine cleanup actions consist of or are comparable to one or more of the following remedial actions:

(i) Cleanup of above-ground structures;

(ii) Cleanup of below-ground structures;

(iii) Cleanup of contaminated soils where the action would restore the site to cleanup levels; or

(iv) Cleanup of solid wastes, including containers.

(c) Cleanup of ground water will not normally be considered a routine cleanup action.

(d) A routine cleanup action may be conducted under any of the procedures described in WAC

173-340-510. However, the department will attempt to ensure that all routine cleanup action decisions are consistent with this chapter.

(8) Preparation of documents. Except for the initial investigation, any of the studies, reports, or plans used in the cleanup process can be prepared by either the department or the potentially liable person. The department retains all authority to review and verify the documents submitted and to make decisions based on the documents.

(9) Inter-agency coordination.

(a) The department shall ensure appropriate local, state, and federal agencies and tribal organizations are kept informed and, as appropriate, involved in the development and implementation of remedial actions. The department may require a potentially liable person to undertake this responsibility. If the potentially liable person demonstrates that they are unable to obtain adequate involvement to allow the remedial action to proceed by a particular government agency or tribe, the department shall request the involvement of the agency or tribe.

(b) The nature and degree of coordination and consultation shall be commensurate with the other agencies and tribes interest and need at the site. Interested agencies and tribes shall also be included in the mailing list for public notices under WAC 173-340-600. To facilitate coordination, it is important for the agencies and tribes to provide specific comments, including the identification of additional information needed or mitigating measures that are necessary or desirable to satisfy their concerns.

(c) In order to provide for expeditious cleanup actions, all federal, state, and local agencies are encouraged to coordinate when providing notices, holding meetings and hearings, and preparing documents. Whenever reasonable, the department shall coordinate and combine its activities with other agencies and tribes to minimize the duplication of notices, hearings and preparation of documents, unless otherwise prohibited.

(10) Appeals. Unless otherwise indicated all department decisions made under this chapter are remedial decisions and may be appealed only as provided for in RCW 70.105D.060.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-130, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-140 Deadlines.** (1) Purpose. It is the department's intent to move sites through the cleanup process as expeditiously as possible. However, the department is limited by the amount of personnel and funds it can expend in any given fiscal year. This section is intended to establish reasonable deadlines for remedying releases within these constraints. The procedure for setting priorities is described in WAC 173-340-330 and 173-340-340.

(2) Within ninety days of learning of a release or threatened release of a hazardous substance, the department shall complete an initial investigation under WAC 173-340-310.

(3) At least twice a year, the department will determine which sites with completed initial investigations are a high priority for further investigation. At that time, the department will schedule high priority sites for further investigations to commence within six months. This determination will be based on best professional judgment of department staff. Sites may be scheduled for further investigation at any time if the department determines that the site warrants expedited action.

(4) The department shall complete the site hazard assessment and hazard ranking on high priority sites within one hundred eighty days of the scheduled start date. These sites will be identified in the department's site register. Sites not designated as a high priority will be scheduled for future investigations and listed in the biennial report to the legislature (WAC 173-340-340). The department will conduct at least thirty-five site hazard assessments each fiscal year until the number of sites needing site hazard assessments are reduced below this number.

(5) Within thirty days of ranking, the department shall designate which sites are a high priority for a state remedial investigation/feasibility study and which sites are a lower priority where further action can be delayed. The department shall review these lower priority sites and provide an opportunity for public comment as part of the

biennial report to the legislature (WAC 173-340-340).

(6) For all sites designated as a high priority the state remedial investigation/feasibility study shall be completed under WAC 173-340-350 within eighteen months of signing the order or decree. The department may extend the deadline up to twelve months if the circumstances at the site merit a longer timeframe. The department shall provide the public an opportunity to comment on any extension. The department shall initiate a state remedial investigation/feasibility study on at least ten sites per fiscal year.

(7) The department shall select the cleanup action under WAC 173-340-360 and file a consent decree or issue an order for cleanup action for all designated high priority sites within six months of the completion of the state remedial investigation/feasibility study. The department may extend the deadline for up to four months for consent decree and order discussions. The department shall provide the public with an opportunity to comment on any deadline extension.

(8) The department will publish site schedules for designated high priority sites in the site register under WAC 173-340-600(6).

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-140, filed 4/3/90, effective 5/4/90.]

## PART II—DEFINITIONS AND USAGE

**WAC 173-340-200 Definitions.** For the purpose of this chapter, the following definitions shall apply:

"Act" means the same as the "Model Toxics Control Act" and "chapter 70.105D RCW."

"Acute toxicity" means the ability of a hazardous substance to cause injury or death to an organism as a result of a short-term exposure to a hazardous substance.

"Agreed order" means an order issued by the department under WAC 173-340-530 with which the potentially liable person receiving the order

agrees to comply. An agreed order may be used to require or approve any cleanup or other remedial actions but it is not a settlement under RCW 70.105D.040(4) and shall not contain a covenant not to sue, or provide protection from claims for contribution, or provide eligibility for public funding of remedial actions under RCW 70.105D.-070 (2)(d)(xi).

**"All practicable methods of treatment"** means all technologies and/or methods currently available and demonstrated to work under similar site circumstances or through pilot studies, and applicable to the site at reasonable cost. These include "all known available and reasonable methods of treatment" (AKART) for discharges or potential discharges to waters of the state, and "best available control technologies" for releases of hazardous substances into the air resulting from cleanup actions.

**"Applicable state and federal laws"** means all legally applicable requirements and those requirements that the department determines, based on the criteria in WAC 173-340-710(3), are relevant and appropriate requirements.

**"Area background"** means the concentrations of hazardous substances that are consistently present in the environment in the vicinity of a site which are the result of human activities unrelated to releases from that site.

**"Bioconcentration factor"** means the ratio of the concentration of a hazardous substance in the tissue of an aquatic organism divided by the hazardous substance concentration in the ambient water in which the organism resides.

**"Carcinogen"** means any substance or agent that produces or tends to produce cancer in humans. For implementation of this chapter, the term carcinogen will apply to substances on the United States Environmental Protection Agency lists of A (known human) and B (probable human) carcinogens, and any substance which causes a significant increased incidence of benign or malignant tumors in a single, well conducted animal [Ch. 173-340 WAC—p. 6]

bioassay, consistent with the weight of evidence approach specified in the United States Environmental Protection Agency's Guidelines for Carcinogen Risk Assessment as set forth in 51 FR 33992 et seq. as presently published or as subsequently amended or republished.

**"Carcinogenic potency factor" or "CPF"** means the upper 95th percentile confidence limit of the slope of the dose-response curve and is expressed in units of (mg/kg-day)<sup>-1</sup>. When derived from human epidemiological data, the carcinogenic potency factor may be a maximum likelihood estimate.

**"Chronic reference dose"** means an estimate (with an uncertainty spanning an order of magnitude or more) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of adverse effects during a lifetime.

**"Chronic toxicity"** means the ability of a hazardous substance to cause injury or death to an organism resulting from repeated or constant exposure to the hazardous substance over an extended period of time.

**"Cleanup"** means the implementation of a cleanup action or interim action.

**"Cleanup action"** means any remedial action, except interim actions, taken at a site to eliminate, render less toxic, stabilize, contain, immobilize, isolate, treat, destroy, or remove a hazardous substance that complies with WAC 173-340-360.

**"Cleanup action plan"** means the document prepared by the department under WAC 173-340-360 which selects the cleanup action and specifies cleanup standards and other requirements for the cleanup action.

**"Cleanup level"** means the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions.

**"Cleanup process"** means the process for identifying, investigating, and cleaning up hazardous waste sites under chapter 70.105D RCW.

**"Cleanup standards"** means the standards promulgated under RCW 70.105D.030 (2)(d). Establishing cleanup standards requires specification of the following:

Hazardous substance concentrations that protect human health and the environment ("cleanup levels");

The location on the site where those cleanup levels must be attained ("points of compliance"); and

Additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. These requirements are specified in applicable state and federal laws and are generally established following the selection of a specific cleanup action.

**"Closure site assessment"** means a site assessment required for closure of an underground storage tank pursuant to rules adopted under chapter 90.76 RCW.

**"Compliance monitoring"** means a remedial action that consists of monitoring as described in WAC 173-340-410.

**"Containment"** means a container, vessel, barrier, or structure, whether natural or constructed, which confines a hazardous substance within a defined boundary and prevents or minimizes its release into the environment.

**"Contaminant"** means any hazardous substance that does not occur naturally or occurs at greater than natural background levels.

**"Curie"** means the measure of radioactivity defined as that quantity of radioactive material which decays at the rate of  $3.70 \times 10^{10}$  transformations per second. This decay rate is nearly equivalent to that exhibited by 1 gram of radium in equilibrium with its disintegration products.

**"Day"** means calendar day; however, any document due on the weekend or a holiday may be submitted on the first working day after the weekend or holiday.

**"Decree"** means consent decree under WAC 173-340-520. "Consent decree" is synonymous with decree.

**"Department"** means the department of ecology.

**"Developmental reference dose"** means an estimate (with an uncertainty of an order of magnitude or more) of an exposure level for the human population, including sensitive subgroups, that is likely to be without an appreciable risk of developmental effects.

**"Direct contact"** means exposure to hazardous substances through ingestion or dermal contact.

**"Director"** means the director of ecology or the director's designee.

**"Environment"** means any plant, animal, natural resource, surface water (including underlying sediments), ground water, drinking water supply, land surface (including tidelands and shorelands) or subsurface strata, or ambient air within the state of Washington or under the jurisdiction of the state of Washington.

**"Exposure"** means subjection of an organism to the action, influence, or effect of a hazardous substance (chemical agent) or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries (e.g., skin, lungs, gut) and available for absorption.

**"Exposure parameters"** means those parameters used to derive an estimate of the exposure to a hazardous substance.

**"Exposure pathway"** means the path a hazardous substance takes or could take from a source to an exposed organism. An exposure pathway describes the mechanism by which an

individual or population is exposed or has the potential to be exposed to hazardous substances at or originating from a site. Each exposure pathway includes an actual or potential source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source of the hazardous substance, the exposure pathway also includes a transport/exposure medium.

**"Facility"** means any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, vessel, or aircraft; or any site or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located.

**"Federal cleanup law"** means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. 9601 et seq., as presently promulgated or as subsequently amended or repromulgated.

**"Fish diet fraction"** means the percentage of the total fish or shellfish in an individual's diet that is obtained or has the potential to be obtained from the site.

**"Food crop"** means any domestic plant which is produced for the purpose of, or may be used in whole or in part for, consumption by people or livestock. This shall include nursery, root, or seedstock to be used for the production of food crops.

**"Free product"** means a hazardous substance that is present as a nonaqueous phase liquid (that is, liquid not dissolved in water).

**"Ground water"** means water in a saturated zone or stratum beneath the surface of land or below a surface water.

**"Hazard index"** means the sum of two or more hazard quotients for multiple hazardous substances and/or multiple exposure pathways.

**"Hazardous sites list"** means the list of hazardous waste sites maintained under WAC 173-340-330.

**"Hazardous substance"** means any dangerous or extremely hazardous waste as defined in RCW 70.105.010 (5) and (6), or any dangerous or extremely dangerous waste as designated by rule under chapter 70.105 RCW; any hazardous substance as defined in RCW 70.105.010(14) or any hazardous substance as defined by rule under chapter 70.105 RCW; any substance that, on the effective date of this section, is a hazardous substance under section 101(14) of the federal cleanup law, 42 U.S.C., Sec. 9601(14); petroleum or petroleum products; and any substance or category of substances, including solid waste decomposition products, determined by the director by rule to present a threat to human health or the environment if released into the environment.

The term hazardous substance does not include any of the following when contained in an underground storage tank from which there is not a release: Crude oil or any fraction thereof or petroleum, if the tank is in compliance with all applicable federal, state, and local law.

**"Hazardous waste site"** means any facility where there has been confirmation of a release or threatened release of a hazardous substance that requires remedial action.

**"Hazard quotient"** or **"HQ"** means the ratio of the dose of a single hazardous substance over a specified time period to a reference dose for that hazardous substance derived for a similar exposure period.

**"Highest beneficial use"** means the beneficial use of a resource generally requiring the highest quality in the resource. For example, for many hazardous substances, providing protection for the beneficial use of drinking water will generally also

provide protection for a great variety of other existing and future beneficial uses of ground water.

**"Independent remedial actions"** means remedial actions conducted without department oversight or approval and not under an order or decree.

**"Indicator hazardous substances"** means the subset of hazardous substances present at a site selected under WAC 173-340-708 for monitoring and analysis during any phase of remedial action for the purpose of characterizing the site or establishing cleanup requirements for that site.

**"Industrial properties"** means properties that are or have been characterized by, or are to be committed to, traditional industrial uses such as processing or manufacturing of materials, marine terminal and transportation areas and facilities, fabrication, assembly, treatment, or distribution of manufactured products, or storage of bulk materials, that are either:

- Zoned for industrial use by a city or county conducting land use planning under chapter 36.70A RCW (Growth Management Act); or
- For counties not planning under chapter 36.70A RCW (Growth Management Act) and the cities within them, zoned for industrial use and adjacent to properties currently used or designated for industrial purposes.

See WAC 173-340-745 for additional criteria to determine if a land use not specifically listed in this definition would meet the requirement of "traditional industrial use" and for evaluating if a land use zoning category meets the requirement of being "zoned for industrial use."

**"Inhalation correction factor"** means a multiplier that is used to adjust exposure estimates based on ingestion of drinking water to take into account exposure to hazardous substances which are volatilized and inhaled during use of the water.

**"Initial investigation"** means a remedial action that consists of an investigation under WAC 173-340-310 to determine that a release or threatened release may have occurred that warrants further action under this chapter.

**"Institutional control"** means a measure undertaken to limit or prohibit activities that may interfere with the integrity of a cleanup action or result in exposure to hazardous substances at the site.

**"Integrated risk information system"** or **"IRIS"** means a data base developed by the United States Environmental Protection Agency which provides a summary of information on hazard identification and dose-response assessment for specific hazardous substances.

**"Interim action"** means a remedial action conducted under WAC 173-340-430 that partially addresses the cleanup of a site.

**"Interspecies scaling factor"** means the conversion factor used to take into account differences between animals and humans.

**"Legally applicable requirements"** means those cleanup standards, standards of control, and other human health and environmental protection requirements, criteria, or limitations promulgated under state or federal law that specifically address a hazardous substance, cleanup action, location, or other circumstances at the site.

**"Lowest observed adverse effect level"** or **"LOAEL"** means the lowest concentration of a hazardous substance at which there is a statistically or biologically significant increase in the frequency or severity of an adverse effect between a population and a control group.

**"Mail"** means delivery through the United States Postal Service or an equivalent method of delivery or transmittal, including private mail carriers, or personal delivery.

**"Maximum contaminant level" or "MCL"** means the maximum concentration of a contaminant established by either the Washington state board of health or the United States Environmental Protection Agency under the Federal Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in chapter 248-54 WAC or 40 C.F.R. 141 as presently promulgated or subsequently amended or repromulgated.

**"Maximum contaminant level goal" or "MCLG"** means the maximum concentration of a contaminant established by either the Washington state board of health or the United States Environmental Protection Agency under the Federal Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in chapter 248-54 WAC or 40 C.F.R. 141 as presently promulgated or subsequently amended or repromulgated, for which no known or anticipated adverse effects on human health occur, including an adequate margin of safety.

**"Method detection limit" or "MDL"** means the minimum concentration of a compound that can be measured and reported with 99% confidence that the value is greater than zero.

**"Millirem" or "mrem"** means the measure of the dose of any radiation to body tissue in terms of its estimated biological effect relative to a dose received from an exposure to one roentgen (R) of x-rays. One millirem equals 0.001 rem.

**"Mixed funding"** means any funding provided to potentially liable persons from the state toxics control account under WAC 173-340-560.

**"Model Toxics Control Act" or "act"** means the act approved by the voters at the November 1988 general election, also known as Initiative 97 (chapter 70.105D RCW).

**"Natural background"** means the concentration of hazardous substance consistently present in the environment which has not been influenced by localized human activities. For example, several metals naturally occur in the bedrock and soils of

Washington state due solely to the geologic processes that formed these materials and the concentration of these metals would be considered natural background. Also, low concentrations of some particularly persistent organic compounds such as polychlorinated biphenyls (PCBs) can be found in surficial soils and sediment throughout much of the state due to global use of these hazardous substances. These low concentrations would be considered natural background. Similarly, concentrations of various radionuclides which are present at low concentrations throughout the state due to global distribution of fallout from bomb testing and nuclear accidents would be considered natural background.

**"Natural person"** means any unincorporated individual or group of individuals. The term "individual" is synonymous with "natural person."

**"No observed adverse effect level" or "NOAEL"** means the exposure level at which there are no statistically or biologically significant increases in frequency or severity of adverse effects between the exposed population and its appropriate control; some effects may be produced at this level, but they are not considered to be adverse, nor precursors to specific adverse effects.

**"Null hypothesis"** means an assumption about hazardous substance concentrations at a site when evaluating compliance with cleanup levels established under this chapter. The null hypothesis is that the site is contaminated at concentrations which exceed cleanup levels. This shall not apply to cleanup levels based on background concentrations.

**"Order"** means an enforcement order issued under WAC 173-340-540 or an agreed order issued under WAC 173-340-530.

**"Owner or operator"** means any person with any ownership interest in the facility or who exercises any control over the facility; or in the case of an abandoned facility, any person who had owned, or operated, or exercised control over the facility any time before its abandonment. The term does not include:

An agency of the state or unit of local government which acquired ownership or control involuntarily through bankruptcy, tax delinquency, abandonment, or circumstances in which the government involuntarily acquires title. This exclusion does not apply to an agency of the state or unit of local government which has caused or contributed to the release or threatened release of a hazardous substance from the facility; or

A person who, without participating in the management of a facility, holds indicia of ownership primarily to protect the person's security interest in the facility.

**"PAHs (carcinogenic)"** means those PAHs substances identified as A (known human) or B (probable human) carcinogens by the United States Environmental Protection Agency. These include benzo(a)anthracene, benzo(b)fluoranthene, benzo(-k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

**"Permanent solution"** means a cleanup action in which cleanup standards of WAC 173-340-700 through 173-340-760 can be met without further action being required at the site being cleaned up or any other site involved with the cleanup action, other than the approved disposal of any residue from the treatment of hazardous substances.

**"Person"** means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, state government agency, unit of local government, federal government agency, or Indian tribe.

**"Picocurie" or "pCi"** means  $10^{-12}$  curie.

**"Point of compliance"** means the point or points where cleanup levels established in accordance with WAC 173-340-720 through 173-340-760 shall be attained.

**"Polychlorinated biphenyls" or "PCB mixtures"** means those aromatic compounds containing two benzene nuclei with two or more substituted chlorine atoms. For the purposes of this chapter, PCB includes those congeners which are identified

using the appropriate analytical methods as specified in WAC 173-340-830.

**"Polycyclic aromatic hydrocarbons" or "PAH"** means those hydrocarbon molecules composed of two or more fused benzene rings. For the purpose of this chapter, PAH includes those compounds which are identified and quantified using the appropriate analytical methods as specified in WAC 173-340-830. The specific compounds generally included are acenaphthene, acenaphthylene, fluorene, naphthalene, anthracene, fluoranthene, phenanthrene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, pyrene, chrysene, benzo[a]pyrene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, and benzo[ghi]perylene.

**"Potentially liable person"** means any person whom the department finds, based on credible evidence, to be liable under RCW 70.105D.040.

**"Practicable"** means (except when used in the phrase "permanent to the maximum extent practicable" which is defined in WAC 173-340-360(5)) capable of being designed, constructed and implemented in a reliable and effective manner including consideration of cost. When considering cost under this analysis, an alternative shall not be considered practicable if the incremental cost of the alternative is substantial and disproportionate to the incremental degree of protection provided by the alternative over other lower cost alternatives.

**"Practical quantitation limit" or "PQL"** means the lowest concentration that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness, and comparability during routine laboratory operating conditions, using department approved methods.

**"Public notice"** means, at a minimum, adequate notice mailed to all persons who have made a timely request of the department and to persons residing in the potentially affected vicinity of the proposed action; mailed to appropriate news media; published in the newspaper of largest circulation in

the city or county of the proposed action; and opportunity for interested persons to comment.

**"Public participation plan"** means a plan prepared under WAC 173-340-600 to encourage coordinated and effective public involvement tailored to the public's needs at a particular site.

**"Rad"** means that quantity of ionizing radiation that results in the absorption of 100 ergs of energy per gram of irradiated material, regardless of the source of radiation.

**"Radionuclide"** means a type of atom which spontaneously undergoes radioactive decay. Radionuclides are hazardous substances under the act.

**"Recovery by-products"** means any hazardous substance, water, sludge or other materials collected in the free product removal process in response to a release from an underground storage tank.

**"Reasonable maximum exposure"** means the highest exposure that can be reasonably expected to occur for a human or other living organisms at a site under current and potential future site use.

**"Reference dose"** or **"RFD"** means a benchmark dose, derived from the NOAEL or LOAEL for a hazardous substance by consistent application of uncertainty factors used to estimate acceptable daily intake doses and an additional modifying factor, which is based on professional judgment when considering all available data about a substance, expressed in units of milligrams per kilogram body weight per day. This includes chronic reference doses, subchronic reference doses, and developmental reference doses.

**"Regional office"** means one of the regional offices of the department of ecology.

**"Release"** means any intentional or unintentional entry of any hazardous substance into the environment, including but not limited to the

abandonment or disposal of containers of hazardous substances.

**"Relevant and appropriate requirements"** means those cleanup standards, standards of control, and other human health and environmental requirements, criteria, or limitations established under state and federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstance at a site, the department determines address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site. The criteria specified in WAC 173-340-710(3) shall be used to determine if a requirement is relevant and appropriate.

**"Rem"** means the unit of radiation dose equivalent that is the dosage in rads multiplied by a factor representing the different biological effects of various types of radiation.

**"Remedy"** or **"remedial action"** means any action or expenditure consistent with the purposes of chapter 70.105D RCW to identify, eliminate, or minimize any threat posed by hazardous substances to human health or the environment including any investigative and monitoring activities with respect to any release or threatened release of a hazardous substance and any health assessments or health effects studies conducted in order to determine the risk or potential risk to human health.

**"Restoration time frame"** means the period of time needed to achieve the required cleanup levels at the points of compliance established for the site.

**"Risk"** means the probability that a hazardous substance, when released into the environment, will cause an adverse effect in exposed humans or other living organisms.

**"Routine cleanup action"** means a remedial action that consists of a cleanup action meeting the requirements in WAC 173-340-130(7).

**"Safety and health plan"** means a plan prepared under WAC 173-340-810.

**"Sample mean"** means the arithmetic mean or the average of a set of measurements. The arithmetic mean is defined as the sum of all measurements divided by the number of measurements.

**"Sampling and analysis plan"** means a plan prepared under WAC 173-340-820.

**"Saturated zone"** means the area below the water table in which all interstices are filled with water.

**"Schools"** means preschools, elementary schools, middle schools, high schools, and similar facilities, both public and private, used primarily for the instruction of minors.

**"Science advisory board"** means the advisory board established by the department under RCW 70.105D.030(4).

**"Secondary maximum contaminant level"** means the maximum concentration of a secondary contaminant in water established by the United States Environmental Protection Agency under the Federal Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in 40 C.F.R. 143 as presently promulgated or as subsequently amended or repromulgated.

**"Sensitive environment"** means an area of particular environmental value, where a release could pose a greater threat than in other areas including: Wetlands; critical habitat for endangered or threatened species; national or state wildlife refuge; critical habitat, breeding or feeding area for fish or shellfish; wild or scenic river; rookery; riparian area; big game winter range.

**"Site"** means the same as facility.

**"Site characterization report"** means a written report describing the site and nature of a release from an underground storage tank, as described in WAC 173-340-450 (4)(b).

**"Site check"** means the investigation conducted pursuant to rules adopted under chapter 90.76 RCW in order to confirm a release from an underground storage tank.

**"Site hazard assessment"** means a remedial action that consists of an investigation performed under WAC 173-340-320.

**"Site register"** means the public information document described in WAC 173-340-600.

**"Soil"** means a mixture of organic and inorganic solids, air, water, and biota which exists on the earth's surface above bedrock, including materials of anthropogenic sources such as slag, sludge, etc.

**"State remedial investigation/feasibility study"** means a remedial action that consists of activities performed under WAC 173-340-350 to collect, develop, and evaluate sufficient information regarding a site to enable the selection of a cleanup plan under WAC 173-340-360.

**"Status report"** means a written or verbal report on the status of the interim actions taken in response to a release from an underground storage tank, as described in WAC 173-340-450 (4)(b).

**"Subchronic reference dose"** means an estimate (with an uncertainty of an order of magnitude or more) of a daily exposure level for the human population, including sensitive subgroups, that is likely to be without appreciable risk of adverse effects during a portion of a lifetime.

**"Surface water"** means lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the state of Washington or under the jurisdiction of the state of Washington.

**"Technically possible"** means capable of being designed, constructed and implemented in a reliable and effective manner, regardless of cost.

**"Total excess cancer risk"** means the upper bound on the estimated excess cancer risk associated with exposure to multiple hazardous substances and multiple exposure pathways.

**"Total petroleum hydrocarbons" or "TPH"** means any fraction of crude oil that is contained in plant condensate, crankcase motor oil, gasoline, aviation fuels, kerosene, diesel motor fuel, benzol, fuel oil, and other products derived from the refining of crude oil. For the purposes of this chapter, TPH will generally mean those fractions of the above products that are quantified by EPA Methods 8015 or 418.1 as appropriate or other test methods approved by the department.

**"Type I error"** means the error made when it is concluded that an area of a site is below cleanup levels when it actually exceeds cleanup levels. This is the rejection of a true null hypothesis.

**"Underground storage tank" or "UST"** means an underground storage tank and connected underground piping as defined in the rules adopted under chapter 90.76 RCW.

**"Underground storage tank operator"** means any underground storage tank operator as defined in the rules adopted under chapter 90.76 RCW.

**"Underground storage tank owner"** means any underground storage tank owner as defined in the rules adopted under chapter 90.76 RCW.

**"Underground storage tank release"** means a confirmed release from an underground storage tank pursuant to the rules adopted under chapter 90.76 RCW.

**"Unrestricted site use conditions"** means restrictions on the use of the site or natural resources affected by releases of hazardous substances from the site are not required to ensure continued protection of human health and the environment.

**"Upper bound on the estimated excess cancer risk of one in one hundred thousand"** means the upper 95th percent confidence limit on

the estimated risk of one additional cancer above the background cancer rate per one hundred thousand individuals.

**"Upper bound on the estimated excess cancer risk of one in one million"** means the upper 95th percent confidence limit on the estimated risk of one additional cancer above the background cancer rate per one million individuals.

**"Volatile organic compound"** means those carbon-based compounds listed in EPA methods 601, 602, 603, 624, 8010, 8015, 8020, 8030, 8240, 502.1, 502.2, 503.1, 524.1, 524.2, and those with similar vapor pressures or boiling points.

**"Wastewater facility"** means all structures and equipment required to collect, transport, treat, reclaim, or dispose of domestic, industrial, or combined domestic/industrial wastewaters.

**"Wetlands"** means lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification, wetlands must have one or more of the following attributes at least periodically, the land supports predominantly hydrophytes; the

substrate is predominately undrained hydric soil; and the substrate is nonsoil and saturated with water or covered by shallow water at some time during the growing season each year.

**"Zoned for (a specified) use"** means the use is allowed as a permitted or conditional use under the local jurisdiction's land use zoning ordinances. A land use that is inconsistent with the current zoning but allowed to continue as a nonconforming use or through a comparable designation is not considered to be zoned for that use.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-200, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-200, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-200, filed 4/3/90, effective 5/4/90.]

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

**WAC 173-340-210 Usage.** For the purposes of this chapter, the following shall apply:

(1) Unless the context clearly requires otherwise the use of the singular shall include the plural and conversely.

(2) The terms "applicable," "appropriate," "relevant," "unless otherwise directed by the department" and similar terms implying discretion mean as determined by the department, with the burden of proof on other persons to demonstrate the requirements are or are not necessary.

(3) "Approved" means for department conducted or ordered remedial actions, or for potentially liable person conducted cleanups agreed to by the department in an agreed order or decree governing remedial actions at the site.

(4) "Conduct" means to perform or undertake whether directly or through an agent or contractor, unless this chapter expressly provides otherwise.

(5) "Include" means included but not limited to.

(6) "May" means the provision is optional and permissive, and does not impose a requirement.

(7) "Shall" means the provision is mandatory.

(8) "Threat" means threat or potential threat.

(9) "Under" means pursuant to, subject to, required by, established by, in accordance with, and

similar expressions of legislative or administrative authorization or direction.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-210, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-210, filed 4/3/90, effective 5/4/90.]

### PART III—SITE REPORTS AND CLEANUP DECISIONS

**WAC 173-340-300 Site discovery and reporting.** (1) Purpose. As part of a program to identify hazardous waste sites, this section sets forth the requirements for reporting a release of a hazardous substance due to past activities, whether discovered before or after the effective date of this regulation. It also sets forth the requirements for reporting independent cleanup actions. The department may take any other actions it deems appropriate to identify potential hazardous waste sites consistent with chapter 70.105D RCW.

(2) Release report. Any owner or operator who has information that a hazardous substance has been released to the environment at the owner or operator's facility and may be a threat to human health or the environment shall report such information to the department by June 1, 1990, or for discovery of releases after this date, within ninety days of discovery. Releases from underground storage tanks as described in the rules adopted under chapter 90.76 RCW must be reported within twenty-four hours of release confirmation, in accordance with WAC 173-340-450. To the extent known, the report shall include: The identification and location of the hazardous substance, circumstances of the release and the discovery, and any remedial actions planned, completed, or underway. All other persons are encouraged to report such information to the department.

(3) Exemptions. The following releases are exempt from these notification requirements:

(a) Application of pesticides and fertilizers for their intended purposes and according to label instructions;

(b) Lawful and nonnegligent use of hazardous substances by a natural person for personal or domestic purposes;

(c) A release in accordance with a permit that authorizes the release;

(d) A release previously reported to the department in fulfillment of a reporting requirement in this chapter or in another law or regulation;

(e) A release previously reported to the United States Environmental Protection Agency under CERCLA, Section 103(c) (42 9603(c));

(f) A release to the air;

(g) Releases discovered in public water systems regulated by the department of health; or

(h) A release to a permitted wastewater facility.

