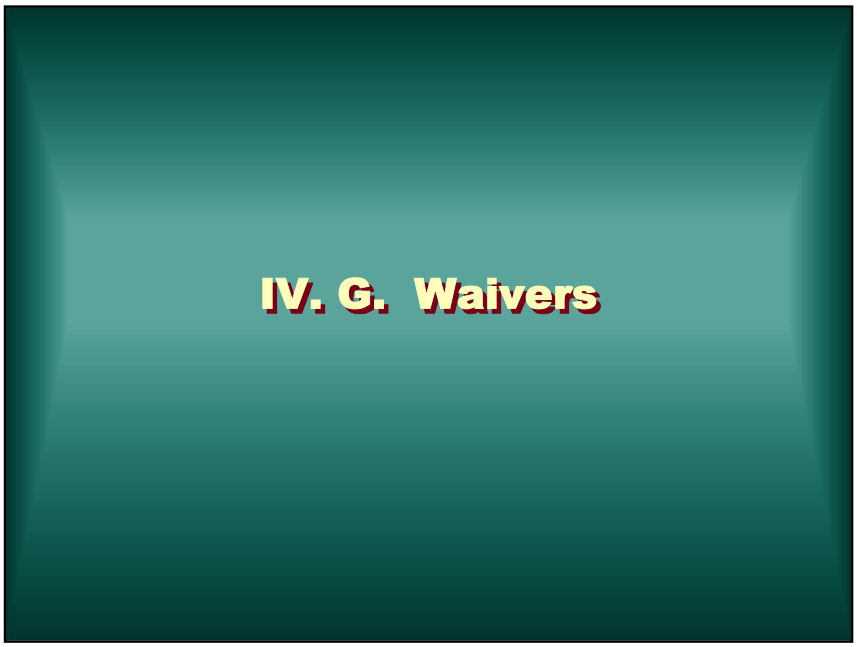
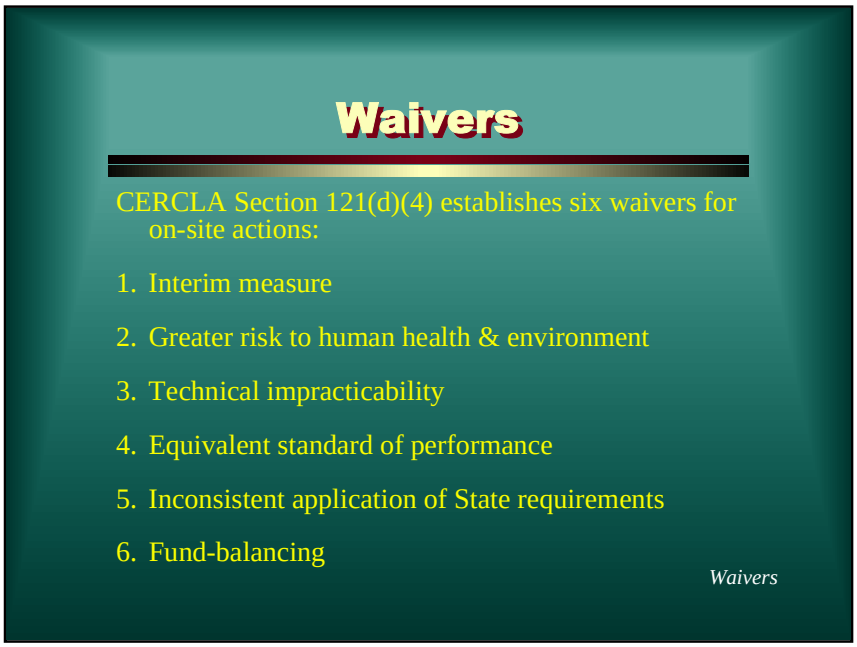


Notes:

