



Determining Applicable or Relevant and Appropriate Requirements (ARARs) at Federal Facility Sites

MAY 14, 2023

FEDERAL FACILITIES RESTORATION AND REUSE OFFICE

FEDERAL FACILITIES TRAINING

1

The purpose of this course is to discuss the approach to determining applicable or relevant and appropriate requirements (ARARs) in Federal Facility Records of Decision (RODs) and identify how and when States and other parties should become involved.

Group Poll

Which ARARs do you believe are most cited in a federal facility decision document?



This Photo by Unknown Author is licensed under CC BY-SA

FEDERAL FACILITIES TRAINING

2

Overview

ARARs and To-Be-Considered (TBCs)

Types of ARARs

Substantive and administrative requirements

Documenting ARARs

ARARs identification and analysis

CERCLA ARAR Waivers

- U.S. EPA, Interim Final CERCLA Compliance with Other Laws Manual, August 1988
- U.S. EPA, Interim Final CERCLA Compliance with Other Laws Manual, Part II, 1989
- U.S. EPA, Documenting Applicable, or Relevant and Appropriate Requirements in Comprehensive Environmental Response, Compensation, and Liability Act Response Action Decisions, 2023

This module provides an overview of Applicable or Relevant and Appropriate Requirements (ARARs) under Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and associated Environmental Protection Agency (EPA) guidance. The goal is for you to become familiar with the three types of ARARs and how they are determined; understand the difference between substantive and administrative requirements; learn how to document ARARs; learn the general procedure for identifying and analyzing ARARs; and become familiar with 6 waivers identified under CERCLA 121(d).

The majority of the information provided in this training is based on U.S. EPA, Interim Final CERCLA Compliance with Other Laws Manual, August 1988; U.S. EPA, Interim Final CERCLA Compliance with Other Laws Manual, Part II, 1989 and U.S. EPA, Documenting Applicable, or Relevant and Appropriate Requirements in Comprehensive Environmental Response, Compensation, and Liability Act Response Action Decisions, 2023.

ARARs and To-Be-Considered (TBCs)

FEDERAL FACILITIES TRAINING

4

Why are ARARs Necessary?

- ❑ CERCLA was enacted to address abandoned, uncontrolled hazardous waste sites
- ❑ Permits are not required for onsite work under CERCLA
- ❑ Congress's intent was to streamline and expedite the cleanup process at CERCLA sites
- ❑ Congress still wanted CERCLA cleanups to achieve applicable standards in order to ensure remedies are protective of human health and the environment

FEDERAL FACILITIES TRAINING

5

CERCLA was enacted to address abandoned, uncontrolled hazardous waste sites. Cleanup of these sites is conducted either through urgent, short-term removal actions, or through longer term remedial actions, or a combination of both removal and follow-on remedial action. Congress gave the President the authority under CERCLA to select and carry out cleanup actions without applying for permits required under other Federal or state statutes or regulatory programs for activities conducted onsite which would otherwise require a permit. Congress's intent was to avoid lengthy application periods and the imposition of application fees in order to streamline and expedite the cleanup process at CERCLA sites.

However, Congress still wanted CERCLA cleanups to achieve applicable standards in order to ensure that remedies implemented would be protective of human health and the environment.

ARARs Overview

- ❑ Onsite CERCLA cleanups must attain or waive ARARs
 - ARARs should be complied with during implementation of remedial actions
- ❑ CERCLA Section 121(d) requires that on-site remedial actions attain or waive federal environmental laws, or more stringent state environmental or facility siting laws, that are determined to be ARARs.
- ❑ Under limited circumstances local requirements may be ARARs

This section covers how ARARs and To-Be-Considered (TBCs) materials are identified under CERCLA, the NCP, and associated EPA guidance for cleanups of hazardous substances, pollutants, or contaminants addressed under CERCLA. CERCLA section 121(d)(2) states that for wastes left onsite, remedial actions must comply with or waive Federal and State environmental laws that are legally applicable or are relevant and appropriate under the circumstances of the release. There are 6 statutory ARAR waivers that will be discussed later in this presentation. The 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) also requires compliance with ARARs during removal and remedial actions to the extent practicable. Identification and determination of state and federal ARARs is a fundamental component of remedy selection. 40 CFR 300.430(b)(9) states that the lead agency shall “Initiate the identification of potential federal and state ARARs and, as appropriate, other criteria, advisories, or guidance to be considered.”

Some of the many sources of ARARs include the Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), Floodplain management, wetlands management laws, and Clean Air Act (CAA). Keep in mind that achieving ARARs may require consultation with another agency with jurisdiction over the land. For example, consulting with the Fish and Wildlife Service regarding the Endangered Species Act.

Generally, only Federal or more stringent state standards are ARARs, not local requirements. For example, one limited circumstance when local requirements can be ARARs is under the CWA pretreatment program, and the local requirements may be incorporated into and enforced under the NPDES permit issued to the industrial user by the State or EPA. Most other types of local ordinances are not ARARs.

State Requirements

CERCLA requires Superfund remedial actions to comply with State environmental or facility siting laws provided that the State requirements:

1. are promulgated*
2. are more stringent than Federal laws; and
3. are identified by the State in a timely manner.

*State laws that are promulgated must be enforceable and be consistently applied in similar situations across the State.

Only those state standards that are promulgated, are identified by the state in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term promulgated means that the standards are of general applicability and are legally enforceable (40 CFR 300.400(g)(4)). Legally enforceable requirements are State regulations or statutes that contain specific enforcement provisions or are enforceable by means of the general authority in other laws or in the State constitution. (See EPA Guidance Section 7.1.1 in CERCLA Compliance with Other Laws Manual, Part II, 1989)

The comparison of State and Federal requirements on the basis of stringency can be facilitated by first determining the authority under which the environmental program and its requirements were promulgated. In the case of State environmental programs that have been authorized by EPA to be fully administered and enforced in lieu of a Federal program, the stringency of the State requirements has already been established, i.e., the State program must be at least as stringent such that it provides for compliance with the requirements of the Federal Act. Establishing stringency can require more attention, however, when the State program has not been Federally authorized. In such cases, a comparison of requirements may call for an evaluation of the more stringent of two requirements (see EPA Guidance Section 7.1.2 in CERCLA Compliance with Other Laws Manual, Part II, 1989)

40 CFR 300.430(f)(1)(ii)(C)) states that “An alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected [if] (5) with respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state.” This is discussed again in the ARAR waiver section at the end of this presentation.

To Be Considered Requirements (TBCs)

- Non-promulgated advisories or guidance issued by Federal or State government
- TBCs will be considered along with ARARs during:
 - Site risk assessment
 - Determining necessary level of cleanup
- TBCs should be included in the ROD when they are necessary to interpret ARARs or determine preliminary remediation goals

To-be-Considered Material (TBCs) are non-promulgated advisories or guidance issued by Federal or State government that are not legally binding and do not have the status of potential ARARs. However, in many circumstances TBCs will be considered along with ARARs as part of the site risk assessment and may be used in determining the necessary level of cleanup for protection of health or the environment. EPA’s approach to determining protectiveness involves risk assessment, considering both ARARs and TBCs. (See EPA Guidance page xiv in CERCLA Compliance with Other Laws Manual, Part I, 1988). TBCs are not potential ARARs because they are neither promulgated nor enforceable. It may be necessary to consult TBCs to interpret ARARs, or to determine preliminary remediation goals when ARARs do not exist for particular contaminants. (see EPA’s Overview of ARARs Fact Sheet, 1989)

ARARs (and TBCs necessary for protection) must be attained for hazardous substances, pollutants, or contaminants remaining onsite at the completion of the remedial action, unless waiver of an ARAR is justified. Ideally, TBCs are considered at the FS stage and in the Proposed Plan for the various remedial alternatives under consideration. Once a remedial action is selected in a ROD, the "TBCs" will already have been considered and either determined to be appropriate to apply to the remedy or discarded as inappropriate. At that point, they're incorporated into the performance standards in the ROD. Although most people still refer to them as "TBCs," the fact is that they have been considered and

are being applied to the site.

Identification of ARARs

- Must be done on a site-specific basis involving a two-part analysis.
 - Is it applicable?
 - Is it relevant and appropriate?
- A requirement may be either “applicable” or “relevant and appropriate,” but not both.
- ARARs are based on the circumstances of the site



FEDERAL FACILITIES TRAINING 9

Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination of whether a given requirement is applicable; then, if it is not applicable, a determination of whether it is nevertheless both relevant and appropriate. It is important to consider ARARs early in the CERCLA process. For example, the need to address a specific ARAR could determine the sampling approach, the analytical method used, and/or the analytical detection limit that must be achieved during the remedial investigation (RI).

Applicable Requirements

- Promulgated under Federal or State law
- Specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site

40 CFR 300.400(g)(1)
Lead and support agencies shall identify requirements applicable to the release or remedial action.

FEDERAL FACILITIES TRAINING 10

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated

under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site (See EPA Guidance page xiii in CERCLA Compliance with Other Laws Manual, Part I, 1988). If a requirement is deemed "applicable," all substantive portions of that requirement apply. In order to directly apply to the situation, the specific terms or jurisdictional prerequisites of the law are met (e.g., all of the triggers for regulation are met). The difference between substantive and administrative requirements will be discussed further in later slides.

40 CFR 300.400(g)(1) provides information on the identification of applicable or relevant and appropriate requirements and states "The lead and support agencies shall identify requirements applicable to the release or remedial action contemplated based upon an objective determination of whether the requirement specifically addresses a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site."

40 CFR 300.515(d) provides information on the requirements for state involvement in remedial and enforcement response. This section states "A key component of the EPA/state partnership shall be the communication of potential federal and state ARARs and, as appropriate, other pertinent advisories, criteria, or guidance to be considered (TBCs)." The OLEM Directive 9200.2-187 dated October 20, 2017 "Best Practice Process for Identifying and Determining State Applicable or Relevant and Appropriate Requirements Status Pilot" provides a detailed step-by-step breakdown of responsibilities and includes key points during the remedial process that are important for identifying and communicating ARARs. This directive also emphasizes that legal counsel or other ARARs expertise should be involved early in the remedial process to increase understanding of ARARs selection. There should be structured opportunities at key points in the process for development of written statements of positions, documentation of agreement and options for formal dispute resolution. Also, because it provides greater transparency and increased understanding of ARARs selection, the documentation of agreement should be added to the site's administrative record.

Relevant and Appropriate Requirements

- ❑ Address situations sufficiently similar to the circumstances of the release or remedial action contemplated at the Site such that their use is well-suited
- ❑ Promulgated cleanup standards, standards of control, other substantive environmental protection requirements, and criteria that are not applicable

Example:
MCLs may not be applicable to a groundwater cleanup, but are generally considered relevant and appropriate.

40 CFR 300.400(g)(2) provides information on the identification of ARARs and states “If, based upon paragraph (g)(1) of this section, it is determined that a requirement is not applicable to a specific release, the requirement may still be relevant and appropriate to the circumstances of the release.”