An exemption from these notification requirements does not imply a release from liability in future actions by the department.

(4) Report of independent actions.

(a) Report. Any person who conducts an independent interim action or cleanup action shall submit a written report to the department within ninety days of the completion of the action. For the purposes of this section, the department will consider an interim action or cleanup action complete if no remedial action other than compliance monitoring has occurred at the site for ninety days. This is not intended to preclude earlier reporting of such actions. See WAC 173-340-450 for additional requirements for reporting independent interim actions for releases from underground storage tanks.

(b) Contents. The report shall include the information in subsection (2) of this section if not already reported, and results of all site investigations, cleanup actions and compliance monitoring planned or underway. The department may require additional reports on the work performed.

(c) Combined reports. If the independent interim action or cleanup action is completed within ninety days of discovery, a single written report may be submitted on both the release and the action taken. The reports shall contain the information specified in subsections (2) and (4) of this section and shall be submitted within ninety days of completion of the interim action or cleanup action.

(d) Notification. The department shall publish a notice of all reports on independent interim actions and cleanup actions received under this section in the site register.

(5) Department response. Within ninety days of receipt of information under this section, the department shall respond in accordance with WAC 173-340-310. Receipt of information regarding an independent interim action or cleanup action under subsection (3) or (4) of this section shall not obligate the department to take any action beyond that prescribed in WAC 173-340-310 and subsection (4)(d) of this section. Neither submission of information on independent interim action and cleanup actions nor any response by the department shall release the person submitting the report or any other person from liability. The department reserves all rights to pursue any subsequent action it deems appropriate.

(6) Other obligations. Nothing in this section shall eliminate any obligations to comply with reporting requirements that may exist in a permit or under other laws.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-300, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-300, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-310 Initial investigation.** (1) Purpose. The purpose of the initial investigation is to determine whether or not a release or threatened release of a hazardous substance may have occurred that warrants further action under this chapter.

(a) Applicability and timing. Whenever the department receives information and has a reasonable basis to believe that there may be a release or a threatened release of a hazardous substance that may pose a threat to human health or the environment, the department shall conduct an initial investigation within ninety days.

(b) Exemptions. The department shall not be required to conduct an initial investigation when:

(i) The circumstances associated with the release or threatened release are known to the department and have previously been or currently are being evaluated by the department or other government agency; or

(ii) The release is permitted.

(2) Contents. The initial investigation shall include at a minimum: A site visit and documentation of conditions observed.

(3) Department deferral to others. The department may rely on another government agency or a contractor to the department to conduct an initial investigation on its behalf, provided the department determines such agency or contractor is not suspected to have contributed to the release or threatened release of a hazardous substance and that no conflict of interest exists.

(4) Department decision. Based on the information obtained about the site, the department shall within thirty days of completion of the initial investigation make one or more of the following decisions:

- (a) A site hazard assessment is required;
- (b) Emergency remedial action is required;
- (c) Interim action is required; or
- (d) The site requires no further action under this chapter at this time because either:
  - (i) There has been no release or threatened release of a hazardous substance; or
  - (ii) A release or threatened release of a hazardous substance has occurred, but in the department's judgment, does not pose a threat to human health or the environment; or
  - (iii) Action under another authority is appropriate.

A decision for a particular follow-up action does not preclude the department from requiring some other action in the future based on reevaluation of the site or additional information.

(5) Early notice letter.

(a) For sites requiring further remedial action under chapter 70.105D RCW, the department will notify the owner, operator, and any potentially liable person known to the department of its decision. This letter may be combined with the notice in WAC 173-340-500.

(b) The notification shall be a letter mailed to the person which includes:

- (i) The basis for the department's decision;
- (ii) Information on the cleanup process provided for in this chapter;

(iii) A statement that it is the department's policy to work cooperatively with persons to accomplish prompt and effective cleanups;

(iv) A person or office of the department to contact regarding the contents of the letter; and

(v) A statement that the letter is not a determination of liability and that cooperating with the department in planning or conducting a remedial action is not an admission of guilt or liability.

Nothing in this section shall preclude the department from taking or requiring appropriate remedial action at any time.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-310, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-320 Site hazard assessment.**

(1) Purpose. The purpose of the site hazard assessment is to provide sufficient sampling data and other information to:

- (a) Confirm or rule out that a release or threatened release of a hazardous substance has occurred;
- (b) To identify the hazardous substance and provide some information regarding the extent and concentration of the substance;
- (c) Identify site characteristics that could result in the hazardous substance entering and moving through the environment;
- (d) Evaluate the potential for the threat to human health and the environment; and
- (e) Determine the hazard ranking of the site under WAC 173-340-330, if appropriate.

(2) Timing. Unless otherwise directed by the department, a site hazard assessment shall be completed before proceeding to any subsequent phase of remedial action, other than an emergency or interim action.

(3) Administrative options. The site hazard assessment may be conducted under any of the procedures described in WAC 173-340-510.

(4) Scope and content. A site hazard assessment is an early study to provide preliminary data regarding the relative potential hazard of the site. A site hazard assessment is not intended to be a detailed site characterization, however it shall include sufficient sampling, site observations,

maps, and other information needed to meet the purposes specified in subsection (1) of this section. To fulfill this requirement, a site hazard assessment shall include, as appropriate, the following information:

(a) Identification of hazardous substances, including what was released and is threatened to be released and/or, if known, what products of decomposition, recombination, or chemical reaction are currently present on site, and an estimate of their quantities and concentrations;

(b) Evidence confirming a release or threatened release of hazardous substances to the environment;

(c) Description of facilities containing releases, if any, and their condition;

(d) Identification of the location of all areas where a hazardous substance is known or suspected to be, indicated on a site map;

(e) Consideration of surface water run-on and run-off and the hazardous substances leaching potential;

(f) Preliminary characterization of the subsurface and ground water actually or potentially affected by the release, including vertical depth to ground water and distance to nearby wells, bodies of surface water, and drinking water intakes;

(g) Preliminary evaluation of receptors, including: Human population, food crops, recreation areas, parks, sensitive environments, irrigated areas, and aquatic resources currently or potentially affected by ground water, air, or surface water containing the release of hazardous substances at the site, including distances to these receptors; and

(h) Any other physical factors which may be significant in estimating the potential or current exposure to sensitive biota.

(5) Guidance. The department shall make available guidance for how to conduct a site hazard assessment to meet the requirements of this section.

(6) Notification. The department shall make available the results of the site hazard assessment to the site's owner and operator and any person who has received a potentially liable person status letter under WAC 173-340-500 regarding the site. If the department finds after a site hazard assessment that the site requires no further action, it shall publish this decision in the site register.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-320, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-330 Hazardous sites list.** (1)

Purpose. The department shall maintain a list of sites where remedial action has been determined by the department to be necessary. This hazardous sites list shall fulfill the department's responsibilities under RCW 70.105D.030 (2)(b) and (3). From this list, the department shall select those sites where action is anticipated and include those in the biennial program report. (See WAC 173-340-340.)

(2) Hazard ranking. Sites placed on the list shall be given a hazard ranking. The purpose of hazard ranking is to estimate, based on the information compiled during the site hazard assessment, the relative potential risk posed by the site to human health and the environment. This assessment considers air, ground water, and surface water migration pathways, human and nonhuman exposure targets, properties of the substances present, and the interaction of these variables.

(a) The department shall evaluate each site on a consistent basis using the procedure described in the *"Washington Ranking Method Scoring Manual,"* and all revisions and additions thereto. The ranking procedure and major amendments to the manual shall be reviewed by the science advisory board established under chapter 70.105D RCW. Information obtained in the site hazard assessment, plus any additional data specified in the manual, shall be included in the hazard ranking evaluation.

(b) The department shall periodically provide notification of the results of hazard ranking in the site register established under WAC 173-340-600. The department shall make available hazard ranking results for each site to the site owner and operator and any potentially liable person known to the department prior to publishing in the site register.

(c) The department may at its discretion re-rank a site if, prior to the initiation of state action at the site, the department receives additional information within the scope of the evaluation criteria which indicates that a significant change in rank may result.

(3) Listing.

(a) Sites shall be placed on the hazardous sites list if, after the completion of a site hazard assessment, the department has determined that further action is required at the site. The list shall be updated at least once per year. Placement of a site on the hazardous sites list does not, by itself, imply that persons associated with the site are liable under chapter 70.105D RCW.

(b) The hazardous sites list shall also reflect the current status of remedial action at each site. The department may change a site's status to reflect current conditions. The status for each site shall be identified as one of the following:

- (i) Sites awaiting further remedial action;
- (ii) Sites with remedial action in progress;
- (iii) Sites where a cleanup action has been conducted but confirmational monitoring is underway;
- (iv) Sites with independent remedial actions; or
- (v) Other categories established by the department.

(4) Removing sites from the list.

(a) The department may remove a site from the list only after it has determined that:

(i) All remedial actions except confirmational monitoring have been completed and compliance with the cleanup standards has been achieved at the site; or

(ii) The listing was erroneous.

(b) A site owner, operator, or potentially liable person may request that a site be removed from the list by submitting a petition to the department. The petition shall include thorough documentation of all investigations performed, all cleanup actions taken, and of adequate compliance monitoring to demonstrate to the department's satisfaction that one of the conditions in (a) of this subsection has been met. The department may require payment of costs incurred, including an advance deposit, for review and verification of the work performed. The department shall review such petitions; however, the timing of the review shall be at its discretion and as resources may allow.

(c) The department will maintain a record of sites that have been removed from the list under (a)(i) of this subsection. This record will be made available to the public upon request.

(5) Relisting of sites. The department may relist a site which has previously been removed if it determines that the site requires further remedial action.

(6) Notice. The department shall provide public notice and an opportunity to comment when the department proposes to remove a site from the list. Additions to the list, changes in site status, and removal from the list shall be published in the site register.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-330, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-340 Biennial program report.**

(1) Before November 1 of each even-numbered year, the department shall prepare a biennial program report for the legislature containing its plan for conducting remedial actions for the following two fiscal years. This report shall identify the projects and expenditures recommended for appropriation from both the state and local toxics control accounts. In determining which sites the department shall consider for planned action, emphasis shall be given to sites posing the highest risk to human health and the environment, as indicated by a site's hazard ranking. The department may also consider other factors in setting site priorities. After legislative action and any revisions, this report shall become the department's biennial program plan.

(2) The department shall provide public notice and a hearing on the proposed plan. For purposes of this subsection only, public notice shall consist of mailings to all persons who have made a timely request and to appropriate news media, and publication in the state register. Notice shall also be provided in the site register. The public comment period on the proposed plan shall run for at least thirty days from the date of the publication in the site register.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-340, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-350 State remedial investigation and feasibility study.** (1) Purpose. The

purpose of a state remedial investigation/feasibility study is to collect, develop, and evaluate sufficient information regarding a site to enable the selection of a cleanup action under WAC 173-340-360.

(2) Timing. Unless otherwise directed by the department, a state remedial investigation/feasibility study shall be completed before selecting a cleanup action under WAC 173-340-360, except for an emergency or interim action.

(3) Administrative options. A state remedial investigation/feasibility study may be conducted under any of the procedures described in WAC 173-340-510.

(4) Public participation will be accomplished in a manner consistent with WAC 173-340-600.

(5) Scope. The scope of a state remedial investigation/feasibility study will depend on the informational needs of the specific facility. This requires that the process remain flexible, with the scope of the state remedial investigation/feasibility study varying from site to site to avoid the collection of unnecessary information so that the cleanup can proceed in a timely manner. However, in all cases sufficient information must be collected, developed, and evaluated to enable the selection of a cleanup action under WAC 173-340-360. In addition, for facilities on the federal national priorities list, the state remedial investigation/feasibility study shall comply with federal requirements.

(6) Contents. A state remedial investigation/feasibility study shall include the following information as appropriate:

(a) General facility information. General information, including: Project title; name, address, and phone number of project coordinator; legal description of the facility location; dimensions of the facility; present owner and operator; chronological listing of past owners and operators and operational history; and other pertinent information.

(b) Site conditions map. An existing site conditions map which illustrates relevant current site features such as: Property boundaries; proposed facility boundaries; surface topography; surface and subsurface structures; utility lines; well locations; and other pertinent information.

(c) Field investigations. Sufficient investigations to characterize the distribution of hazardous substances present at the site, and threat to human health and the environment. Where applicable to the site, these investigations will need to address the following:

(i) Surface water and sediments. Investigations of surface water and sediments to characterize significant hydrologic features such as: Surface drainage patterns and quantities, areas of erosion and sediment deposition, surface waters, floodplains, and actual or potential hazardous substance migration routes towards and within these features. Sufficient surface water and sediment sampling shall be performed to adequately characterize the areal and vertical distribution and concentrations of hazardous substances. Properties of surface and subsurface sediments which are likely to influence the type and rate of hazardous substance migration, or are likely to affect the ability to implement alternative cleanup actions shall be characterized.

(ii) Soils. Investigations to adequately characterize the areal and vertical distribution and concentrations of hazardous substances in the soil due to the facility. Properties of surface and subsurface soils which are likely to influence the type and rate of hazardous substance migration, or which are likely to affect the ability to implement alternative cleanup actions shall be characterized.

(iii) Geology and ground water system characteristics. Investigations of site geology and hydrogeology to adequately characterize the areal and vertical distribution and concentrations of hazardous substances in the ground water and those features which affect the fate and transport of these hazardous substances. This shall include, as appropriate, the description, physical properties and distribution of bedrock and unconsolidated materials; ground water flow rate and gradient for affected and potentially affected ground waters; ground water divides; areas of ground water recharge and discharge; location of public and private production wells; and ground water quality data.

(iv) Air. An evaluation of air quality impacts, including sampling, where appropriate, and information regarding local and regional climatological

characteristics which are likely to affect the hazardous substance migration such as: Seasonal patterns of rainfall; the magnitude and frequency of significant storm events; temperature extremes; prevailing wind direction; and wind velocity.

(v) Land use. Information characterizing human populations exposed or potentially exposed to the hazardous substance released from the facility and present and proposed land uses and zoning for the site and potentially affected areas.

(vi) Natural resources and ecology. Information to determine the impact or potential impact of the hazardous substance from the facility on the natural resources and ecology of the area such as: Sensitive environment, plant and animal species, and other environmental receptors.

(vii) Hazardous substance sources. A description of and sufficient sampling to define the location, quantity, areal and vertical extent, concentration within and sources of waste disposal areas. Where relevant, information on the physical and chemical characteristics, and the biological effects of hazardous substances shall be provided.

(viii) Regulatory classifications. Regulatory designations classifying affected air, surface water and ground water, if any.

(d) Risk assessment. A risk assessment characterizing the current and potential threats to human health and the environment that may be posed by hazardous substances. This assessment may not be required when the department determines that proposed cleanup standards are obvious and undisputed and allow an adequate margin of safety for protection of human health and the environment.

(e) Cleanup action alternatives. An evaluation of alternative cleanup actions that protect human health and the environment by eliminating, reducing, or otherwise controlling risks posed through each exposure pathway and migration route, shall be required. The number and types of alternatives to be evaluated shall take into account the characteristics and complexity of the facility. A phased approach for evaluation of alternatives may be required for certain facilities, including an initial screening of alternatives to reduce the number of potential remedies for the final detailed evaluation. The final evaluation of cleanup action alternatives

that pass the initial screening shall be evaluated for compliance with the requirements in WAC 173-340-360.

(f) Work plans. A sampling and analysis plan, and a safety and health plan shall be prepared as part of state remedial investigation/feasibility study activities. These plans shall conform to the requirements specified in this chapter.

(g) Treatability studies. The department may require treatability studies as necessary to provide sufficient information to develop and evaluate cleanup action alternatives for a site.

(h) Any information needed to fulfill the applicable requirements of the State Environmental Policy Act.

(i) Other information as required by the department.

(7) In appropriate cases the department may allow departure from the requirements of subsection (6) of this section and will allow information to be incorporated by reference to avoid unnecessary duplication.

(8) Report. A report shall be prepared at the completion of the remedial investigation/feasibility study. Additionally, the department may require reports to be submitted following discrete elements of the remedial investigation/feasibility study. Reports prepared under this section and under an order or decree shall be submitted to the department for review and approval.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-350, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-350, filed 4/3/90, effective 5/4/90.]

### **WAC 173-340-360 Selection of cleanup actions. (1) Purpose.**

(a) This section describes the requirements for selecting cleanup actions. It specifies the criteria for approving cleanup actions, the order of preference for cleanup technologies, policies for permanent solutions, the application of these criteria to particular situations, and the process for making these decisions. This section is intended to be used in conjunction with the cleanup standards defined in WAC 173-340-700 through 173-340-760 and the

administrative principles for the overall cleanup process (WAC 173-340-130).

(b) Because cleanup actions will often involve the use of several cleanup technologies or methods at a single site, the overall cleanup action shall meet the requirements of this section.

(2) Threshold requirements.

All cleanup actions conducted under this chapter shall protect human health and the environment; shall comply with cleanup standards (see WAC 173-340-700 through 173-340-760); shall comply with applicable state and federal laws (see WAC 173-340-710); and shall provide for compliance monitoring (see WAC 173-340-410).

(3) Other requirements. In addition, the cleanup action conducted shall:

(a) Use permanent solutions to the maximum extent practicable (see WAC 173-340-360 (4), (5), (7), and (8));

(b) Provide for a reasonable restoration time frame (see WAC 173-340-360(6)); and

(c) Consider public concerns raised during public comment on the draft cleanup action plan (see WAC 173-340-360 (10) through (13)).

(4) Cleanup technologies.

(a) Cleanup of hazardous waste sites shall be conducted using technologies which minimize the amount of untreated hazardous substances remaining at a site. Toward that end, the following technologies for addressing specific hazardous substances or pathways shall be considered in order of descending preference:

(i) Reuse or recycling;

(ii) Destruction or detoxification;

(iii) Separation or volume reduction followed by reuse, recycling, destruction, or detoxification of the residual hazardous substance;

(iv) Immobilization of hazardous substances;

(v) On-site or off-site disposal at an engineered facility designed to minimize the future release of hazardous substances and in accordance with applicable state and federal laws;

(vi) Isolation or containment with attendant engineering controls; and

(vii) Institutional controls and monitoring.

(b) A combination of technologies from more than one of the categories under (a) of this subsection may be used at a specific site. For example,

the source of the hazardous substance may be recovered and recycled or destroyed, while containment is used to stop the migration of hazardous substances that have reached the ground water.

(c) Since cleanup actions will often involve a combination of technologies, cleanup action alternatives shall maximize the use of higher preference technologies.

(d) Ecology does not expect that one type of technology will be used for all sites. The adoption of the technology preferences in this subsection is designed to make it more difficult to select a cleanup action with a low preference without careful explanation of why technologies above it have not been used. As noted in subsection (9) of this section, ecology expects that lower options will be appropriate for some sites.

(5) Permanent solutions.

(a) When selecting a cleanup action, preference shall be given to permanent solutions to the maximum extent practicable.

(b) A permanent solution is one in which cleanup standards can be met without further action being required at the original site or any other site involved with the cleanup action, other than the approved disposal of any residue from preferred treatment technologies under subsection (4)(a)(i) through (iii) of this section.

(c) In general, technologies which reuse, recycle, destroy, or detoxify hazardous substances will result in permanent solutions if residual hazardous substance concentrations are below cleanup levels established under WAC 173-340-700 through 173-340-760. Containment of hazardous substances and/or institutional controls alone are not permanent solutions. Other technologies, such as immobilization of hazardous substances, may provide permanent solutions under some conditions.

(d) Ecology recognizes that permanent solutions may not be practicable for all sites. A determination that a cleanup action satisfies the requirement to use permanent solutions to the maximum extent practicable is based upon consideration of a number of factors. The following criteria shall be used to determine whether a cleanup action is "permanent to the maximum extent practicable":

(i) Overall protectiveness of human health and the environment including the degree to which existing risks are reduced, time required to reduce risk at the facility and attain cleanup standards, on-site and off-site risks resulting from implementing the alternative, the degree the cleanup action may perform to a higher level than specific standards in WAC 173-340-700 through 173-340-760, and improvement of the overall environmental quality;

(ii) Long-term effectiveness including degree of certainty that the alternative will be successful, long-term reliability, magnitude of residual risk, and effectiveness of controls required to manage treatment residues or remaining wastes;

(iii) Short-term effectiveness including protection of human health and the environment during construction and implementation of the alternative, and the degree of risk to human health and the environment prior to attainment of cleanup standards;

(iv) Permanent reduction of toxicity, mobility and volume of the hazardous substance including adequacy of the alternative in destroying the hazardous substances, reduction or elimination of hazardous substance releases and sources of releases, degree of irreversibility of waste treatment process, and the characteristics and quantity of treatment residuals generated;

(v) Ability to be implemented including consideration of whether the alternative is technically possible, availability of necessary off-site facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction, operations and monitoring, and integration with existing facility operations and other current or potential remedial actions;

(vi) Cleanup costs. A cleanup action shall not be considered practicable if the incremental cost of the cleanup action is substantial and disproportionate to the incremental degree of protection it would achieve over a lower preference cleanup action. When selecting from among two or more cleanup action alternatives which have an equivalent level of preference under subsection (4) of this section, preference may be given to the least cost alternative. In performing this evaluation, the top three preferences in subsection (4) of this section

shall be considered equivalent unless there are overriding public concerns or technical uncertainties;

(vii) The degree to which community concerns are addressed.

(e) To ensure a bias toward permanent solutions, cleanup actions conducted under this chapter including consideration of prior actions at the site shall comply with the following requirements:

(i) The cleanup action shall prevent or minimize present and future releases and migration of hazardous substances in the environment;

(ii) The cleanup action shall provide for a net reduction in the amount of a hazardous substance being released from the source area;

(iii) The cleanup action shall not rely primarily on dilution and dispersion of the hazardous substance if active remedial measures are technically possible;

(iv) A cleanup action relying primarily on institutional controls and monitoring shall not be used where it is technically possible to implement a cleanup action alternative that utilizes a higher preference cleanup technology for all or a portion of the site; and

(v) A cleanup action involving off-site transport and disposal of hazardous substances without treatment shall not be used if a treatment technology or method exists which will attain cleanup standards and is practicable.

(6) Restoration time frame.

(a) The cleanup action selected shall provide for a reasonable restoration time frame. The factors to be considered when establishing a reasonable restoration time frame shall include:

(i) Potential risks posed by the site to human health and the environment;

(ii) Practicability of achieving a shorter restoration time frame;

(iii) Current use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;

(iv) Potential future use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;

(v) Availability of alternative water supplies;

(vi) Likely effectiveness and reliability of institutional controls;

(vii) Ability to control and monitor migration of hazardous substances from the site;

(viii) Toxicity of the hazardous substances at the site; and

(ix) Natural processes which reduce concentrations of hazardous substances and have been documented to occur at the site or under similar site conditions.

(b) A longer period of time may be used for the restoration time frame for a site to achieve cleanup levels at the point of compliance if higher preference cleanup technologies in accordance with subsections (4) and (5) of this section are selected instead of on-site or off-site disposal, isolation, or containment options.

(c) When area background concentrations would result in recontamination of the site to levels which exceed cleanup levels, that portion of the cleanup action which addresses cleanup below area background concentrations may be delayed until the off-site sources of hazardous substances are controlled. In these cases the remedial action shall be considered an interim action until cleanup levels are attained.

(d) Where cleanup levels determined under method C in WAC 173-340-707 are below technically possible concentrations, concentrations that are technically possible to achieve shall be met within a reasonable time frame considering the factors in (a) of this subsection. In these cases the remedial action shall be considered an interim action until cleanup levels are attained.

(e) Extending the restoration time frame shall not be used as a substitute for active cleanup actions, when such actions are practicable.

(7) Ground water restoration.

(a) Ground water treatment to achieve the levels in WAC 173-340-720 throughout the ground water at and beyond the point of compliance shall be required where such treatment is practicable or where such treatment is not practicable, but deemed by the department to be in the public interest.

(b) When ground water treatment to achieve the cleanup levels at or beyond the point of compliance within an existing ground water plume is not practicable the following measures shall be taken:

(i) Treatment shall be used to reduce the levels to the maximum extent practicable;

(ii) Ground water containment, including barriers or hydraulic control through ground water pumping or both, shall be implemented to the maximum extent practicable to avoid lateral and vertical expansion of the ground water volume affected by the hazardous substance;

(iii) Source control measures shall be implemented to prevent or minimize additional releases to the ground water;

(iv) Adequate ground water monitoring to demonstrate control and containment of the hazardous substance shall be conducted;

(v) The potentially liable person shall provide an alternative water supply or treatment for persons with water supplies rendered unusable by the release; and

(vi) The practicability of achieving ground water cleanup levels by treating the ground water affected by the release shall be reevaluated during the periodic review under WAC 173-340-420.

(c) Appropriate restrictions on the use of ground water shall be placed under WAC 173-340-440 until cleanup levels established under WAC 173-340-720 are achieved.

(d) The integrity and continued operation of any treatment or containment system shall be assured in accordance with WAC 173-340-440.

(8) Containment actions.

(a) A cleanup action which relies primarily on on-site disposal, isolation, or containment of hazardous substances shall not be conducted if it is practicable to reuse, destroy, or detoxify those substances in a manner that remaining concentrations are below cleanup levels established under WAC 173-340-700 through 173-340-760.

(b) Long-term monitoring (WAC 173-340-410) and institutional controls (WAC 173-340-440) shall be required if on-site disposal, isolation, or containment is the selected cleanup action for a site or a portion of a site. Such measures shall be required until residual hazardous substance concentrations no longer exceed site cleanup levels established under WAC 173-340-700 through 173-340-760.

(c) If the proposed cleanup action involves on-site containment, the draft cleanup action plan shall specify the types, levels, and amounts of hazardous substances remaining on-site and the measures that

will be utilized to prevent migration and contact with those substances.

(9) Expectations. Ecology has the following expectations for cleanup actions conducted under this chapter. The department recognizes that there may be sites where these expectations are not appropriate:

(a) Ecology expects that treatment technologies will be used wherever practicable. Use of treatment technologies should be emphasized at sites containing liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile materials, and/or discrete areas of hazardous substances which lend themselves to treatment;

(b) To minimize the need for long-term management of contaminated materials, ecology expects that hazardous substances will be totally destroyed, detoxified, and/or removed to concentrations below cleanup levels throughout sites containing small volumes of hazardous substances;

(c) Ecology recognizes the need to use engineering controls, such as containment, for sites or portions of sites that contain large volumes of materials with relatively low levels of hazardous substances where treatment is impracticable;

(d) Ecology expects institutional controls, such as water use restrictions and deed restrictions, will be used to supplement engineering controls in order to prevent or limit exposure to hazardous substances and protect the integrity of the cleanup action;

(e) Ecology expects that cleanup actions will return useable ground waters to their beneficial uses wherever practicable, within a reasonable time frame. When restoration of ground water to beneficial uses is not practicable, ecology expects to require measures to minimize/prevent further migration, minimize ongoing releases, prevent exposure to contaminated water, and other appropriate measures (see WAC 173-340-360(7));

(f) In order to minimize the potential for migration of hazardous substances, ecology expects that active measures will be taken to prevent precipitation and subsequent runoff from coming into contact with contaminated soils and waste materials. When such measures are impracticable, such as during active cleanup, ecology expects that

site runoff will be contained and treated prior to release from the site;

(g) Ecology expects that when hazardous substances remain on-site at concentrations which exceed cleanup levels, those hazardous substances will be consolidated to the maximum extent practicable where needed to minimize the potential for direct contact and migration of hazardous substances;

(h) Ecology expects that, for facilities adjacent to a surface water body, active measures will be taken to prevent/minimize releases to surface water via surface runoff and ground water discharges. Ecology expects that dilution will not be the sole method for demonstrating compliance with cleanup standards; and

(i) Ecology expects that cleanup actions conducted under this chapter will not result in a significantly greater overall threat to human health and the environment than other alternatives.

(10) Draft cleanup action plan. The department shall issue a draft cleanup action plan for cleanup actions conducted by the department or conducted by a potentially liable person under an order or decree. The level of detail in the draft cleanup action plan shall be commensurate with the complexity of the site and proposed cleanup action.

(a) The draft cleanup action plan shall include the following:

(i) A general description of the proposed cleanup action including compliance monitoring;

(ii) A brief summary of other alternative cleanup actions evaluated in the state remedial investigation/feasibility study or comparable documents;

(iii) Site cleanup levels and points of compliance for each hazardous substance and for each media of concern;

(iv) The schedule for implementation of the cleanup action plan including, if known, restoration time frame;

(v) Required institutional controls and site use restrictions, if any, for the proposed cleanup action;

(vi) Justification for selecting a cleanup action that uses cleanup technologies that have a lower preference than higher representative cleanup technologies listed in subsection (4)(a) of this section;

(vii) Applicable state and federal laws for the proposed cleanup action, when these are known at this step in the cleanup process (this does not preclude subsequent identification of applicable state and federal laws);

(viii) A preliminary determination by the department that the proposed cleanup action will comply with subsections (2) and (3) of this section; and

(ix) Where the cleanup action involves on-site containment, specification of the types, levels, and amounts of hazardous substances remaining on site and the measures that will be utilized to prevent migration and contact with those substances.

(b) For routine actions the department may use an order or decree to fulfill the requirements of a cleanup action plan, provided that the information in (a) of this subsection is included therein. The scope of detail for the required information shall be commensurate with the complexity of the site and proposed cleanup action.

(11) Public participation. The department will provide public notice and opportunity for comment on the draft cleanup plan as described in WAC 173-340-600.

(12) Final plan. Upon completion of the public comment period the department, after review and consideration of the comments received, shall issue a final cleanup action plan and publish its availability in the site register and by other appropriate methods. If the department determines, following the implementation of the preferred alternative, that the cleanup levels established in the cleanup action plan cannot be achieved, the department shall issue public notice of this determination.

(13) Federal cleanup sites. A record of decision or order or consent decree prepared under the Federal Cleanup Law that provides for a cleanup action may be used by the department to meet the requirements of this section provided:

(a) The cleanup action meets the requirements in subsections (2) and (3) of this section;

(b) The state has concurred with the cleanup action; and

(c) An opportunity was provided for the public to comment on the cleanup action.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-360, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-360, filed 4/3/90, effective 5/4/90.]

## PART IV—SITE CLEANUP AND MONITORING

**WAC 173-340-400 Cleanup actions.** Unless otherwise directed by the department, cleanup actions shall comply with this section except for emergencies or interim actions.