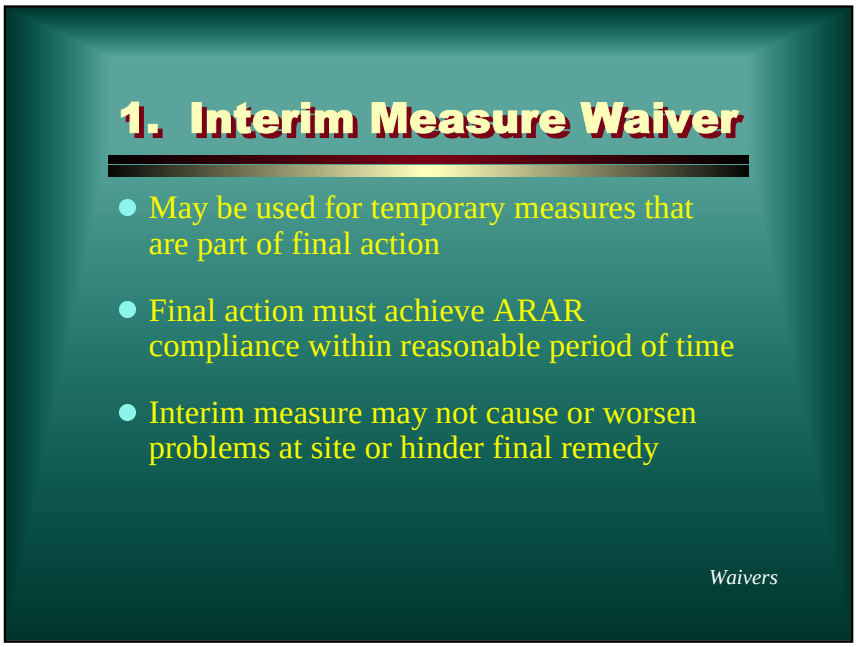


Notes:

Waivers may be used for on-site removal and remedial actions. CERCLA Section 121(d)(4) establishes waivers for remedial actions. NCP Section 300.415(i) extends these waivers to removal actions.

The waivers can be invoked only for removal or remedial actions that take place on-site. Off-site actions may not use the waivers.

Regardless of the use of waivers, the remedy must provide overall protection of human health and the environment. Therefore, ARARs that require protection of human health and the environment cannot be waived.



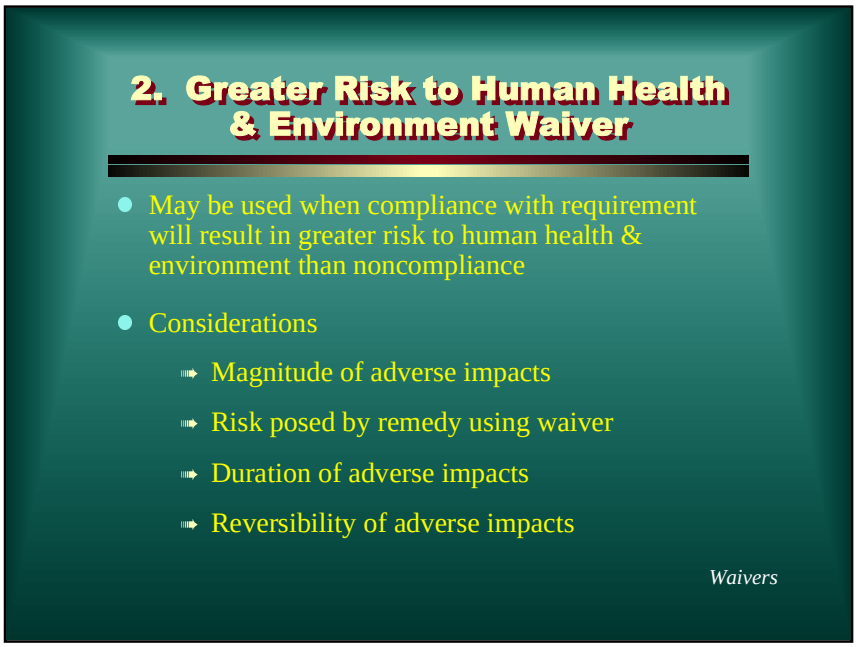
Notes:

This waiver may be applied to a temporary measure which "will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement."

The interim measure waiver cannot be used for actions that cause additional migration of contaminants, complicate the site response, present an immediate threat to public health or the environment, or interfere with or delay the final remedy.