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not “applicable” to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

For example, the standards for cleaning up uranium and thorium processing facility sites are frequently considered “relevant and appropriate” for radiologically contaminated sites that did not conduct such processing. For the example in the slide, MCLs and MCLGs are made relevant and appropriate to groundwater cleanups by Section 121(d)(2)(A).

Relevant and Appropriate Requirements (cont.)

- ❑ Determination that a requirement is relevant and appropriate considers both aspects:
 - Is it relevant; AND
 - Is it appropriate?

- ❑ Involves a comparison of eight site-specific factors with those addressed in the statutory or regulatory requirement



In general, determining relevant and appropriate requirements involves a comparison of a number of site-specific factors, including the characteristics of the remedial action, the hazardous substances present at the site, or the physical circumstances of the site, with those addressed in the statutory or regulatory requirement.

In some cases, a requirement may be relevant, but not appropriate, given site-specific circumstances; such a requirement would not be an ARAR for the site. In addition, there is more discretion in the determination of relevant and appropriate; it is possible for only part of a requirement to be considered relevant and appropriate in a given case. When the analysis results in a determination that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable.

8 Site-Specific Comparisons to Determine Relevant and Appropriate Requirements		
	Characteristics of Requirement	Characteristics of CERCLA site/action
1	Purpose	Purpose
2	Medium regulated	Medium present
3	Substances regulated	Substances present
4	Activities regulated	Remedial action considered
5	Any variances, waivers, or exemptions of the requirement	Availability of such variances, waivers, or exemptions based on site circumstances
6	Type of place regulated	Type of place affected
7	Type/size of structure or facility regulated	Type/size of structure or facility affected
8	Any consideration of use or potential use of affected resources	The use or potential use of the affected resource at the site

40 CFR 300.400(g)(2)(i) through (viii) list the comparisons that shall be made, where pertinent, to determine relevance and appropriateness.

- (i) The purpose of the requirement and the purpose of the CERCLA action;
- (ii) The medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site;
- (iii) The substances regulated by the requirement and the substances found at the CERCLA site;
- (iv) The actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site;
- (v) Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site;
- (vi) The type of place regulated and the type of place affected by the release or CERCLA action;
- (vii) The type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action;
- (viii) Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resource at the CERCLA site.

Apply Your Understanding



Which of the following is not true of a TBC:



A. It is promulgated



B. It is not promulgated



C. It is considered in determining a remedy's protectiveness



D. It can help determine preliminary remediation goals

FEDERAL FACILITIES TRAINING

14

Apply Your Understanding

Site Y identifies a facility that was used for plutonium-processing and is radiologically contaminated. Remediation will address contaminated buildings and soil.



Which of the following standards could be considered relevant and appropriate for this remedial action? Select all that apply.



A. RCRA closure and post-closure performance standards for a waste management unit



B. RCRA requirements for tank systems including response to leaks or spills



C. Standards for cleanup up of other radiologically contaminated sites such as uranium and thorium processing facilities.



D. Nuclear Regulatory Commission Regulations for low level waste transfer for disposal

FEDERAL FACILITIES TRAINING

15

Types of ARARs

FEDERAL FACILITIES TRAINING

16

Identified
early, during
site
investigation

Chemical- specific ARARs

are usually health- or risk-based numerical values or methodologies used to determine acceptable concentrations of chemical that may be found in or discharged to the environment

Location- specific ARARs

restrict actions or contaminant concentrations in certain environmentally sensitive areas.

Identified
during
Feasibility
Study

Action-specific ARARs

are usually technology- or activity-based requirements or limitations on actions or conditions involving specific substances

FEDERAL FACILITIES TRAINING

17

There are three types of ARARs. Chemical- and location-specific ARARs are identified early in the process, generally during the site investigation, while action-specific ARARs are usually identified during the Feasibility Study (FS) in the detailed analysis of alternatives.

Chemical-Specific ARAR

- ❑ Usually health or risk-based numerical values or methodologies
- ❑ Result in the establishment of numerical values when applied to site-specific conditions
- ❑ These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment

Example:
Numerical MCLs for groundwater that is identified as a potential source of drinking water

Chemical-specific requirements are usually health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. When a chemical has more than one ARAR, generally, the cleanup value should be the more stringent one. For example, numerical concentration standards for soil, groundwater or surface water can be used to determine protectiveness of and human health and the environment.

Example Chemical-Specific ARAR from Final Travis Air Force Base Groundwater Record of Decision, 2014

TABLE C-1
Chemical-specific ARARs
Groundwater Record of Decision, Travis Air Force Base, California

Remedy Component/ Alternative	Site	Requirement	Citation	Federal, or State Requirement	Description	ARAR Determination	Comments
Groundwater treatment systems 2 - MNA 3 - GET 4 - Bioreactor and GET 5 - EVO and EA 6 - Bioreactor, Phytoremediation, EVO PRB, and EA 7 - Passive Skimming and EA	Site FT004, Site FT005, Site LF006, Subarea LF007B, Subarea LF007C, Subarea LF007D, Site LF008, Site SS015, Site SS016, Site ST027B, Site SS029, Site SS030, Site SDO31, Site SDO33, Site SDO34, Site SS035, Site SDO36, Site SDO37, Site DPO39, Site SDO43	Primary drinking water standards (Non-zero MCLGs and MCLs)	Safe Drinking Water Act, 40 CFR Part 141, Sections 141.11, 141.50-51, and 141.61-62 40 CFR 300.430(e)(2)(i)(C)	Federal	MCLGs are goals under the SDWA which are set at levels at which no adverse health effects will occur and allow an adequate margin of safety. MCLs are promulgated and enforceable maximum concentrations of drinking water priority pollutants that are set as closely as feasible to MCLGs, considering best technology, treatment techniques, and other factors. The NCP states that primary drinking water standards are legally applicable only to drinking water at the tap, but are relevant and appropriate as cleanup standards for groundwater and surface water that have been determined to be current or future drinking water sources. Under CERCLA 121(d)(2)(A), remedial actions shall attain MCLGs where relevant and appropriate. The NCP provides that where an MCLG has been set at a level of zero, the MCL for that contaminant shall be attained.	Relevant and appropriate	This regulation addresses drinking water-based cleanup goals for groundwater plumes.
			22 CCR, Div. 4, Ch. 15, Articles 4, 4.5, and 5.5, Sections 64431 et seq., 64444	State	Establishes standards for public water supply systems, including primary MCLs. State MCLs must be at least as stringent as Federal MCLs. State MCLs are incorporated into State and Regional Water Quality Board Water Quality Control Plans as water quality objectives for protection of current and potential drinking water supply sources. MCLs are some of the applicable upper-end objectives for ambient ground and surface water where the water is a source of drinking water, as defined in the Water Quality Control Plans.		

This excerpt from the 2014 Travis Air Force ROD cites the federal Safe Drinking Water Act as a chemical-specific ARAR that is relevant and appropriate as a regulation that addresses drinking water-based cleanup goals for groundwater plumes. The description states that primary drinking water standards are legally applicable only to drinking water at the tap, but are relevant and appropriate as cleanup standards for groundwater and surface water that have been determined to be current or future drinking water sources.

Example Chemical-Specific ARAR from Final Travis Air Force Base Groundwater Record of Decision, 2014 (continued)

Remedy Components/ Alternatives		Site(s)	Requirement	Citation	Federal, or State Requirement	Description	ARAR Determination	Comments
Groundwater treatment systems and treatment system effluent discharged to surface water		Site FT004, Site FT005, Site LF006, Subarea LF007B, Subarea LF007C, Subarea LF007D,	Sources of Drinking Water Policy	SWRCS Resolution 88-63	State	Designates all ground and surface water of the state of California as potential drinking water with certain exceptions	TBC	See Joint AF/State, AF, State, EPA position comments 3 below.
2 - MNA 3 - GET 4 - Bioreactor and GET 5 - EVO and EA 6 - Bioreactor, Phytoremediation, EVO PRB, and EA 7 - Passive Skimming and EA		Site LF008, Site SSO15, Site SSO16, Site ST027B, Site SSO29, Site SSO30, Site SSO31, Site SSO33, Site SSO34, Site SSO35, Site SSO36, Site SSO37, Site DPO39, Site SD043						

State Water Resources Control Board

TABLE C-1
Chemical-specific ARARs
Groundwater Record of Decision, Travis Air Force Base, California
Groundwater Record of Decision, Travis Air Force Base, California

FEDERAL FACILITIES TRAINING 20

This excerpt from the 2014 Travis Air Force ROD cites a chemical-specific State requirement with an ARAR determination of TBC for the State’s Sources of Drinking Water Policy.

ARARs table from the B.F. Goodrich Superfund Site, Calvert City, Marshall County, Kentucky, Record of Decision (February 2020),

1. Chemical-specific ARARs

Media/Action	Requirement	Prerequisite	Citation
<i>Protection of Surface Water Quality</i>			
Minimum criteria applicable to all surface waters	The water quality criteria for the protection of human health related to fish consumption in Table 1 of Section 6 of this administrative regulation shall apply to all surface water at the edge of the assigned mixing zones except for those points where water is withdrawn for domestic water supply use. (a) The criteria are established to protect human health regarding the consumption of fish tissue and shall not be exceeded. • For those substances associated with a cancer risk, an acceptable risk level of not more than one (1) additional cancer case in a population of 1,000,000 people, or 1 x 10 ⁻⁶ shall be utilized to establish the allowable concentration.	Presence of pollutants in surface waters of the Commonwealth (including mixing zones, with the exception that toxicity to aquatic life in mixing zones shall be subject to the provisions of 401 KAR 10:029, Section 4) – relevant and appropriate	401 KAR 10:031 § 2(3)
Criteria for surface water designated as <i>Warm Water Aquatic Life Habitat</i>	The allowable instream concentration of toxic substances, or whole effluents containing toxic substances, which are noncumulative or non-persistent with a half-life of less than 96 hours, shall not exceed: a. 0.1 of the 96 hour median LC ₅₀ of representative indigenous or indicator aquatic organisms; or b. A chronic toxicity unit of 1.00 utilizing the 25 percent inhibition concentration, or LC ₂₅ .	Discharge of toxic pollutants to surface waters of the Commonwealth designated as <i>Warm Water Aquatic Life Habitat</i> – applicable	401 KAR 10:031 § 4(1)(j)(1)
	The allowable instream concentration of toxic substances, or whole effluents containing toxic substances, which are bioaccumulative or persistent, including pesticides, if not otherwise regulated, shall not exceed: a. 0.01 of the 96 hour median LC ₅₀ of representative indigenous or indicator aquatic organisms; or b. A chronic toxicity unit of 1.00 utilizing the LC ₂₅ .		401 KAR 10:031 § 4(1)(j)(2)

FEDERAL FACILITIES TRAINING 21

This is example of an ARARs table excerpted from the B.F. Goodrich Superfund Site, Calvert City, Marshall County, Kentucky, Record of Decision (February 2020), which includes recommended columns for presenting the ARARs information with some example language and sub-headers breaks within the table. These excerpts are not intended to capture all ARARs related to a specific media, location, or action or a specific site. Regions may include additional columns, including, for example, a column that briefly describes the remedy action that will meet the substantive provision of an ARAR, or they may describe this information in text of the decision document.