(1) Purpose. The purpose of this section is to ensure that the cleanup action is designed, constructed, and operated in a manner which is consistent with:

(a) The cleanup action plan;

(b) Accepted engineering practices; and

(c) The requirements of WAC 173-340-360 (1) and (2).

(2) Administrative options. A cleanup action may be conducted under any of the procedures described in WAC 173-340-510.

(3) Public participation. During cleanup action implementation, public participation shall be accomplished in a manner consistent with the requirements of WAC 173-340-600.

(4) Plans describing the cleanup action. Design, construction, and operation of the cleanup action shall be consistent with the purposes of this section and shall consider relevant information provided by the state remedial investigation/feasibility study. For most cleanups, to ensure this is done it will be necessary to prepare the following engineering documents. The scope and level of detail in these documents may vary from site to site depending on the site specific conditions and nature and complexity of the proposed cleanup action. In some cases it may be appropriate to combine the information in these various documents into one report to avoid unnecessary duplication. Any document prepared in order to implement a cleanup may be used to satisfy these requirements provided they contain the required information. In addition, for facilities on the national priorities list the plans prepared for the cleanup action shall also comply with federal requirements.

(a) Engineering design report. The engineering design report shall include sufficient information for the development and review of construction plans and specifications. It shall document engineering concepts and design criteria used for design of the cleanup action. The following information shall be included in the engineering design report, as appropriate:

(i) Goals of the cleanup action including specific cleanup or performance requirements;

(ii) General information on the facility including a summary of information in the state remedial investigation/feasibility study updated as necessary to reflect the current conditions;

(iii) Identification of who will own, operate, and maintain the cleanup action during and following construction;

(iv) Facility maps showing existing site conditions and proposed location of the cleanup action;

(v) Characteristics, quantity, and location of materials to be treated or otherwise managed, including ground water containing hazardous substances;

(vi) A schedule for final design and construction;

(vii) A description and conceptual plan of the actions, treatment units, facilities, and processes required to implement the cleanup action including flow diagrams;

(viii) Engineering justification for design and operation parameters, including: Design criteria, assumptions and calculations for all components of the cleanup action; expected treatment, destruction, immobilization, or containment efficiencies and documentation on how that degree of effectiveness is determined; demonstration that the cleanup action will achieve compliance with cleanup requirements by citing pilot or treatability test data, results from similar operations, or scientific evidence from the literature;

(ix) Design features for control of hazardous materials spills and accidental discharge (for example, containment structures, leak detection devices, run-on and run-off controls);

(x) Design features to assure long-term safety of workers and local residences (for example, hazardous substances monitoring devices, pressure valves, bypass systems, safety cutoffs);

(xi) A discussion of methods for management or disposal of any treatment residual and other waste materials containing hazardous substances generated as a result of the cleanup action;

(xii) Facility specific characteristics which may affect design, construction, or operation of the selected cleanup action, including: Relationship of the proposed cleanup action to existing facility operations; probability of flooding, probability of seismic activity, temperature extremes, local planning and development issues; soil characteristics and ground water system characteristics;

(xiii) A general description of construction testing which will be used to demonstrate adequate quality control;

(xiv) A general description of compliance monitoring which will be performed during and after construction to meet the requirements of WAC 173-340-410;

(xv) A general description of construction procedures proposed to assure that the safety and health requirements of WAC 173-340-810 are met;

(xvi) Any information not provided in the state remedial investigation/feasibility study needed to fulfill the applicable requirements of the State Environmental Policy Act (chapter 43.21C RCW);

(xvii) Any additional information needed to address the applicable state, federal and local requirements; and property access issues which need to be resolved to implement the cleanup action; and

(xviii) Other information as required by the department.

(b) Construction plans and specifications. Construction plans and specifications shall detail the cleanup actions to be performed. The plans and specifications shall be prepared in conformance with currently accepted engineering practices and techniques and shall include the following information as applicable:

(i) A general description of the work to be performed and a summary of the engineering design criteria from the engineering design report;

(ii) General location map and existing facility conditions map;

(iii) A copy of any permits and approvals;

(iv) Detailed plans and procedural material specifications necessary for construction of the cleanup action;

(v) Specific quality control tests to be performed to document the construction, including specifications for the testing or reference to specific testing methods, frequency of testing, acceptable results, and other documentation methods;

(vi) Startup procedures and criteria to demonstrate the cleanup action is prepared for routine operation;

(vii) Additional information to address applicable state, federal, and local requirements;

(viii) A compliance monitoring plan prepared under WAC 173-340-410 describing monitoring to be performed during construction, and a sampling and analysis plan meeting the requirements of WAC 173-340-820;

(ix) Provisions to assure safety and health requirements of WAC 173-340-810 are met; and

(x) Other information as required by the department.

(c) Operation and maintenance plan. An operation and maintenance plan which presents technical guidance and regulatory requirements to assure effective operations under both normal and emergency conditions. The operation and maintenance plan shall include the following elements, as appropriate:

(i) Name and phone number of the responsible individuals;

(ii) Process description and operating principles;

(iii) Design criteria and operating parameters and limits;

(iv) General operating procedures, including startup, normal operations, operation at less than design loading, shutdown, and emergency or contingency procedures;

(v) A discussion of the detailed operation of individual treatment units, including a description of various controls, recommended operating parameters, safety features, and any other relevant information;

(vi) Procedures and sample forms for collection and management of operating and maintenance records;

(vii) Spare part inventory, addresses of suppliers of spare parts, equipment warranties, and appropriate equipment catalogues;

(viii) Equipment maintenance schedules incorporating manufacturers recommendations;

(ix) Contingency procedures for spills, releases, and personnel accidents;

(x) A compliance monitoring plan prepared under WAC 173-340-410 describing monitoring to be performed during operation and maintenance, and a sampling and analysis plan meeting the requirements of WAC 173-340-820;

(xi) Description of procedures which assure that the safety and health requirements of WAC 173-340-810 are met, including specification of contaminant action levels and contingency plans, as appropriate;

(xii) Procedures for the maintenance of the facility after completion of the cleanup action, including provisions for removal of unneeded appurtenances, and the maintenance of covers, caps, containment structures, and monitoring devices; and

(xiii) Other information as required by the department.

(5) In appropriate cases the department may authorize departure from the requirements of subsection (4) of this section, and may allow information to be incorporated by reference to avoid unnecessary duplication.

(6) Permits and approvals, if required for construction or to otherwise implement the cleanup action shall be identified and where possible, resolved prior to, or during, the design phase to avoid delays during construction and implementation of the cleanup action.

(7) Construction. Construction shall be conducted in accordance with the construction plans and specifications, and other plans prepared under this section.

(a) Department inspections.

(i) The department may perform site inspections and construction oversight. The department may require that construction activities be halted at a site if construction or any supporting activities: Are not consistent with approved plans; are not in compliance with environmental regulations or

accepted construction procedures; or endanger human health or the environment.

(ii) The department may conduct a formal inspection of the site following construction and an initial operational shake down period to ensure satisfactory completion of the construction. If such an inspection is performed, the construction documentation report and engineer's opinion specified in (b)(ii) of this subsection shall be available prior to the inspection.

(b) Construction documentation.

(i) All aspects of construction shall be performed under the supervision of a professional engineer registered in the state of Washington or a qualified technician under the direct supervision of a professional engineer registered in the state of Washington. During construction detailed records shall be kept of all aspects of the work performed including construction techniques and materials used, items installed, and tests and measurements performed.

(ii) As built reports. At the completion of construction the engineer responsible for the supervision of construction shall prepare as built drawings and a report documenting all aspects of facility construction. The report shall also contain an opinion from the engineer, based on testing results and inspections, as to whether the cleanup action has been constructed in substantial compliance with the plans and specifications and related documents.

(iii) In appropriate cases the department may authorize departure from the requirements of this subsection and may allow information to be incorporated by reference to avoid unnecessary duplication.

(c) Plan modifications. Changes in the design or construction of the cleanup action performed under an order or decree shall be approved by the department.

(8) If the department determines that any plans prepared under this section represent a substantial change from the cleanup action plan, the department shall provide public notice and opportunity for comment under WAC 173-340-600.

(9) Plans or reports prepared under this section and under an order or decree shall be submitted to the department for review and approval.

(10) Waste management. Any waste contaminated by a hazardous substance generated during cleanup activities and requiring off-site treatment, storage or disposal, shall be transported to a facility permitted or approved to handle these wastes.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-400, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-410 Compliance monitoring requirements.** (1) Purpose. The purposes of compliance monitoring and evaluation of the data are to:

(a) Protection monitoring. Confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of an interim action or cleanup action as described in the safety and health plan;

(b) Performance monitoring. Confirm that the interim action or cleanup action has attained cleanup standards and, if appropriate, other performance standards;

(c) Confirmational monitoring. Confirm the long-term effectiveness of the interim action or cleanup action once cleanup standards and, if appropriate, other performance standards have been attained.

(2) General requirements. Compliance monitoring shall be required for all cleanup actions, and may be required for interim and emergency actions, performed under this chapter.

(3) Compliance monitoring plans. A compliance monitoring plan shall be prepared for all cleanup actions and may be required for interim and emergency actions unless otherwise directed by the department. Plans prepared under this section and under an order or decree shall be submitted to the department for review and approval. Protection monitoring may be addressed in the safety and health plan. Performance and confirmational monitoring may be addressed in separate plans and may be combined with other plans or submittals, such as those in WAC 173-340-400 and 173-340-820.

Compliance monitoring plans shall be specific for the media being tested and shall contain the following elements:

(a) A sampling and analysis plan meeting the requirements of WAC 173-340-820 which shall explain in the statement of objectives how the purposes of WAC 173-340-410(2) are met;

(b) Data analysis and evaluation procedures used, to demonstrate and confirm compliance and justification for these procedures, including:

(i) A description of any statistical method to be employed; or

(ii) If sufficient data is not available prior to writing the plan to propose a reliable statistical method to demonstrate and confirm compliance, a contingency plan proposing one or more reliable statistical methods to demonstrate and confirm compliance, and the conditions under which the methods would be used at the facility; and

(c) Other information as required by the department.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-410, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-420 Periodic review.** (1) If the department selects or approves a cleanup action that results in hazardous substances remaining at a site at concentrations which exceed method A or method B cleanup levels established under WAC 173-340-700 through 173-340-760 or if conditional points of compliance have been established, the department shall review the cleanup action no less frequently than every five years after the initiation of such cleanup action to assure that human health and the environment are being protected.

(2) When evaluating whether human health and the environment are being protected, the factors the department shall consider shall include:

(a) The effectiveness of ongoing or completed cleanup actions;

(b) New scientific information for individual hazardous substances or mixtures present at the site;

(c) New applicable state and federal laws for hazardous substances present at the site;

(d) Current and projected site uses;

(e) The availability and practicability of higher preference technologies as defined in WAC 173-340-360(4); and

(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

(3) The department shall publish a notice of all periodic reviews in the site register and provide an opportunity for public comment.

(4) When the department determines that substantial changes in the cleanup action are necessary to protect human health and the environment at the site, a revised cleanup action plan shall be prepared. The department shall provide opportunities for public review and comment on the draft cleanup action plan consistent with the requirements in WAC 173-340-360 and 173-340-600.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-420, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-420, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-430 Interim actions.**

(1) Purpose. The purpose of this section is to describe how certain interim actions can occur prior to the selection and completion of a cleanup action. An interim action is:

(a) An action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at a facility; or

(b) An action that corrects a problem that may become substantially worse or cost substantially more to address if the action is delayed; or

(c) An action needed to provide for completion of a site hazard assessment, state remedial investigation/feasibility study or design of a cleanup action.

Example. A site is identified where oil-based wood preservative has leaked from a tank and is puddled on the ground and is floating on the water table. Run-off from adjacent properties passes through the site. Neighborhood children have been seen on the site. In this case, several interim actions would be appropriate prior to fully defining the extent of the distribution of hazardous substances at the site and selecting a cleanup action. These interim actions might consist of removing

the tank, fencing the site, rerouting run-off, and removing the product puddled on the ground and floating on the water table. Further studies would then determine what additional soil and ground water cleanup would be needed.

(2) General requirements.

(a) Interim actions may:

(i) Achieve cleanup standards for a portion of the site; or

(ii) Provide a partial cleanup, that is, clean up hazardous substances from all or part of the site, but not achieve cleanup standards; or

(iii) Provide a partial cleanup of hazardous substances and not achieve cleanup standards, but provide information on how to achieve cleanup standards for a cleanup. For example, demonstration of an unproven cleanup method.

(b) Relationship to the cleanup action:

(i) If the cleanup action is known, the interim action shall be consistent with the cleanup action.

(ii) If the cleanup action is not known, the interim action shall not foreclose reasonable alternatives for the cleanup action. This is not meant to preclude the destruction or removal of hazardous substances.

(3) Timing.

(a) Interim actions may occur anytime during the cleanup process. Interim actions shall not be used to delay or supplant the cleanup process. An interim action may be done prior to or in conjunction with a site hazard assessment and hazard ranking. However, sufficient technical information must be available regarding the facility to ensure the interim action is appropriate and warranted.

(b) Interim actions shall be followed by additional remedial actions unless compliance with cleanup standards has been confirmed at the site.

(c) The department shall set appropriate deadlines commensurate with the actions taken for completion of the interim action.

(4) Administrative options. Except as provided in WAC 173-340-530, interim cleanup actions may be conducted under any of the procedures described in WAC 173-340-510.

(5) Public participation will be accomplished in a manner consistent with WAC 173-340-600.

(6) Submittal requirements. Unless otherwise directed by the department and except for under-

ground storage tank releases being addressed under WAC 173-340-450 and emergencies, a report shall be prepared prior to conducting an interim action. Reports prepared under an order or decree shall be submitted to the department for review and approval. Reports shall be of a scope and detail commensurate with the work performed and site-specific characteristics, and shall include, as appropriate:

(a) A description of the interim action and how it will meet the criteria identified in subsections (1) and (2) of this section;

(b) Information from the applicable subsections of the remedial investigation/feasibility study of WAC 173-340-350, including at a minimum;

(i) A description of existing site conditions and a summary of all available data related to the interim action;

(ii) Alternative interim actions considered and an explanation why the proposed alternative was selected;

(c) Information from the applicable subsections of the design and construction requirements of WAC 173-340-400;

(d) A compliance monitoring plan meeting the applicable requirements of WAC 173-340-410;

(e) A safety and health plan meeting the requirements of WAC 173-340-810; and

(f) A sampling and analysis plan meeting the requirements of WAC 173-340-820.

(7) Construction. Construction of the interim action shall be in conformance with WAC 173-340-400(7).

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-430, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-430, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-440 Institutional controls.**

(1) Purpose. Institutional controls are measures undertaken to limit or prohibit activities that may interfere with the integrity of an interim action or cleanup action or result in exposure to hazardous substances at a site. Such measures shall be required to assure both the continued protection of human health and the environment and the integrity

of an interim action or cleanup action in the following circumstances:

(a) Where a cleanup action results in residual concentrations of hazardous substances which exceed method A or method B cleanup levels, as applicable, established under WAC 173-340-700 through 173-340-760; or

(b) If conditional points of compliance have been established; or

(c) When the department determines such controls are required to assure the continued protection of human health and the environment or the integrity of the cleanup action.

(2) Institutional controls shall not be used as a substitute for cleanup actions that would otherwise be technically possible.

(3) Institutional controls include:

(a) Physical measures, such as fences and signs, to limit activities that may interfere with the cleanup action or result in exposure to hazardous substances at the site; and

(b) Legal and administrative mechanisms to limit site use or activities and/or to ensure that any physical measures are maintained over time. Examples of limits on site use activities include restricting the use of a property for industrial or commercial purposes or other specified land uses, or placing restrictions on activities such as disturbing a cap or using the ground water. Examples of maintenance activities include, inspection and repair of monitoring wells, treatment systems, caps or ground water barrier systems.

(4) Format.

(a) For properties owned by a person who has been named as a potentially liable person or who has not been named a potentially liable person by the department but meets the criteria in RCW 70.105D.040 for being named a potentially liable person, appropriate institutional controls shall be described in a restrictive covenant on the property. The covenant shall be executed by the property owner and recorded with the register of deeds for the county in which the site is located. This restrictive covenant shall run with the land, and be binding on the owner's successors and assigns.

(b) For properties containing hazardous substances where the owner does not meet the criteria in RCW 70.105D.040 for being a potentially liable

person, the department may approve cleanup actions which include restrictive covenants or other legal and/or administrative mechanisms. The use of legal or administrative mechanisms which do not include restrictive covenants is intended to apply to situations where the release has affected properties near the source of the release not owned by a person potentially liable under the act. Examples of such mechanisms include zoning overlays, placing notices in local zoning or building department records or state lands records, public notices and educational mailings.

(5) Where required, the restrictive covenant shall:

(a) Prohibit activities on the site that may interfere with a cleanup action, operation and maintenance, monitoring, or other measures necessary to assure the integrity of the cleanup action and continued protection of human health and the environment;

(b) Prohibit activities that may result in the release of a hazardous substance which was contained as a part of the cleanup action;

(c) Require notice to the department of the owner's intent to convey any interest in the site. No conveyance of title, easement, lease, or other interest in the property shall be consummated by the property owner without adequate and complete provision for the continued operation, maintenance and monitoring of the cleanup action, and for continued compliance with this subsection;

(d) Require the land owner to restrict leases to uses and activities consistent with the restrictive covenant and notify all lessees of the restrictions on the use of the property. This requirement applies only to restrictive covenants imposed after February 1, 1996;

(e) Require notice and approval by the department of any proposal to use the site in a manner which is inconsistent with the restrictive covenant. If the department, after public notice and comment approves the proposed change, the restrictive covenant shall be amended to reflect the change;

(f) Grant the department and its designated representatives the right to enter the property at reasonable times for the purpose of evaluating compliance with the cleanup action plan and other required plans, including the right to take samples,

inspect any remedial actions taken at the site, and to inspect records.

(6) Local government notification. Prior to a restrictive covenant being established under this chapter, the department shall notify and seek comment from a city or county department with land use planning authority for real property subject to the restrictive covenant. Once a restrictive covenant has been executed, this same department shall be notified and sent a copy of the restrictive covenant. For independent cleanups using restrictive covenants, the person conducting the cleanup shall be responsible for these notifications.

(7) Financial assurances. The department may require the potentially liable person to provide financial assurances, through a trust fund or equivalent financial mechanism approved by the department, sufficient to cover all costs of operation and maintenance including compliance monitoring and undertaking appropriate corrective measures. It is the department's expectation that such assurances will be required wherever the cleanup action includes containment and in other appropriate circumstances.

(8) Removal of restrictions. If the residual hazardous substances remaining at the site are subsequently reduced in concentration such that the method A or method B cleanup levels, as applicable, established under WAC 173-340-700 through 173-340-760 are met without a conditional point of compliance, then the owner may request that the restrictive covenant or other restrictions be eliminated. The restrictive covenant or other restrictions shall be removed, if the department, after public notice and opportunity for comment, concurs.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-440, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-440, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-450 Releases from underground storage tanks.** (1) Purpose. The purpose of this section is to set forth the requirements for addressing releases which may pose a threat to human health or the environment from USTs defined under chapter 90.76 RCW and rules

adopted therein, including heating oil USTs of greater than 1,100 gallons capacity.

(a) Releases from USTs exempted under chapter 90.76 RCW and rules adopted therein are still subject to all other requirements of this chapter.

(b) Unless the department requires otherwise, UST owners and UST operators shall comply with the requirements in this section after confirmation of an UST release which may pose a threat to human health or the environment.

(2) Initial response. Within twenty-four hours of the UST release, the UST owner or the UST operator shall perform the following actions:

(a) Report the UST release to the department and other authorities with jurisdiction, in accordance with rules adopted under chapter 90.76 RCW and any other applicable law;

(b) Remove as much of the hazardous substance from the UST as is possible and necessary to prevent further release to the environment;

(c) Eliminate or reduce any fire, explosion or vapor hazards in such a way as to minimize any release of hazardous substances to surface water and ground water; and

(d) Visually inspect any aboveground releases or exposed belowground releases and prevent the hazardous substance from spreading into surrounding soils, ground water and surface water.

(3) Interim actions.

(a) As soon as possible but no later than twenty days following confirmation of an UST release, the UST owner or the UST operator shall perform the following interim actions:

(i) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors or free product which may have migrated from the UST into structures in the vicinity of the site, such as sewers or basements;

(ii) Reduce the threat to human health and the environment posed by contaminated soils that are excavated or discovered as a result of investigation or cleanup activities. Treatment, storage and disposal of soils must be carried out in compliance with all applicable federal, state and local requirements;

(iii) Test for hazardous substances in the environment where they are most likely to be present. Such testing shall be done in accordance

with a sampling and analysis plan prepared under WAC 173-340-820. The sample types, sample locations, and measurement methods shall be based on the nature of the stored substance, type of subsurface soils, depth to ground water and other factors as appropriate for identifying the presence and source of the release. If contaminated soil is found in contact with the ground water or soil contamination appears to extend below the lowest soil sampling depth, then testing shall include the installation of ground water monitoring wells to test for the presence of possible ground water contamination. Information gathered for the site check or closure site assessment conducted pursuant to rules adopted under chapter 90.76 RCW, which sufficiently characterizes the releases at the site, may be substituted for the testing required under this paragraph;

(iv) The testing performed under (a)(iii) of this subsection shall include, at a minimum, the following:

(A) Benzene, toluene, ethylbenzene, xylene, lead, and total petroleum hydrocarbons where leaded gasoline may be present;

(B) Benzene, toluene, ethylbenzene, xylene and total petroleum hydrocarbons where unleaded gasoline may be present;

(C) Total petroleum hydrocarbons and other appropriate indicator hazardous substances where any petroleum product other than gasoline may be present;

(D) The hazardous substance stored and any likely decomposition by-products where a hazardous substance other than petroleum may be present; and

(E) Any other tests required by the department; and

(v) Investigate for the presence of free product.

(b) Free product removal. At sites where investigations indicate free product is present, the UST owner or the UST operator shall conduct, as soon as possible after discovery, an interim action to remove the free product while continuing, as necessary, any other actions required under this section. To accomplish this the UST owner or UST operator shall:

(i) Conduct free product removal to the maximum extent practicable and in a manner which

minimizes the spread of hazardous substances, by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site. The objective of free product removal system must be, at a minimum, to stop the free product migration;

(ii) Properly treat, discharge, or dispose of recovery by-products in compliance with all applicable local, state, and federal regulations and permits; and

(iii) Handle all flammable products safely to prevent fires and explosions.

(4) Reporting requirements. The following reports are required to be submitted to the department:

(a) Status report. Within twenty days after an UST release, the UST owner or UST operator shall submit a status report to the department. The status report shall identify if known, the types, amounts, and locations of hazardous substances released, how the release occurred, evidence confirming the release, actions taken under subsections (2) and (3) of this section, any planned remedial actions, and any results of work done up to the time of the report. This report may be provided verbally to the department.

(b) Site characterization reports. Within ninety days after release confirmation, unless directed to do otherwise by the department, the UST owner or UST operator shall submit a report to the department about the site and nature of the release. This report shall be submitted to the department in writing and may be combined with the twenty-day status report, if the information required is available at that time. The site characterization report shall include, at a minimum, the following information:

(i) The information required for the status report under (a) of this subsection;

(ii) A site conditions map indicating approximate boundaries of the property, all areas where hazardous substances are known or suspected to be located, and sampling locations. This map may consist of a sketch of the site at a scale sufficient to illustrate this information;

(iii) Available data regarding surrounding populations, surface and ground water quality, use and approximate location of wells potentially affected by the release, subsurface soil conditions, depth to ground water, direction of ground water

flow, proximity to and potential for affecting surface water, locations of sewers and other potential conduits for vapor or free product migration, surrounding land use, and proximity to sensitive environments;

(iv) Results of tests for hazardous substances performed under subsection (3)(a)(iii) and (iv) of this section;

(v) Results of the free product investigation required under subsection (3)(a)(v) of this section;

(vi) Results of all completed site investigations, interim actions and cleanup actions and a description of any remaining investigations, cleanup actions and compliance monitoring which are planned or underway; and

(vii) Information on the free product removal efforts at sites where investigations indicate free product is present. This shall include, at a minimum, the following information:

(A) Name of the person responsible for implementing the free product removal measures;

(B) The estimated quantity, type, and thickness of free product observed or measured in wells, boreholes and excavations;

(C) The type of free product recovery system used;

(D) The location of any on-site or off-site discharge during the recovery operation;

(E) The type of treatment applied to, and the effluent quality expected from, any discharge;

(F) The steps taken and planned to obtain necessary permits for any discharge;

(G) Disposition of recovered free product; and

(viii) Any other information required by the department.

(5) State remedial investigation and feasibility study.

(a) The scope of a state remedial investigation and feasibility study under this chapter will depend on the informational needs at a specific site and will vary from site to site to avoid the collection of unnecessary information. For sites with UST releases, a state remedial investigation and feasibility study must at a minimum address the elements in WAC 173-340-350 (6)(a), (b), (c)(ii), (c)(iii), (c)(v) through (c)(vii) and (e). The department may require additional information when needed to select a cleanup action. UST owners and operators

shall conduct a state remedial investigation and feasibility study for sites where the following conditions exist:

(i) There is evidence that the release has caused hazardous substances to be present in the ground water in excess of the ground water standards promulgated under chapter 90.48 RCW or cleanup levels in WAC 173-340-720 (Table 1);

(ii) Free product is found; or

(iii) Where otherwise required by the department.

(b) UST owners and UST operators shall submit the information collected for the state remedial investigation/feasibility study to the department as soon as practicable. The information may be included with other reports submitted under this section.

(6) If the department determines, based on the results of the remedial investigation/feasibility study or other information, that additional remedial action is required, the department may require the UST owner or the UST operator to submit engineering documents as described in WAC 173-340-400.

(7) Unless directed to do otherwise by the department, cleanup actions performed by UST owners or UST operators shall comply with cleanup standards, WAC 173-340-700 through 173-340-750 and the requirements for the selection of cleanup actions, WAC 173-340-360.

(8) Independent cleanup actions. In addition to work performed under subsections (2) through (5), and (7) of this section, UST owners or UST operators performing independent cleanup actions shall:

(a) Notify the department of their intention to begin cleanup. This can be included with other reports under this section;

(b) Comply with any conditions imposed by the department to assure adequate protection of human health and the environment; and

(c) Within ninety days of completion of the cleanup action, submit the results of all investigations, interim and cleanup actions and compliance monitoring not previously submitted to the department.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-450, filed 1/28/91, effective 2/28/91.]

## **PART V—ADMINISTRATIVE PROCEDURES FOR REMEDIAL ACTIONS**

**WAC 173-340-500 Determination of status as a potentially liable person.** (1) Status letter. The department shall issue a potentially liable person status letter to any person it believes to be potentially liable as provided for in RCW 70.105-D.020(8), unless an emergency requires otherwise. Persons will be notified when the department has credible evidence of their potential liability under RCW 70.105D.040 and when the department is ready to proceed with remedial action except for emergencies and initial investigations. The status letter shall be sent by certified mail, return receipt requested, or by personal service.

(2) Contents of letter. The status letter shall provide:

(a) The name of the person the department believes to be potentially liable;

(b) A general description of the location of the facility;

(c) The basis for the department's belief that the person has a relationship to the facility;

(d) The basis for the department's belief that a release or threatened release of a hazardous substance has occurred at the facility and that the release or threatened release poses a threat to human health or the environment;

(e) An indication of the department's intentions regarding enforcement or other actions at the facility; and

(f) The names of other persons to whom the department has sent a status letter.

(3) Opportunity to comment. Any comments shall be submitted in writing to the department within thirty days from the date of receipt by the potentially liable person of the status letter unless the department provides an extension.

(4) Determination of status. If after reviewing any comments submitted, the department concludes that credible evidence supports a finding of potential liability, then the department shall issue a determination of potentially liable person status.

(5) Voluntary waiver. Persons may accept status as a potentially liable person at any time through a voluntary waiver of their right to notice and comment.

(6) Additional potentially liable persons. The department reserves the right to notify additional potentially liable persons at any time, and as resources permit, will facilitate potentially liable persons' efforts to identify additional potentially liable persons. The department shall notify in writing, all persons who previously received a status letter for the facility whenever additional status letters have been sent.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-500, filed 4/3/90, effective 5/4/90.]

## **WAC 173-340-510 Administrative options for remedial actions.**

(1) Policy. It is the responsibility of each and every liable person to conduct remedial action so that sites are cleaned up well and expeditiously where a release or threatened release of a hazardous substance requires remedial action. Potentially liable persons are encouraged to initiate discussions and negotiations with the department and the office of the attorney general which may lead to an agreement on the remedial action to be conducted with the state of Washington. The department may provide informal advice and assistance on the development of proposals for remedial action, as provided by WAC 173-340-130. Any approval by the department or the state of remedial action shall occur by one of the means described in subsections (2) and (3) of this section.

(2) Actions initiated by the potentially liable person. Potentially liable persons may initiate a remedial action, as follows:

(a) A person may initiate negotiations for a consent decree by submitting a letter under WAC 173-340-520(1).

(b) A person may request an agreed order by submitting a letter under WAC 173-340-530.

(3) Action initiated by the department. The department may initiate remedial action by:

(a) Issuing a letter inviting negotiations on a consent decree under WAC 173-340-520(2); or

(b) Issuing an enforcement order under WAC 173-340-540.

(4) Department remedial action. Nothing in this chapter shall preclude the department from taking appropriate remedial action on its own at any time. Except for emergency actions and initial investigations, reasonable effort will be made to notify potentially liable persons prior to the department taking remedial actions for which the recovery of public funds can be sought under RCW 70.105D.050(3).

(5) Independent remedial action. Nothing in this chapter shall preclude potentially liable persons from taking independent remedial action without oversight or approval from the department at sites not in discussions or negotiations for, or under, an order or decree. A potentially liable person may not take independent remedial actions after commencing discussions or negotiations for an agreed order or consent decree unless:

(a) Such action does not foreclose or preempt the remedial actions under discussion or negotiations and such action does not foreclose the selection of cleanup action; or

(b) If the potentially liable person has provided reasonable notice to the department and the department does not object to such action.

The department will use the appropriate requirements contained herein to evaluate the adequacy of any independent remedial action performed. Persons performing independent remedial actions do so at their own risk and may be required to take additional remedial actions if the department deems such actions necessary. In such circumstances, the department reserves all of its rights to take actions authorized by law.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-510, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-520 Consent decrees.** (1) Initiated by potentially liable persons. To request a consent decree a person shall submit a letter to the department and office of the attorney general via

certified mail, return receipt requested, or by personal delivery.