The following are hypothetical situations in which interim measures are taken and the interim measure waiver would apply:

- Capping a landfill to prevent surface water runoff to a river
- Water running over a landfill site during a storm picks up contaminants and washes them into a nearby river. The site is capped as an interim measure to prevent further con-amination of the river. The cap does not achieve final remediation of the contaminated material in the soil or clean up the nearby river to State water quality standards.
- Dewatering and repackaging of drums storing hazardous wastes
- Drums at the Oak Ridge Reservation K-25 site hold contaminated sludge from New Hope Pond at Y-12. The drums contain free liquids and were corroding and leaking. As an interim measure, drums containing free liquids were dewatered. Leaking drums had sludges removed and put into new intact drums. Final treatment and disposal of the sludge has not yet been achieved.
- Installation of a grout curtain to contain a groundwater contaminant plume
- A large groundwater plume contaminated with trichloroethylene at Paducah Gaseous Diffusion Plant was contaminating nearby residential wells. A grout curtain was installed in the ground to contain and divert the plume to prevent further contamination of nearby drinking water wells.



Notes:

This waiver may be invoked when "compliance with the requirement will result in greater risk to human health and the environment than other alternatives."

The following are hypothetical situations in which the greater risk to human health and the environment waiver would apply:

- Radioactive cesium in river bottom sediments
- Radioactive cesium from Oak Ridge National Laboratory (ORNL) was washed into the Clinch River in early 1950s. The cesium settled in the river bottom sediments. Two feet of clean sediment has since overlain this layer. Dredging the river bottom to obtain the cesium-contaminated sediment would release the cesium to the river waters and endanger aquatic life and human health. No risk to humans or aquatic life would result from leaving the cesium in the sediment.
- Cleanup of buried pyrophoric uranium in a landfill
- Pyrophoric uranium waste at ORNL Y-12 site was deposited long ago in an old landfill. Pyrophoric uranium will burst into flames and burn if exposed to air. This risk of removing the uranium is greater than leaving it in place and capping it.

Notes:

This waiver may be invoked when "compliance with the requirement is technically impracticable from an engineering perspective."

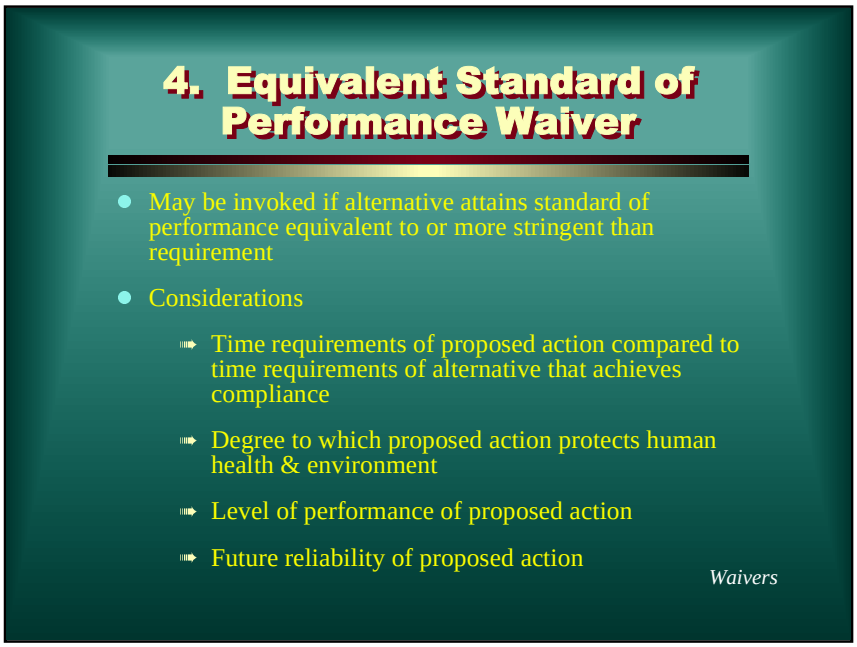
This waiver may be invoked if either of the following conditions is met:

- Engineering infeasibility: Compliance with an ARAR is considered infeasible from an engineering perspective if current engineering methods necessary to construct and maintain an alternative that meets ARAR compliance cannot be reasonably implemented.
- Lack of reliability: An alternative which achieves ARAR compliance is considered unreliable if the probability for the alternative to remain protective is low. Lack of reliability may be because of unreliable technical and institutional controls or because of inordinate maintenance costs.