Action-Specific Requirements

- Usually technology or activity-based requirements or limitations
- Determine how a remedial alternative must be achieved

Example:
Requirements related to air stripping, capping, injection of treated groundwater, and excavation

FEDERAL FACILITIES TRAINING22

Action-specific requirements are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Since there are usually several alternative actions for any remedial site, very different requirements can come into play. These action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how a selected alternative must be achieved. **As the statute that is directed toward the management of hazardous waste, RCRA provides the largest number of pertinent action-specific requirements.**

For example, actions related to air stripping, capping, discharge of treatment system effluent, discharge to a publicly owned treatment works (POTW), dredging, excavation, land treatment, placement of waste in land disposal unit, and underground injection of wastes and treated groundwater will have action-specific requirements that apply.

Example Action-Specific ARAR from Final Travis Air Force Base Groundwater Record of Decision, 2014 (excerpt)

TABLE C-3
Action-specific ARARs
Groundwater Record of Decision, Travis Air Force Base, California

Remedy Component/ Alternatives	Sites	Requirement	Citation	Federal or State Requirement	Description	ARAR Determination	Comments
Discharges to surface water 3 – GET 4 – Bioreactor and GET	Site FT005, Subarea LF007C Site SS029, Site SS030 Site SS016	Effluent requirements for discharges to surface water	40 CFR Part 122.41(d) and (e), 122.41(j)(1), (3) and (4), 122.41(i)(6), 122.44(a), (b)(1), (d), (e), and (f), 122.45(a), (d) and (f), 122.48(a) and 122.48(b)	Federal	Establishes requirements to ensure that discharges to surface water do not contribute to a violation of surface water quality standards, including effluent limitations, monitoring and reporting requirements, and the requirement to comply with effluent requirements for discharges to surface water.	Applicable	Applicable at all sites where there will be discharge of extracted or treated groundwater to surface water via the storm water system or to Union Creek. The SWRCB is authorized to implement the NPDES program in the State of California. California Regional Water Quality Control Board, San Francisco Bay Region Order No. R2-2009-0069, NPDES NO. CAG012003, General Waste Discharge Requirements for Discharge or Reuse of Extracted and Treated Groundwater Resulting From the Cleanup of Groundwater Polluted by Volatile Organic Compounds, establishes substantive discharge standards. Only the substantive portions from Subpart C, 40 CFR Part 122.41-48, including the listed citations in this table are ARARs; reporting requirements and other procedural or administrative requirements are not ARARs.

FEDERAL FACILITIES TRAINING 23

This excerpt from the 2014 Travis Air Force ROD cites sections of 40 CFR Part 122 as a federal action-specific ARAR that is applicable. The comments section states it is “applicable at all sites where there will be discharge of extracted or treated groundwater to surface water via the storm water system or to Union Creek.” 40 CFR Part 122 pertains to EPA Administered Permit Programs: the National Pollutant Discharge Elimination System.

ARARs table from the B.F. Goodrich Superfund Site, Calvert City, Marshall County, Kentucky, Record of Decision (February 2020),

3. Action-specific ARARs

Action	Requirement	Prerequisite	Citation
<i>Site Preparation, Construction, and Excavation</i>			
Activities causing fugitive dust emissions	No person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following: <ul style="list-style-type: none"> • Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land; • Application and maintenance of asphalt, oil, water, or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts; • Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; • The maintenance of paved roadways in a clean condition; and • The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water. 	Fugitive emissions from land-disturbing activities (e.g., handling, processing, transporting or storing of any material, demolition of structures, construction operations, grading of roads, or the clearing of land, etc.) – applicable	401 KAR 63:010 § 3(1) and (1)(a), (b), (d), (e) and (f)
<i>Waste Characterization – Primary Wastes (contaminated media and debris) and Secondary Wastes (wastewaters, spent treatment media, etc.)</i>			
Characterization of solid waste	Must determine if solid waste is excluded from regulation under 40 C.F.R. § 261.4.	Generation of solid waste as defined in 40 C.F.R. § 261.2 – applicable	40 C.F.R. § 262.11(a) 401 KAR 32:010 § 2
	Must determine if waste is listed as a hazardous waste in Subpart D of 40 C.F.R. Part 261.	Generation of solid waste which is not excluded under 40 C.F.R. § 261.4 – applicable	40 C.F.R. § 262.11(b) 401 KAR 32:010 § 2

FEDERAL FACILITIES TRAINING 24

Location-Specific Requirements

- ❑ Restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they occur in special locations.
- ❑ These location-specific requirements may include narrative requirements, rather than specifying cleanup numbers.
 - Consultation with other agencies as necessary will help ensure compliance with ARARs

**Example:
 Requirements for
 floodplains,
 wetlands, historic
 places, and sensitive
 ecosystems or
 habitats.**

A site's location is a fundamental determinant of its impact on human health and the environment. Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in specific locations, such as floodplains, wetlands, historic places, and sensitive ecosystems or habitats. For example, wetlands protection laws that will limit activities that can take place in the wetland are location-specific requirements. Another example of a location-specific requirement is the substantive CWA §404 prohibitions of the unrestricted discharge of dredged or fill material into wetlands.

Example Location-Specific ARAR from Final Travis Air Force Base Groundwater Record of Decision, 2014

TABLE C-2
 Location-specific ARARs
 Groundwater Record of Decision, Travis Air Force Base, California

Location/Alternatives	Sites	Requirement	Citation	Federal, or State Requirement	Description	ARAR Determination	Comments
Critical habitat upon which endangered species or threatened species depend 2 – MNA 3 – GET 4 – Bioreactor and GET 5 – EVO and EA 6 – Bioreactor, Phytoremediation, EVO PRB, and EA 7 – Passive Skimming and EA	Site FT004, Site FT005, Site LF006, Subarea LF007B, Subarea LF007C, Subarea LF007D, Site LF008, Site SS015, Site SS016, Site ST027B, Site SS029, Site SS030, Site SD031, Site SD033, Site SD034, Site SS035, Site SD036, Site SD037, Site DP039, Site SD043	Endangered Species Act	18 USC Section 1531(c)	Federal	Requires action to conserve endangered species and critical habitats upon which endangered species depend. Includes consultation with the Dept of Interior.	Applicable	Activities at remedial sites must be performed in such a manner as to identify the presence of and protect endangered or threatened plants and animals at the site. Species at Travis AFB include the California tiger salamander, vernal pool fairy shrimp, Contra Costa goldfields, and vernal pool tadpole shrimp.

This excerpt from the 2014 Travis Air Force ROD cites the Endangered Species Act as a federal location-specific ARAR that is applicable. The comments state “activities at remedial sites must be performed in such a manner as to identify the presence of and protect endangered or threatened plants and animals at the site.” This ARAR requires action to conserve endangered species and critical habitats upon which endangered species depend.

**ARARs table from the B.F. Goodrich Superfund Site, Calvert City,
 Marshall County, Kentucky, Record of Decision (February 2020),**

2. Location-specific ARARs/TBC

Location	Requirement	Prerequisite	Citation
<i>Wetlands</i>			
Presence of Wetlands	Shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Federal actions that involve potential impacts to, or take place within, wetlands – TBC <i>NOTE:</i> Federal agencies required to comply with E.O. 11990 requirements.	Executive Order 11990 Section 1(a) <i>Protection of Wetlands</i>
	Shall avoid undertaking construction located in wetlands unless: (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.		Executive Order 11990, Section 2(a) <i>Protection of Wetlands</i>
Presence of Wetlands (as defined in 44 C.F.R. § 9.4)	The Agency shall minimize ⁶⁴ the destruction, loss or degradation of wetlands. The Agency shall preserve and enhance the natural and beneficial wetlands values.	Federal actions affecting or affected by Wetlands as defined in 44 C.F.R. § 9.4 – applicable	44 C.F.R. § 9.11(b)(2) and (b)(4) <i>Mitigation</i>
	The Agency shall minimize: Potential adverse impact the action may have on wetland values.		44 C.F.R. § 9.11(c)(3) <i>Minimization provisions</i>
<i>Floodplains</i>			
Presence of Floodplains designated as such on a map ⁶⁵	Shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.	Federal actions that involve potential impacts to, or take place within, floodplains – TBC <i>NOTE:</i> Federal agencies required to comply with E.O. 11988 requirements.	Executive Order 11988 Section 1. <i>Floodplain Management</i>

Determining ARARs for a Federal Facility



This Photo by Unknown Author is licensed under CC BY

- Combined effort by the federal facility agreement (FFA) parties
 - Occurs throughout CERCLA process
- Identify ARARs that are pertinent to the characteristics of the site, the substances present, and the potential remedial action alternatives.
- EPA cannot specify in advance which requirements will be ARARs for a site.

Note that some Federal Facility Agreements (FFAs) may have a description of ARARs that should be considered. DoD FFAs typically do not identify ARARs. Determining ARARs for a Federal Facility ROD will require a combined effort with all FFA signatories throughout the remedial process. This is further discussed in the “Documenting ARARs” section.

Due to varied and unpredictable situations at CERCLA sites, EPA cannot specify in advance which requirements will be applicable or relevant and appropriate for each site. Previous decision documents at a site may serve as a starting guide, but ARARs are always a site-specific determination, and the previous decision documents may not have the most recent regulations or requirements. ARARs **that are pertinent to** the characteristics of the particular site, the substances at the site, and the remedial action alternatives that are developed to address the circumstances of the site must be identified.

Apply Your Understanding

Scenario: You are considering an in-situ groundwater remediation approach for your site. How would you label the State's water policy that the groundwater is considered a potential source of drinking water?

A) TBC

B) Applicable

C) Relevant and Appropriate

D) None of the above

FEDERAL FACILITIES TRAINING

29

Substantive and Administrative Requirements

FEDERAL FACILITIES TRAINING

30

On-Site Activities and Substantive Requirements

- Requirements that pertain directly to actions or conditions in the environment.

Quantitative health or risk-based restrictions upon exposure to types of hazardous substances (e.g., maximum contaminants levels (MCLs) establishing drinking water standards for particular contaminants)

Technology-based requirements for actions taken upon hazardous substances (e.g., incinerator standards requiring particular destruction and removal efficiency)

Restrictions upon activities in certain special locations (e.g., standards prohibiting certain types of facilities in floodplains)

FEDERAL FACILITIES TRAINING

31

Onsite activities (those within the area of contamination and suitable areas in close proximity necessary for implementation of the response action) are required to comply only with the substantive requirements of the ARAR, not the administrative requirements.

Substantive requirements are those requirements that pertain directly to actions or conditions in the environment. Examples of substantive requirements include quantitative health- or risk-based restrictions upon exposure to types of hazardous substances (e.g., maximum contaminant levels [MCLs] establishing **cleanup** standards for particular contaminants), technology-based requirements for actions taken upon hazardous substances (e.g., incinerator standards requiring particular destruction and removal efficiency), and restrictions upon activities in certain special locations (e.g., standards prohibiting certain types of facilities in floodplains).