(a) Request. The letter shall describe, based on available information:

(i) The proposed remedial action, including the schedule for the work;

(ii) Information which demonstrates that the settlement will lead to a more expeditious cleanup, be consistent with cleanup standards if the remedial action is a cleanup action, and be consistent with any previous orders;

(iii) The facility, including location and boundaries;

(iv) The environmental problems to be addressed including a description of the releases at the facility and the potential impact of those releases to human health and the environment;

(v) A summary of the relevant historical use or conditions at the facility;

(vi) The date on which the potentially liable person will be ready to submit a detailed proposal;

(vii) Any special scheduling considerations for implementing the remedial actions;

(viii) Names of other persons who the person has reason to believe may be potentially liable persons at the facility; and

(ix) A proposed public participation plan. This proposed plan shall be commensurate with the nature of the proposal and site and shall include the elements listed in WAC 173-340-600(8).

(b) The letter may include:

(i) A waiver of the procedural requirements of WAC 173-340-500 and acceptance, for purposes of settlement, of potentially liable person status.

(ii) The contents of detailed proposal under (f) of this subsection.

(c) Recognizing that the steps of the cleanup process may be combined and may vary by site, the information in the request shall be at the level of detail appropriate to the steps in the process for which the consent decree is requested. For example, a request for a consent decree for a state remedial investigation/feasibility study should generally include the level of information needed for a site hazard assessment, if not already done by the department, so that the department and the public can evaluate the proposed scope of work and relative priority of the site.

(d) The department may waive part of the letter requirements of (a) of this subsection if the requirements have already been met.

(e) Response. The department shall respond to the request within sixty days, unless the department needs additional time to determine potentially liable person status under WAC 173-340-500. This determination will be based in part on a preliminary finding by the department that any resulting consent decree would be in accordance with RCW 70.105D.040 (4)(a). The department may:

- (i) Request additional information;
- (ii) Accept the request and require the person to submit a detailed written proposal by a specified date; or
- (iii) Provide written reasons for denying the request.

(f) Contents of detailed proposal. The proposal shall contain:

- (i) A proposed technical scope of work describing the remedial action to be conducted;
- (ii) The data, studies, or any other information upon which the settlement proposal is based;
- (iii) A statement describing the potentially liable person's ability to conduct or finance the remedial action as described in the proposed scope of work; and
- (iv) A schedule for proposed negotiations and implementation of the proposed remedial actions.

(g) The department and the office of the attorney general shall determine whether the proposal provides a sufficient basis for negotiations, and shall deliver to the potentially liable person within sixty days following receipt of their proposal a written notice indicating whether or not the proposal is sufficient to proceed with negotiations.

(h) Time limits for negotiations. The department shall set the time period and starting date for negotiations. The department and the office of the attorney general shall then negotiate with those potentially liable persons who have received a notice under (e) of this subsection that their proposal was sufficient to proceed with negotiations. Negotiations may address one or more phases of remedial action. The length of the negotiation period specified by the department shall be no less than that proposed by the potentially

liable person provided it does not conflict with the deadlines established under WAC 173-340-140.

(i) Enforcement stay. Unless an emergency exists, the department will stay any enforcement action under chapter 70.105D RCW, but the duration of such stay shall not exceed one hundred twenty days from the date negotiations begin. The department can withdraw from negotiations if it determines that:

- (i) Reasonable progress is not being made toward a consent decree acceptable to the department; or
- (ii) The proposal is inappropriate based on new information or changed circumstances.

The department may commence with enforcement action after notifying the potentially liable person, in writing, of its intent to withdraw from negotiations.

(2) State-initiated procedures. When the department believes that a consent decree will be a more expeditious method to achieve remedial action at a facility, it may initiate the procedures set forth in this subsection by sending a letter to the potentially liable person. The letter shall be sent via certified mail, return receipt requested, or by personal service.

(a) The letters may be delivered with potentially liable person status letters issued under WAC 173-340-500. The period for negotiation shall not commence until the thirty-day comment period required by WAC 173-340-500 has expired or the person expressly waives the procedural requirements of WAC 173-340-500.

(b) Contents of letter. The letter shall:

- (i) Inform potentially liable person(s) that the department and the attorney general want to begin negotiations which may lead to a consent decree providing for remedial action;
- (ii) Propose a draft consent decree and scope of work;
- (iii) Define the negotiation process and schedule which shall not exceed ninety days;
- (iv) Reference the department's finding under WAC 173-340-500;
- (v) Request a written statement of the potentially liable person's willingness to proceed with the negotiation process defined in the letter; and

(vi) Request the names of other persons whom the person has reason to believe may be potentially liable persons at the facility.

(c) The letter may request the potentially liable person to respond, in writing, to the proposed draft consent decree and scope of work prior to initiating the negotiation phase.

(d) Negotiations. The department and the office of the attorney general shall negotiate with potentially liable persons who have indicated to the department a willingness to proceed with the negotiations. The negotiation time frame shall begin from the date the potentially liable person receives the letter under (a) of this subsection unless modified by the department. Negotiations may address one or more phases of remedial action.

(e) Enforcement stay. Unless an emergency exists, the department will stay any enforcement action under chapter 70.105D RCW, but the duration of the stay shall not exceed ninety days from the date negotiations begin. The department can withdraw from negotiations if it determines that:

(i) Reasonable progress is not being made toward a consent decree acceptable to the department; or

(ii) The proposal is inappropriate based on new information or changed circumstances. The department may commence with enforcement action after notifying the potentially liable person, in writing, of its intent to withdraw from negotiations.

(f) Deadline extensions. The department may at its discretion extend the deadline for negotiations established in (b) of this subsection, provided the extension does not exceed thirty days.

(3) Filing a decree. After satisfying the public comment and hearing requirements, the department shall determine whether the proposed settlement negotiated under subsection (1) or (2) of this section, is more expeditious and consistent with cleanup standards established and in compliance with any order issued by the department relevant to the remedial action. After making the requisite findings, the department shall forward the proposed consent decree with the findings required by RCW 70.105D.040(4), to the office of the attorney general. If agreed to by the office of the attorney

general, the consent decree will be filed by that office with the appropriate superior court or the federal court having jurisdiction over the matter.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-520, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-530 Agreed orders.** (1)

Agreed orders may be used for all remedial actions.

Since an agreed order is not a settlement, an agreed order shall not provide for mixed funding, a covenant not to sue, or protection from claims for contribution. An agreed order means that the potentially liable person agrees to perform remedial actions at the site in accordance with the provisions of the agreed order and that the department will not take additional enforcement action against the potentially liable person to require those remedial actions specified in the agreed order so long as the potentially liable person complies with the provisions of the order. The department may require additional remedial actions should it deem such actions necessary.

(2) Request.

(a) To request an agreed order, a person shall submit a letter to the department based on available information, describing:

(i) The proposed remedial action including a schedule for the work;

(ii) The facility, including location and boundaries;

(iii) The environmental problems to be addressed, including the releases at the facility and the potential impact of those releases to human health and the environment;

(iv) A summary of the relevant historical use or conditions at the facility;

(v) Names of other persons whom the person has reason to believe may be potentially liable persons at the facility; and

(vi) A proposed public participation plan. This proposed plan shall be commensurate with the nature of the proposal and site and shall include at a minimum the elements listed in WAC 173-340-600(8).

(b) The letter may include a waiver of the procedural requirements of WAC 173-340-500, and

acceptance, for purposes of the agreed order, of potentially liable person status.

(c) Recognizing that the basic steps of the cleanup process may be combined and may vary by site, the information in the request shall be at the level of detail appropriate to the step in the process for which the order is requested. For example, a request for an agreed order for a state remedial investigation/feasibility study should generally include the level of information needed for a site hazard assessment, so that the department and the public can evaluate the proposed scope of work and relative priority of the site.

(d) The department may waive part of the letter requirements of (a) of this subsection if the requirements have already been met.

(3) Response. The department shall respond to the request within sixty days, unless the department needs additional time to determine potentially liable person status under WAC 173-340-500. The department may:

(a) Request additional information;

(b) Proceed with discussions, if the department believes it is in the public interest to do so; or

(c) Provide written reasons for denying the request.

(4) Discussions on the agreed order shall not exceed sixty days unless the department decides continued discussions are in the public interest.

Unless an emergency exists, the department will stay any enforcement action under chapter 70.105D RCW; however, the duration of such stay shall not exceed sixty days from the date discussions begin. Furthermore, the department can withdraw from discussions if it determines that:

(a) Reasonable progress is not being made toward an agreed order acceptable to the department; or

(b) The agreed order is inappropriate based on new information or changed circumstances.

The department may commence with enforcement action after notifying the potentially liable person in writing of its intent to withdraw from discussions.

(5) Focus of discussions. The focus of discussions for the agreed order shall ordinarily be the technical scope of work and work schedule. This subsection is not intended to preclude discussion on

any item. It is intended to convey the expectation that the scope of work and work schedule will be the primary topics of discussion in formulating agreed orders.

(6) When issuing an agreed order, the department shall provide appropriate public participation opportunities under WAC 173-340-600. If the agreed order is for a routine cleanup action and any person requests judicial review, then the applicable consent decree procedures under WAC 173-340-520 will be initiated.

(7) Revisions. If the department and the potentially liable person signing the order agree to substantial changes in the order, the department shall provide appropriate additional public notice and opportunity to comment.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-530, filed 1/26/96, effective 2/26/96; 90-08-086, § 173-340-530, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-540 Enforcement orders.**

The department may issue an enforcement order requiring remedial action after issuing a notice of potentially liable person status letter under WAC 173-340-500. In emergencies, the notice of potentially liable person status may occur concurrently with the issuance of the order. Unless an emergency requires otherwise, the issuance of a potentially liable person status letter shall precede or take place concurrently with the issuance of an enforcement order. Furthermore, except in an emergency, the department shall issue its determination under WAC 173-340-500(4) before an enforcement order can become effective. Failure to comply with an enforcement order may result in substantial liability for costs and penalties as specified in RCW 70.105D.050.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-540, filed 4/3/90, effective 5/4/90.]

#### **WAC 173-340-550 Payment of remedial action costs.**

(1) Policy. RCW 70.105D.050(3) requires that the state seek to recover the amounts spent by the department for investigative and remedial actions and orders. It is the department's

intention to recover those costs which are reasonably attributable to the site. Timing of cost recovery for individual sites will be considered on a case-by-case basis, however, the department may demand payment of costs as they are incurred.

(2) Costs. Each person who is liable under chapter 70.105D RCW is liable for remedial action costs incurred by the department. Remedial action costs are costs reasonably attributable to the site and may include costs of direct activities, support costs of direct activities, and interest charges for delayed payments. The department may send its request for payment to all potentially liable persons who are under an order or decree for the remedial action costs at the site. The department shall charge an hourly rate based on direct staff costs plus support costs. It is the department's intention that the resulting hourly rate charged be less than the hourly rate typically charged by a comparably sized consulting firm providing similar services. The department shall use the following formula for computing hourly rates:

Hourly Rate = DSC + DSC(ASCM) + DSC(P-SCM), where

DSC = Direct Staff Costs defined in (a) of this subsection,

ASCM = Agency Support Cost Multiplier defined in (b) of this subsection, and

PSCM = Program Support Cost Multiplier defined in (c) of this subsection

(a) Costs of direct activities are direct staff costs and other direct costs. Direct staff costs (DSC) are the costs of hours worked directly on a contaminated site, including salaries, retirement plan benefits, Social Security benefits, health care benefits, leave and holiday benefits, and other benefits required by law to be paid to, or on behalf of, employees. Other direct costs are costs incurred as a direct result of department staff working on a contaminated site including, for example, costs of: Travel related to the site, printing and publishing of documents about the site, purchase or rental of equipment used for the site, and contracted work for the site.

(b) Agency support costs are the costs of facilities, communications, personnel, fiscal, and other state-wide and agency-wide services. The agency support cost multiplier (ASCM) used shall

be the agency indirect rate approved by the agency's federal cognizant agency (which, as of July 1, 1993, was the United States Department of the Interior) for each fiscal year.

(c) Program support costs are the costs of administrative time spent by site managers and other staff who work directly on sites and a portion of the cost of management, clerical, policy, computer, financial, and other support provided by other program staff to site managers and other staff who work directly on sites. Other activities of the toxics cleanup program not included in program support costs include, for example, community relations not related to a specific site, policy development, and a portion of the cost of nonsite management, clerical, policy, computer, financial, and other support staff. The program support cost multiplier (PSCM) used shall be calculated by dividing actual program support costs by the direct staff costs of all hours charged to site related work. This multiplier shall be evaluated at least biennially and any changes published in at least two publications of the *Site Register*. The calculation and source documents used in any revision shall be audited by either the state auditor's office or a private accounting firm. Audit results shall be available for public review. This multiplier shall not exceed 1.0 (one).

(3) Request for payment. When the department requests payment of remedial action costs it shall provide an itemized statement documenting the costs incurred.

(4) Interest charges. A minimum of twelve percent interest shall accrue on all remedial action costs not paid within ninety days of the billing date, or within another longer time period designated by the department.

(5) Private rights of action. The purpose of this subsection is to facilitate private rights of action and minimize department staff involvement in these actions by providing guidance to potentially liable persons and the court on what remedial actions the department would consider the substantial equivalent of a department-conducted or department-supervised remedial action. In determining substantial equivalence, the department anticipates the requirements in this section will be evaluated as a whole and that a claim would

not be disallowed due to omissions that do not diminish the overall effectiveness of the remedial action. For the purposes of this section, the department would consider the following remedial actions to be the substantial equivalent of a department-conducted or department-supervised remedial action.

(a) A remedial action conducted by the department;

(b) A remedial action that has been or is being conducted under an order or decree and the remedial requirements of the order or decree have been satisfied for those portions of the remedial action for which the private right of action is being sought; or

(c) A remedial action that has been conducted as an independent remedial action that includes the following elements:

(i) Information on the site and remedial actions conducted has been reported to the department in accordance with WAC 173-340-300 and 173-340-450, as applicable;

(ii) The department has not objected to the remedial action being conducted or any such objection has been cured as determined by the court;

(iii) Except for emergency remedial actions, prior to conducting an interim action or cleanup action, reasonable steps have been taken to provide advance public notice. The notice may be combined with any notices under another law. These public notice procedures apply only to interim actions or cleanup actions conducted as independent remedial actions after the effective date of this section. For interim actions or cleanup actions conducted as independent remedial actions prior to the effective date of this section, the department recognizes little or no public notification typically occurred because there were no department-specified requirements other than the reporting requirements in this chapter. For these actions, this chapter contains no other specific public notice requirements or guidance, and the court will need to determine such requirements, if any, on a case-by-case basis. For independent remedial actions consisting of site investigations and studies, it is anticipated that public notice would not normally be done since often these early phases of work are

to determine if a release even requires an interim action or cleanup action. For the purposes of this subsection only, unless the court determines other notice procedures are adequate for the site-specific circumstances, the following constitutes adequate public notice and supersedes the requirements in WAC 173-340-600:

(A) Except for emergency remedial actions, written notification has been mailed at least fifteen days prior to beginning construction of the interim action or cleanup action to the last known address of the following persons: The department which shall publish a summary of the notice in the *Site Register*; the local jurisdictional health department/district; the town, city or county with land use jurisdiction; the land owners identified by the tax assessor at the time the action is commenced for that portion of the facility where the interim action or cleanup action is being conducted; and persons potentially liable under RCW 70.105D.040 known to the person conducting the interim action or cleanup action. In identifying other potentially liable persons who are to be noticed under this provision, the person doing the remedial action need only make a reasonable effort to review information currently readily available. Where the interim action or cleanup action is complex, notification prior to beginning detailed design is recommended but not required. For emergency remedial actions, written notice should be provided as soon as practicable;

(B) The notice includes: A brief statement describing the releases being remedied and the interim actions or cleanup actions expected to be conducted; the schedule for these interim actions or cleanup actions; and, for persons potentially liable under RCW 70.105D.040 known to the person conducting the interim actions or cleanup actions, a statement that they could be held liable for the costs of remedial actions being conducted; and

(C) Posting a sign at the site at a location visible to the general public indicating what interim actions or cleanup actions are being conducted and identifying a person to contact for more information. Except for emergency remedial actions this sign should be posted not later than the beginning of construction of any interim action or cleanup action and should remain posted for the

duration of the construction. For emergency remedial actions posting of a sign should be done as soon as practicable;

(iv) The remedial actions have been conducted substantially equivalent with the technical standards and evaluation criteria contained in the following sections, where applicable. Where documents are required by the following sections, the documents prepared need not be the same in title or format. Other documents can be used in place of the documents specified in these sections as long as sufficient information is included in the record to serve the same purpose. When using these sections to determine substantial equivalence it should be recognized that there are often many alternative methods for cleanup of a facility that would comply with these provisions. In applying these sections, reference should be made to the other applicable sections of this chapter, with particular attention to WAC 173-340-130 (Administrative principles), WAC 173-340-200 (Definitions) and WAC 173-340-210 (Usage):

- (A) WAC 173-340-350 (State remedial investigation and feasibility study);
- (B) WAC 173-340-360 (Selection of cleanup actions);
- (C) WAC 173-340-400 (Cleanup actions);
- (D) WAC 173-340-410 (Compliance monitoring requirements);
- (E) WAC 173-340-430 (Interim actions);
- (F) WAC 173-340-440 (Institutional controls);
- (G) WAC 173-340-450 (Releases from underground storage tanks);
- (H) WAC 173-340-700 through WAC 173-340-760 (Cleanup standards); and
- (I) WAC 173-340-810 through WAC 173-340-850 (General provisions); and

(v) For facilities where hazardous substances have been disposed of as part of the remedial action, documentation is available indicating where these substances were disposed of and that this disposal was in compliance with applicable state and federal laws. It is not the intent of this provision to require extensive documentation. For example, if the remedial action results in solid wastes being transported off-site for disposal, it would be sufficient to have records indicating the

wastes have been disposed of at a permitted solid waste or hazardous waste landfill.

(6) Natural resource damages. Nothing in this section shall affect the authority of the department and the office of attorney general to recover natural resource damages.

(7) Independent remedial actions.

(a) The department has established a mechanism to recover the direct and support costs associated with the review and evaluation of independent remedial action reports submitted under WAC 173-340-300(4). This enables the department to evaluate independent cleanups and facilitates the return of property to productive use. Participation in this program is voluntary, and ecology will recover only the costs of review under the independent remedial action program from those persons requesting the department's review of an independent remedial action report. Ecology shall recover its costs of providing the review of independent remedial action reports, including:

- (i) Providing a written determination regarding the adequacy of the remedial actions performed at a site;
- (ii) Providing a written determination regarding the adequacy of the remedial actions performed at a site and removing sites or portions of sites from the hazardous sites list if the department has sufficient information to show that the independent remedial efforts are appropriate to characterize and address contamination at the site, as provided for in WAC 173-340-330 (4)(b); or
- (iii) Providing a written determination describing the deficiencies with the report or remedial action conducted at the site.

(b) The mechanism used to recover ecology's costs shall be evaluated in June 1994, and, if necessary, adjusted. The mechanism used to recover ecology's costs of review shall be evaluated every other year thereafter.

(c) It is the department's policy, in conducting reviews under this subsection, to promote independent remedial actions by delisting sites or portions of sites whenever petitions and supporting documents show that the actions taken are appropriate to characterize and address the contamination at the site.

(8) Prepayment of costs. Persons may request the department's oversight of remedial actions through a prepayment agreement. The purpose of such an agreement is to enable department oversight of remedial actions at lower priority sites. The department shall make a determination that such an agreement is in the public interest. A prepayment agreement requires a person to pay the department's remedial action costs, in advance, allowing the department to increase staff for the unanticipated workload. Agreements may cover one or more facilities.

[Statutory Authority: RCW 70.105D.030 (1)(f), 70.105D.040(2) and SB 5404. 93-24-064, § 173-340-550, filed 11/24/93, effective 12/25/93. Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-550, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-560 Mixed funding.** (1)

Introduction. Under RCW 70.105D.070 (2)(d)(xi), the department may provide public funds from the state toxics control account to a potentially liable person for the purpose of assisting with the payment of remedial action costs regardless of when incurred. This assistance can be provided in the form of a loan or a contribution, in cash or in kind. Any funding decision under this section is solely the responsibility of the director.

(2) Applicability and request.

(a) Mixed funding shall be provided only to potentially liable persons whom the department has found to be eligible and who have entered into a consent decree with the department under the requirements of this chapter.

(b) The consent decree shall identify remedial action tasks to be addressed by the mixed funding, costs to be borne by the potentially liable person, costs to be borne by the state toxics control account and terms of the agreement. In the case of loans, the consent decree shall also define any terms and conditions under which the potentially liable person receiving mixed funding has agreed to reimburse the state toxics control account.

(c) The potentially liable person shall submit sufficient documentation to support its request for mixed funding.

(3) Eligibility and mixed funding criteria. The director shall make a determination, based upon specific criteria whether a proposal is eligible for funding. The only circumstances under which mixed funding can be approved by the department are when the funding will achieve both:

(a) A substantially more expeditious or enhanced cleanup than would otherwise occur; and

(b) The prevention or mitigation of unfair economic hardship. In considering this criterion the department shall consider the extent to which mixed funding will either:

(i) Prevent or mitigate unfair economic hardship faced by the potentially liable person if the remedial action plan were to be implemented without public funding; or

(ii) Achieve greater fairness with respect to the payment of remedial action costs between the potentially liable person entering into a consent decree with the department and any nonsettling potentially liable persons.

(4) Funding decision. The department may have informal discussions on mixed funding. If a potentially liable person is found to be eligible for mixed funding, the director shall make a determination regarding the amount of funding to be provided, if any. This shall be determined at the discretion of the director and is not subject to review. A determination of eligibility is not a funding commitment. Actual funding will depend on the availability of funds.

(5) The department may recover the amount of public funding spent on investigations and remedial actions from potentially liable persons who have not entered into a consent decree under this chapter.

For purposes of such cost recovery action, the amount in mixed funding attributed to the site shall be considered as remedial action costs paid by the department.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-560, filed 4/3/90, effective 5/4/90.]

**PART VI—PUBLIC PARTICIPATION**

**WAC 173-340-600 Public notice and participation.** (1) Purpose. Public participation is

an integral part of the department's responsibilities under the Model Toxics Control Act. The department's goal is to provide the public with timely information and meaningful opportunities for participation which are commensurate with each site. The department will meet this goal through a public participation program that includes: The early planning and development of a site-specific public participation plan; the provision of public notices; a site register; public meetings or hearings; and the participation of regional citizens' advisory committees.

(2) Criteria. In order to promote effective and meaningful public participation, the department may determine that public participation opportunities in addition to those specifically required by chapter 70.105D RCW, or this chapter, are appropriate and should be provided. In making this determination, the department may consider:

(a) Known or potential risks to human health and the environment that could be avoided or reduced by providing information to the public;

(b) Public concerns about the facility;

(c) The need to contact the public in order to gather information about the facility;

(d) The extent to which the public's opportunity to affect subsequent departmental decisions at the facility may be limited or foreclosed in the future;

(e) The need to prevent disclosure of confidential, unverified, or enforcement-sensitive information;

(f) The routine nature of the contemplated remedial action; and

(g) Any other factors as determined by the department.

(3) Public notice. Whenever public notice is required by chapter 70.105D RCW, the department shall at a minimum provide or require notice as described in this section except as specified for the biennial report in WAC 173-340-340.

(a) Request. Notice shall be mailed to persons who have made a timely request. A request for notice is timely if received prior to or during the public comment period for the current phase of remedial action at the facility. However, the receipt of a request for notice shall not require the department to extend the comment period associated with the notice.

(b) Mail. Notice shall be mailed to persons who reside within the potentially affected vicinity of the proposed action. The potentially affected vicinity shall include all property adjoining the site and any other area that the department determines to be directly affected by the proposed action.

(c) Newspaper publication. Notice of the proposed action shall be published in the newspaper of largest circulation in the city or county of the proposed action, by one or more of the following methods: Display ad; legal notice; or any other appropriate format, as determined by the department.

(d) Other news media. Notice of the proposed action shall be mailed to any other news media which the department determines to be appropriate. The department may consider how a medium compares with the newspaper of largest circulation in terms of: Audience reached; timeliness; adequacy in conveying the particular information in the notice; cost; or other relevant factors.

(e) Comment periods. All public notices shall indicate the public comment period on the proposed action. Unless stated otherwise, comment periods shall be for thirty days at a minimum.

(f) Combining public comment requirements. Whenever reasonable, the department shall consolidate public notice and opportunities for public comment under this chapter with public notice and comment requirements under other laws and regulations.

(4) Public meetings. During any comment period announced by a public notice issued under this chapter, if ten or more persons request a public meeting on the subject of the public notice, the department shall hold a public meeting for the purpose of receiving comments.

(5) Additional methods. In addition to "public notice" required by chapter 70.105D RCW, or this chapter, the department may use any of the following methods to provide information to the public:

(a) Press releases;

(b) Fact sheets;

(c) Public meetings;

(d) Publications;

(e) Personal contact by department employees;

(f) Posting signs at the facility;

(g) Notice in the site register;

(h) Any other methods as determined by the department.

(6) Site register. The department shall regularly publish and maintain a site register, giving notice of the following:

(a) Determinations of no further action under WAC 173-340-320;

(b) Results of site hazard rankings;

(c) Availability of annual and biennial reports;

(d) Issuance of enforcement orders, agreed orders, or proposed consent decrees;

(e) Public meetings or hearings;

(f) Scoping notice of department-conducted state remedial investigation/feasibility study;

(g) Availability of state remedial investigation/feasibility study reports and draft and final cleanup plans;

(h) Change in site status or placing sites on or removing sites from the hazardous sites list under WAC 173-340-330;

(i) Availability of engineering design reports under WAC 173-340-400;

(j) Schedules developed under WAC 173-340-140;

(k) Reports of independent cleanup actions received under WAC 173-340-300;

(l) Commencement of negotiations or discussions under WAC 173-340-520 and 173-340-530;

(m) Deadline extensions or missed deadlines under WAC 173-340-140; and

(n) Any other notice that the department deems appropriate for inclusion.

(7) Evaluation. As part of requiring or conducting a remedial action at any facility, the department shall evaluate public participation needs at the facility, including an identification of the potentially affected vicinity for the remedial action.

(8) Public participation plans.

(a) Scope. The public participation plans required by this section are intended to encourage a coordinated and effective public involvement tailored to the public's needs at a particular facility. The scope of a plan shall be commensurate with the nature of the proposed remedial actions; the level of public concern; and the risks posed by the facility.

(b) Early planning encouraged. In order to develop an appropriate plan, the department or potentially liable person (if submitting a plan to the department) should engage in an early planning process to assess the public participation needs at the facility. This process may include identifying and conferring with individuals, community groups, local governments, tribes, public agencies, or any other organizations that may have an interest in or knowledge of the facility.

(c) Plan development. The department shall develop the plan, or work with the potentially liable person to develop the plan. If a plan already exists for a facility, the department shall consider whether the existing plan is still appropriate or whether the plan should be amended. For example, a plan originally developed to address a state remedial investigation/feasibility study may need to be amended to address implementation phases.

(d) Plans required. As part of requiring or conducting a remedial action, except emergency actions, at any site that has been assigned a hazard ranking score, the department shall ensure that a public participation plan is developed and implemented. The department may also require the development of a public participation plan for facilities which have not been assigned a hazard ranking score as part of an agreed order or consent decree with a potentially liable person.

(e) Plan as part of order or decree. A potentially liable person will ordinarily be required to submit a proposed public participation plan as part of its request for an agreed order or a consent decree. If a plan already exists for the facility, the potentially liable person may either resubmit the existing plan with any proposed amendments or submit an entirely new proposed plan. The proposed plan may be revised during the course of discussions or negotiations on the agreed order or consent decree.

The final public participation plan may become part of the agreed order or consent decree.

(f) Contents. The public participation plan shall include the following:

(i) Applicable public notice requirements and how these will be met, including: When public notice will occur; the length of the comment periods accompanying each notice; the potentially

affected vicinity and any other areas to be provided notice, to the extent known.

(ii) Information repositories. The plan should identify at least one location where the public can review information about the remedial action. Multiple locations may be appropriate.

(iii) Methods of identifying the public's concerns. Such methods may include: Interviews; questionnaires; meetings; contacts with community groups or other organizations which have an interest in the site; establishing citizen advisory groups for sites; or obtaining advice from the appropriate regional citizens' advisory committee.

(iv) Methods of addressing the public's concerns and conveying information to the public. These may include any of the methods listed in subsection (5) of this section.

(v) Coordination of public participation requirements. The plan should identify any public participation requirements of other applicable federal, state or local laws, and address how such requirements can be coordinated. For example, if Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) applies to the proposed action, the plan should explain how CERCLA and this chapter's public comment periods will be coordinated.

(vi) Amendments to the plan. The plan should outline the process for amending the plan. Any amendments must be approved by the department.

(vii) Any other elements that the department determines to be appropriate for inclusion in the final public participation plan.

(g) Implementation. The department shall retain approval authority over the actions taken by a potentially liable person to implement the plan.

(9) Consent decrees. In addition to any other applicable public participation requirements, the following shall be required for consent decrees.

(a) A public participation plan which meets the requirements of subsection (8) of this section shall be developed when required by subsection (8)(d) of this section.

(b) Notice of negotiations. When the department decides to proceed with negotiations it shall place a notice in the site register advising the public that negotiations have commenced. This notice shall include the name of the facility, a general

description of the subject of the order and the deadlines for negotiations.

(c) Notice of proposed decree. The department shall provide or require public notice of proposed consent decree. The notice may be combined with notice of other documents under this chapter, such as a cleanup action plan, or under other laws. The notice shall briefly:

(i) Identify and generally describe the facility;

(ii) Identify the person(s) who are parties to the consent decree;

(iii) Generally describe the remedial action proposed in the proposed consent decree;

(iv) Indicate the date, place, and time of the public hearing on the proposed consent decree; and

(v) Invite the public to comment at the public hearing or in writing. The public comment period shall run for at least thirty days from the date of the issuance of the notice.

(d) Public hearing. The department shall hold a public hearing on the proposed consent decree for the purpose of providing the public with an opportunity to comment.

(e) Revisions. If the state and the potentially liable person agree to substantial changes to the proposed consent decree, the department shall provide additional public notice and opportunity to comment.

(f) Extensions. The department shall publish in the next site register the extension of deadlines for designated high priority sites.

(10) Agreed orders. In addition to any other applicable public participation requirements, the following shall be required for agreed orders under WAC 173-340-530.