Although cost may be a consideration in determining whether to use this waiver, cost should not be a primary concern unless the cost of compliance is inordinately expensive.

The following are hypothetical situations in which the technical impracticability waiver would apply:

- Pump and treat DNAPL-contaminated groundwater
- Groundwater is contaminated with DNAPLs. Technology of choice to clean up groundwater is "pump and treat." However, DNAPLs do not readily dissolve into the groundwater. They tend to stick to the underground rock and dissolve very slowly into groundwater. Therefore, "pump and treat" methods of cleanup do not remove DNAPLs efficiently or completely.
- State water quality standards set at levels below detection limits
- Current technology cannot detect levels of a substance below a certain cutoff point. Some States have some water quality standards set below detection limits (e.g., dioxin in Minnesota), so measuring for this requirement is technically impracticable.



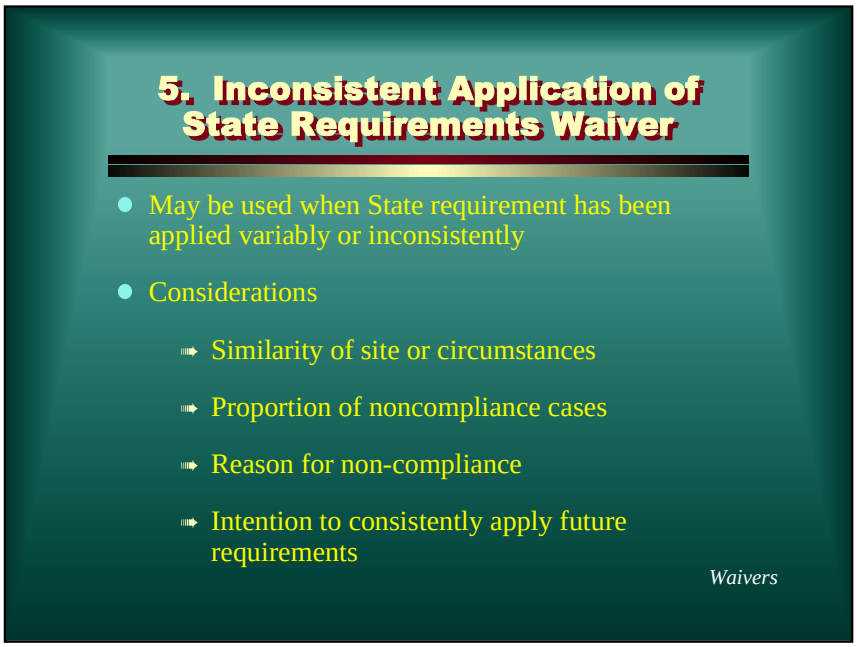
Notes:

An ARAR may be waived if 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."

This waiver, to be interpreted narrowly, is for the use of alternative but equivalent technologies. "Equivalent standard of performance" does **not** mean "equivalent risk" unless the original standard was risk-based. The waiver allows flexibility in the choice of technology but does not allow any lesser standard or any other basis (such as a risk-based calculation) for determining the required level of control, unless the original standard was risk-based. To be considered "equivalent," the alternative must achieve the same degree of protection, the same level of performance, and the same future reliability.

The following are hypothetical situations in which the equivalent standard of performance waiver would apply:

- Newly-developed technology achieves same cleanup standards as the BDAT.
- RCRA hazardous wastes may be disposed of on land if they meet the Best Demonstrated Available Technology (BDAT) set by EPA for that hazardous waste. If a newly-developed or alternate technology can be shown to achieve the same cleanup levels as the BDAT, it would be considered an equivalent standard of performance.
- *Case Study* example
- TSCA requires a 50-ft buffer between groundwater and the bottom of a chemical waste landfill. In the ORNL WAG 1 SIOU project, engineered buffers provide an equivalent level of protection from infiltration into groundwater.
- Paoli Railyard, Paoli, PA
- Soil contaminated with PCBs> 50 ppm was excavated, solidified, and placed back on the railyard in a containment cell. Requirement for a synthetic membrane liner and leachate collection system was waived because there was no hydraulic connection between the solidifed mass and the ground or surface water, and because the performance standard for the solidified treated soil requires a hydraulic conductivity of 10^{-7} cm/sec, which is equivalent to that required by a synthetic membrane liner under TSCA.