Note: Cleanup activities that occur onsite are statutorily exempt by CERCLA §121(e) from any requirement to obtain permits. While Superfund cleanups will comply with all the substantive requirements that permits enforce, onsite CERCLA cleanups are not required to go through the lengthy approval process to obtain the actual permit papers. In determining the extent to which onsite CERCLA response actions must comply with other environmental and public health laws, one should distinguish between substantive requirements (which may be applicable or relevant and appropriate) and administrative requirements (which are not).

Administrative Requirements

- ❑ Mechanisms that facilitate the implementation of the substantive requirements of a statute or regulation
- ❑ Include the approval of or consultation with administrative bodies, issuance of permits, documentation, reporting, recordkeeping, and enforcement
- ❑ Prescribe methods and procedures by which substantive requirements are made effective

Off-site activities must meet BOTH substantive and administrative requirements of applicable laws and regulations

Administrative requirements are those mechanisms that facilitate the implementation of the substantive requirements of a statute or regulation. Administrative requirements include the approval of or consultation with administrative bodies, issuance of permits, documentation, reporting, recordkeeping, and enforcement. In general, administrative requirements prescribe methods and procedures by which substantive requirements are made effective.

Reminder: Cleanup activities that remain on-site are statutorily exempted by CERCLA §121(e) from the requirement to obtain permits. While Superfund cleanups will comply with all the substantive requirements that permits enforce, parties conducting on-site CERCLA cleanups are not required to obtain the actual permit papers. In determining the extent to which on-site CERCLA response actions must comply with other environmental and public health laws, one should distinguish between substantive requirements (which may be applicable or relevant) and appropriate) and administrative requirements (which are not).

Off-site activities must meet BOTH substantive and administrative requirements of any applicable laws (i.e., they are subject to whatever the law is outside of the cleanup area for the off-site activity).

Consulting with Other Agencies

- Lead agencies should consult with administrating agencies to ensure that remedial activities comply with substantive ARARs
 - National Historic Preservation Act
 - Archeological and Historic Preservation Act
 - Endangered Species Act
 - Wild and Scenic Rivers Act
 - Fish and Wildlife Coordination Act

While EPA interprets CERCLA §121(e) to exempt lead agencies from obtaining Federal, State, or local permits (or documents similar to permits) or from complying with the administrative requirements for onsite remedial activities, it is strongly recommended that lead agencies, nevertheless, consult as specified with administering agencies for onsite actions. The administering agencies have the expertise to determine the impacts of a remedial action on particular aspects of the environment and what steps should be taken to avoid and mitigate adverse impacts. Examples of when to consult with administering agencies include:

- National Historic Preservation Act: Pursuant to §106 and §110(f) of the National Historic Preservation Act (NHPA), as amended, CERCLA remedial actions are required to take into account the effects of remedial activities on any historic properties included on or eligible for inclusion on the National Register of Historic Places. The first step toward substantive compliance with the NHPA is to identify cultural resources included on the National Register that are located in or near the area under study in the remedial investigation. The second step is to identify the possible effects of proposed remedial activities on such resources. Tribes should be consulted as appropriate.
- Archeological and Historic Preservation Act: If activities in connection with any Federal construction project or Federally approved project may cause irreparable loss to

significant scientific, prehistorical, or archeological data, the Act requires the agency undertaking that project to preserve the data or request the DOI to do so.

- **Endangered Species Act (ESA):** Section 7(a) of the ESA requires Federal agencies, in consultation with the DOI and the National Marine Fisheries Service (NMFS), as appropriate, to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their critical habitats.
- **Wild and Scenic Rivers Act:** If the project(s) would affect the free-flow characteristic of a designated river or unreasonably diminish the scenic, recreational and fish and wildlife values present in the area, such activities should be undertaken in a manner that would minimize adverse impacts, and should be developed in consultation with the DOI (National Park Service) and the Department of Agriculture (DOA).
- **Fish and Wildlife Coordination Act:** Under §662 of the Act, consultation is required with the FWS or NMFS and the Wildlife Resources Agency of the State if alteration of the water resource would occur as a result of off-site remedial activities. Consultation is strongly recommended for on-site actions. The purpose of consultation is to develop measures to prevent, mitigate or compensate for project-related losses to fish and wildlife.

Apply Your
Understanding

Which of the following are
Substantive Requirements? Select all
that apply

Requirement

A. Consultation with administrative bodies

B. Technology-Based Requirements

C. Restrictions on activities in a flood plain

D. Record keeping processes

E. Issuance of a permit

Documenting ARARs

FEDERAL FACILITIES TRAINING

35

ARAR Documentation

- The ROD should document ARARS as follows:
 1. Major ARARs should be discussed in the Description of Alternatives.
 2. ARAR compliance should be summarized in the Summary of the Comparative Analysis.
 3. All ARARs selected for the remedy should be listed and briefly described in the Statutory Determinations sections.



FEDERAL FACILITIES TRAINING

36

ARARs considered for each alternative in the detailed analysis of alternatives should be documented in detail in the Remedial Investigation/Feasibility Study (RI/FS). The Proposed Plan and ROD should summarize how the components of an alternative will comply with major ARARs and should describe why the requirement is applicable or relevant and appropriate. When an alternative is chosen that does not attain an ARAR, the basis for waiving the requirement must be fully documented and explained. There are 6 statutory justifications for waiving an ARAR. TBCs referred to in the ROD should be listed and described briefly, as

well as the reasons for their use. Generally, there is no need to document why a requirement is not an ARAR, although documentation should be provided for both ARARs and TBCs when the determination has been difficult or controversial. (see EPA's Overview of ARARs Fact Sheet, 1989).

ARARs and Removal Actions

- ❑ Removal actions must comply with ARARs to the extent practicable considering the exigencies of the situation (40 CFR 300.415(j))
- ❑ In determining whether compliance with ARARs is practicable, the lead agency may consider:
 1. The urgency of the situation
 2. The scope of the removal action

Merriam Webster Definitions
POSSIBLE implies that a thing may certainly exist or occur given the proper conditions.
PRACTICABLE capable of being put into practice. Implies it is affected by current conditions.
FEASIBLE capable of being done or carried out. Applies to what is likely to work and attain the desired result

EPA's policy for removal actions is that ARARs will be identified and attained to the extent practicable. Factors to use to determine whether the identification and attainment of ARARs is practicable in a particular removal situation include:

(1) Urgency of the situation: Where urgent conditions constrain or preclude efforts to identify and attain ARARs, the On-Scene Coordinator's (OSC) documentation of these conditions will be considered sufficient as justification for not attaining all ARARs. To illustrate, a site may contain leaking drums that pose a danger of fire or explosion in a residential area. The drums should be removed or stabilized immediately, without attempting to identify and comply with all potential ARARs. The OSC's documentation should describe the time critical nature of the situation and the remedial action taken.

(2) Scope of the removal action to be taken: Removal actions generally focus on the stabilization of a release or threat of release and mitigation of near-term threats. ARARs that are within the scope of such removal actions, therefore, are only those ARARs that must be attained in order to eliminate the near-term threats. For example, a removal action may be conducted to remove large numbers of leaking drums and associated contaminated soil. In this situation, because the removal focuses only on partial control, chemical-specific ARARs for groundwater restoration would not be considered.

(See EPA Guidance Section 1 in CERCLA Compliance with Other Laws Manual, Part I, 1988).

Developing Protective Remedies

- ❑ CERCLA Section 121 requires selection of a remedial action that is protective of human health and the environment and meets ARARs.
- ❑ EPA's approach to determining protectiveness:
 - Risk Assessment
 - ARARs
 - TBCs as appropriate
- ❑ Acceptable exposure levels

CERCLA §121 requires selection of a remedial action that is protective of human health and the environment and that complies with ARARs. Both are threshold requirements that the remedial alternative must meet. (40 CFR 300.430(f)(1)(i)(A)).

ARARs (and TBCs necessary for protection) must be attained for hazardous substances, pollutants, or contaminants remaining on-site at the completion of the remedial action, unless waiver of an ARAR is justified. In addition, EPA intends that the implementation of remedial actions should also comply with ARARs (and TBCs as appropriate) to protect public health and the environment (See EPA Guidance page xv in CERCLA Compliance with Other Laws Manual, Part I, 1988).

The risk assessment includes consideration of site-specific factors, such as types of hazardous substances present, potential for exposure, and presence of sensitive populations. Acceptable exposure levels are generally determined by applicable or relevant and appropriate Federal and State environmental requirements, if available, and the following factors:

- (1) for systemic toxicants, concentration levels to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of significant adverse effects during a lifetime;
- (2) for known or suspected carcinogens, concentration levels that represent an excess

- upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} ; and,
- (3) other factors related to exposure (such as multiple contaminants at a site or multiple exposure pathways) or to technical limitations (such as detection/quantification limits for contaminants).

When and Where ARARs Should be Attained

- ❑ EPA's policy is to attain ARARs (and TBCs necessary for protection) pertaining either to contaminant levels or to performance or design standards to ensure protection at all points of potential exposure.
- ❑ At each potential point of exposure, a reasonable maximum exposure scenario should be assumed, and cleanup goals set accordingly to ensure protectiveness, using best professional judgment.

Generally, EPA's policy is to attain ARARs (and TBCs necessary for protection) pertaining either to contaminant levels or to performance or design standards to ensure protection at all points of potential exposure. At each potential point of exposure, a reasonable maximum exposure scenario should be assumed, and cleanup goals set accordingly, to ensure protectiveness, using best professional judgment. Restrictions on use or access should not be a substitute for remediation to appropriate protective health-based or design levels.

Exposure Point Considerations

Media	Exposure Point	Assumptions
Groundwater	remediation levels should generally be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place	A reasonable maximum exposure scenario should be assumed at each potential exposure point.
Surface Waters	selected level(s) should be attained at the point or points where the release enters the surface waters	
Air	selected level(s) should be established for the maximum exposed individual, considering reasonably expected use of the site and surrounding area	

For ground water, remediation levels should generally be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place. For surface waters, the selected level(s) should be attained at the point or points where the release enters the surface waters. For air, the selected level(s) should be established for the maximum exposed individual, considering reasonably expected use of the site and surrounding area.

ARARs Identification and Analysis

Questions to Help Identify ARARs

- Does the remedy restore groundwater and/or cleanup contaminated soils, (i.e., meet remediation goals in the media)?
- Is the remedy performed in-situ or ex-situ with treatment system?
- Is there a discharge into surface water or emission into air from a treatment system?
- Is the OU located within floodplain, wetland, critical habitat, historical district, or other special location?