(a) Public participation plan. A plan meeting the requirements of subsection (8) of this section shall be developed when required by subsection (8)(d) of this section.

(b) Notice of discussions. When the department decides to proceed with discussions it shall place a notice in the site register advising the public that discussions have commenced. This notice shall include the name of the facility, a general description of the subject of the order and the deadlines for discussions.

(c) Notice of agreed orders. Public notice shall be provided by the department for any agreed order.

For all agreed orders, notice shall be mailed no later than three days after the issuance of the agreed order. For agreed orders covering a state remedial investigation/feasibility study, the comment period shall be at least thirty days and shall be completed before the agreed order becomes effective. For other agreed orders, the agreed order may be effective before the comment period is over, unless the department determines it is in the public interest to complete the public comment period prior to the effective date of the agreed order. The department may determine that it is in the public interest to provide public notice prior to the effective date of any agreed order or to hold a public meeting or hearing on the agreed order. This notice shall briefly:

- (i) Identify and generally describe the facility;
- (ii) Identify the person(s) who are parties to the order;
- (iii) Generally describe the remedial action proposed in the proposed order; and
- (iv) Invite the public to comment on the proposed order.

(d) Revisions. If the department and the potentially liable person agree to substantial changes to the proposed order, the department shall provide additional public notice and opportunity to comment.

(e) Extensions. The department shall publish in the next site register the extension of deadlines for designated high priority sites.

(11) Enforcement orders. In addition to any other applicable public participation requirements, the department shall provide public notice of all enforcement orders. Except in the case of emergencies, notice shall be mailed no later than three days after the date of the issuance of the order. In emergencies, notice shall be mailed no later than ten days after the issuance of the order.

(a) Contents of notice. All notices shall briefly:

- (i) Identify and generally describe the facility;
- (ii) Identify the person(s) who are parties to the order;
- (iii) Generally describe the terms of the proposed order; and
- (iv) Invite the public to comment on the proposed order.

(b) The department may amend the order on the basis of public comments. The department shall provide additional public notice and opportunity to comment if the order is substantially changed.

(12) State remedial investigation/feasibility study. In addition to any other applicable public participation requirements, the following shall be required during a state remedial investigation/feasibility study.

(a) Scoping. When the department elects to perform a state remedial investigation/feasibility study, public notice and an opportunity to comment on the scope of the state remedial investigation/feasibility study will be provided.

(b) Extensions. The department shall publish in the next site register the extension of deadlines for designated high priority sites.

(c) Report. The department shall provide or require public notice of state remedial investigation/feasibility study reports prepared under WAC 173-340-350. This public notice may be combined with public notice of the draft cleanup action plan. At a minimum, public notice shall briefly:

- (i) Describe the site and state remedial investigation/feasibility study results;
- (ii) If available, identify the department's selected cleanup action and provide an explanation for its selection;
- (iii) Invite public comment on the report. The public comment period shall extend for at least thirty days from the date of mailing of the notice.

(13) Selection of cleanup actions. In addition to any other applicable public participation requirements, the department shall:

(a) Provide a notice of availability of draft or final cleanup action plans and a brief description of the proposed or selected alternative in the site register;

(b) Provide public notice of the draft cleanup action plan. A notice of a draft cleanup plan may be combined with notice on the state remedial investigation/feasibility study. Notice of a draft cleanup action plan may be combined with notice on a draft consent decree or on an order. At a minimum, public notice shall briefly:

- (i) Describe the site;
- (ii) Identify the department's proposed cleanup action and provide an explanation for its selection;

(iii) Invite public comment on the draft cleanup action plan. The public comment period shall run for at least thirty days from the date of issuance of the public notice.

(14) Cleanup action implementation. In addition to any other applicable public participation requirements, the following shall be required during cleanup action implementation.

(a) Public notice and opportunity to comment on any plans prepared under WAC 173-340-400 that represent a substantial change from the cleanup action plan.

(b) When the department conducts a cleanup action, public notice and an opportunity to comment shall be provided on the engineering design report and notice shall be given in the site register.

(15) Routine cleanup and interim actions. In addition to any other applicable public participation requirements, the following will be required for routine cleanup actions and interim actions.

(a) Public notice shall be provided for any proposed routine cleanup or interim actions under WAC 173-340-130 or 173-340-430. This public notice shall be combined with public notice of an order or settlement whenever practicable.

(b) At a minimum, public notice shall briefly:

(i) Describe the site;

(ii) Identify the proposed action;

(iii) Identify the likely or planned schedule for the action;

(iv) Reference any planning documents prepared for the action;

(v) Identify department staff who may be contacted for further information; and

(vi) Invite public comment on the routine cleanup or interim action.

The public comment period shall extend for at least thirty days from the date of the mailing of notice.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-600, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-610 Regional citizens' advisory committees.** (1) The department shall establish regional citizens' advisory committees as part of a public participation program. The regional citizens' advisory committees are intended to promote

meaningful and effective public involvement in the department's remedial action program under chapter 70.105D RCW. The committees will advise the department as to the concerns of citizens locally and regionally regarding the remedial actions within each committee's region, with emphasis on issues that affect the region as a whole, rather than site-specific concerns.

(2) Location. There shall be a regional citizens' advisory committee representing each geographic region of the state served by a regional office of the department.

(3) Membership. At any time, each committee shall have no fewer than five and no more than twelve members. The director shall, no later than July 1, 1990, appoint five members to each committee to represent citizens' interests in the region. These members shall serve three-year terms that may be renewed at the director's discretion. These members should represent citizen interests in the region.

(a) The director may appoint up to seven additional members to represent communities that may be affected by the remedial actions within each region. These members shall serve two-year terms that may be renewed at the director's discretion.

(b) At no time shall more than twenty-five percent of the membership of any committee consist of persons who are elected or appointed public officials or their representatives.

(c) The department shall advise the public as to whether any vacancies exist on the committees, and shall accept applications from interested citizens.

(d) The following persons shall not be eligible to serve on any committee:

(i) Persons whom the department has found are potentially liable persons under WAC 173-340-500 with regard to any facility that is currently the subject of department investigative, remedial or enforcement actions, not including compliance monitoring;

(ii) Agents or employees of such potentially liable persons as described in (d)(i) of this subsection; and

(iii) Agents or employees of the department.

(e) A member shall refrain from participating in a committee matter if that member for any reason

cannot act fairly and in the public interest with regard to that matter.

(f) The director may dismiss a member for cause in accordance with the terms of the regional citizens' advisory committee charter.

(4) Meetings. The committees shall meet at least twice a year at the regional offices or elsewhere as agreed upon by a committee and the department. Appropriate department staff may attend these meetings. The department shall brief the committees on the program's major planned and ongoing activities for the year.

(a) The department and the committees may agree to additional meetings.

(b) Each committee will designate one of its members to serve as chair. The committee chairs shall meet every year with the program manager or his/her designee.

(c) All committee meetings shall be open to the public. The department shall inform the public of committee meetings.

(5) Resources to be allocated to the committees.

(a) The department shall determine, after consulting with the committees, the amount of staff time and other department resources that shall be available to the committees for each biennium.

(b) The department shall designate staff to work with the committees.

(c) Members shall be reimbursed for travel expenses (as provided for in chapter 43.03 RCW) for any meetings approved by the department.

(6) Responsibilities. The committees are directed to:

(a) Meet at least twice annually;

(b) Inform citizens within each region as to the existence of the committees and their availability as a resource;

(c) Review the department's biennial program priorities, and advise the department of citizen concerns regarding the program priorities;

(d) Advise the department on a timely basis of citizen concerns regarding investigative or remedial activities within each region, and where possible, suggest ways in which the department can address those concerns;

(e) Annually prepare a brief report to the department describing:

(i) Major citizen concerns that have been brought to the committee's attention during the past year;

(ii) Any committee proposals or recommendations to address these concerns;

(iii) The committee's plans for the coming year; and

(iv) Any other information or issues which the committee believes appropriate for inclusion.

(7) The committees are encouraged to work with the department and the public to develop additional committee goals or responsibilities.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-610, filed 4/3/90, effective 5/4/90.]

## PART VII—CLEANUP STANDARDS

**WAC 173-340-700 Overview of cleanup standards.** (1) Purpose. This section provides an overview of the methods for establishing cleanup standards that apply to a release or threatened release of a hazardous substance at a site. If there are any inconsistencies between this section and any specifically referenced section, the referenced section shall govern.

(2) Cleanup standards versus selection of cleanup actions.

(a) Cleanup standards are identified for the particular hazardous substances at a site and the specific areas or pathways, such as land or water, where humans and the environment can become exposed to these substances. This part provides uniform methods state-wide for identifying cleanup standards and requires that all cleanups under the act meet these standards. The actual degree of cleanup may vary from site to site and will be determined by the cleanup action alternative selected under WAC 173-340-360. Establishing cleanup standards for individual sites requires the specification of the following:

(i) Hazardous substance concentrations that protect human health and the environment ("cleanup levels");

(ii) The location on the site where those cleanup levels must be attained ("points of compliance"); and

(iii) Additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. These requirements are specified in applicable state and federal laws and are generally established in conjunction with the selection of a specific cleanup action.

(b) For most sites, there are several cleanup technologies or combinations of cleanup technologies ("cleanup action alternatives") that may be used to comply with cleanup standards at individual sites. Other parts of this rule govern the process for planning and deciding on the cleanup action to be taken at a site. For example, WAC 173-340-350 (State remedial investigation and feasibility study) (RI/FS) specifies the studies that are prepared to define the nature and extent of contamination ("RI") and to identify and evaluate cleanup action alternatives ("FS"). WAC 173-340-360 (Selection of cleanup actions) specifies the criteria for selecting the preferred alternative. WAC 173-340-410 specifies the monitoring required to assure that the remedy is effective.

(c) The department recognizes that cleanup actions selected under WAC 173-340-360 may involve containment of hazardous substances. In these cases, the cleanup action may be determined to comply with cleanup standards, provided the compliance monitoring program is designed to ensure the long-term integrity of the containment system, and the other requirements for containment technologies in WAC 173-340-360(8) are met.

(3) Three basic methods for establishing cleanup levels. These rules provide three approaches for establishing cleanup levels:

(a) Method A: Tables. On some sites, the cleanup action may be routine (WAC 173-340-130) or may involve relatively few hazardous substances. Under Method A, cleanup levels for hazardous substances are established at concentrations at least as stringent as concentrations specified in applicable state and federal laws and Tables 1, 2, or 3 of this chapter. Method A cleanup levels for hazardous substances not addressed under applicable state and federal laws or Tables 1, 2, or 3 are established at concentrations which do not exceed the natural background concentration or the

practical quantitation limit for the substance in question.

(b) Method B: Standard method. Method B is the standard method for determining cleanup levels for ground water, surface water, soil, and air. Cleanup levels for individual hazardous substances are established using applicable state and federal laws or the risk equations specified in WAC 173-340-720 through 173-340-750. For individual carcinogens, cleanup levels are based upon the upper bound of the estimated excess lifetime cancer risk of one in one million ( $1 \times 10^{-6}$ ). For individual noncarcinogenic substances, cleanup levels are set at concentrations which are anticipated to result in no acute or chronic toxic effects on human health and the environment. Where a hazardous waste site involves multiple hazardous substances and/or multiple pathways of exposure, method B cleanup levels for individual substances must be modified in accordance with the procedures in WAC 173-340-708. Under this method, the total excess lifetime cancer risk for a site shall not exceed one in one hundred thousand ( $1 \times 10^{-5}$ ) and the hazard index for substances with similar noncarcinogenic toxic effects shall not exceed one (1).

(c) Method C: Conditional method. Compliance with cleanup levels developed under the method A or B may be impossible to achieve or may cause greater environmental harm. In those situations, method C cleanup levels for individual hazardous substances may be established on the basis of applicable state and federal laws and a site-specific risk assessment. Method C industrial soil cleanup levels may also be established at industrial properties which meet the criteria in WAC 173-340-745. For individual carcinogens, method C cleanup levels are based upon the upper bound of the estimated lifetime cancer risk of one in one hundred thousand ( $1 \times 10^{-5}$ ). For individual noncarcinogenic substances, method C cleanup levels are set at concentrations which are anticipated to result in no acute or chronic toxic effects on human health and no significant adverse effects on the protection and propagation of aquatic and terrestrial organisms. Where a hazardous waste site involves multiple hazardous substances and/or multiple pathways of exposure, method C cleanup levels for individual substances must be modified

in accordance with the procedures in WAC 173-340-708. Under this method, the total excess lifetime cancer risk for a site shall not exceed one in one hundred thousand ( $1 \times 10^{-5}$ ) and the hazard index for substances with similar noncarcinogenic toxic effects shall not exceed one (1).

(4) Additional requirements for setting cleanup levels. Several requirements apply to cleanups under any of the three basic methods. Some of these requirements, such as the identification of applicable state and federal laws, describe analyses used along with methods A, B or C in order to set cleanup levels for particular substances at a site. Others describe the technical procedures to be used.

(a) Applicable state and federal laws. RCW 70.105D.030 (2)(d) requires the cleanup standards in these rules to be "at least as stringent as all applicable state and federal laws." In addition to establishing minimum requirements for cleanup standards, applicable state and federal laws may also impose certain technical and procedural requirements for performing cleanup actions. These requirements are described in WAC 173-340-710 and are similar to the "ARAR" (applicable, relevant and appropriate requirements) approach of the federal superfund law.

(b) Cross-media contamination. In some situations, migration of hazardous substances from one medium may cause contamination in a second media. For example, the release of hazardous substances in soil may cause ground water contamination. Under methods A, B, and C, cleanup levels must be established at concentrations which prevent violations of cleanup levels for other media following implementation of the cleanup action.

(c) Risk assessment procedures. The analyses performed under methods B and C use several factors for defining cleanup levels for carcinogens and noncarcinogens. The individual factors and procedures for modifying these factors based on new scientific information are specified in WAC 173-340-708 and 173-340-720 through 173-340-750. WAC 173-340-708 also provides rules for use of indicator hazardous substances.

(d) Natural background. Cleanup levels shall not exceed concentrations established under methods A, B, or C except where the natural background concentration is greater than the cleanup level

established under those methods. In such situations, the cleanup level shall be established at a concentration equal to the natural background concentration.

(5) Threshold criteria for all cleanup actions. WAC 173-340-360 specifies that all cleanup actions conducted under this chapter shall protect human health and the environment, comply with cleanup standards and applicable state and federal laws, and provide for compliance monitoring. These are the threshold criteria and all cleanup actions must meet these criteria regardless of other factors such as cost or technical limitations.

(6) Measuring compliance. Setting cleanup standards also involves being able to demonstrate that they have been met. This involves specifying where on the site the cleanup levels must be met ("points of compliance"), how long it takes for a site to meet cleanup levels ("restoration time frame"), and conducting sufficient monitoring to demonstrate that the cleanup standards have been met and will continue to be met in the future. The provisions for establishing points of compliance are in WAC 173-340-720 through 173-340-750. The provisions for establishing restoration time frames are in WAC 173-340-360. The compliance monitoring plan prepared under WAC 173-340-410 specifies precisely how these are measured for each site. Where cleanup levels are below the practical quantitation limit, compliance with cleanup standards will be based upon the practical quantitation limit.

(7) Administrative principles for cleanup standards.

(a) Remedial actions under this chapter shall be conducted in a manner that is consistent with this section. This section shall be used in combination with WAC 173-340-130, the more specific sections in Part VII of this chapter and WAC 173-340-360.

(b) Establishing cleanup standards and selecting an appropriate cleanup action involves many technical and public policy decisions. This chapter is intended to constrain the range of decisions needed to be made on individual sites to promote expeditious cleanups.

(c) The act contains policies which state, in part, each person has a fundamental and inalienable right to a healthful environment and it is essential

that sites be cleaned up well. Consistent with these policies, cleanup standards under this chapter shall be established which provide conservative estimates of human health and environmental risks which protect susceptible individuals as well as the general population.

(d) Cleanup standards under this chapter shall be established which protect human health and the environment for current and potential future site and resource uses.

(e) Cleanup actions that achieve cleanup levels under methods A, B or C (as applicable) and comply with applicable state and federal laws shall be presumed to be protective of human health and the environment.

(f) Except as provided for in applicable state and federal laws, cost shall not be a factor in determining what cleanup level is protective of human health and the environment. In addition, where specifically provided for in this chapter, cost may be appropriate for certain other determinations related to cleanup standards such as point of compliance. Cost shall, however, be considered when selecting an appropriate cleanup action.

(g) At most sites, there is more than one hazardous substance and more than one pathway for hazardous substances to get into the environment. For many sites there is more than one technology that could address each of these. When evaluating cleanup action alternatives it is appropriate to consider a representative range of technologies that could address each of these as well as different combinations of these technologies to accomplish the overall site cleanup.

(h) The cleanup of a particular media of a site will often affect other media at the site. These cross-media impacts shall be considered when establishing cleanup standards and selecting a cleanup action. Cleanup actions conducted under this chapter shall use appropriate engineering controls or other measures to minimize these cross-media impacts.

(i) In general, cleanup levels must be met throughout a site before the site will be considered to be clean. A remedy that leaves hazardous substances on a site in excess of cleanup levels may qualify as a cleanup action as long as the remedy is protective of human health and the environment,

meets cleanup levels at specified points of compliance, complies with applicable state and federal laws, provides for adequate monitoring, and incorporates appropriate institutional controls. However, these rules are intended to promote thorough cleanups rather than long-term partial cleanups or containment measures.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-700, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-700, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-700, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-702 General policies.** (1)

**Purpose.** This section defines the policies and principles that the department shall utilize to ensure that cleanup standards under this chapter are established and implemented in a scientifically and technically sound manner.

(2) Relationship to federal cleanup law. When evaluating cleanup actions performed under the federal cleanup law, the department shall consider WAC 173-340-360 and 173-340-700 through 173-340-760 to be a legally applicable requirement under Section 121(d) of the Federal Cleanup Law.

(3) Regulation update. The department shall review and, as appropriate, update WAC 173-340-700 through 173-340-760 no less frequently than once every five years.

(4) Institutional controls. Institutional controls under WAC 173-340-440 shall be required whenever a cleanup action results in residual concentrations of hazardous substances which exceed method A or method B cleanup levels, as applicable, or conditional points of compliance are approved by the department under WAC 173-340-720 through 173-340-760. Institutional controls shall also be required when cleanup levels are established under WAC 173-340-745.

(5) Burden of proof. Any person responsible for undertaking a cleanup action under this chapter who proposes to establish a cleanup level under method C or a conditional point of compliance shall have the burden of demonstrating to the department that requirements in this part have been met to assure protection of human health and the environment. The department shall only approve

cleanup levels under method C or conditional points of compliance when it determines that that the person undertaking the cleanup actions met this burden of proof.

(6) New scientific information. The department shall consider new scientific information when establishing cleanup levels for individual sites. In making a determination on how to use this new information, the department shall, as appropriate, consult with the science advisory board, the department of health, and the United States Environmental Protection Agency.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-702, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-704 Use of method A.** (1) Method A may be used to establish cleanup levels at the following types of sites:

(a) Sites undergoing routine cleanup actions as defined in WAC 173-340-130; or

(b) Sites where numerical standards are available in this chapter or applicable state and federal laws for all indicator hazardous substances in all media of concern.

(2) Method A cleanup levels shall be established in accordance with the procedures in WAC 173-340-720 through 173-340-760. Method A cleanup levels shall be at least as stringent as all of the following:

(a) Concentrations of individual hazardous substances listed in the tables in WAC 173-340-720, 173-340-740, or 173-340-745;

(b) Concentrations of individual hazardous substances established under applicable state and federal laws; and

(c) For individual hazardous substances not addressed under (a) and (b) of this subsection, concentrations that do not exceed natural background levels or the practical quantitation limit for the substance in question.

(3) The department may establish method A cleanup levels more stringent than those required by subsection (2) of this section, when based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(4) Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup action under this chapter.

(5) If there are any inconsistencies between this section and any specifically referenced sections, the referenced section shall govern.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-704, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-705 Use of method B.** (1) Method B is applicable to all sites. It shall be used to develop cleanup levels unless one or more of the conditions for using method A or method C are demonstrated to exist and the person conducting the cleanup action elects to utilize that method.

(2) Method B cleanup levels shall be established in accordance with the procedures in WAC 173-340-720 through 173-340-760. Method B cleanup levels shall be at least as stringent as all of the following:

(a) Concentrations of individual hazardous substances established under applicable state and federal laws;

(b) Concentrations which are estimated to result in no adverse effects on the protection and propagation of aquatic and terrestrial life;

(c) For hazardous substances for which sufficiently protective, health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(i) Concentrations which are estimated to result in no acute or chronic toxic effects on human health as determined using a hazard quotient of one (1)

and the procedures specified in WAC 173-340-720 through 173-340-760;

(ii) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to one in one million as determined using the procedures specified in WAC 173-340-720 through 173-340-760; and

(iii) Concentrations which eliminate or minimize the potential for food chain contamination; and

(3) The department may establish method B cleanup levels that are more stringent than those required by subsection (2) of this section, when based upon a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(4) Concentrations of individual hazardous substances established under subsections (2) and (3) of this section, including those based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures in WAC 173-340-708. In making these adjustments, the hazard index shall not exceed one (1) and the total excess cancer risk shall not exceed one in one hundred thousand. These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including cleanup levels based on applicable state and federal laws.

(5) If there are any inconsistencies between this section and any specifically referenced sections, the referenced section shall govern.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-705, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-706 Use of method C.** (1) Method C cleanup levels represent concentrations which are protective of human health and the environment for specified site uses. A site (or portion of a site) that qualifies for a method C cleanup level for one medium does not necessarily

qualify for a method C cleanup level in other media. Each medium must be evaluated separately using the criteria applicable to that medium.

(a) Method C cleanup levels may be established where the person conducting the cleanup action can demonstrate that such levels comply with applicable state and federal laws, that all practicable methods of treatment are utilized, that institutional controls are implemented in accordance with WAC 173-340-440, and that one or more of the following conditions exist:

(i) Where method A or B cleanup levels are below area background concentrations, method C cleanup levels may be established at concentrations that are equal to area background concentrations, but in no case greater than concentrations specified in subsection (2) of this section; or

(ii) Where attainment of method A or B cleanup levels has the potential for creating a significantly greater overall threat to human health or the environment than attainment of method C cleanup levels established under this chapter, method C cleanup levels may be established at concentrations which minimize those overall threats, but in no case greater than concentrations specified in subsection (2) of this section. Factors that shall be considered in making this determination include:

- (A) Results of a site-specific risk assessment;
- (B) Duration of threats;
- (C) Reversibility of threats;
- (D) Magnitude of threats; and
- (E) Nature of affected population.

(iii) Where method A or B cleanup levels are below technically possible concentrations, method C cleanup levels may be established at the technically possible concentrations, but in no case greater than levels specified in subsection (2) of this section.

(b) For soil cleanup levels only, Method C cleanup levels may also be established where the person conducting the cleanup action can demonstrate that the area under consideration is an industrial property and meets the criteria for establishing industrial soil cleanup levels under WAC 173-340-745.

(2) Method C cleanup levels shall be established in accordance with the procedures in WAC

173-340-720 through 173-340-760. Method C cleanup levels shall be at least as stringent as all of the following:

(a) Concentrations established under applicable state and federal laws;

(b) Concentrations which are estimated to result in no significant adverse effects on the protection and propagation of aquatic and terrestrial life;

(c) For hazardous substances for which sufficiently protective, health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which are protective of human health and the environment as determined by the following methods:

(i) Concentrations which are estimated to result in no significant adverse acute or chronic toxic effects on human health as estimated using a hazard quotient of one and the procedures defined in WAC 173-340-720 through 173-340-760;

(ii) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to one in one hundred thousand as determined using the procedures defined in WAC 173-340-720 through 173-340-760; and

(iii) Concentrations which eliminate or minimize the potential for food chain contamination.

(3) The department may establish method C cleanup levels that are more stringent than those required by subsection (2) of this section when based upon a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(4) Concentrations of individual hazardous substances established under subsections (2) and (3) of this section, including those based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with WAC 173-340-708. In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand. These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway,

[Ch. 173-340 WAC—p. 56]

including cleanup levels based on applicable state and federal laws.

(5) If there are any inconsistencies between this subsection and any specifically referenced sections, the referenced section shall govern.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-706, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-706, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-707 Analytical considerations.** (1) Analytical methods used to evaluate the effectiveness of a cleanup action shall comply with the requirements in WAC 173-340-830.

(2) The department recognizes that there may be situations where a hazardous substance is not detected or is detected at a concentration below the practical quantitation limit utilizing sampling and analytical procedures which comply with the requirements of WAC 173-340-830. If those situations arise and the practical quantitation limit is higher than the cleanup level for that substance, the cleanup level shall be considered to have been attained, subject to subsection (4) of this section, only when the more stringent of the following conditions are met:

(a) The practical quantitation limit is no greater than ten times the method detection limit; or

(b) The practical quantitation limit for the particular hazardous substance, medium, and analytical procedure is no greater than the practical quantitation limit established by the United States Environmental Protection Agency and used to establish requirements in 40 CFR 136, 40 CFR 141 through 143, or 40 CFR 260 through 270.

(3) In cases where a cleanup level required by this chapter is less than the practical quantitation limit using an approved analytical procedure, the department may also require one or more of the following:

(a) Use of surrogate measures of hazardous substance contamination;

(b) Use or development of specialized sample collection or analysis techniques to improve the method detection limit or practical quantitation limit for the hazardous substances at the site; or

(c) Monitoring to assure that the concentration of a hazardous substance does not exceed detectable levels.

(4) When the practical quantitation limit is above the cleanup level, the department shall consider the availability of improved analytical techniques when performing periodic reviews under WAC 173-340-420. Subsequent to those reviews, the department may require the use of improved analytical techniques with lower practical quantitation limits and other appropriate actions.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-707, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-708 Human health risk assessment procedures.** (1) Purpose. This section defines the risk assessment framework that the department will utilize to establish cleanup levels.

(2) Selection of indicator hazardous substances.

(a) When defining cleanup requirements at a site that is contaminated with a large number of hazardous substances, the department may eliminate from consideration those hazardous substances that contribute a small percentage of the overall threat to human health and the environment. The remaining hazardous substances shall serve as indicator hazardous substances for purposes of defining site cleanup requirements.

(b) If the department considers this approach appropriate for a particular site, the factors evaluated when eliminating individual hazardous substances from further consideration shall include:

(i) The toxicological characteristics of the hazardous substance that influence its ability to adversely affect human health or the environment relative to the concentration of the hazardous substance at the site;

(ii) The chemical and physical characteristics of the hazardous substance which govern its tendency to persist in the environment;

(iii) The chemical and physical characteristics of the hazardous substance which govern its tendency to move into and through environmental media;

(iv) The natural background concentrations of the hazardous substance;

(v) The thoroughness of testing for the hazardous substance at the site;

(vi) The frequency that the hazardous substance has been detected at the site; and

(vii) Degradation by-products of the hazardous substance.

(c) When the department determines that the use of indicator hazardous substances is appropriate for a particular site, it may also require biological testing to address potential toxic effects associated with hazardous substances eliminated from consideration under this subsection.

(3) Reasonable maximum exposure.

(a) Cleanup levels shall be based on estimates of current and future resource uses and reasonable maximum exposures expected to occur under both current and potential future site use conditions.

(b) The reasonable maximum exposure is defined as the highest exposure that is reasonably expected to occur at a site under current and potential future site use. WAC 173-340-720 through 173-340-760 define the reasonable maximum exposures for ground water, surface water, soil, and air. These reasonable maximum exposures will apply to most sites where individuals or groups of individuals are or could be exposed to hazardous substances. For example, the reasonable maximum exposure for most ground water is defined as exposure to hazardous substances in drinking water and other domestic uses.

(c) Persons performing cleanup actions under this chapter may utilize the evaluation criteria in WAC 173-340-720 through 173-340-760 to demonstrate that the reasonable maximum exposure scenarios specified in those sections are not appropriate for a particular site. The use of an alternate exposure scenario shall be documented by the person performing the cleanup action. Documentation for the use of alternate exposure scenarios shall be based on the results of investigations performed in accordance with WAC 173-340-350.

(d) Individuals or groups of individuals may be exposed to hazardous substances through more than one exposure pathway. For example, a person may be exposed to hazardous substances from a site by drinking contaminated ground water, eating contaminated fish, and breathing contaminated air. At sites where the same individuals or groups of

individuals are or could be consistently exposed through more than one pathway, the reasonable maximum exposure shall represent the total exposure through all of those pathways. At such sites, the cleanup levels derived for individual pathways under WAC 173-340-720 through 173-340-760 shall be adjusted downward to take into account multiple exposure pathways.

(4) Cleanup levels for individual hazardous substances. Cleanup levels for individual hazardous substances will generally be based on a combination of requirements in applicable state and federal laws and risk assessment.

(5) Multiple hazardous substances.

(a) Cleanup levels for individual hazardous substances established under methods B and C shall be adjusted downward to take into account exposure to multiple hazardous substances. Adverse effects resulting from exposure to two or more hazardous substances with similar types of toxic response are assumed to be additive unless scientific evidence is available to demonstrate otherwise.

(b) Cancer risks resulting from exposure to two or more carcinogens are assumed to be additive unless scientific evidence is available to demonstrate otherwise.

(c) For purposes of establishing cleanup levels for noncarcinogens under methods B and C, the health threats resulting from exposure to two or more hazardous substances with similar types of toxic response may be apportioned between those hazardous substances in any combination as long as the hazard index does not exceed one (1).

(d) For purposes of establishing cleanup levels for carcinogens under methods B and C, the cancer risks resulting from exposure to multiple hazardous substances may be apportioned between hazardous substances in any combination as long as the total excess cancer risk does not exceed one in one hundred thousand.

(e) The department may require biological testing to assess the potential interactive effects associated with chemical mixtures.

(6) Multiple pathways of exposure.

(a) Estimated doses of individual hazardous substances resulting from more than one pathway of exposure are assumed to be additive unless

scientific evidence is available to demonstrate otherwise.

(b) Cleanup levels based on one pathway of exposure shall be adjusted downward to take into account exposures from more than one exposure pathway. The number of exposure pathways considered at a given site shall be based on the reasonable maximum exposure scenario as defined in WAC 173-340-708(3).

(c) For purposes of establishing cleanup levels for noncarcinogens under methods B and C, the health threats associated with exposure via multiple pathways may be apportioned between exposure pathways in any combination as long as the hazard index does not exceed one (1).

