Cost-Effectiveness Defined – The Mystery of Proportionality Under CERCLA's National Contingency Plan (NCP) Solved

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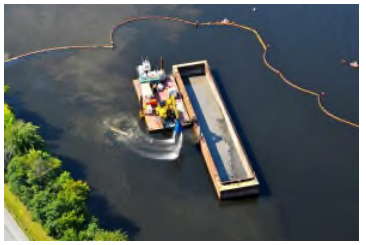
Contaminated Sediment: Costly Challenge

- ROD for Grasse River (NY): $243M
- ROD for Gowanus Canal (NY): $506M
- Proposed Plan for the Lower 8 Miles of the Passaic River (NJ): $1.4B
- ROD for the Lower Willamette River (OR): over $1B
- Lower Fox River (WI): $700M



Key Issue – CERCLA's Cost-Effectiveness Requirement

- National Policy:
  - CERCLA requires remedies that are selected must "provide for cost-effective response." 42 USC 9621(a)
  - In evaluating cost-effectiveness, EPA must take into account the total short- and long-term costs, including costs of operation and maintenance. Id.
  - Regions must select remedies that are cost-effective (2005 Guidance, p. 7-17).

The National Contingency Plan and Cost-Effectiveness

- Cost-effectiveness is one of the Nine Criteria for evaluating remedies. 40 CFR 430(e)(9)(iii).
- Overall protection of human health and the environment and compliance with ARARs are threshold criteria.
- Cost-effectiveness is one of five “primary balancing criteria.”

National Contingency Plan (cont.)

- Each remedial action selected shall be cost-effective, provided that it first satisfies the threshold criteria (overall protection of human health and the environment and compliance with ARARs)

National Contingency Plan (cont.)

- Cost-effectiveness is determined by evaluating three of the five balancing criteria: long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment and short-term effectiveness.

National Contingency Plan (cont.)

- Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. A remedy shall be cost-effective it its costs are proportional to overall effectiveness.

National Contingency Plan (cont.)

– Cost-effective means that costs must be proportional to the overall remedial effectiveness.
  - *40 CFR §300.430 (f)(1)(ii)(D)*

NCP Preamble

- The Preamble to the NCP includes an important clarification that EPA must consider the *incremental* cost-effectiveness of a potential remedy:
- "[I]f the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist."
  - *Preamble to the NCP, 55 Red Reg 8728 (March 8, 1990)*

Other cost considerations

- In addition, costs that are "grossly excessive" compared to overall effectiveness of alternatives "may be considered as one of several factors to eliminate alternatives." 40 CFR 300.430(e)(7)(iii).
- Alternatives that provide similar effectiveness and implementability as another alternative, but at greater cost, may be eliminated. Id.

Documenting the Decision

- The NCP requires the Record of Decision to state how the remedy is cost-effective, i.e., explain “how the remedy provides overall effectiveness proportional to its costs.” 40 CFR 300.430(f)(5)

Cost-Effectiveness Example

- Lower Duwamish Waterway (ROD, November 2014)
  - Cost of the remedy is not proportional to the incremental effectiveness it offers compared to other available remedies.
    - Three alternatives would achieve approximately the same level of long-term risk reduction.
    - Selected alternative (5C modified) will cost at least $142 million more (representing a 71% increase) than another alternative with a comparable level of protectiveness

Cost-Effectiveness Example

Lower 8 Miles of the Passaic River (ROD, March 2016)

-Region 2's cost-effectiveness "analysis" for this estimated $1.4 billion remedy consists of six sentences, provides no details as to how cost-effectiveness or proportionality were determined, and fails to address how the cost-effectiveness of the selected remedy was compared to other alternatives, as required by the NCP

– Benefits of dredging alternative were overstated because plan did not take into account risks created by the dredging remedy itself