SDWA primary drinking water standards

RCRA Air Emission Standards

CWA NDPES
CAA NESHAPs

NEPA
CWA Sec. 404

FEDERAL FACILITIES TRAINING

42

- **Safe Drinking Water Act (SWA):** SDWA maximum contaminant level goals (MCLGs) set above zero or MCLs shall be attained for ground or surface waters that are a current or potential sources of drinking water, where relevant and appropriate under the circumstances of the release. [Ref 40 CFR §300.430(e)(2)(i)(B)]
- **Air Emission Standards Under the Resource Conservation and Recovery Act (RCRA):** Regulations under RCRA address air pollutant emissions from several activities that may occur at CERCLA sites (e.g., incineration and air stripping). These RCRA regulations may be potential ARARs. Regulations for air pollutant emissions from hazardous waste incinerators are set forth in 40 CFR Part 264, Subpart O. Air pollutant emissions from other thermal treatments are covered in 40 CFR Part 265, Subpart P. These regulations specify that the owner or operator of the thermal treatment device must demonstrate that it meets the same performance standard as exists for hazardous waste incinerators.
- **National Emission Standards for Hazardous Air Pollutants (NESHAPs)** are point-source standards promulgated under Title III of CAA for substances identified by EPA as hazardous air pollutants (HAPs), which are designated as hazardous substances under CERCLA Section 101.
- **National Environmental Policy Act (NEPA) Regulations, Wetlands, Floodplains, etc.:** These regulations contain the procedures for complying with wetlands protection. Actions must avoid, to the extent possible, adverse impacts to floodplains, in accordance with Executive Order 11990 and 10 CFR 1022.

- **Clean Water Act Regulations, Guidelines for Specification of Disposal Sites for Dredged or Filled Materials:** These regulations apply to discharges of dredged or fill material into US waters, including jurisdictional wetlands. Federal agencies must minimize potential adverse impacts.

Questions to Help Identify ARARs

- ❑ Does action “generate” waste (i.e., removed from AOC or actively managed) or leave waste-in-place (e.g., landfill closure)?
- ❑ What type of remediation waste (e.g., RCRA hazardous, TSCA PCB, Rad, etc.) and secondary waste (PPE, treatment residuals) is generated?
- ❑ How is the waste managed (i.e., staged, stored, treated, capped, transported, disposed, etc.)?

RCRA Hazardous
and Solid Waste
Amendments

- **Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA):** include specific provisions restricting the land disposal of RCRA hazardous wastes. The purpose of these HSWA provisions is to minimize the potential of future risk to human health and the environment by requiring the treatment of hazardous wastes prior to their land disposal.

Coordination/Consultation with Other Federal and State Programs

- ❑ Sources of potential ARARs include:
 - other Federal environmental laws administered by EPA
 - authorized States’ (e.g., under RCRA) laws
 - other Federal agency-administered laws
 - more stringent State environmental or facility siting laws
- ❑ To ensure that remedies comply with substantive aspects of identified ARARs, other Federal and State program offices should be consulted, as appropriate.

Sources of potential ARARs include other Federal environmental laws administered by EPA, authorized States' laws (under RCRA), laws administered by other Federal agencies, and more stringent State environmental or facility siting laws. Therefore, to ensure that remedies comply with substantive aspects of identified ARARs, other Federal and State program offices should be consulted, as appropriate, particularly for onsite actions where no permit will be obtained.

Chemical-Specific ARARs to Consider

- ❑ Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs)
- ❑ SDWA Maximum Contaminant Level Goals (MCLGs) (set above zero)
- ❑ Clean Water Act Water Quality Criteria (WQC) for surface water

ARARs for health or risk based numerical values that establish an acceptable amount or concentration of a chemical that may remain in or be discharged to the ambient environment

The Safe Drinking Water Act (SDWA) non-zero Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs) usually are relevant and appropriate at CERCLA sites with groundwater cleanup. SDWA MCLGs (set above zero) or MCLs shall be attained for ground or surface waters that are a current or potential sources of drinking water, where relevant and appropriate under the circumstances of the release (40 CFR §300.430(e)(2)(i)(B))

CERCLA §121 states that remedial actions shall attain Federal water quality criteria where they are relevant and appropriate under the circumstances of the release or threatened release. Water quality criteria are non-enforceable guidance developed under Clean Water Act (CWA) §304 and are used by the State, in conjunction with a designated use for a stream segment, to establish water quality standards under §303. In determining the applicability or relevance and appropriateness of water quality criteria, the most important factors to consider are the designated uses of the water and the purposes for which the potential requirements are intended. A water quality criteria component for aquatic life may be found relevant and appropriate when there are environmental factors that are being considered at a site, such as protection of aquatic organisms. With respect to the use of water quality criteria for protection of human health, levels are provided for exposure both from drinking the water and from consuming aquatic organisms (primarily fish) and from fish consumption alone.

Action-Specific ARARs to Consider

- ❑ RCRA Closure Requirements for Subtitle C and D landfills
- ❑ CWA NPDES requirements for point-source discharges and stormwater
- ❑ CAA NESHAPS for hazardous air pollutants, asbestos, and radionuclides

Examples of Actions that trigger ARARs

- Air Stripping
- Capping
- Discharge of treatment system effluent
- Dredging
- Excavation
- Incineration
- Placement of waste in land disposal unit
- Underground injection of wastes and treated groundwater

FEDERAL FACILITIES TRAINING

46

Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Since there are usually several alternative actions for any remedial site, very different requirements can come into play. These action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how a selected alternative must be achieved. Most action-specific requirements include performance standards that can be assessed immediately (e.g., store waste in non-leaking container with label that I.D. waste type).

National Emission Standards for Hazardous Air Pollutants (NESHAPs) are point-source standards promulgated under Title III of CAA for substances identified by EPA as hazardous air pollutants HAPs which are designated as hazardous substances under CERCLA section 101. CERCLA section 101 [42 U.S.C. section 9601] provides definitions for terms used throughout CERCLA. CERCLA section 101(14) defines “hazardous substance” by reference to lists of substances designated under specific authorities.

There are currently about 800 CERCLA hazardous substances. In addition, there are approximately 1,500 known radionuclides, approximately 760 of which are listed individually. The CERCLA list of hazardous substances can be found at 40 CFR part 302.4 in Table 302.4 “List of Hazardous Substances and Reportable Quantities”. The CERCLA list of hazardous substances is currently comprised of the following lists:

- CWA Hazardous Substances per CWA section 311(b)(2) [40 CFR 116.4; 33 U.S.C. 1321(b)(2)]
- CWA Toxic Pollutants per CWA section 307(a) [40 CFR 401.15, 40 CFR part 423 Appendix A, and 40 CFR 131.36; 33 U.S.C. 1317(a)]
- CAA Hazardous Air Pollutants (HAPs) per CAA section 112(b) [33 U.S.C. 7412(b); P.L. 102-187 December 4, 1991; 70 FR 75047, December 19, 2005; 69 FR 69320, November 29, 2004; 61 FR 30816, June 18, 1996; 65 FR 47342, August 2, 2000, and 87 FR 393, January 5, 2022]

- RCRA Hazardous Wastes per RCRA section 3001 [40 CFR part 261 Subpart D – Lists of Hazardous Wastes; 42 U.S.C. 6921]

Location-Specific ARARs to Consider

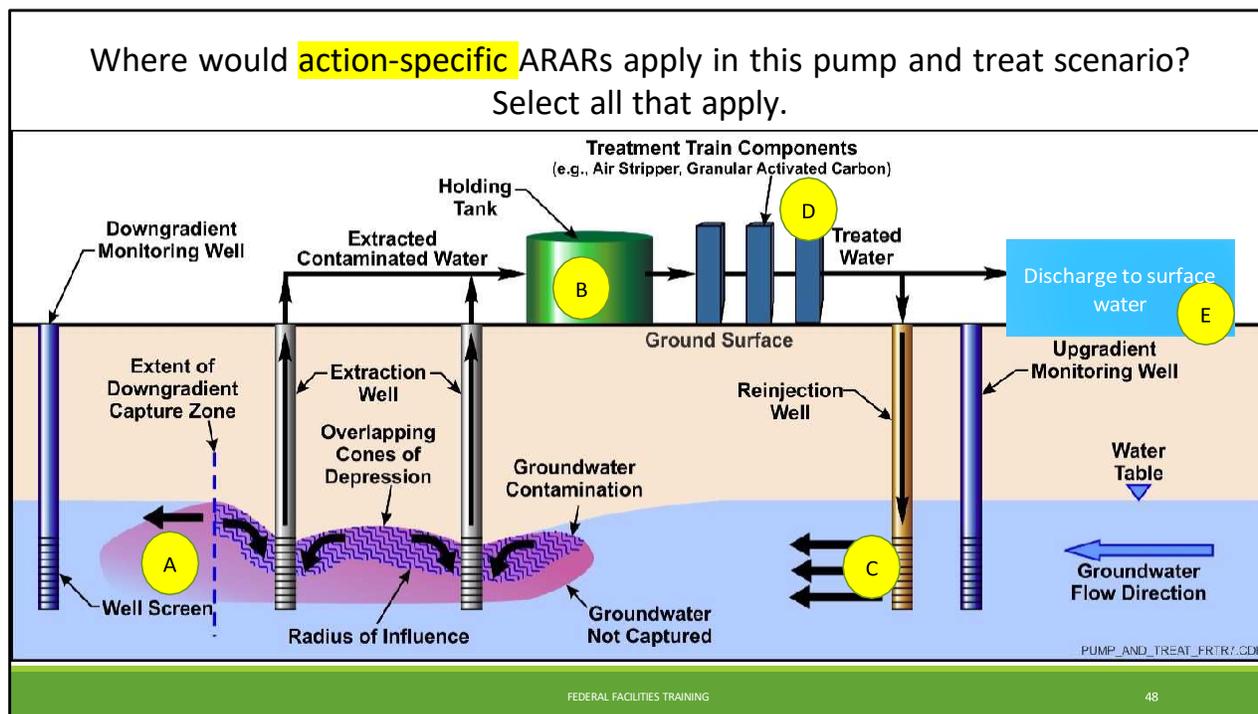
- Clean Water Act
- RCRA Location Requirements
- National Historic Preservation Act of 1966 (NHPA)
- Endangered Species Act
- Fish and Wildlife Coordination Act
- Wild and Scenic Rivers Act

FEDERAL FACILITIES TRAINING

47

Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in specific locations. Some examples of special locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats.

- **Clean Water Act:** Section 404 deals with prohibitions on discharges of fill material into wetlands.
- **RCRA Location Requirements:** RCRA contains a number of explicit limitations on where on-site storage, treatment, or disposal of hazardous waste may occur.
- **National Historic Preservation Act of 1966 (NHPA):** Requires action to take into account effects on properties included in or eligible for the National Register of Historic Places and to minimize harm to National Historic Landmarks.
- **Endangered Species Act:** Establishes protections for fish, wildlife, and plants that are listed as threatened or endangered; provides for adding species to and removing them from the list of threatened and endangered species, and for preparing and implementing plans for their recovery; provides for interagency cooperation to avoid take of listed species and for issuing permits for otherwise prohibited activities; provides for cooperation with States, including authorization of financial assistance; and implements the provisions of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).
- **Fish and Wildlife Coordination Act:** Directs the Service to investigate and report on proposed Federal actions that affect any stream or other body of water and to provide recommendations to minimize impacts on fish and wildlife resources.
- **Wild and Scenic Rivers Act (WSR):** The WSR system was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.