(d) For purposes of establishing cleanup levels for carcinogens under methods B and C, the cancer risks associated with exposure via multiple pathways may be apportioned between exposure pathways in any combination as long as the total excess cancer risk does not exceed one in one hundred thousand.

(7) Reference doses.

(a) The chronic reference dose and the developmental reference dose shall be used to establish cleanup levels under this chapter. Cleanup levels shall be established using the value which results in the most protective concentration.

(b) Inhalation reference doses shall be used in WAC 173-340-750. Where the inhalation reference dose is reported as a concentration in air, that value shall be converted to a corresponding inhaled intake (mg/kg-day) using a human body weight of 70 kg and an inhalation rate of 20 m<sup>3</sup>/day.

(c) A subchronic reference dose may be utilized to evaluate potential noncarcinogenic effects resulting from exposure to hazardous substances over short periods of time. This value may be used in place of the chronic reference dose where it can be demonstrated that a particular hazardous substance will degrade to negligible concentrations during the exposure period.

(d) For purposes of establishing cleanup levels for hazardous substances under this chapter, a reference dose established by the United States Environmental Protection Agency and available through the "integrated risk information system" data base shall be used unless the department

determines that there is clear and convincing scientific data which demonstrates that the use of this value is inappropriate.

(e) If a reference dose is not available through the "integrated risk information system" or is demonstrated to be inappropriate under (d) of this subsection, a reference dose shall be established utilizing the methods described in Risk Assessment Guidance for Superfund. Human Health Evaluation Manual, Part A. (October 1989.)

(f) In estimating a reference dose for a hazardous substance under (e) of this subsection, the department shall consult with the science advisory board, the department of health, and the United States Environmental Protection Agency.

(g) Where a reference dose other than those established under (d) of this subsection is used to establish a cleanup level at individual sites, the department shall summarize the scientific rationale for the use of those values in the cleanup action plan. The department shall provide the opportunity for public review and comment on this value in accordance with the requirements of WAC 173-340-360 and 173-340-600.

(8) Carcinogenic potency factor.

(a) For purposes of establishing cleanup levels for hazardous substances under this chapter, a carcinogenic potency factor established by the United States Environmental Protection Agency and available through the "integrated risk information system" data base shall be used unless the department determines that there is clear and convincing scientific data which demonstrates that the use of this value is inappropriate.

(b) If a carcinogenic potency factor is not available through the "integrated risk information system" or is demonstrated to be inappropriate under (a) of this subsection, one of the following methods shall be utilized to establish a carcinogenic potency factor:

(i) The carcinogenic potency factor may be derived from appropriate human epidemiology data on a case-by-case basis; or

(ii) The carcinogenic potency factor may be derived from animal bioassay data using the following procedures:

(A) All carcinogenesis bioassays shall be reviewed and data of appropriate quality shall be

used for establishing the carcinogenic potency factor.

(B) The linearized multistage extrapolation model shall be utilized to estimate the slope of the dose-response curve unless the department determines that there is clear and convincing scientific data which demonstrates that the use of an alternate extrapolation model is more appropriate;

(C) All doses shall be adjusted to give an average daily dose over the study duration; and

(D) An interspecies scaling factor shall be used to take into account differences between animals and humans. This scaling factor shall be based on the assumption that milligrams per surface area is an equivalent dose between species unless the department determines there is clear and convincing scientific data which demonstrates that an alternate procedure is more appropriate. The slope of the dose response curve for the test species shall be multiplied by this scaling factor in order to obtain the carcinogenic potency factor, except where such scaling factors are incorporated into the extrapolation model under (B) of this subsection. Where adequate pharmacokinetic and metabolism studies are available, data from these studies may be utilized to adjust the interspecies scaling factor.

(c) In estimating a carcinogenic potency factor for a hazardous substance under (b) of this subsection, the department shall consult with the science advisory board, the department of health, and the United States Environmental Protection Agency.

(d) Where a carcinogenic potency factor other than that established under (a) of this subsection is used to establish cleanup levels at individual sites, the department shall summarize the scientific rationale for the use of that value in the cleanup action plan. The department shall provide the opportunity for public review and comment on this value in accordance with the requirements of WAC 173-340-360 and 173-340-600.

(9) Bioconcentration factors.

(a) For purposes of establishing cleanup levels for a hazardous substance under WAC 173-340-730, a bioconcentration factor established by the United States Environmental Protection Agency and utilized to establish the ambient water quality criterion for that substance under section 304 of the Clean Water Act shall be used unless the

department determines that there is clear and convincing scientific data which demonstrates that the use of an alternate value is more appropriate.

(b) When utilizing a bioconcentration factor other than that utilized to establish the ambient water quality criterion, the department shall consult with the science advisory board, the department of health, and the United States Environmental Protection Agency.

(c) Where a bioconcentration factor other than that established under (a) of this subsection is used to establish cleanup levels at individual sites, the department shall summarize the scientific rationale for the use of that factor in the draft cleanup action plan. The department shall provide the opportunity for public review and comment on the value in accordance with the requirements of WAC 173-340-360 and 173-340-600.

(10) Exposure parameters.

(a) As a matter of policy, the department has defined the exposure parameters to be used when establishing cleanup levels under this chapter. With the exception of the parameters identified in (b) of this subsection, these parameters shall not be modified for individual hazardous substances or sites in a manner which results in a less stringent cleanup level. The scientific and technical basis for these parameters shall be reviewed when updating this chapter under WAC 173-340-704(3).

(b) The department may approve the use of values other than those specified in WAC 173-340-720 through 173-340-760 where there is clear and convincing scientific data which demonstrates that one or more of the following parameters should be modified for an individual hazardous substance or site:

- (i) Gastrointestinal absorption rate;
- (ii) Inhalation correction factor;
- (iii) Bioconcentration factor; or
- (iv) Inhalation absorption rate.

(c) Where exposure parameters other than those established under WAC 173-340-720 through 173-340-760 are used to establish cleanup levels at individual sites, the department shall summarize the scientific rationale for the use of those parameters in the cleanup action plan. The department shall provide the opportunity for public review and comment on those values in accordance with the

requirements of WAC 173-340-360 and 173-340-600.

(11) Methods for defining background concentrations.

(a) Sampling of hazardous substances in background areas may be conducted to distinguish site-related concentration from nonsite related concentrations of hazardous substances or to support the development of a method C cleanup level under the provisions of WAC 173-340-706. For purposes of this chapter, two types of background may be determined, natural background and area background concentrations.

(b) For purposes of defining background concentrations, samples shall be collected from areas that have the same basic characteristics as the medium of concern at the site, have not been influenced by releases from the site and, in the case of natural background concentrations, have not been influenced by releases from other localized human activities.

(c) The statistical method used to evaluate available data shall be appropriate for the distribution of each hazardous substance. If the distribution of the hazardous substance data is inappropriate for statistical methods based on a normal distribution, then the data may be transformed. If the distributions of individual hazardous substances differ, more than one statistical method may be required at a site. In general, appropriate statistical methods include the following:

(i) A tolerance interval procedure in which an interval for each hazardous substance is established from the distribution of background data and the cleanup level of each hazardous substance is compared to the lower tolerance limit; and

(ii) Other statistical methods proposed by the person undertaking the cleanup action and approved by the department.

(d) If a tolerance interval approach is used to evaluate natural background data, the tolerance interval shall have a coverage of ninety-five percent and a tolerance coefficient of ninety-five percent. When determining natural background concentrations, sample size of ten or more background soil samples shall be required. When determining area background concentrations, a sample size of twenty or more soil samples shall be

required. The number of samples for other media shall be sufficient to provide a representative measure of background concentrations and shall be determined on a case-by-case basis.

(e) For purposes of estimating background concentrations, values below the method detection limit shall be assigned a value equal to one-half of the method detection limit. Measurements above the method detection limit, but below the practical quantitation limit shall be assigned a value equal to the method detection limit. The department may approve the use of alternate statistical procedures for handling data below the method detection limit or practical quantitation limit. Alternate statistical procedures may include probit analysis and regression analysis.

(12) Significant figures. Risk assessment results shall be presented using one significant figure.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-708, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-710 Applicable state and federal laws.** (1) Applicable state and federal laws.

(a) All cleanup actions conducted under this chapter shall comply with applicable state and federal laws. For purposes of this chapter, the term "applicable state and federal laws" shall include legally applicable requirements and those requirements that the department determines, based on consideration of the criteria in subsection (3) of this section, are relevant and appropriate requirements.

(b) The person conducting a cleanup action shall identify all applicable state and federal laws. The department shall make the final interpretation on whether these requirements have been correctly identified and are legally applicable or relevant and appropriate.

(2) Legally applicable requirements. Legally applicable requirements include those cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations promulgated under state or federal law that specifically address a hazardous substance, cleanup action, location or other circumstances at the site.

(3) Relevant and appropriate requirements. Relevant and appropriate requirements include those cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

WAC 173-340-710 through 173-340-760 identifies several requirements the department shall consider relevant and appropriate for establishing cleanup standards. For other regulatory requirements, the following criteria shall be evaluated, where pertinent, to determine whether such requirements are relevant and appropriate for a particular hazardous substance, remedial action, or site:

(a) Whether the purpose for which the statute or regulations under which the requirement was created is similar to the purpose of the cleanup action;

(b) Whether the media regulated or affected by the requirement is similar to the media contaminated or affected at the site;

(c) Whether the hazardous substance regulated by the requirement is similar to the hazardous substance found at the site;

(d) Whether the entities or interests affected or protected by the requirement are similar to the entities or interests affected by the site;

(e) Whether the actions or activities regulated by the requirement are similar to the cleanup action contemplated at the site;

(f) Whether any variance, waiver, or exemption to the requirements are available for the circumstances of the site;

(g) Whether the type of place regulated is similar to the site;

(h) Whether the type and size of structure or site regulated is similar to the type and size of structure or site affected by the release or contemplated by the cleanup action; and

(i) Whether any consideration of use or potential use of affected resources in the requirement is similar to the use or potential use of the resources affected by the site or contemplated cleanup action.

(4) Variances. For purposes of this chapter, a regulatory variance or waiver provision included in an applicable state and federal law shall be considered potentially applicable to interim actions and cleanup actions and the department may determine that a particular regulatory variance or waiver is appropriate if the substantive conditions for such a regulatory variance or waiver are met. In all such cases, interim actions and cleanup actions shall be protective of human health and the environment.

(5) New requirements. The department shall consider new applicable state and federal laws as part of the periodic review under WAC 173-340-420. Cleanup actions shall be evaluated in light of these new requirements to determine whether the cleanup action is still protective of human health and the environment.

(6) Selection of cleanup actions. To demonstrate compliance with WAC 173-340-360, cleanup actions shall comply with all applicable state and federal laws in addition to the other requirements of this chapter. The following, which is not a complete list, are selected applications of specific applicable state and federal laws to cleanup actions.

(a) Water discharge requirements. Hazardous substances which are directly or indirectly released or proposed to be released to waters of the state shall be provided with all known, available and reasonable methods of treatment consistent with the requirements of chapters 90.48 and 90.54 RCW and the regulations that implement those statutes.

(b) Air emission requirements. Best available control technologies consistent with the requirements of chapter 70.94 RCW and the regulations that implement this statute shall be applied to releases of hazardous substances to the air resulting from cleanup actions at a site.

(c) Solid waste landfill closure requirements. For solid waste landfills, the solid waste closure requirements in chapter 173-304 WAC shall be minimum requirements for cleanup actions conducted under this chapter. In addition, when the department determines that the closure requirements in chapter 173-303 WAC are applicable requirements, the more stringent closure requirements under that law shall also apply to cleanup actions conducted under this chapter.

(d) Sediment management requirements. Sediment cleanup actions conducted under this chapter shall comply with the sediment cleanup standards in chapter 173-204 WAC. In addition, a state remedial investigation/feasibility study conducted under WAC 173-340-350 shall also comply with the cleanup study plan requirements under chapter 173-204 WAC. The process for selecting sediment cleanup actions under this chapter shall comply with the requirements in WAC 173-340-360.

(7) Interim actions. Interim actions conducted under this chapter shall comply with legally applicable requirements. The department may also determine, based on the criteria in subsection (3) of this section, that other requirements, criteria, or limitations are relevant and appropriate for interim actions.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-710, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-720 Ground water cleanup standards.** (1) General considerations.

(a) Ground water cleanup levels shall be based on estimates of the highest beneficial use and the reasonable maximum exposure expected to occur under both current and potential future site use conditions. The department has determined that for most sites drinking water is the beneficial use requiring the highest quality of ground water and that exposure to hazardous substances via ingestion of drinking water and other domestic uses represents the reasonable maximum exposure. In the event of a release of a hazardous substance, treatment, removal, or containment measures shall be conducted to reduce the concentration of the hazardous substance in ground water to a concentration consistent with this use unless the following can be demonstrated:

(i) The ground water does not serve as a current source of drinking water;

(ii) The ground water is not a potential future source of drinking water for any of the following reasons:

(A) The ground water is present in insufficient quantity to yield greater than 0.5 gallon per minute

on a sustainable basis to a well constructed in compliance with chapter 173-160 WAC and in accordance with normal domestic water well construction practices for the area in which the site is located;

(B) The ground water contains natural background concentrations of organic or inorganic constituents which make use of the water for drinking not practicable. Ground water containing total dissolved solids at concentrations greater than 10,000 mg/l shall normally be considered to have fulfilled this requirement; or

(C) The ground water is situated at a great depth or location which makes recovery of water for drinking water purposes technically impossible; and

(iii) The department determines it is unlikely that hazardous substances will be transported from the contaminated ground water to ground water that is a current or potential future source of drinking water, as defined in (a)(ii) of this subsection, at concentrations which exceed ground water quality criteria published in chapter 173-200 WAC; or

(iv) More stringent concentrations are necessary to protect human health or the environment.

(b) In making a determination under (a)(iii) of this subsection, the department shall consider site-specific factors including:

(i) The extent of affected ground water;

(ii) The distance to existing water supply wells;

(iii) The likelihood of interconnection due to well construction practices in the area of the state where the site is located;

(iv) The physical and chemical characteristics of the hazardous substance;

(v) The hydrogeologic characteristics of the site;

(vi) The presence of discontinuities in the affected geologic stratum; and

(vii) The degree of confidence in any predictive modeling performed.

(c) The department recognizes that there may be sites where there is an extremely low probability that ground water classified as potential future source of drinking water under (b) of this subsection will actually be used for that purpose (i.e., the shallow ground waters on Harbor Island). At such sites, the department may approve ground water

cleanup levels that are based on protecting beneficial uses of adjacent surface water if the person undertaking the cleanup action can demonstrate all of the following:

(i) There are known or projected points of entry of the ground water into the surface water;

(ii) The surface water is not classified as a suitable domestic water supply source under chapter 173-201 WAC;

(iii) Ground water flows into surface waters will result in no exceedances of surface water cleanup levels at the point of entry or at any downstream location where it is reasonable to believe that hazardous substances may accumulate;

(iv) The cleanup action includes institutional controls that will prevent the use of contaminated ground water at any point between the source of hazardous substances and the point(s) of entry of the ground water into the surface water; and

(v) The department determines it is unlikely that hazardous substances will be transported from the contaminated ground water to ground water that is a current or potential future source of drinking water, as defined in (b) of this subsection, at concentrations which exceed ground water quality criteria published in chapter 173-200 WAC.

(d) Where more stringent cleanup levels are necessary to protect beneficial uses of ground water other than drinking water, the cleanup level shall be established by the department under methods B or C as appropriate.

(e) Releases of hazardous substances to ground waters of the state shall not directly or indirectly cause violations of surface water, sediments, soil, or air cleanup standards established under this chapter or other applicable state and federal laws.

(2) Method A cleanup levels.

(a) Where the ground water is a current or potential future source of drinking water, method A cleanup levels shall be at least as stringent as all of the following:

(i) Concentrations listed in Table 1:



Table 1  
Method A Cleanup Levels - Ground Water<sup>a</sup>

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5.0 ug/liter <sup>b</sup>
Benzene	71-43-2	5.0 ug/liter <sup>c</sup>
Cadmium	7440-43-9	5.0 ug/liter <sup>d</sup>
Chromium (Total)	7440-47-3	50.0 ug/liter <sup>e</sup>
DDT	50-29-3	0.1 ug/liter <sup>f</sup>
1,2 Dichloroethane	107-06-2	5.0 ug/liter <sup>g</sup>
Ethylbenzene	100-41-4	30.0 ug/liter <sup>h</sup>
Ethylene dibromide	106-93-4	0.01 ug/liter <sup>i</sup>
Gross Alpha Particle Activity		15.0 pCi/liter <sup>j</sup>
Gross Beta Particle Activity		4.0 mrem/yr <sup>k</sup>
Lead	7439-92-1	5.0 ug/liter <sup>l</sup>
Lindane	58-89-9	0.2 ug/liter <sup>m</sup>
Methylene chloride	75-09-2	5.0 ug/liter <sup>n</sup>
Mercury	7439-97-6	2.0 ug/liter <sup>o</sup>
PAHs (carcinogenic)		0.1 ug/liter <sup>p</sup>
PCB mixtures		0.1 ug/liter <sup>q</sup>
Radium 226 and 228		5.0 pCi/liter <sup>r</sup>
Radium 226		3.0 pCi/liter <sup>s</sup>
Tetrachloroethylene	127-18-4	5.0 ug/liter <sup>t</sup>
Toluene	108-88-3	40.0 ug/liter <sup>u</sup>
Total Petroleum Hydrocarbons		1000.0 ug/liter <sup>v</sup>
1,1,1 Trichloroethane	71-55-6	200.0 ug/liter <sup>w</sup>
Trichloroethylene	79-01-5	5.0 ug/liter <sup>x</sup>
Vinyl chloride	75-01-4	0.2 ug/liter <sup>y</sup>
Xylenes	1330-20-7	20.0 ug/liter <sup>z</sup>

<sup>a</sup> Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup action under this chapter.

<sup>b</sup> Arsenic. Cleanup level based on background concentrations for state of Washington.

<sup>c</sup> Benzene. Cleanup level based on applicable state and federal law.

<sup>d</sup> Cadmium. Cleanup level based on applicable state and federal law and concentration derived using procedures in subsection (3)(a)(ii)(A) of this section and a hazard quotient of 0.2.

<sup>e</sup> Chromium (Total). Cleanup level based on applicable state and federal law.

<sup>f</sup> DDT. Cleanup levels based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

- g 1,2 Dichloroethane. Cleanup level based on applicable state and federal law.
- h Ethylbenzene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.
- i Ethylene dibromide. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.
- j Gross Alpha Particle Activity, excluding uranium. Cleanup level based on applicable state and federal law.
- k Gross Beta Particle Activity, including gamma activity. Cleanup level based on applicable state federal law.
- l Lead. Cleanup level based on applicable state and federal law and prevention of unacceptable blood lead levels.
- m Lindane. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.
- n Methylene chloride. Cleanup level based on concentration derived using the procedures in subsection (3)(a)(ii)(B) of this section.
- o Mercury. Cleanup level based on applicable state and federal law.
- p PAHs (carcinogenic). Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.
- q PCB mixtures. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.
- r Radium 226 and 228. Cleanup level based on applicable state and federal law.
- s Radium 226. Cleanup level based on applicable state and federal law.
- t Tetrachloroethylene. Cleanup level based on applicable state and federal law.
- u Toluene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.
- v Total Petroleum Hydrocarbons. Cleanup level based on prevention of adverse aesthetic characteristics.
- w 1,1,1 Trichloroethane. Cleanup level based on applicable state and federal law.
- x Trichloroethylene. Cleanup level based on applicable state and federal law.
- y Vinyl chloride. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.
- z Xylenes. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics; and

(ii) Concentrations established under applicable state and federal laws, including the following requirements:

(A) Maximum contaminant levels established under the Safe Drinking Water Act and published in 40 C.F.R. 141, as amended;

(B) Maximum contaminant level goals for noncarcinogens established under the Safe Drinking Water Act and published in 40 C.F.R. 141, as amended;

(C) Secondary maximum contaminant levels established under the Safe Drinking Water Act and published in 40 C.F.R. 143, as amended; and

(D) Maximum contaminant levels established by the state board of health and published in chapter 248-54 WAC, as amended.

(b) The department may establish method A cleanup levels more stringent than those required by (a) of this subsection when, based upon site-specific evaluations, the department determines that such levels are necessary to protect human health and the environment.

(c) Cleanup levels to protect beneficial uses of ground water other than drinking water shall be established by the department under methods B or C, as appropriate.

(3) Method B cleanup levels.

(a) Where the ground water is a current or potential future source of drinking water, method B cleanup levels shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws, including the requirements in subsection (2)(a)(ii) of this section;

(ii) For hazardous substances for which sufficiently protective, health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health as determined by the following methods:

(A) Concentrations which are estimated to result in no acute or chronic toxic effects on human health as determined using the following equation and standard exposure assumptions:

$$\text{Ground water cleanup level} = \frac{\text{RFD} \times \text{ABW} \times \text{UCF} \times \text{HQ}}{\text{DWIR} \times \text{INH}} \quad (\text{ug/l})$$

Where:

RFD = Reference Dose as specified in WAC 173-340-708(7) (mg/kg-day)

ABW = Average body weight during period of exposure (16 kg)

UCF = Unit conversion factor (1,000 ug/mg)

HQ = Hazard quotient (1)

DWIR = Drinking water ingestion rate (1.0 liter/day)

INH = Inhalation correction factor as defined in WAC 173-340-720(7);

(B) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 1,000,000 as determined using the following equation and standard exposure assumptions:

$$\text{Ground water cleanup level} = \frac{\text{RISK} \times \text{ABW} \times \text{LIFE} \times \text{UCF}}{\text{CPF} \times \text{DWIR} \times \text{DUR} \times \text{INH}} \quad (\text{ug/l})$$

Where:

RISK = Acceptable cancer risk level (1 in 1,000,000)

ABW = Average body weight during the period of exposure (70 kg)

LIFE = Lifetime (75 years)

UCF = Unit conversion factor (1,000 ug/mg)

CPF = Carcinogenic potency factor as specified in WAC 173-340-708(8) (kg-day/mg)

DWIR = Drinking water ingestion rate (2.0 liters/day)

DUR = Duration of exposure (30 years)

INH = Inhalation correction factor as defined in WAC 173-340-720(7);

(b) The department may establish method B cleanup levels that are more stringent than those required by subsection (3)(a) of this section, when, based on site-specific evaluations, the department determines such levels are necessary to protect human health and the environment. This may include the following:

(i) Concentrations which are necessary to protect sensitive sub-groups;

(ii) Concentrations which eliminate or minimize the potential for food chain contamination;

(iii) Concentrations which eliminate or minimize the potential for damage to soils or biota in the soils which could impair the use of the soil for agricultural or silvicultural purposes;

(iv) Concentrations which eliminate or minimize the potential for the accumulation of vapors in buildings or other structures to concentrations which pose a threat to human health or the environment; and

(v) Concentrations which protect nearby surface waters. In general, these will be based on attaining surface water cleanup levels in the surface water as close as technically possible to the point or points where the ground water flows into the surface water.

(c) Method B cleanup levels to protect beneficial uses of ground water other than drinking water shall be established by the department on a case-by-case basis.

(4) Method C cleanup levels.

(a) Method C cleanup levels may be approved by the department if the person undertaking the cleanup action can demonstrate that such levels are consistent with applicable state and federal laws, that all practicable methods of treatment have been utilized, that institutional controls are implemented in accordance with WAC 173-340-440, and that one or more of the conditions in WAC 173-340-706(1) exist.

(b) Where the ground water is a current or potential future source of drinking water as defined in subsection (1)(a) of this section, method C cleanup levels for ground water shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws, including the requirements in subsection (2)(a)(ii) of this section;

(ii) For hazardous substances for which sufficiently protective, health-based standards or criteria have not been established under applicable state and federal laws, those concentrations that protect human health as determined using the following methods:

(A) Concentrations which are estimated to result in no significant acute or chronic toxic effects on human health and are estimated in accordance with WAC 173-340-720 (3)(a)(ii)(A) except that the average body weight shall be 70 kg

and the drinking water intake rate shall be 2 liters/day;

(B) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 100,000 and are estimated in accordance with WAC 173-340-720 (3)(a)(ii)(B);

(c) The department may establish method C cleanup levels that are more stringent than those required by (b) of this subsection when, based on a site-specific evaluation, the department determines such levels are necessary to protect human health and the environment. This may include consideration of those factors listed in subsection (3)(b) of this section.

(d) Method C cleanup levels that protect beneficial uses of ground water other than drinking water shall be established by the department on a case-by-case basis.

(5) Multiple hazardous substances/multiple pathways of exposure.

(a) Ground water cleanup levels for individual hazardous substances developed in accordance with subsections (3) and (4) of this section, including those based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures in WAC 173-340-708 (5) and (6). In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand.

(b) The overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including cleanup levels based on applicable state and federal laws.

(6) Point of compliance.

(a) For ground water, the point of compliance is the point or points where the ground water cleanup levels established under subsections (2), (3), (4), and (5) of this section must be attained. Ground water cleanup levels shall be attained in all ground waters from the point of compliance to the outer boundary of the hazardous substance plume.

(b) The point of compliance shall be established throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site.

(c) Where hazardous substances remain on-site as part of the cleanup action, the department may approve a conditional point of compliance which shall be as close as practicable to the source of hazardous substances, not to exceed the property boundary. Where a conditional point of compliance is proposed, the person responsible for undertaking the cleanup action shall demonstrate that all practicable methods of treatment are to be utilized in the site cleanup.

(d) At sites where the affected ground water flows into nearby surface water, the cleanup level may be based on protection of the surface water. At these sites, the department may approve a conditional point of compliance that is located within the surface water as close as technically possible to the point or points where ground water flows into the surface water. Conditional points of compliance may be approved only if the following requirements are met:

(i) Use of a dilution zone under WAC 173-201-035 to demonstrate compliance with surface water cleanup levels shall not be allowed;

(ii) Ground water discharges shall be provided with all known available and reasonable methods of treatment prior to release into surface waters;

(iii) Ground water discharges shall not result in violations of sediment quality values published in chapter 173-204 WAC; and

(iv) Ground water monitoring shall be performed to estimate contaminant flux rates and to address potential bioaccumulation problems resulting from surface water concentrations below method detection limits.

(7) Inhalation correction factors.

(a) The inhalation correction factor is an adjustment factor which takes into account exposure to hazardous substances which are volatilized and inhaled during showering and other domestic activities. When available, hazardous substance-specific information shall be used to estimate these values.

(b) Where hazardous substance-specific information is not available, inhalation correction factors shall be one of the following:

(i) For volatile organic hazardous substances, 2; or

(ii) Other hazardous substances, 1.

(c) Where separate toxicity factors (reference doses and carcinogenic potency factors) are available for inhalation and oral exposures, the health hazards associated with the inhalation of hazardous substances in ground water during showering and other domestic activities may be evaluated separately from the health hazards associated with ingestion of drinking water. In these cases, the ground water cleanup level based on ingestion of drinking water shall be modified to take into account multiple exposure pathways in accordance with WAC 173-340-708(6).

(8) Compliance monitoring.

(a) Compliance with ground water cleanup levels shall be determined by analyses of unfiltered ground water samples, unless it can be demonstrated that a filtered sample provides a more representative measure of ground water quality. Ecology expects that filtering will generally be acceptable for inorganic substances where:

(i) A properly constructed monitoring well cannot be sufficiently developed to provide low turbidity water samples;

(ii) Due to the natural background concentration of hazardous substances in the aquifer material, unfiltered samples would not provide a representative measure of ground water quality; and

(iii) Filtering is performed in the field with all practicable measures taken to avoid exposing the ground water sample to the ambient air prior to filtering.

(iv) Ecology expects that filtering will generally be allowed for hazardous substances such as iron and manganese.

(b) Sampling and analytical procedures shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. The sample design shall provide data which are representative of the site.

(c) The data analysis and evaluation procedures used to evaluate compliance with ground

water cleanup levels shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. These procedures shall meet the following general requirements:

(i) Methods of data analysis shall be consistent with the sampling design;

(ii) When cleanup levels are based on requirements specified in applicable state and federal laws, the procedures for evaluating compliance that are specified in those requirements shall be utilized to evaluate compliance with cleanup levels unless those procedures conflict with the intent of this section;

(iii) Where procedures for evaluating compliance are not specified in an applicable state and federal law, statistical methods used shall be appropriate for the distribution of sampling data for each hazardous substance. If the distribution of sampling data for a hazardous substance is inappropriate for statistical methods based on a normal distribution, then the data may be transformed. If the distributions for hazardous substances differ, more than one statistical method may be required;

(iv) Compliance with ground water cleanup levels shall be determined for each ground water monitoring well or other monitoring points such as a spring;

(v) The data analysis procedures identified in the compliance monitoring plan shall specify the statistical parameters to be used to determine compliance with ground water cleanup levels.

(A) For clean levels based on short-term or acute toxic effects on human health or the environment, an upper percentile concentration shall be used to evaluate compliance with ground water cleanup levels.

(B) For cleanup levels based on chronic or carcinogenic threats, the mean concentration shall be used to evaluate compliance with ground water cleanup levels unless there are large variations in concentrations relative to the mean concentration or a large percentage of concentrations below the detection limit;

(vi) When active ground water restoration is performed, or containment technologies are used that incorporate active pumping of ground water, compliance with ground water cleanup levels shall be determined when the ground water

characteristics at the site are no longer influenced by the cleanup action.

(d) Appropriate statistical methods include the following:

(i) A procedure in which a confidence interval for each hazardous substance is established from ground water sampling data and the ground water cleanup level is compared to the upper confidence interval; and

(ii) A parametric test for percentiles based on tolerance intervals to test the proportion of ground water samples having concentrations less than the ground water cleanup level; or

(iii) Other statistical methods approved by the department.

(e) If a confidence interval approach is used to evaluate compliance with a ground water cleanup level, the decision rule is a one-tailed test of the null hypothesis that the true ground water concentration exceeds the ground water cleanup level. Compliance with a ground water cleanup level shall be determined using the following criteria:

(i) The upper confidence limit on the true ground water concentration shall be less than the ground water cleanup level. Statistical tests shall be performed at a Type I error level of 0.05;

(ii) No single sample concentration shall be greater than two times the ground water cleanup level; and

(iii) Less than ten percent of the sample concentrations shall exceed the ground water cleanup level during a representative sampling period.