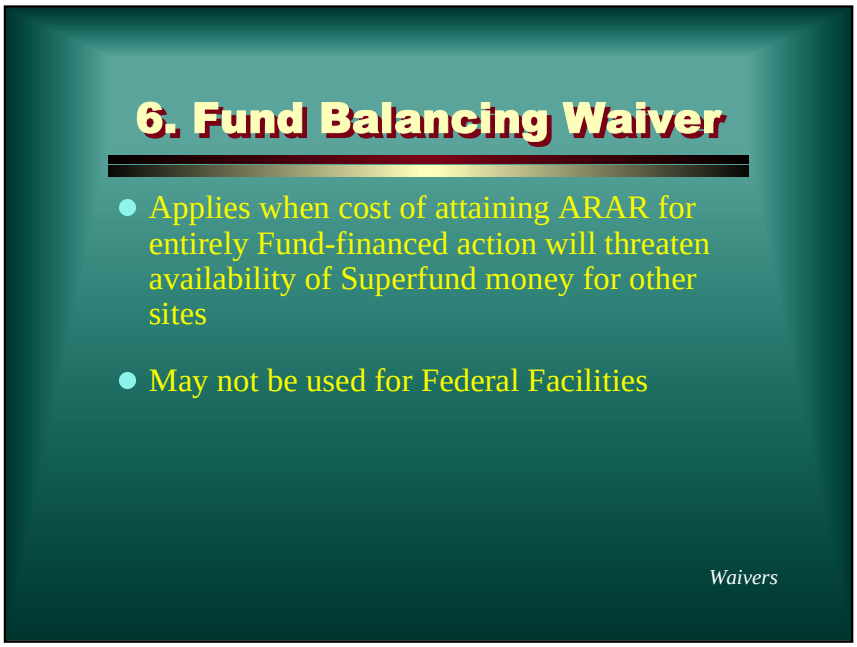
Notes:

State requirement may be waived when "the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances. . . ." The State's intention to consistently apply future requirements can be determined by policy statements, legislative history, site remedial planning documents, and State responses to Federal-lead sites. Newly promulgated regulations are presumed to be consistently applied unless there is evidence to the contrary.

The following are hypothetical situations in which the inconsistent application of State requirements waiver would apply:

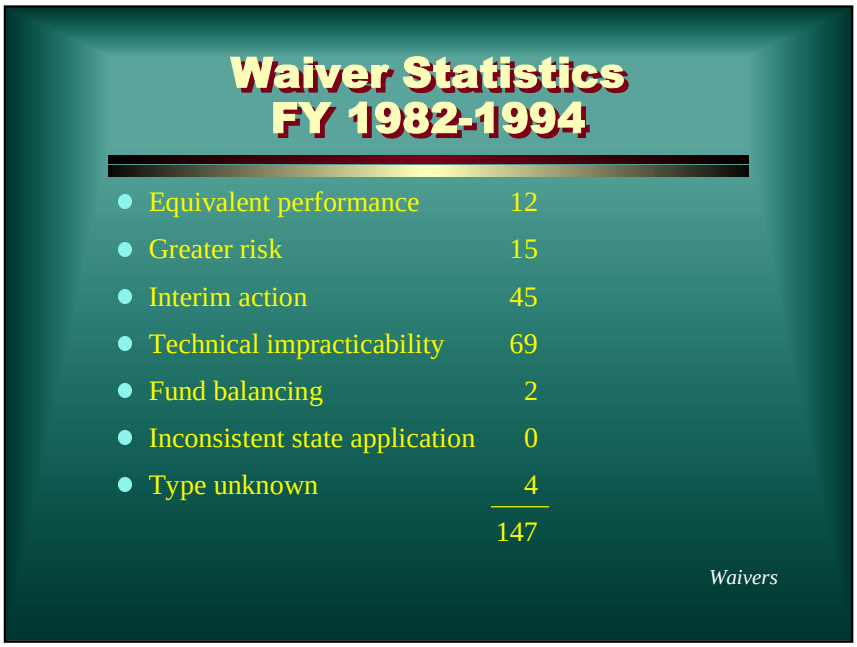
- State enforcing certain cleanup levels only for out-of-state companies
- A State cannot enforce certain cleanup levels at sites owned by out-of-state companies but not enforce them at sites owned wholly by in-state companies.
- State demands cleanup to background levels at one site and to MCLs at another site
- A State cannot demand, for example, that one area of groundwater at a site be cleaned to background levels and then demand that another area of groundwater be cleaned to MCL levels if the groundwater at both areas hold the same classification.