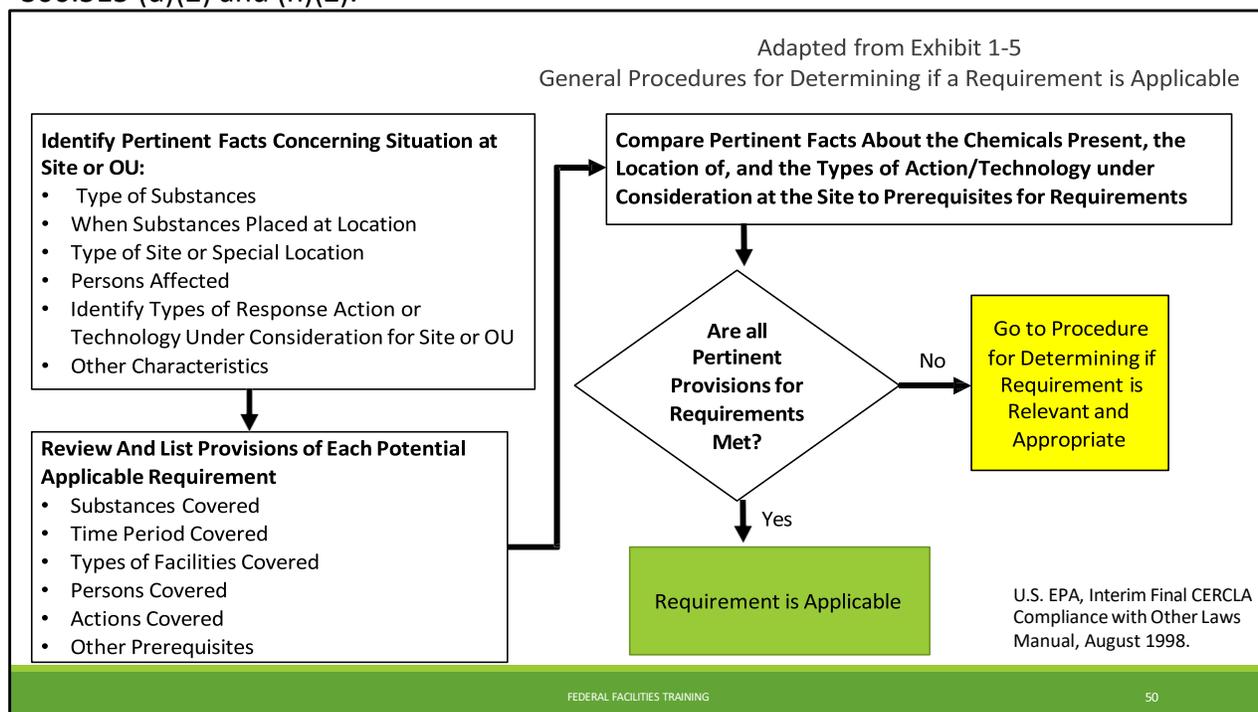
Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Since there are usually several alternative actions for any remedial site, very different requirements can come into play. These action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how a selected alternative must be achieved.

General Procedure for Identification and Analysis of ARARs

- (1) Identify potential ARARs
- (2) Determine whether they are applicable
- (3) If not applicable, determine whether they are relevant and appropriate
- (4) Identify TBCs in addition to ARARs
- (5) Determine whether an ARAR waiver is justified

For chemical-specific requirements under RCRA, CWA, and SDWA; location-specific requirements under several statutes; and, action-specific requirements under RCRA, CWA, and SDWA, potential requirements have already been identified and are listed in Exhibits 1-1, 1-2, and 1-3 of the CERCLA Compliance with Other Laws Manual, Part II.

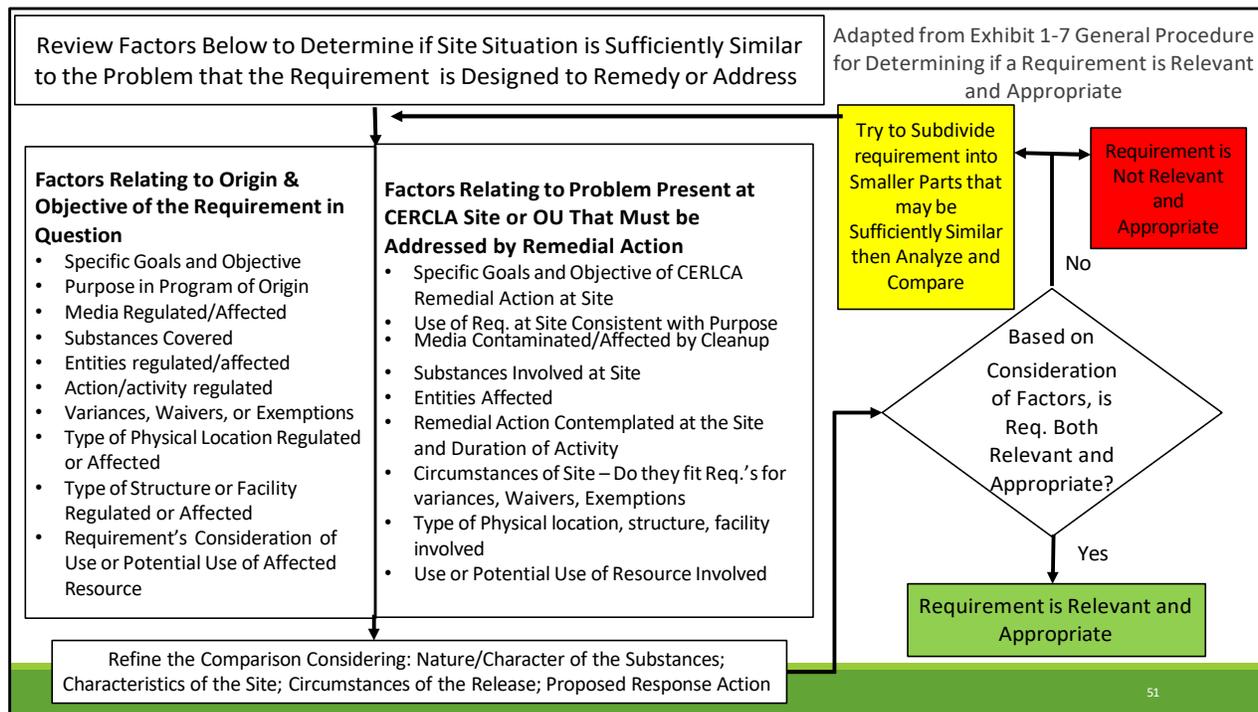
At a federal facility, the lead and support agencies shall identify ARARs in a timely manner and include citations to the statutes or regulations that they consider to be ARARs (40 CFR 300.400(g)(5)). Notification of ARARs, procedures, and timeframes are specified in 40 CFR 300.515 (d)(2) and (h)(2).



Use the procedures described in the flowchart in CERCLA Compliance with Other Laws Manual, Exhibit 1-5 and accompanying text and analyze the potential ARARs to determine whether they are actually applicable to the particular conditions at the site.

General Procedure for Determining if a Requirement is Applicable:

The basic criterion for an applicable requirement is that it directly and fully addresses or regulates the hazardous substance, pollutant, contaminant, action being taken, or other circumstances at a site. To determine whether a particular requirement would be legally applicable, it is necessary to refer to the specific terms or jurisdictional prerequisites of the statute or regulation.



If the requirements are not applicable, use the procedures outlined in the flowchart in Exhibit 1-7 and analyze them to determine whether they are relevant and appropriate to the particular conditions at the site.

General Procedure for Determining if a Requirement is Relevant and Appropriate from U.S. EPA, Interim Final CERCLA Compliance with Other Laws Manual, August 1988: A particular requirement could be “relevant and appropriate” even if it is not “applicable.” The basic considerations are whether the requirement (1) regulates or addresses problems or situations sufficiently similar to those encountered at the CERCLA site (i.e., relevance), and (2) is appropriate to the circumstances of the release or threatened release, such that its use is well suited to the particular site. Determining whether a requirement is relevant and appropriate is site-specific and must be based on best professional judgment. This judgment is based on consideration of a number of factors, including the characteristics of the remedial action, the hazardous substances present at the site, and the physical circumstances of the site and of the release, as compared to the statutory or regulatory requirement. All requirements found to be applicable or relevant and appropriate must be complied with.

A requirement may be relevant but not appropriate for the specific site. Only those requirements that are determined to be both relevant and appropriate must be complied

with. A requirement may be found relevant because it closely matches the site on some of the factors listed in Exhibit 1-7, but may not be appropriate because the site circumstances differ significantly on other key factors.

Apply Your Understanding



Soil disturbing and fencing activities during remedy implementation could impact the entire site

Endangered species found in these areas

FEDERAL FACILITIES TRAINING

52

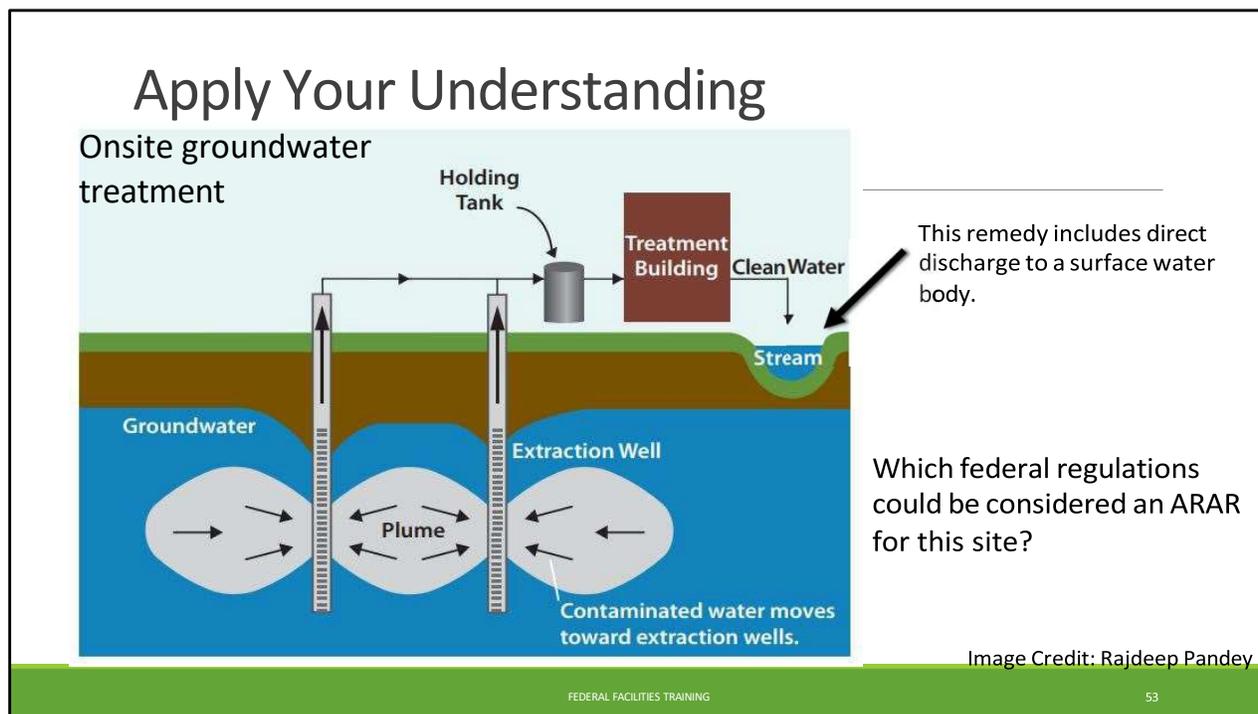
Given the Scenario above, answer the following questions.