(f) If a method to test the proportion of ground water samples is used to evaluate compliance with a ground water cleanup level, compliance shall be determined using the following criteria:

(i) The true proportion of samples that exceed the ground water cleanup level shall be less than fifty percent. Statistical tests shall be performed with a Type I error level of 0.05; and

(ii) No single sample concentration shall be greater than two times the ground water cleanup level; and

(iii) Less than ten percent of the sample concentrations shall exceed the ground water cleanup level during a representative sampling period.

(g) For purposes of demonstrating compliance with ground water cleanup levels, measurements below the method detection limit shall be assigned a value equal to one-half the method detection limit. Measurement above the method detection limit but below the practical quantitation limit shall be assigned a value equal to the method detection limit. The department may approve alternate statistical procedures for handling nondetected values or values below the practical quantitation limit. Alternate procedures may include probit analysis and regression analysis.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-720, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-730 Surface water cleanup standards.** (1) General considerations.

(a) Surface water cleanup levels shall be based on estimates of the highest beneficial use and the reasonable maximum exposure expected to occur under both current and potential future site use conditions. The classification and the highest beneficial use of a surface water body shall be determined in accordance with chapter 173-201 WAC, as amended. In the event of a release of a hazardous substance, treatment, removal, or containment measures shall be conducted to reduce the level of hazardous substances in surface water to concentrations consistent with uses specified under this section and chapter 173-201 WAC, as amended.

(b) Surface water cleanup levels established under this section apply to those surface waters of the state affected or potentially affected by releases of hazardous substances from sites addressed under this chapter. Ecology does not expect that cleanup standards will be applied to storm water runoff that is in the process of being conveyed to a treatment system.

(c) Releases of hazardous substances to surface waters of the state shall not directly or indirectly cause violations of groundwater, soil, sediment, or air cleanup standards established under this chapter or other applicable state and federal laws.

(2) Method A cleanup levels.

(a) Method A cleanup levels shall be at least as stringent as concentrations established under applicable state and federal laws, including the following requirements:

(i) All water quality criteria published in the water quality standards for surface waters of the state of Washington, chapter 173-201 WAC, as amended;

(ii) Water quality criteria based on the protection of aquatic organisms (acute and chronic criteria) and human health published pursuant to section 304 of the Clean Water Act.

(b) The department may establish method A cleanup levels that are more stringent than those required under subsection (2)(a) of this section, when, based on site-specific evaluations, the department determines that such levels are necessary to protect human health and the environment.

(3) Method B cleanup levels.

(a) Method B cleanup levels for surface waters shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws, including the following requirements:

(A) All water quality criteria published in the water quality standards for surface waters of the state of Washington, chapter 173-201 WAC, as amended; and

(B) Water quality criteria based on the protection of aquatic organisms (acute and chronic criteria) and human health published pursuant to section 304 of the Clean Water Act unless it can be demonstrated that such criteria are not relevant and appropriate for a specific surface water body or hazardous substance.

(ii) Concentrations which are estimated to result in no adverse effects on the protection and propagation of wildlife, fish, and other aquatic life;

(iii) For hazardous substances for which sufficiently protective, health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health as determined by the following methods:

(A) For surface waters which support or have the potential to support fish or shellfish popula-

tions, concentrations which are anticipated to result in no acute or chronic toxic effects on human health as determined using the following equations and standard exposure assumptions:

$$\text{Surface water cleanup level} = \frac{\text{RFD} \times \text{ABW} \times \text{UCF1} \times \text{UCF2} \times \text{HQ}}{\text{BCF} \times \text{FCR} \times \text{FDF}} \quad (\text{ug/l})$$

Where:

- RFD = Reference Dose as specified in WAC 173-340-708(7) (mg/kg-day)  
 ABW = Average body weight during the exposure period (70 kg)  
 UCF1 = Unit conversion factor (1,000 ug/mg)  
 UCF2 = Unit conversion factor (1,000 grams/liter)  
 BCF = Fish bioconcentration factor as defined in WAC 173-340-708(9) (unitless)  
 FCR = Fish consumption rate (54 grams/day)  
 FDF = Diet fraction (0.5)  
 HQ = Hazard Index (1)

(B) For surface waters which support fish or shellfish populations, concentrations which are anticipated to result in an excess cancer risk less than or equal to 1 in 1,000,000 as determined using the following equation and standard exposure assumptions:

$$\text{Surface water cleanup level} = \frac{\text{RISK} \times \text{ABW} \times \text{LIFE} \times \text{UCF1} \times \text{UCF2}}{\text{CPF} \times \text{BCF} \times \text{FCR} \times \text{FDF} \times \text{DUR}} \quad (\text{ug/l})$$

Where:

- CPF = Carcinogenic Potency Factor as specified in WAC 173-340-708(8) (kg-day/mg)  
 RISK = Acceptable cancer risk level (1 in 1,000,000)  
 ABW = Average body weight during the exposure period (70 kg)  
 LIFE = Lifetime (75 years)  
 UCF1 = Unit conversion factor (1,000 ug/mg)  
 UCF2 = Unit conversion factor (1,000 grams/liter)  
 BCF = Fish bioconcentration factor as defined in WAC 173-340-708(9) (unitless)  
 FCR = Fish consumption rate (54 grams/day)  
 FDF = Diet fraction (0.5)  
 DUR = Duration of exposure (30 years);

(C) For surface waters which represent a source or potential future source of drinking water, concentrations which are anticipated to result in no adverse impacts on human health as established in accordance with WAC 173-340-720(3).

(b) The department may establish method B cleanup levels more stringent than those required by subsection (3)(a) of this section, when, based on site-specific evaluations, the department determines that such levels are necessary to protect human health and the environment.

(4) Method C cleanup levels.

(a) Method C cleanup levels may be approved by the department if the person undertaking the cleanup action can demonstrate that such levels are consistent with applicable state and federal laws, that all practicable methods of treatment have been utilized, that institutional controls are implemented in accordance with WAC 173-340-440, and that one or more of the conditions in WAC 173-340-706(1) exist.

(b) Method C cleanup levels for surface waters shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws, including the requirements identified in subsection (3)(a)(i) of this section;

(ii) Concentrations which are estimated to result in no significant adverse effects on the protection and propagation of wildlife, fish and other aquatic life;

(iii) For hazardous substances for which sufficiently protective, health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) For surface waters which support or have the potential to support fish or shellfish populations, concentrations which are estimated to result in no significant acute or chronic toxic effects on human health or the environment and are estimated in accordance with WAC 173-340-730 (3)(a)(iii)(A) except that the fish diet fraction shall be twenty percent;

(B) For surface waters which support or have the potential to support fish or shellfish populations, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 100,000 and are estimated in accordance with WAC 173-340-730 (3)(a)(iii)(B) except that the fish diet fraction shall be twenty percent;

(C) For surface waters which represent a source or potential future source of drinking water, concentrations which are estimated to result in no adverse impacts on human health and are established in accordance with WAC 173-340-720(4); and

(c) The department may establish method C cleanup levels that are more stringent than those required by (b) of this subsection when, based on site-specific evaluations, the department determines that such levels are necessary to protect human health and the environment.

(5) Multiple hazardous substances/multiple pathways of exposure.

(a) Surface water cleanup levels for individual hazardous substances developed in accordance with subsections (3) and (4) of this section, including those based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures specified in WAC 173-340-708 (5) and (6). In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand.

(b) These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including cleanup levels based on applicable state and federal laws.

(6) Point of compliance.

(a) The point of compliance shall be the point or points at which hazardous substances are released to surface waters of the state unless the department has authorized a dilution zone in accordance with WAC 173-201-035.

(b) Where hazardous substances are released to the surface water as a result of ground water flows, no dilution zone shall be allowed to demonstrate compliance with surface water cleanup levels. See WAC 173-340-720 (6)(d) for additional requirements.

(7) Compliance monitoring.

(a) Sampling and analytical procedures shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. The sample design shall provide data which are representative of the site.

(b) The data analysis and evaluation procedures used to evaluate compliance with surface water cleanup levels shall be defined in a compliance monitoring plan prepared under WAC 173-340-410.

(c) Compliance with surface water cleanup standards shall be determined by analyses of unfiltered surface water samples, unless it can be demonstrated that a filtered sample provides a more representative measure of surface water quality.

(d) When surface water cleanup levels are based on requirements specified in applicable state and federal laws, the procedures for evaluating compliance that are specified in those requirements shall be utilized to evaluate compliance with surface water cleanup levels unless these procedures conflict with the intent of this section.

(e) Where procedures for evaluating compliance are not specified in an applicable state and federal law, the statistical methods used to evaluate compliance with surface water cleanup levels shall be appropriate for the distribution of the hazardous substance sampling data. If the distribution of the hazardous substance sampling data is inappropriate for statistical methods based on a normal distribution, then the data may be transformed. If the distributions of individual hazardous substances differ, more than one statistical method may be required.

(f) For purposes of demonstrating compliance, measurements below the method detection limit shall be assigned a value equal to one-half of the method detection limit. Measurements above the method detection limit but below the practical

quantitation limit shall generally be assigned a value equal to the method detection limit. The department may approve alternate statistical procedures for handling nondetected values or values below the practical quantitation limit. Alternate statistical procedures may include probit analysis and regression analysis.

(g) Sampling and analysis of fish tissue or shellfish may be required to supplement water column sampling during compliance monitoring.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-730, filed 1/28/91, effective 2/28/91.]

### **WAC 173-340-740 Soil cleanup standards.**

#### (1) General considerations.

(a) Presumed exposure scenario soil cleanup levels shall be based on estimates of the reasonable maximum exposure expected to occur under both current and future site use conditions. The department has determined that residential land use is generally the site use requiring the most protective cleanup levels and that exposure to hazardous substances under residential land use conditions represents the reasonable maximum exposure scenario. Soil cleanup levels for this presumed exposure scenario shall be established in accordance with method A or method B cleanup levels described in subsections (2) and (3) of this section. In the event of a release of a hazardous substance, treatment, removal, and/or containment measures shall be implemented for those soils with hazardous substance concentrations which exceed soil cleanup levels based on this use unless the following can be demonstrated:

(i) The property does not serve as a current residential area;

(ii) The property does not have the potential to serve as a future residential area based on the consideration of zoning, statutory and regulatory restrictions, comprehensive plans, historical use, adjacent land uses, and other relevant factors; and

(iii) Appropriate use restrictions are implemented at the property; or

(iv) More stringent concentrations are necessary to protect human health and the environment.

(b) Industrial property soil cleanup levels. Soil cleanup levels for qualifying industrial

properties may be established in accordance with the requirements in WAC 173-340-745.

(c) Commercial property soil cleanup levels. For industrial land uses not qualifying under WAC 173-340-745 and commercial land uses, the presumption is that soil cleanup levels shall be established in accordance with residential areas unless it can be clearly demonstrated that this is inappropriate.

(i) For a property to qualify under this subsection, it must be clearly demonstrated that:

(A) The property is currently zoned for or otherwise officially designated for industrial/commercial use;

(B) The property is currently used for industrial/commercial purposes or has a history of use for industrial/commercial purposes;

(C) Properties adjacent to and in the general vicinity of the property are used or are designated for use for industrial/commercial purposes; and

(D) The property and properties adjacent to and in the general vicinity are expected to be used for industrial/commercial purposes for the foreseeable future due to site zoning, statutory or regulatory restrictions, comprehensive plans, adjacent land use, and other relevant factors.

(ii) For industrial/commercial land uses qualifying under this subsection, soil cleanup levels shall be established as close as practicable to the method B soil cleanup levels established under subsection (3) of this section and shall be at least as stringent as the method C soil cleanup levels established under subsection (4) of this section. The overall limits on hazard index and total excess cancer risk specified in subsections (3) through (5) of this section shall apply to these sites.

(iii) Institutional controls under WAC 173-340-440 shall be required for industrial/commercial land uses qualifying under this subsection where soil cleanup levels are less stringent than method B soil cleanup levels established under subsection (3) of this section.

(iv) Soil cleanup levels for areas beyond the commercial/industrial property boundary that do not qualify for commercial soil cleanup levels under this subsection (including implementation of institutional controls and a covenant restricting use of the property to commercial or industrial

use, as applicable) shall use method A or method B cleanup levels as described in subsections (2) or (3) of this section.

(v) The department expects that only industrial/commercial properties located in the interior portion of a large industrial/commercial area will qualify for other than method A or method B cleanup levels under this subsection.

(d) Other nonresidential properties soil cleanup levels.

(i) Soil cleanup levels for childcare facilities and schools shall be established in accordance with method A or method B cleanup levels as described in subsections (2) and (3) of this section.

(ii) For other nonresidential land uses such as recreational or agricultural uses, soil cleanup levels shall be established on a case-by-case basis.

(A) The overall limits on the hazard index and cancer risk specified in subsections (3) through (5) of this section shall apply to these types of sites.

(B) Soil cleanup levels for these types of sites shall be at least as stringent as method C cleanup levels established under subsection (4) of this section.

(C) Where other than a method A (residential) or method B soil cleanup level is proposed at these properties, the cleanup action shall include appropriate institutional controls implemented in accordance with WAC 173-340-440 to limit potential exposure to residual contamination. This shall include, at a minimum, placement of a covenant on the property restricting use of the property to the land use(s) the cleanup level is based on.

(e) Relationship between soil cleanup levels and other cleanup standards. Soil cleanup levels shall be established at concentrations which do not directly or indirectly cause violations of ground water, surface water, sediment, or air cleanup standards established under this chapter or applicable state and federal laws. A property that qualifies for other than a method A or method B soil cleanup level under this subsection does not necessarily qualify for other than a method A or method B cleanup level in other media. Each

medium must be evaluated separately using the criteria applicable to that medium.

(2) Method A cleanup levels.

(a) Method A cleanup levels shall be at least as stringent as all of the following:

(i) Concentrations in the following table; and

Table 2  
Method A Cleanup Levels - Soil<sup>a</sup>

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	20.0 mg/kg <sup>b</sup>
Benzene	71-43-2	0.5 mg/kg <sup>c</sup>
Cadmium	7440-43-9	2.0 mg/kg <sup>d</sup>
Chromium	7440-47-3	100.0 mg/kg <sup>e</sup>
DDT	50-29-3	1.0 mg/kg <sup>f</sup>
Ethylbenzene	100-41-4	20.0 mg/kg <sup>g</sup>
Ethylene dibromide	106-93-4	0.001 mg/kg <sup>h</sup>
Lead	7439-92-1	250.0 mg/kg <sup>i</sup>
Lindane	58-89-9	1.0 mg/kg <sup>j</sup>
Methylene chloride	75-09-2	0.5 mg/kg <sup>k</sup>
Mercury (inorganic)	7439-97-6	1.0 mg/kg <sup>l</sup>
PAHs (carcinogenic)		1.0 mg/kg <sup>m</sup>
PCB Mixtures		1.0 mg/kg <sup>n</sup>
Tetrachloroethylene	127-18-4	0.5 mg/kg <sup>o</sup>
Toluene	108-88-3	40.0 mg/kg <sup>p</sup>
TPH (gasoline)		100.0 mg/kg <sup>q</sup>
TPH (diesel)		200.0 mg/kg <sup>r</sup>
TPH (other)		200.0 mg/kg <sup>s</sup>
1,1,1 Trichloroethane	71-55-6	20.0 mg/kg <sup>t</sup>
Trichloroethylene	79-01-5	0.5 mg/kg <sup>u</sup>
Xylenes	1330-20-7	20.0 mg/kg <sup>v</sup>

<sup>a</sup> Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do NOT necessarily trigger requirements for cleanup action under this chapter.

<sup>b</sup> Arsenic. Cleanup level based on background concentrations in the state of Washington.

<sup>c</sup> Benzene. Cleanup level based on protection of ground water.

<sup>d</sup> Cadmium. Cleanup level based on plant protection.

<sup>e</sup> Chromium. Cleanup level based on health risks associated with inhalation of resuspended dust.

<sup>f</sup> DDT. Cleanup level based on concentrations derived using the procedures in subsection (3)(a)(iii)(B) of this section.

<sup>g</sup> Ethylbenzene. Cleanup level based on protection of ground water.

- h Ethylene dibromide. Cleanup level based on protection of ground water.
- i Lead. Cleanup level based on preventing unacceptable blood lead levels.
- j Lindane. Cleanup level based on concentration derived using the procedures in subsection (3)(a)(iii)(B) of this section.
- k Methylene chloride. Cleanup level based on protection of ground water.
- l Mercury. Cleanup level based on protection of ground water.
- m PAHs (carcinogenic). Cleanup level based on concentration derived using the procedures in subsection (3)(a)(iii)(B) of this section.
- n PCB Mixtures. Cleanup level based on concentration derived using the procedures in subsection (3)(a)(iii)(B) of this section.
- o Tetrachloroethylene. Cleanup level based on protection of ground water.
- p Toluene. Cleanup level based on protection of ground water.
- q Total Petroleum Hydrocarbons (gasoline). Cleanup level based on protection of ground water.
- r Total Petroleum Hydrocarbons (diesel). Cleanup level based on protection of ground water.
- s Total Petroleum Hydrocarbons (other). Cleanup level based on protection of ground water.
- t 1,1,1 Trichloroethane. Cleanup level based on protection of ground water.
- u Trichloroethylene. Cleanup level based on protection of ground water.
- v Xylenes. Cleanup level based on protection of ground water.

(ii) Concentrations established under applicable state and federal laws;

(b) For sites with additional hazardous substances which are deemed indicator hazardous substances under WAC 173-340-708(2) for which there is no value in Table 2 or applicable state and federal laws, cleanup levels for these additional hazardous substances shall be established at the natural background concentration or the practical quantification limit, subject to the limitations in this chapter.

(c) The department may establish method A cleanup levels that are more stringent than those required by subsection (2)(a) of this section, when based on a site-specific evaluation, the department determines that such levels are necessary to protect human health or environment.

(3) Method B cleanup levels.

(a) Method B cleanup levels for soils shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws;

(ii) Concentrations which will not cause contamination of ground water at levels which exceed method B ground water cleanup levels established under WAC 173-340-720 as determined using the following criteria:

(A) For individual hazardous substances or mixtures, concentrations that are equal to or less than one hundred times the ground water cleanup level established in accordance with WAC 173-340-720 unless it can be demonstrated that a higher soil concentration is protective of ground water at the site;

(B) For total petroleum hydrocarbons, the person undertaking the cleanup may elect to make this demonstration on the basis of data on individual hazardous substances that comprise the total petroleum hydrocarbons.

(iii) For those hazardous substances for which health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Concentrations which are estimated to result in no acute or chronic toxic effects on human health via direct contact with contaminated soil and are determined using the

following equation and standard exposure assumptions:

$$\text{Soil Cleanup Level} = \frac{\text{RFD} \times \text{ABW} \times \text{UCF2} \times \text{HQ}}{(\text{ug/l}) \quad \text{SIR} \times \text{AB1} \times \text{FOC}}$$

Where:

- RFD = Reference Dose as defined in WAC 173-340-708(7) (mg/kg-day)  
 ABW = Average body weight over the period of exposure (16 kg)  
 UCF2 = Units conversion factor (1,000,000 mg/kg)  
 SIR = Soil ingestion rate (200 mg/day)  
 AB1 = Gastrointestinal absorption rate (1.0)  
 FOC = Frequency of contact (1.0)  
 HQ = Hazard quotient (1);

(B) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 1,000,000 via direct contact with contaminated soil and are determined using the following equation and standard exposure assumptions:

$$\text{Soil Cleanup Level} = \frac{\text{ISK} \times \text{ABW} \times \text{LIFE} \times \text{UCF1}}{(\text{ug/l}) \quad \text{CPF} \times \text{SIR} \times \text{AB1} \times \text{DUR} \times \text{FOC}}$$

Where:

- RISK = Acceptable cancer risk level (1 in 1,000,000)  
 ABW = Average body weight over the period of exposure (16 kg)  
 LIFE = Lifetime (75 years)  
 UCF1 = Unit conversion factor (1,000,000 mg/kg)  
 CPF = Carcinogenic Potency Factor as defined in WAC 173-340-708(8) (kg-day/mg)  
 SIR = Soil ingestion rate (200 mg/day)  
 AB1 = Gastrointestinal absorption rate (1.0)  
 DUR = Duration of exposure (6 years)  
 FOC = Frequency of contact (1.0);

(iv) To assure that unacceptable risks do not result from inhalation of hazardous substances in or released from contaminated soils, soil concentrations which ensure that releases of hazardous substances shall not result in ambient air concentrations which exceed method B cleanup levels established under WAC 173-340-750.

(b) The department may establish method B cleanup levels that are more stringent than those required under (a) of this subsection, when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health or environment, including the following:

(i) Concentrations which eliminate or substantially reduce the potential for food chain contamination;

(ii) Concentrations which eliminate or substantially reduce the potential for damage to soils or biota in the soils which could impair the use of soils for agricultural or silvicultural purposes;

(iii) Concentrations which eliminate or substantially reduce the potential for adverse effects on vegetation or wildlife;

(iv) Concentrations more stringent than those in (b) of this subsection where the department determines that such levels are necessary to protect the ground water at a particular site;

(v) Concentrations necessary to protect nearby surface waters from hazardous substances in runoff from the site; and

(vi) Concentrations which eliminate or minimize the potential for the accumulation of vapors in buildings or other structures to concentrations which pose a threat to human health or the environment.

(4) Method C cleanup levels.

(a) Method C soil cleanup levels may be utilized if the person conducting the cleanup action can demonstrate that such levels are consistent with applicable state and federal laws, that all practicable methods of treatment have been utilized, that institutional controls are implemented in accordance with WAC 173-340-440, and that one or more of the conditions in WAC 173-340-706 (1)(a) exist.

(b) Method C cleanup levels for soils shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws;

(ii) Concentrations which will not cause contamination of ground water at levels which exceed ground water cleanup levels established

under WAC 173-340-720 as determined using the following procedures:

(A) For individual hazardous substances or mixtures, concentrations that are equal to or less than one hundred times the ground water cleanup level established in accordance with WAC 173-340-720 unless it can be demonstrated that a higher soil concentration is protective of ground water at the site;

(B) For total petroleum hydrocarbons, the person undertaking the cleanup may elect to make this demonstration on the basis of data on individual hazardous substances that comprise the total petroleum hydrocarbons;

(iii) For those hazardous substances for which health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Concentrations which are anticipated to result in no significant acute or chronic toxic effects on human health and estimated in accordance with WAC 173-340-740 (3)(a)(iii)(A) except that the frequency of contact shall be 0.5, the soil ingestion rate shall be 100 milligrams per day, and the average body weight shall be 16 kilograms;

(B) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 100,000 and are estimated in accordance with WAC 173-340-740 (3)(a)(iii)(B) except that the frequency of contact shall be 0.5 and the soil ingestion rate shall be 100 milligrams per day; and

(iv) To assure that unacceptable risks do not result from inhalation of hazardous substances in or released from contaminated soils, soil concentrations which ensure that releases of hazardous substances shall not result in ambient air concentrations which exceed method C cleanup levels established under WAC 173-340-750.

(C) The department may establish method C cleanup levels that are more stringent than those required by (a) through (c) of this subsection when, based on a site-specific evaluation, the

department determines that such levels are necessary to protect human health and the environment, including consideration of those factors listed in subsection (3)(b) of this section.

(5) Multiple hazardous substances/multiple pathways of exposure.

(a) Soil cleanup levels for individual hazardous substances developed in accordance with subsections (3) and (4) of this section, including cleanup levels based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures specified in WAC 173-340-708 (5) and (6).

In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand.

(b) These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including cleanup levels based on applicable state and federal laws.

(6) Point of compliance.

(a) The point of compliance is the point or points where the soil cleanup levels established under subsections (2), (3), (4), and (5) of this section shall be attained.

(b) For soil cleanup levels based on the protection of ground water, the point of compliance shall be established in the soils throughout the site.

(c) For soil cleanup levels based on human exposure via direct contact, the point of compliance shall be established in the soils throughout the site from the ground surface to fifteen feet below the ground surface. This represents a reasonable estimate of the depth of soil that could be excavated and distributed at the soil surface as a result of site development activities.

(d) The department recognizes that, for those cleanup actions selected under WAC 173-340-360 that involve containment of hazardous substances, the soil cleanup levels will typically not be met at the points of compliance specified in (b) and (c) of this subsection. In these cases, the

cleanup action may be determined to comply with cleanup standards, provided the compliance monitoring program is designed to ensure the long-term integrity of the containment system, and the other requirements for containment technologies in WAC 173-340-360(8) are met.

(7) Compliance monitoring.

(a) Compliance with soil cleanup levels shall be based on total analyses of the soil fraction less than two millimeters in size. When it is reasonable to expect that larger soil particles could be reduced to two millimeters or less during current or future site use and this reduction could cause an increase in the concentrations of hazardous substances in the soil, soil cleanup levels shall also apply to these larger soil particles. Compliance with soil cleanup levels shall be based on dry weight concentrations. The department may approve the use of alternate procedures for stabilized soils.

(b) Sampling and analytical procedures shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. The sample design shall provide data which are representative of the area where exposure to hazardous substances may occur.

(c) The data analysis and evaluation procedures used to evaluate compliance with soil cleanup levels shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. These procedures shall meet the following general requirements:

(i) Methods of data analysis shall be consistent with the sampling design. Separate methods may be specified for surface soils and deeper soils;

(ii) When cleanup levels are based on requirements specified in applicable state and federal laws, the procedures for evaluating compliance that are specified in those requirements shall be utilized to evaluate compliance with cleanup levels unless those procedures conflict with the intent of this section;

(iii) Where procedures for evaluating compliance are not specified in an applicable state and federal law, statistical methods shall be appropriate for the distribution of sampling data for each hazardous substance. If the distribution of sampling data for a hazardous substance is

inappropriate for statistical methods based on a normal distribution, then the data may be transformed. If the distributions for hazardous substances differ, more than one statistical method may be required; and

(iv) The data analysis plan shall specify which parameters are to be used to determine compliance with soil cleanup levels.

(A) For cleanup levels based on short-term or acute toxic effects on human health or the environment, an upper percentile soil concentration shall be used to evaluate compliance with cleanup levels.

(B) For cleanup levels based on chronic or carcinogenic threats, the mean soil concentration shall be used to evaluate compliance with cleanup levels unless there are large variations in hazardous substance concentrations relative to the mean hazardous substance concentration or a large percentage of concentrations are below the detection limit.

(d) Appropriate statistical methods include the following:

(i) A procedure in which a confidence interval for each hazardous substance is established from site sampling data and the soil cleanup level is compared to the upper confidence interval;

(ii) A parametric test for percentiles based on tolerance intervals to test the proportion of soil samples having concentrations less than the soil cleanup level; or

(iii) Other statistical methods approved by the department.

(e) If a confidence interval approach is used to evaluate compliance with a soil cleanup level, the decision rule is a one-tailed test of the null hypothesis that the true soil concentration of a hazardous substance exceeds the soil cleanup level. Compliance with soil cleanup levels shall be determined using the following criteria:

(i) The upper confidence interval on the true soil concentration is less than the soil cleanup level. Statistical tests shall be performed at a Type I error level of 0.05;

(ii) No single sample concentration shall be greater than two times the soil cleanup level; and

(iii) Less than ten percent of the sample concentrations shall exceed the soil cleanup level.

(f) If a method to test the proportion of soil samples is used to evaluate compliance with a soil cleanup level, compliance shall be determined using the following criteria:

(i) No single sample concentrations shall be greater than two times the soil cleanup level; and

(ii) Less than ten percent of the sample concentrations shall exceed the soil cleanup level; and

(iii) The true proportion of samples that do not exceed the soil cleanup level shall not be less than ninety percent. Statistical tests shall be performed with a Type I error level of 0.05.

(g) For purposes of demonstrating compliance with soil cleanup levels, measurements below the method detection limit shall be assigned a value equal to one-half the method detection limit. Detectable levels below the practical quantitation limit shall be assigned a value equal to the method detection limit. The department may approve alternate statistical procedures for handling nondetected values or values below the practical quantitation limit. Alternate statistical procedures may include probit analysis and regression analysis.

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-740, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-740, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-745 Soil cleanup standards for industrial properties.** (1) General considerations.

(a) Use of this section. This section shall be used to establish soil cleanup levels where the department has determined that industrial land use represents the reasonable maximum exposure.

(b) Criteria. Cleanup levels shall not be based on industrial land use unless the following criteria can be demonstrated:

(i) The area of the site where industrial property soil cleanup levels are proposed meets the definition of an industrial property under WAC 173-340-200;

Industrial soil cleanup levels are based on an adult worker exposure scenario. It is essential to evaluate land uses and zoning for compliance with this definition in the context of this exposure

scenario. Local governments use a variety of zoning categories for industrial land uses so a property does not necessarily have to be in a zone called "industrial" to meet the definition of "industrial property." Also, there are land uses allowed in industrial zones that are actually commercial or residential, rather than industrial, land uses. Thus, an evaluation to determine compliance with this definition should include a review of the actual text in the comprehensive plan and zoning ordinance pertaining to the site and a visit to the site to observe land uses in the zone. When evaluating land uses to determine if a property use not specifically listed in the definition is a "traditional industrial use" or to determine if the property is "zoned for industrial use," the following characteristics shall be considered:

- People do not normally live on industrial property. The primary potential exposure is to adult employees of businesses located on the industrial property;
- Access to industrial property by the general public is generally not allowed. If access is allowed, it is highly limited and controlled due to safety or security considerations;
- Food is not normally grown/raised on industrial property. (However, food processing operations are commonly considered industrial facilities);
- Operations at industrial properties are often (but not always) characterized by use and storage of chemicals, noise, odors and truck traffic;
- The surface of the land at industrial properties is often (but not always) mostly covered by buildings or other structures, paved parking lots, paved access roads and material storage areas, minimizing potential exposure to the soil;
- Industrial properties may have support facilities consisting of offices, restaurants, and other facilities that are commercial in nature but are primarily devoted to administrative functions necessary for the industrial use and/or are primarily intended to serve the

industrial facility employees and not the general public;

(ii) The cleanup action provides for appropriate institutional controls implemented in accordance with WAC 173-340-440 to limit potential exposure to residual hazardous substances. This shall include, at a minimum, placement of a covenant on the property restricting use of the area of the site where industrial soil cleanup levels are proposed to industrial property uses; and

(iii) Hazardous substances remaining at the property after remedial action would not pose a threat to human health or the environment at the site or in adjacent nonindustrial areas. In evaluating compliance with this criterion, at a minimum the following factors shall be considered:

- The potential for access to the industrial property by the general public, especially children. The proximity of the industrial property to residential areas, schools or childcare facilities shall be considered when evaluating access. In addition, the presence of natural features, manmade structures, arterial streets or intervening land uses that would limit or encourage access to the industrial property shall be considered. Fencing shall not be considered sufficient to limit access to an industrial property since this is insufficient to assure long term protection;
- The degree of reduction of potential exposure to residual hazardous substances by the selected remedy. Where the residual hazardous substances are to be capped to reduce exposure, consideration shall be given to the thickness of the cap and the likelihood of future site maintenance activities, utility and drainage work, or building construction reexposing residual hazardous substances.
- The potential for transport of residual hazardous substances to off-property areas, especially residential areas, schools and childcare facilities;
- The potential for adverse effects on vegetation or wildlife caused by residual hazardous substances; and

- The likelihood that these factors would not change for the foreseeable future.