Addressing Cost-effectiveness

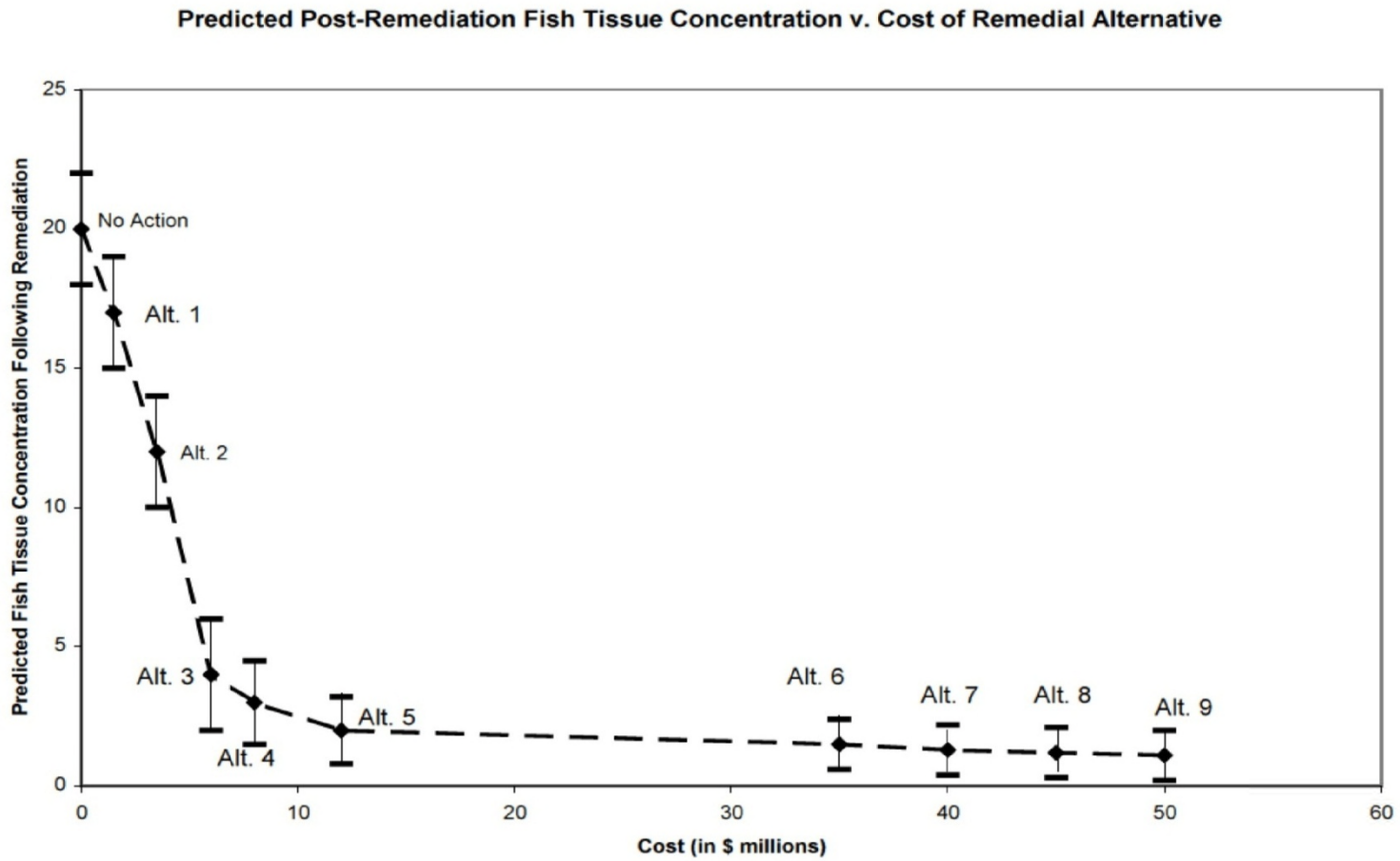
Transparency needed:

Each sediment site ROD must include a detailed and transparent analysis addressing the “proportionality” between the anticipated risk reduction of each remedial alternative and the incremental cost of each such alternative, and explaining why the selected remedy is proportional.

Addressing Cost-effectiveness

- This will force the Regions to actually conduct a detailed evaluation of the proportionality cost-effectiveness requirement of the NCP rather than simply stating the remedy is cost-effective, which is the current practice.

Remedy/Cost-Effectiveness Proportionality



Nyanza Example

- Nyanza Chemical Waste Dump Site OU4 (Sudbury River)
  - Remedy selected in 2010 included MNR and ENR (with a thin-layer sand cap)
  - Fish tissue collected in 2014-15 showed a 21% decrease in fish tissue Hg concentration
  - Based on this information, EPA updated the Human Health Risk Assessment

Nyanza (cont.)

- Based on the Hg reductions without ENR, EPA proposed to Amend the ROD in 2016
- “EPA believes ENR (i.e., thin-layer sand capping) no longer provides a cost-effective approach at $8.5 million for the amount of added protectiveness to be gained over MNR at a cost of $1 million.” ESD at p. 9

Nyanza (cont.)

- Importantly, EPA compared the *incremental* protectiveness of ENR vs. MNR (very little difference) to the *incremental* cost of ENR vs. MNR ($7.5 million) to conclude that ENR was no longer cost-effective.

Conclusion

- The current practice at CERCLA Sediment sites fails to comply with the CERCLA and NCP requirements for evaluating cost-effectiveness
- This is unacceptable and the consequences are extreme, especially at mega sites
- A Technical Bulletin detailing the steps and procedures to evaluate and document the proportionality test of the NCP is critical
- Questions? Comments? Volunteers?!

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