Question 1. How should the Endangered Species Act be considered for this site?

- A. Applicable
- B. Relevant and Appropriate
- C. TBC
- D. Should not be considered

Question 2. What type of ARAR should the Endangered Species Act be identified as?

- A. Chemical Specific
- B. Location Specific
- C. Action Specific



Given the Scenario above, answer the following questions.

Question 1. Which federal regulations could be considered an ARAR for this site? Select all that apply.

- A. RCRA
- B. Clean Water Act
- C. Fish and Wildlife Coordination Act
- D. Wild and Scenic Rivers Act

Question 2. Which sub part of the federal regulation identified should be considered an ARAR for this site?

- A. Clean Water Act Indirect Discharge Requirements
- B. Clean Water Act Section 404 regarding dredged materials
- C. Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit requirements
- D. Clean Water Act Section 103 on Marine Protection Research and Sanctuaries Act regarding ocean discharges

Information below taken from 1990 EPA guidance on CERCLA Compliance with the CWA and SDWA. <https://semspub.epa.gov/work/HQ/174500.pdf>

A primary purpose of the Clean Water Act (CWA), also known as the Federal Water Pollution Control Act, is to restore and maintain the quality of surface waters. The CWA regulations that are most likely to be ARARs for Superfund actions are the requirements for: (1) surface-water quality; (2) direct discharges to surface waters; (3) indirect discharges to publicly-owned treatment works (POTWS); or (4) discharges of dredge-and-fill materials into surface waters (including wetlands). Pollutants are regulated under the CWA according to their category – toxic, conventional, and nonconventional.

An on-site discharge from a CERCLA site to surface waters must meet the substantive NPDES requirements, but need not obtain an NPDES permit nor comply with the administrative requirements of the permitting process, consistent with CERCLA section 121(e)(1). On the other hand, an off-site discharge from a CERCLA site to surface waters is required to obtain an NPDES permit and to meet both the substantive and the administrative NPDES requirements.

Points of Compliance (POCs)

ARARs (and TBCs necessary for protection), pertaining both to contaminant levels and to performance or design standards, should generally be attained at all points of potential exposure, or at the point specified by the ARAR itself. At each potential point of exposure, a reasonable maximum exposure scenario should be assumed, and cleanup goals set accordingly to ensure protectiveness, using best professional judgment. Restrictions on use or access should not be a substitute for remediation to appropriate protective health-based or design levels.

Groundwater POCs

- ❑ Points of compliance for attaining remediation levels are established on a site-specific basis
- ❑ Remediation levels should be attained throughout the plume or at boundary of the waste management area.
- ❑ Different areas of the plume may reach remediation levels at different times, (e.g., leading edge v. upgradient near source).

EPA groundwater policies are often based on the language included in CERCLA, as amended. In some cases, EPA may have limited or no flexibility in the way groundwater policy is interpreted since the policy is in effect the language included in the law.

42 U.S. Code § 9620 (a)(2) - Federal facilities

(2)Application of requirements to Federal facilities

All guidelines, rules, regulations, and criteria which are applicable to preliminary assessments carried out under this chapter for facilities at which hazardous substances are located, applicable to evaluations of such facilities under the National Contingency Plan, applicable to inclusion on the National Priorities List, or applicable to remedial actions at such facilities shall also be applicable to facilities which are owned or operated by a department, agency, or instrumentality of the United States in the same manner and to the extent as such guidelines, rules, regulations, and criteria are applicable to other facilities.

No department, agency, or instrumentality of the United States may adopt or utilize any such guidelines, rules, regulations, or criteria which are inconsistent with the guidelines, rules, regulations, and criteria established by the [EPA] Administrator under this chapter (emphasis added).

Surface Water POCs

- ❑ For surface waters, selected levels should be attained at the point where the release enters the water (i.e., end of the pipe).
- ❑ Example: discharge from ex-situ groundwater treatment facility to surface water



FEDERAL FACILITIES TRAINING

56

Air POCs

- ❑ Selected levels should be established for maximum exposed individual considering the use of the site and surrounding area.
- ❑ Example: Emissions from soil excavation, incineration, and air stripping



FEDERAL FACILITIES TRAINING

57

The Clean Air Act (CAA) is the primary Federal legislation for protecting air quality. EPA also promulgates air pollutant emission regulations for solid and hazardous waste management units under the Resource Conservation and Recovery Act (RCRA), and States often establish additional or more stringent standards. Substantive standards established by any of these regulations may be potential ARARs for CERCLA sites. In order to identify whether CAA requirements are potential ARARs and then to determine whether they are either "applicable" or "relevant and appropriate,"

CERCLA site decisionmakers may need to know the following: Air quality designation of the site's location (i.e., attainment, nonattainment, unclassified, or transport) for each National Ambient Air Quality Standard (NAAQS).

- Classification of each designated nonattainment area (i.e., marginal, moderate, etc.).
- Required control measures including emissions limitations and emissions offsets. Under the NCP, the State is responsible for identifying its potential ARARs, including those that address air pollutant emissions.
- Baseline emission estimates at the site and estimated (i.e., modelled) air pollutant emissions associated with site investigation activities, construction of the remedy, and subsequent operation and maintenance of the remedy.

CERCLA ARAR Waivers

When Can CERCLA ARAR Waivers be Invoked?

- ❑ CERCLA Section 121(d) requires that on-site remedial actions attain or waive ARARs upon completion
- ❑ Any offsite activities must comply with all applicable laws and regulations
- ❑ The statutory requirements to achieve protectiveness cannot be waived
- ❑ A waiver must be invoked for each ARAR that will not be attained

FEDERAL FACILITIES TRAINING

59

CERCLA Section 121(d) requires that on-site remedial actions attain or waive federal environmental ARARs, or more stringent state environmental ARARs, upon completion of the remedial action. These waivers apply only to meeting ARARs with respect to remedial actions on-site; off-site activities must meet all requirements of applicable statutes and regulations. The statutory requirements that remedies be protective of human health and the environment cannot be waived.

Documentation of Waivers

- ❑ CERCLA Proposed Plan must provide a summary explanation of any proposed ARAR waiver
 - Public must have the opportunity to comment on the proposed waiver
- ❑ The ROD must include the waiver invoked and its justification



This Photo by Unknown Author is licensed under CC BY-NC-ND

FEDERAL FACILITIES TRAINING

60

ARARs identified in the ROD must be attained or waived (40 CFR 300.430(f)(1)(ii)(B)). The waiver invoked and the justification for invoking the waiver must be included in the ROD

(40 CFR 300.430(f)(5)(ii)(C)).

A situation may occur where a ROD has been signed, but it is later determined after several years of remedy implementation that an ARAR waiver is justified. If a determination is made that an ARAR waiver is justified after the ROD has been signed, a ROD amendment will be needed. This will require a Proposed Plan to be issued so the public has the opportunity to comment on the proposed waiver.

CERCLA ARARs Waivers

1. Interim Measures – not final Remedial Action
2. Compliance with ARAR Poses Greater Risk to Health and the Environment
3. Compliance with the ARAR is Technically Impracticable
4. Remedy will Attain an Equivalent Standard of Performance
5. Inconsistent Application of State Requirements
6. Fund Balancing – other sites pose worse threats (does not apply to federal facility sites)

§ 300.430(f)(1)(ii)(B).” states “On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C).” An alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected under the following circumstances:

- (1)** The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement;
- (2)** Compliance with the requirement will result in greater risk to human health and the environment than other alternatives;
- (3)** Compliance with the requirement is technically impracticable from an engineering perspective;
- (4)** The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach;
- (5)** With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state; or
- (6)** For Fund-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment.

Group Poll

Which waivers do you have experience with at your site?

A. Interim Measures

B. Greater Risk to Health and Environment

C. Technical Impracticability

D. Equivalent Standard of Performance

E. Inconsistent Application of State Requirements

F. Fund Balancing (does not apply to Federal Facility Sites)

FEDERAL FACILITIES TRAINING

62

Interim Measures

- This waiver can apply when the remedial action selected is only part of a total remedial action that will attain such level or standard of control when completed (CERCLA § 121(d)(4)(A))

Example:

A groundwater alternative for hydraulic containment will not attain MCLs, but is an interim measure that will become part of a total remedial action.

FEDERAL FACILITIES TRAINING

63

This waiver can apply when the remedial action selected is only part of a total remedial action that will attain such level or standard of control when completed (CERCLA §121(d)(4)(A)) . Also cited as “The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement” (300.430(f)(1)(ii)(C)(1).

Greater Risk

- Compliance with such requirement at the facility will result in greater risk to human health and the environment than alternative options. (CERCLA § 121(d)(4)(B))

Example:
Conducting land disposal requirements for waste before placement in a landfill unit would result in greater risk to workers; thus, the LDR requirements were waived and materials were treated after placement within the unit.

This waiver applies when compliance with such requirement at the facility will result in greater risk to human health and the environment than alternative options. (CERCLA §121(d)(4)(B).) Also cited as “Compliance with the requirement will result in greater risk to human health and the environment than other alternatives” (300.430(f)(1)(ii)(C)(2).

This waiver is available for situations where compliance with an ARAR will cause greater risk to human health and the environment than noncompliance. The more significant the risks, the longer they are in duration, and the more irreversible the harm from compliance with an ARAR, the more appropriate the use of this waiver.

Technical Impracticability

- Compliance with such requirement is technically impracticable from an engineering perspective. (CERCLA § 121(d)(4)(C))
 - There are no existing nor innovative technologies that can reliably attain the ARAR in question, or
 - Attainment would be illogical or infeasible from an engineering perspective.

Example:
MCLs being waived in areas of highly-contaminated, inaccessible pockets of liquid waste along fractures in deep bedrock.

This waiver applies when compliance with such requirement is technically impracticable from an engineering perspective. (CERCLA §121(d)(4)(C).) Also cited as “Compliance with the requirement is technically impracticable from an engineering perspective”(300.430(f)(1)(ii)(C)(3).

The term “impracticable” implies an unfavorable balance of engineering feasibility and reliability. The term “engineering perspective” used in the statute implies that cost, although a factor, is not generally the major factor in the determination of technical impracticability. This waiver may be used for cases where: (1) neither existing nor innovative technologies can reliably attain the ARAR in question, or (2) attainment of the ARAR in question would be illogical or infeasible from an engineering perspective.

Equivalent Standard of Performance

- ❑ The remedial action selected will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, criteria, or limitation through use of another method or approach. (CERCLA § 121(d)(4)(D))
- ❑ Use of a particular design or operating standard is stipulated, but equivalent or better remedial results could be achieved using an alternative design or method of operation.

This waiver applies when the remedial action selected will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, criteria, or limitation through use of another method or approach. (CERCLA §121(d)(4)(D).) Also cited as “The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach” 300.430(f)(1)(ii)(C)(4).