A waiver for "inconsistent application of state requirements" has never been requested of, nor invoked by, EPA.



Notes:

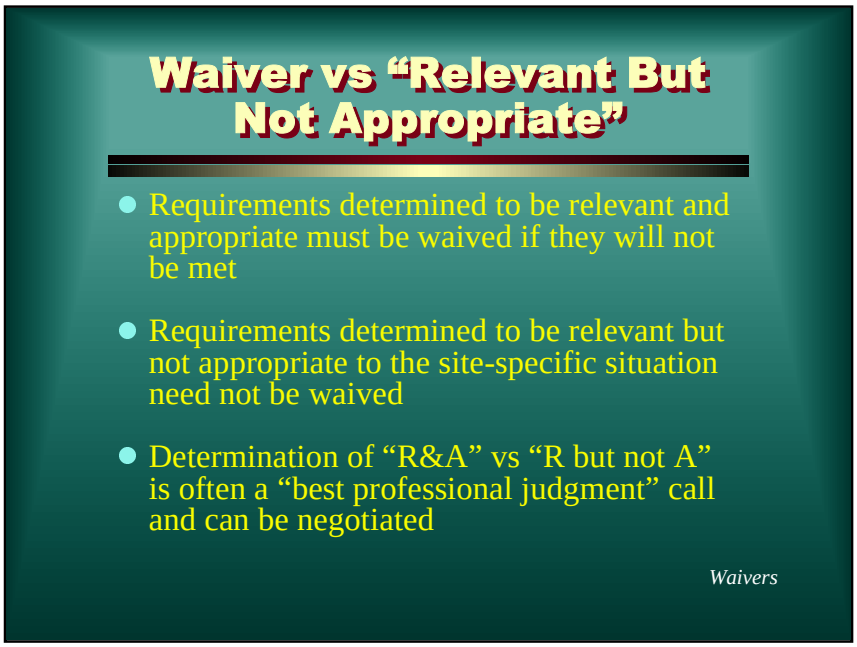
This waiver may be applied when the cost of attaining an ARAR for a *solely fund-financed* action will threaten the availability of Superfund money for other cleanups. *This waiver may not be used for DOE-financed sites.*



Notes:

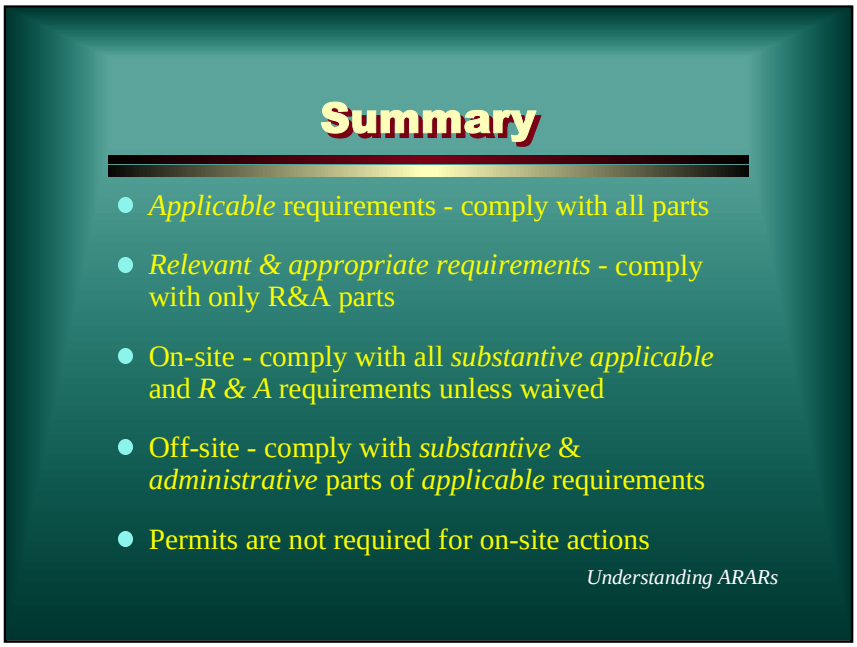
These statistics are based on EPA's review of RODs during the indicated years.