(c) Ecology expectations. In applying the criteria in WAC 173-340-745 (1)(b), the department expects the following results:

(i) The department expects that properties zoned for heavy industrial or high intensity industrial use and located within a city or county having completed a comprehensive plan and adopted implementing zoning regulations under the Growth Management Act (chapter 36.70A RCW) will meet the definition of industrial property. For cities and counties not planning under the Growth Management Act, the department expects that spot zoned industrial properties will not meet the definition of industrial property but that properties that are part of a larger area zoned for heavy industrial or high intensity industrial use will meet the definition of an industrial property;

(ii) For both GMA and non-GMA cities and counties, the department expects that light industrial and commercial zones and uses should meet the definition of industrial property where the land uses are comparable to those cited in the definition of industrial property or the land uses are an integral part of a qualifying industrial use (such as, ancillary or support facilities). This will require a site-by-site evaluation of the zoning text and land uses;

(iii) The department expects that for portions of industrial properties in close proximity to (generally, within a few hundred feet) residential areas, schools or childcare facilities, residential soil cleanup levels will be used unless:

(A) Access to the industrial property is very unlikely or, the hazardous substances that are not treated or removed are contained under a cap of clean soil (or other materials) of substantial thickness so that it is very unlikely the hazardous substances would be disturbed by future site maintenance and construction activities (depths of even shallow footings, utilities and drainage structures in industrial areas are typically three to six feet); and

(B) The hazardous substances are relatively immobile (or have other characteristics) or have been otherwise contained so that subsurface

lateral migration or surficial transport via dust or runoff to these nearby areas or facilities is highly unlikely; and

(iv) Note that a change in the reasonable maximum exposure to industrial site use primarily affects the direct contact exposure pathway. Thus, for example, for sites where the soil cleanup level is based primarily on the potential for the hazardous substance to leach and cause ground water contamination, it is the department's expectation that an industrial land use will not affect the soil cleanup level. Similarly, where the soil cleanup level is based primarily on surface water protection, ecological or other pathways other than direct human contact, land use is not expected to affect the soil cleanup level.

(d) Calculating industrial property soil cleanup levels. Soil cleanup levels established under this section shall be determined as described in subsections (2) through (5) of this section.

(e) Soil cleanup levels for nearby properties. Soil cleanup levels for areas beyond the industrial property boundary that do not qualify for industrial soil cleanup levels under this section (including implementation of institutional controls and a covenant restricting use of the property to industrial property uses) shall be established in accordance with WAC 173-340-740.

(f) Relationship between soil cleanup levels and other cleanup standards. Soil cleanup levels shall be established at concentrations which do not directly or indirectly cause violations of ground water, surface water, sediment or air cleanup standards established under this chapter or under applicable state and federal laws. A property that qualifies for an industrial soil cleanup level under this section does not necessarily qualify for other than a Method A or Method B cleanup level in other media. Each medium must be evaluated separately utilizing the criteria applicable to that medium.

(g) Other options. See WAC 173-340-740 (1)(c) for establishing cleanup levels for industrial land uses not qualifying under this section and for commercial land uses.

(2) Method A cleanup levels.

(a) Method A cleanup levels shall be at least as stringent as all of the following:

(i) Concentrations in the following table:

**Table 3**  
**Method A Cleanup Levels - Industrial Soil<sup>a</sup>**

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	200.0 mg/kg <sup>b</sup>
Benzene	71-43-2	0.5 mg/kg <sup>c</sup>
Cadmium	7440-43-9	10.0 mg/kg <sup>d</sup>
Chromium (Total)	7440-47-3	500.0 mg/kg <sup>e</sup>
DDT	50-29-3	5.0 mg/kg <sup>f</sup>
Ethylbenzene	100-41-4	20.0 mg/kg <sup>g</sup>
Ethylene dibromide	106-93-4	0.001 mg/kg <sup>h</sup>
Lead	7439-92-1	1000.0 mg/kg <sup>i</sup>
Lindane	58-89-9	20.0 mg/kg <sup>j</sup>
Methylene chloride	75-09-2	0.5 mg/kg <sup>k</sup>
Mercury (inorganic)	7439-97-6	1.0 mg/kg <sup>l</sup>
PAHs (carcinogenic)		20.0 mg/kg <sup>m</sup>
PCB Mixtures		10.0 mg/kg <sup>n</sup>
Tetrachloroethylene	127-18-4	0.5 mg/kg <sup>o</sup>
Toluene	108-88-3	40.0 mg/kg <sup>p</sup>
TPH (gasoline)		100.0 mg/kg <sup>q</sup>
TPH (diesel)		200.0 mg/kg <sup>r</sup>
TPH (other)		200.0 mg/kg <sup>s</sup>
1,1,1 Trichloroethane	71-55-6	20.0 mg/kg <sup>t</sup>
Trichloroethylene	79-01-5	0.5 mg/kg <sup>u</sup>
Xylenes	1330-20-7	20.0 mg/kg <sup>v</sup>

<sup>a</sup> Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup actions under this chapter.

<sup>b</sup> Arsenic. Cleanup level based on concentration derived using the procedures in subsection (4)(a)(iii)(B) of this section.

<sup>c</sup> Benzene. Cleanup level based on protection of ground water.

<sup>d</sup> Cadmium. Cleanup level based on protection of ground water.

<sup>e</sup> Chromium. Cleanup level based on inhalation exposure.

<sup>f</sup> DDT. Cleanup level based on protection of ground water.

- g Ethylbenzene. Cleanup level based on protection of ground water.
- h Ethylene dibromide. Cleanup level based on protection of ground water.
- i Lead. Cleanup level based on direct contact.
- j Lindane. Cleanup level based on cleanup level based on concentration derived using the procedures in subsection (4)(a)(iii)(B) of this section.
- k Methylene chloride. Cleanup level based on protection of ground water.
- l Mercury. Cleanup level based on protection of ground water.
- m PAHs (carcinogenic). Cleanup level based on concentration derived using the procedures in subsection (4)(a)(iii)(B) of this section.
- n PCB Mixtures. Cleanup level based on concentration derived using the procedures in subsection (4)(a)(iii)(B) of this section.
- o Tetrachloroethylene. Cleanup level based on protection of ground water.
- p Toluene. Cleanup level based on protection of ground water.
- q Total Petroleum Hydrocarbons (gasoline). Cleanup level based on protection of ground water.
- r Total Petroleum Hydrocarbons (diesel). Cleanup level based on protection of ground water.
- s Total Petroleum Hydrocarbons (other). Cleanup level based on protection of ground water.
- t 1,1,1 Trichloroethane. Cleanup level based on protection of ground water.
- u Trichloroethylene. Cleanup level based on protection of ground water.
- v Xylenes. Cleanup level based on protection of ground water; and

(ii) Concentrations established under applicable state and federal laws;

(b) For sites with additional hazardous substances which are deemed indicator hazardous substances under WAC 173-340-708(2) for which there is no value in Table 3 or applicable state and federal laws, cleanup levels for these additional hazardous substances shall be established at the natural background concentration or the practical quantification limit, subject to the limitations in this chapter.

(c) The department may establish method A cleanup levels that are more stringent than those required by (a) of this subsection when, based on site-specific evaluations, the department determines that such levels are necessary to protect human health or environment, including consideration of the factors in WAC 173-340-740 (3)(b).

(3) Method B cleanup levels. This section does not provide procedures for establishing method B cleanup levels. Method C is the standard method for establishing soil cleanup levels at industrial sites and its use is conditioned upon the continued use of the site for industrial purposes.

(4) Method C cleanup levels.

(a) Method C cleanup levels for industrial soils shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws;

(ii) Concentrations which will not cause contamination of ground water to concentrations which exceed ground water cleanup levels established under WAC 173-340-720 as determined using the following procedures:

(A) For individual hazardous substances or mixtures, concentrations that are equal to or less than one hundred times the ground water cleanup level established in accordance with WAC 173-340-720 unless it can be demonstrated that higher soil concentrations are protective of ground water at the site;

(B) For total petroleum hydrocarbons, the person undertaking the cleanup action may elect to make this demonstration on the basis of data on

individual hazardous substances that comprise the total petroleum hydrocarbons;

(iii) For those hazardous substances for which sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Concentrations which are anticipated to result in no acute or chronic toxic effects on human health via direct contact with contaminated soil and are determined using the following equation and standard exposure assumptions:

$$\text{Soil Cleanup Level} = \frac{\text{RFD} \times \text{ABW} \times \text{UCF2} \times \text{HQ}}{\text{SIR} \times \text{AB1} \times \text{FOC}} \quad (\text{ug/l})$$

Where:

RFD = Reference Dose as specified in WAC 173-340-708(7) (mg/kg-day)

ABW = Average body weight over the period of exposure (70 kg)

UCF2 = Unit conversion factor (1,000,000 mg/kg)

SIR = Soil ingestion rate (50 mg/day)

AB1 = Gastrointestinal absorption rate (1.0)

FOC = Frequency of contact (0.4)

HQ = Hazard quotient (1);

(B) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 100,000 via direct contact with contaminated soil and are determined using the following equation and standard exposure assumptions:

$$\text{Soil Cleanup Level} = \frac{\text{RISK} \times \text{ABW} \times \text{LIFE} \times \text{UCF1}}{\text{CPF} \times \text{SIR} \times \text{AB1} \times \text{DUR} \times \text{FOC}} \quad (\text{ug/l})$$

Where:

RISK = Acceptable cancer risk level (1 in 100,000)

ABW = Average body weight over the period of exposure (70 kg)

LIFE = Lifetime (75 years)

UCF1 = Units conversion factor (1,000,000 mg/kg)

CPF = Carcinogenic Potency Factor as specified in WAC 173-340-708(8) (kg-day/mg)  
 SIR = Soil ingestion rate (50 mg/day)  
 AB1 = Gastrointestinal absorption rate (1.0)  
 DUR = Duration of exposure (20 years)  
 FOC = Frequency of contact (0.4);

(b) The department may establish method C cleanup levels that are more stringent than those required by (a) of this subsection when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(5) Multiple hazardous substances/multiple pathways of exposure.

(a) Soil cleanup levels for individual hazardous substances developed in accordance with subsection (4) of this section, including cleanup levels based on state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures specified in WAC 173-340-708 (5) and (6). In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand.

(b) These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including cleanup levels based on applicable state and federal laws.

(6) Point of compliance. The point of compliance shall be established in accordance with WAC 173-340-740(6).

(7) Compliance monitoring. Compliance monitoring shall be performed in accordance with WAC 173-340-410 and 173-340-740(7).

[Statutory Authority: Chapter 70.105D RCW. 96-04-010 (Order 94-37), § 173-340-745, filed 1/26/96, effective 2/26/96; 91-04-019, § 173-340-745, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-750 Cleanup standards to protect air quality.** (1) General considerations.

(a) Cleanup levels to protect air quality shall be based on estimates of the reasonable maximum exposure expected to occur under both current and future site use conditions. The department has determined that residential site use will generally require the most protective ambient air cleanup levels and that exposure to hazardous substances under these conditions represents the reasonable maximum exposure. In the event of a release or potential release of hazardous substances into the ambient air, treatment, removal, or containment measures shall be conducted to reduce the levels of hazardous substances in the ambient air to levels consistent with this use unless all of the following can be demonstrated:

(i) The site does not serve as a current residential area;

(ii) The site is not likely to become a residential area in the future based on a review of site zoning, statutory or regulatory restrictions, comprehensive plans, historic site use, adjacent land uses, and other relevant factors;

(iii) Appropriate institutional controls are implemented at the site to prohibit residential use; and

(iv) Air emissions from the site will not reduce the air quality in adjacent residential areas; or

(v) More stringent concentrations are necessary to protect human health and the environment.

(b) Ambient air cleanup levels for nonresidential site uses shall be established on a case-by-case basis. The overall limits on the hazard index and total excess cancer risk specified in subsections (3) through (5) of this section shall apply to these sites. Cleanup levels for these types of sites shall be at least as stringent as method C cleanup levels established under subsection (4) of this section.

(c) Ambient air cleanup levels shall be established at concentrations which do not directly or indirectly cause violations of ground water, surface water, or soil cleanup standards established under this chapter or applicable state and federal laws.

(2) Method A cleanup levels.

(a) Method A cleanup levels for ambient air shall be at least as stringent as concentrations

established under applicable state and federal laws;

(b) The department may establish method A cleanup levels that are more stringent than those required by (a) of this subsection when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(3) Method B cleanup levels.

(a) Method B cleanup levels for ambient air shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws; and

(ii) For hazardous substances for which sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Concentrations which are estimated to result in no acute or chronic toxic effects on human health and are determined using the following equation and standard exposure assumptions:

$$\text{Ambient air cleanup level} = \frac{\text{RFD} \times \text{ABW} \times \text{UCF} \times \text{HQ}}{\text{BR} \times \text{ABS}}$$

(ug/l)

Where:

- RFD = Reference Dose as specified in WAC 173-340-708(7) (mg/kg-day)
- BW = Body weight (16 kg)
- UCF = Units conversion factor (1,000 ug/mg)
- BR = Breathing rate (10 m<sup>3</sup>/day)
- ABS = Absorption percentage (1.0)
- HQ = Hazard Quotient (1);

(B) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 1 in 1,000,000 and are determined using the following equation and standard exposure assumptions:

$$\text{Ambient air cleanup level} = \frac{\text{RISK} \times \text{BW} \times \text{LIFE} \times \text{UCF}}{\text{CPF} \times \text{BR} \times \text{ABS} \times \text{DUR}}$$

(ug/l)

Where:

1/26/96)

RISK = Acceptable cancer risk level (1 in 1,000,000)

BW = Body weight (70 kg)

LIFE = Lifetime (75 years)

UCF = Units conversion factor (1,000 ug/mg)

CPF = Carcinogenic potency factor as specified in WAC 173-340-708(8) (kg-day/mg)

BR = Breathing rate (20 m<sup>3</sup>/day)

ABS = Absorption percentage (1.0)

DUR = Duration of exposure (30 years);

(b) The department may establish method B cleanup levels that are more stringent than those required by (a) of this subsection, when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(4) Method C cleanup levels.

(a) Method C cleanup levels may be approved by the department if the person undertaking the cleanup action can demonstrate that such levels are consistent with applicable state and federal laws, that best available control technology has been utilized, and that one or more of the conditions in WAC 173-340-707(1) exist.

(b) Method C cleanup levels for ambient air shall be at least as stringent as all of the following:

(i) Concentrations established under applicable state and federal laws; and

(ii) For hazardous substances for which sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws, those concentrations which protect human health and the environment as determined by the following methods:

(A) Concentrations which are anticipated to result in no significant acute or chronic effects on human health and are estimated in accordance with WAC 173-340-750 (3)(a)(ii)(A) except that the average body weight shall be 70 kg and the estimated breathing rate shall be 20 m<sup>3</sup>/day; and

(B) For known or suspected carcinogens, concentrations for which the upper bound on the estimated excess cancer risk is less than or equal

to 1 in 100,000 and are determined in accordance with WAC 173-340-750 (3)(a)(ii)(B).

(c) The department may establish method C cleanup levels that are more stringent than those required by (b) of this subsection, when, based on a site-specific evaluation, the department determines that such levels are necessary to protect human health and the environment.

(5) Multiple hazardous substances/multiple pathways of exposure.

(a) Air cleanup levels for individual hazardous substances developed in accordance with subsections (3) and (4) of this section, including cleanup levels based on applicable state and federal laws, shall be adjusted downward to take into account exposure to multiple hazardous substances and/or exposure resulting from more than one pathway of exposure. These adjustments shall be made in accordance with the procedures in WAC 173-340-708 (5) and (6). In making these adjustments, the hazard index shall not exceed one and the total excess cancer risk shall not exceed one in one hundred thousand.

(b) These overall limits on the hazard index and total excess cancer risk shall also apply to sites where there is exposure to a single hazardous substance by one exposure pathway, including those cleanup levels based on applicable state and federal laws.

(6) Points of compliance. Cleanup levels established under subsections (2), (3), (4), and (5) of this section shall be attained in the ambient air throughout the site. For sites determined to be industrial sites under the criteria in WAC 173-340-745, the department may approve a conditional point of compliance not to exceed the property boundary.

(7) Compliance monitoring.

(a) Sampling and analytical procedures shall be defined in a compliance monitoring plan prepared under WAC 173-340-410. The sample design shall provide data which are representative of the site.

(b) Data analysis and evaluation procedures used to evaluate compliance with ambient air cleanup levels shall be defined in a compliance monitoring plan prepared under WAC 173-340-410.

(c) Averaging times specified in applicable state and federal laws shall be used to demonstrate compliance with those requirements.

(d) When cleanup levels are not based on applicable state and federal laws, the following averaging times shall be used:

(i) Compliance with ambient air cleanup levels for noncarcinogens shall be based on twenty-four-hour time weighted averages except where the cleanup level is based upon an inhalation reference dose which specifies an alternate averaging time;

(ii) Compliance with ambient air cleanup levels for carcinogens shall be based on annual average concentrations.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-750, filed 1/28/91, effective 2/28/91.]

**WAC 173-340-760 Sediment cleanup standards.** Reserved.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-760, filed 1/28/91, effective 2/28/91.]

## PART VIII—GENERAL PROVISIONS

**WAC 173-340-800 Property access.** (1) Normal entry procedures. Whenever there is a reasonable basis to believe that a release or threatened release of a hazardous substance may exist, the department's authorized employees, agents or contractors may, after reasonable notice, enter upon any real property, public or private, to conduct investigations or remedial actions. The notice shall briefly describe the reason for requesting access. For the purpose of this subsection, unless earlier access is granted, reasonable notice shall mean:

(a) Written notice to site owner and operator to the extent known to the department, sent through the United States Postal Service at least three days prior to entry; or

(b) Notice to site owner and operator to the extent known to the department, in person or by telephone at least twenty-four hours prior to entry.

(2) Notification of property owner. The department will ask a resident, occupant, or other

persons in custody of the site to identify the name and address of owners of the property. If an owner is identified who has not been previously notified, the department will make a prompt and reasonable effort to notify such owners of remedial actions planned or conducted.

(3) Orders and consent decrees. Whenever investigations or remedial actions are conducted under a consent decree or order, a potentially liable person shall not deny access to the DEPARTMENT's authorized employees, agents, or contractors to enter and move freely about the property to oversee and verify investigations and remedial actions being performed.

(4) Ongoing operations. Persons gaining access under this section shall take all reasonable precautions to avoid disrupting the ongoing operations on a site. Such persons shall comply with all state and federal safety and health requirements which the department determines to be applicable.

(5) Access to documents. The department's authorized employees, agents or contractors may, after reasonable notice, enter property for the purpose of inspecting documents relating to a release or threatened release at the facility. Persons maintaining such documents shall:

(a) Provide access during normal business hours and allow the department to copy these documents; or

(b) At the department's request, provide legible copies of the requested documents to the department.

(6) Emergency entry. Notice by the department's authorized employees, agents, or contractors is not required for entry onto property to investigate, mitigate, or abate an emergency posed by the release or threatened release of a hazardous substance. The department will make efforts which are reasonable under the circumstances to promptly notify those owners and operators to the extent known to the department of the actions taken.

(7) Other authorities. Where consent has not been obtained for entry, the department shall secure access in a manner consistent with state and federal law, including compliance with any warrant requirements. Nothing in this chapter

shall affect site access authority granted under other state laws and regulations.

(8) Access by potentially liable persons. The department shall make reasonable efforts to facilitate access to real property and documents for persons who are conducting remedial actions under either an order or decree.

(9) Information sharing. The department will provide the documents and factual information on releases or threatened releases obtained through this section to persons who request such in accordance with chapter 42.17 RCW and chapter 173-03 WAC. The department does not intend application of these authorities to limit its sharing of such factual information.

(10) Split samples. Whenever the department intends to perform sampling at a site, it shall indicate in its notification under subsection (1) of this section whether sampling may occur. The person receiving notice may take split samples, provided this does not interfere with the department's sampling.

[Statutory Authority: Chapter 70.105D RCW, 90-08-086, § 173-340-800, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-810 Worker safety and health.** (1) General provisions. Requirements under the Occupational Safety and Health Act of 1970 (29 U.S.C. Sec. 651 et seq.) and the Washington Industrial Safety and Health Act (chapter 49.17 RCW), and regulations promulgated pursuant thereto shall be applicable to remedial actions taken under this chapter. These requirements are subject to enforcement by the designated federal and state agencies. All governmental agencies and private employers are directly responsible for the safety and health of their own employees and compliance with those requirements. Actions taken by the department under this chapter do not constitute an exercise of statutory authority within the meaning of section (4)(b)(1) of the Occupational Safety and Health Act.

(2) Safety and health plan. Potentially liable persons responsible for undertaking remedial actions under WAC 173-340-520 through 173-340-540, shall submit a safety and health plan for the department's review and comment. The safety

and health plan must be consistent with chapter 49.17 RCW and regulations promulgated pursuant thereto.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-810, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-820 Sampling and analysis plans.** (1) General. A sampling and analysis plan shall be prepared for all sampling activities which are part of investigation and remedial actions unless otherwise directed by the department and except for emergencies. The level of detail required in the sampling and analysis plan may vary with the scope and purpose of the sampling activity. Sampling and analysis plans prepared under an order or decree shall be submitted to the department for review and approval.

(2) Contents. The sampling and analysis plan shall specify procedures which ensure that sample collection, handling, and analysis will result in data of sufficient quality to plan and evaluate remedial actions at the site. Additionally, information necessary to insure proper planning and implementation of sampling activities shall be included. References to standard protocols or procedures manuals may be used provided the information referenced is readily available to the department. The sampling and analysis plan shall contain:

(a) A statement on the purpose and objectives of the data collection, including quality assurance and quality control requirements;

(b) Organization and responsibilities for the sampling and analysis activities;

(c) Requirements for sampling activities including:

(i) Project schedule;

(ii) Identification and justification of location and frequency of sampling;

(iii) Identification and justification of parameters to be sampled and analyzed;

(iv) Procedures for installation of sampling devices;

(v) Procedures for sample collection and handling, including procedures for personnel and equipment decontamination;

(vi) Procedures for the management of waste materials generated by sampling activities, includ-

[Ch. 173-340 WAC—p. 92]

ing installation of monitoring devices, in a manner that is protective of human health and the environment;

(vii) Description and number of quality assurance and quality control samples, including blanks and spikes;

(viii) Protocols for sample labeling and chain of custody; and

(ix) Provisions for splitting samples, where appropriate.

(d) Procedures for analysis of samples and reporting of results, including:

(i) Detection or quantification limits;

(ii) Analytical techniques and procedures;

(iii) Quality assurance and quality control procedures; and

(iv) Data reporting procedures, and where appropriate, validation procedures.

(3) Available guidance. The department shall make available guidance for preparation of sampling and analysis plans.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-820, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-830 Analytical procedures.**

(1) Purpose. This section specifies acceptable analytical methods and other testing requirements for sites where remedial action is being conducted under this chapter.

(2) General requirements.

(a) All hazardous substance analyses shall be conducted by a laboratory accredited under chapter 173-50 WAC, unless otherwise approved by the department.

(b) All analytical procedures used shall be done in accordance with a sampling and analysis plan prepared under WAC 173-340-820.

(c) Tests for which methods have not been specified in this section shall be performed using standard methods or procedures such as those specified by the American Society for Testing of Materials, when available, unless otherwise approved by the department.

(d) Samples shall be analyzed consistent with methods appropriate for the site, the media being analyzed, the hazardous substances being analyzed for, and the anticipated use of the data.

(e) The department may require or approve modifications to the standard analytical methods identified in subsection (4) of this section to provide lower quantitation limits, improved accuracy, greater precision, or to address the factors in (d) of this subsection.

(f) Limits of quantitation. Laboratories shall achieve the lowest practical quantitation limits consistent with the selected method and WAC 173-340-707.

(3) Multiple methods.

(a) Where there is more than one method specified in subsection (4) of this section with a practical quantitation limit less than the cleanup standard, any of the methods may be selected. In these situations, considerations in selecting a particular method may include confidence in the data, analytical costs, and considerations relating to quality assurance or analysis efficiencies.

(b) The department may require an analysis to be conducted by more than one method in order to provide higher data quality. For example, the department may require that different separation and detection techniques be used to verify the presence of a hazardous substance ("qualification") and determine the concentration of the hazardous substance ("quantitation").

(4) Analytical methods.

(a) The methods used for sample collection, sample preservation, transportation, allowable time before analysis, sample preparation, analysis, method detection limits, practical quantitation limits, quality control, quality assurance and other technical requirements and specifications shall comply with the following requirements, as applicable:

(i) Method 1. **Test Methods for Evaluating Solid Waste**, U.S. EPA, SW-846 and any revisions or amendments thereto;

(ii) Method 2. **Methods for Chemical Analysis of Water and Wastes**, U.S. EPA, EPA-600/4-79-020 and any revisions or amendments thereto;

(iii) Method 3. **Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act**, 40 CFR 136, and Appendix A, B, and C, U.S. EPA and any revisions or amendments thereto;

(iv) Method 4. **Standard Methods for the Examination of Water and Wastewater**, American Public Health Association, American Water Works Association, and Water Pollution Control Federation and any revisions or amendments thereto;

(v) Method 5. **Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound**, Puget Sound Estuary Program/Tetra Tech, 1986 and any revisions or amendments thereto;

(vi) Method 6. **Quality Assurance Interim Guidelines for Water Quality Sampling and Analysis**, Groundwater Management Areas Program, Washington Department of Ecology, Water Quality Investigations Section, December 1986 and any revisions or amendments thereto; or

(vii) Equivalent methods subject to approval by the department.

(b) The methods used for a particular hazardous substance at a site shall be selected in consideration of the factors in subsection (2) of this section.

(c) Ground water. Methods 1, 2, 3 and 4, as described in (a) of this subsection, may be used to determine compliance with WAC 173-340-720.

(d) Surface water. Methods 1, 2, 3, 4 and 5 as described in (a) of this subsection, may be used to determine compliance with WAC 173-340-730.

(e) Soil. Method 1, as described in (a) of this subsection, may be used to determine compliance with WAC 173-340-740 and 173-340-745.

(f) Air. Appropriate methods for determining compliance with WAC 173-340-750 shall be selected on a case-by-case basis, in consideration of the factors in subsection (2) of this section.

[Statutory Authority: Chapter 70.105D RCW. 91-04-019, § 173-340-830, filed 1/28/91, effective 2/28/91; 90-08-086, § 173-340-830, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-840 General submittal requirements.** Unless otherwise specified by the department, all reports, plans, specifications, and similar information submitted under this chapter shall meet the following requirements:

(1) Cover letter. Include a letter describing the submittal and specifying the desired department action or response.

(2) Number of copies. Three copies of the plan or report shall be submitted to the DEPARTMENT's office responsible for the facility. The department may require additional copies to meet public participation and interagency coordination needs.

(3) Certification. All engineering work submitted under this chapter shall be under the seal of a professional engineer registered with the state of Washington.

(4) Visuals. Maps, figures, photographs, and tables to clarify information or conclusions shall be legible. All maps, plan sheets, drawings, and cross-sections shall meet the following requirements:

(a) To facilitate filing and handling, be on paper no larger than 24 x 36 inches and no smaller than 8 1/2 x 11 inches. Photo-reduced copies of plan sheets may be submitted provided at least one full-sized copy of the photo-reduced sheets are included in the submittal.

(b) Identify and use appropriate and consistent scales to show all required details in sufficient clarity.

(c) Be numbered, titled, have a legend of all symbols used, and specify drafting or origination dates.

(d) Contain a north arrow.

(e) Use United States Geological Survey datum as a basis for all elevations.

(f) For planimetric views, show a survey grid based on monuments established in the field and referenced to state plane coordinates. This requirement does not apply to conceptual diagrams or sketches when the exact location of items shown is not needed to convey the necessary information.

(g) Where grades are to be changed, show original topography in addition to showing the changed site topography. This requirement does not apply to conceptual diagrams or sketches where before and after topography is not needed to convey the necessary information.

(h) For cross-sections, identify the location and be cross-referenced to the appropriate planimetric view. A reduced diagram of a cross-

section location map shall be included on the sheets with the cross-sections.

(5) Sampling data. All sampling data shall be submitted consistent with procedures specified by the department.

(6) Appendix. An appendix providing the principal information relied upon in preparation of the submittal. This should include, for example: A complete citation of references; applicable raw data; a description of, or where readily available, reference to testing and sampling procedures used; relevant calculations; and any other information needed to facilitate review.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-840, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-850 Recordkeeping requirements.** (1) Any remedial actions at a facility must be documented with adequate records. Such records may include: Factual information or data; relevant decision documents; and any other relevant, site specific documents or information.

(2) Unless otherwise required by the department, records shall be retained for at least ten years from the date of completion of compliance monitoring.

(3) Records shall be retained by the person taking remedial action, unless the department requires that person to submit the records to the department.

(4) The department shall maintain its records in accordance with chapter 42.17 RCW.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-850, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-860 Endangerment.** In the event that the department determines that any activity being performed at a hazardous waste site is creating or has the potential to create a danger to human health or the environment, the department may direct such activities to cease for such period of time as it deems necessary to abate the danger.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-860, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-870 Project coordinator.**

The potentially liable person shall designate a project coordinator for work performed under an order or decree. The project coordinator shall be the designated representative for the purposes of the order or decree. That person shall coordinate with the department and the public and shall facilitate compliance with requirements of the order or decree.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-870, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-880 Emergency actions.**

Nothing in this chapter shall limit the authority of the department, its employees, agents, or contractors to take or require appropriate action in the event of an emergency.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-880, filed 4/3/90, effective 5/4/90.]

**WAC 173-340-890 Severability.** If any provision of this chapter or its application to any person or circumstance is held invalid, the remainder of this chapter or the application of the provision to other persons or circumstances shall not be affected.

[Statutory Authority: Chapter 70.105D RCW. 90-08-086, § 173-340-890, filed 4/3/90, effective 5/4/90.]