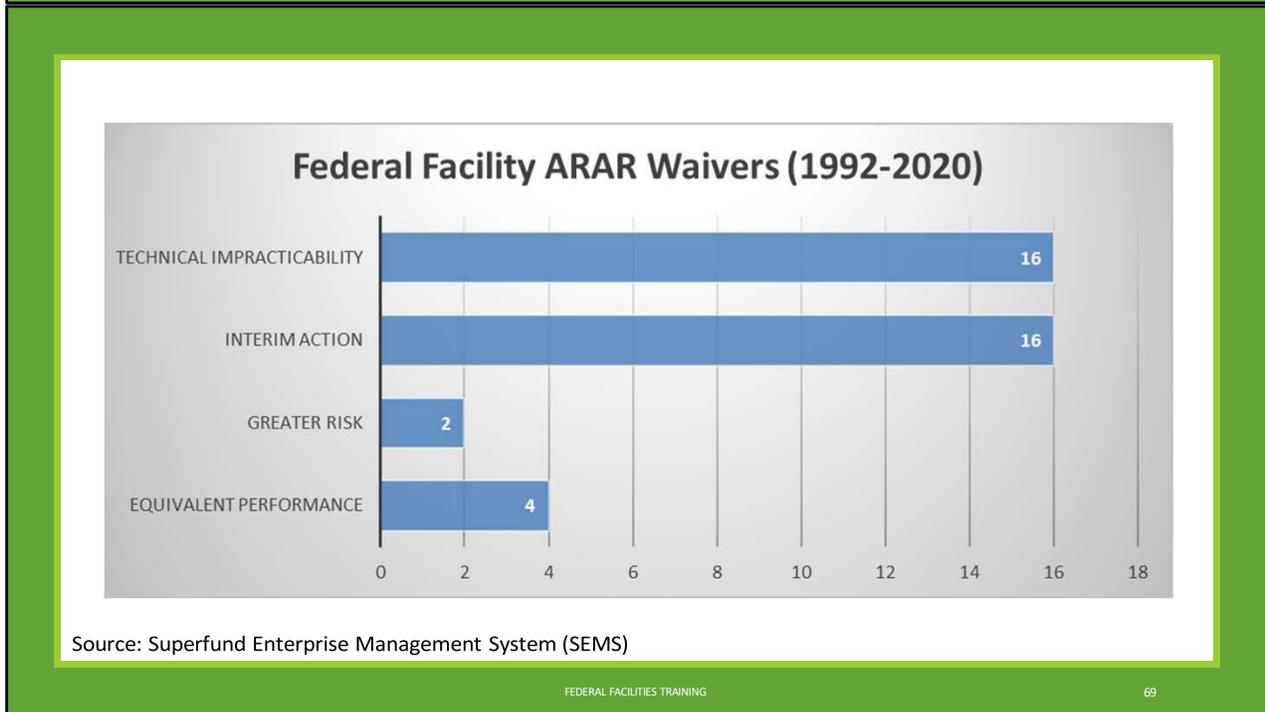
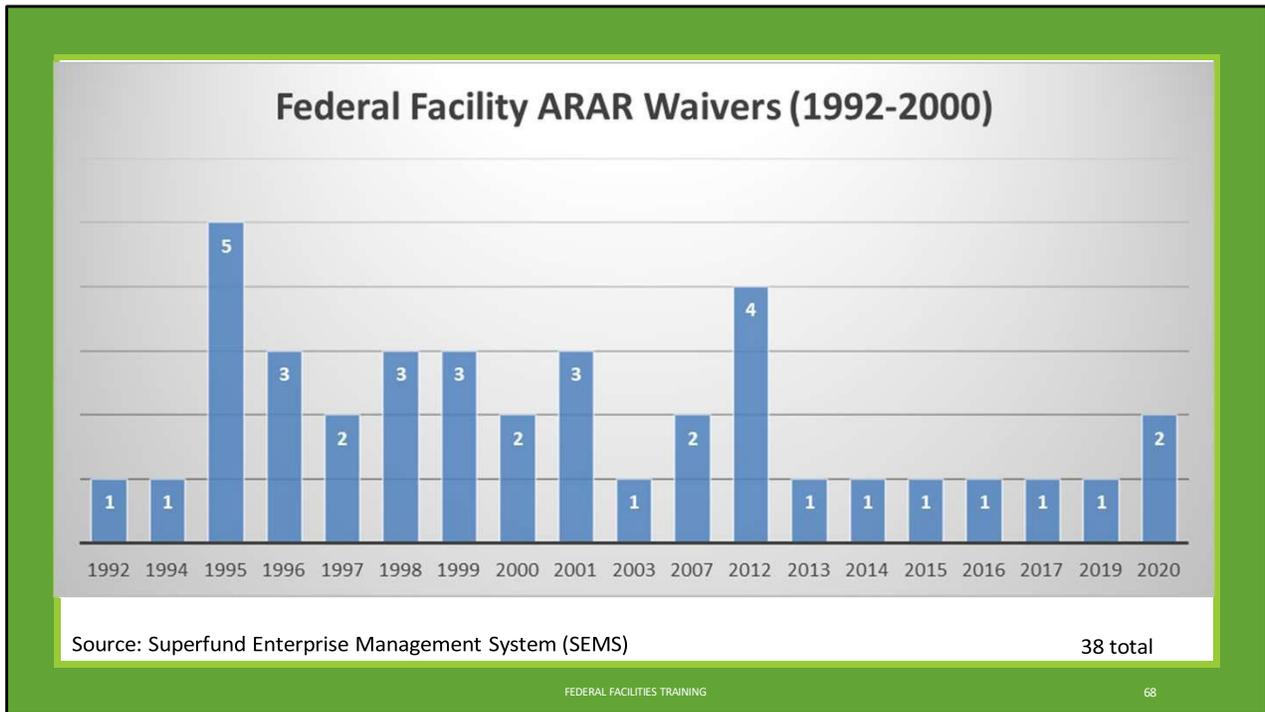
This waiver may be used in situations where an ARAR stipulates use of a particular design or operating standard, but equivalent or better remedial results could be achieved using an alternative design or method of operation.

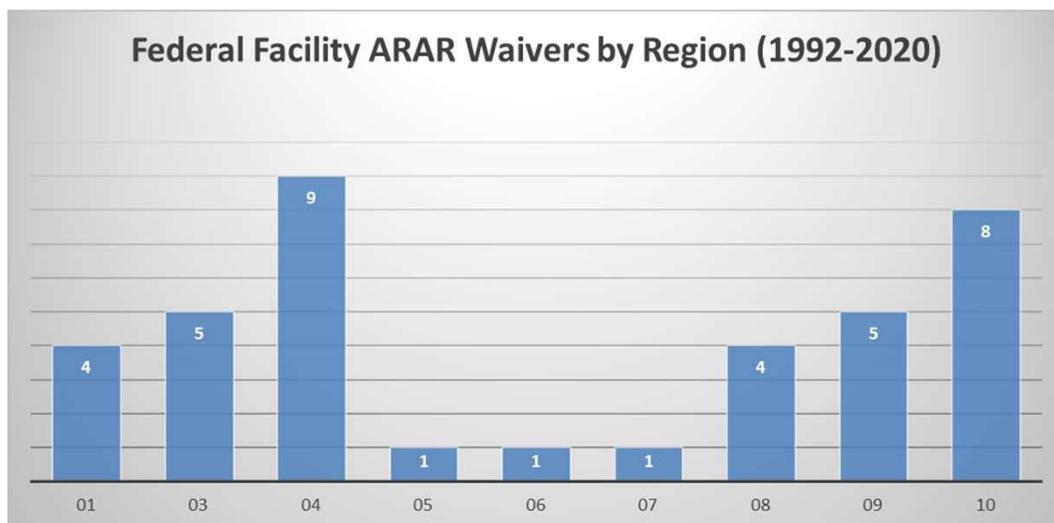
Inconsistent Application of State Requirements

- With respect to a State standard, requirement, criteria, or limitation, the State has not consistently applied (or demonstrated the intention to consistently apply) the standard, requirement, criteria, or limitation in similar circumstances for other remedial actions within the State. (CERCLA § 121(d)(4)(E))
- Considers both National Priorities List (NPL) and non-NPL sites and other cleanup regulations.

This waiver applied when, with respect to a State standard, requirement, criteria, or limitation, the State has not consistently applied (or demonstrated the intention to consistently apply) the standard, requirement, criteria, or limitation in similar circumstances at other remedial actions within the State. (CERCLA §121(d)(4)(E).) Also cited as” With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state” 300.430(f)(1)(ii)(C)(5).

This waiver may be invoked when evidence exists that demonstrates that a State standard has not been or will not be consistently applied to other remedial sites within the State, including both National Priorities List (NPL) and non-NPL sites.





Source: Superfund Enterprise Management System (SEMS)

ARARs Post-ROD

“Freezing” ARARs in a ROD

- ❑ Newly promulgated requirements that would be an ARAR must be evaluated to determine whether they must be met to ensure protectiveness
- ❑ To the extent that the remedy remains protective, the original ARARs remain “frozen” at the ROD
- ❑ Remedy must be modified if a new ARAR is needed to be protective
 - Explanation of Significant Differences
 - ROD Amendment

Example:
New info indicates a chemical cleanup level is outside CERCLA risk range, making it not protective

If a requirement that would be applicable or relevant and appropriate to the remedial action is promulgated after the Record of Decision (ROD) is signed and the ARARs for the selected remedy have already been established, the remedy will be evaluated in light of the new requirement to ensure that the remedy is still protective. To the extent that the remedy remains protective in light of any new information reflected in the requirement, the original ARARs remain “frozen” at the ROD and nothing more needs to be done. However, if it is determined that the new requirement must be met in order for the remedy to be protective, the remedy must be modified to attain the requirement through an Explanation of Significant Differences (ESD) or ROD amendment.

For example, a new requirement for a chemical at a site may indicate, through new scientific information on which it was based, that the cleanup level selected for the chemical corresponds to a cancer risk of 10^{-2} rather than 10^{-5} , as originally thought. The original remedy would have to be reevaluated taking into account the new requirement because it may no longer be protective. (see EPA’s Overview of ARARs Fact Sheet, 1989)

ARARs and Five-Year Reviews

- The following should be evaluated during the technical assessment:
 - Whether changes in standards identified as ARARs, newly promulgated standards, and/or changes in TBCs could call into question the protectiveness of the remedy.
 - Include additional information about existing ARARs, newly promulgated standards, and/or changes in TBCs that do not affect protectiveness

Five-year reviews (FYRs) generally are required by CERCLA or program policy when hazardous substances remain on site above levels that permit unlimited use and unrestricted exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. At federal NPL facility sites, five-year reviews are performed by the lead agency.

The technical assessment of a five-year review addresses the following questions:

- Is the remedy functioning as intended by the decision documents?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
 - This includes evaluating changes in ARARs and/or TBCs that could affect protectiveness and any additional ARAR/TBC information that do not affect protectiveness
- Has any other information come to light that could call into question the protectiveness of the remedy?

Summary



ARARs and To-Be-Considered (TBCs)



Types of ARARs



Substantive and administrative requirements



Documenting ARARs



ARARs identification and analysis



CERCLA ARAR Waivers