For the four waivers noted as "type unknown," the ROD did not document the waiver sufficiently to allow EPA to determine the type of waiver granted in the ROD.

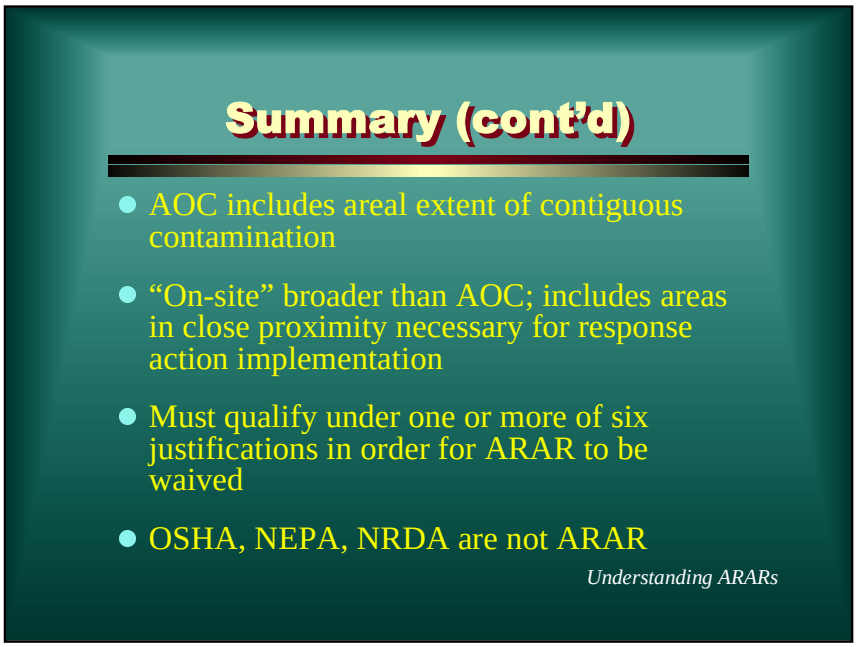


Notes:

EPA's *CERCLA Compliance With Other Laws* Manual includes a lengthy discussion of how to determine if a requirement is "relevant" and "appropriate". In reality, the determination is a very site-specific one, subject to best professional judgment and discussion among all stakeholders. An overly broad interpretation of the "relevant and appropriate" concept may result in a number of requirements needing waivers, where a more defined and refined analysis may eliminate many of the potential requirements as, although relevant, not appropriate to the specifics of the situation, therefore, not ARAR nor invoking any ARAR waivers.


Summary
Applicable requirements - comply with all parts
Relevant & appropriate requirements - comply with only R&A parts
On-site - comply with all *substantive applicable* and *R & A* requirements unless waived
Off-site - comply with *substantive* & *administrative* parts of *applicable* requirements
Permits are not required for on-site actions
Understanding ARARs

Notes:


Summary (cont'd)
AOC includes areal extent of contiguous contamination
"On-site" broader than AOC; includes areas in close proximity necessary for response action implementation
Must qualify under one or more of six justifications in order for ARAR to be waived
OSHA, NEPA, NRDA are not ARAR
Understanding ARARs

Notes: