

Climate Intervention, CWA and RCRA/CERCLA:

Balancing Pollution Protection and Environmental Intervention

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Clean Water Act and Climate Intervention

- » Basics of Clean Water Act system:
 - » Discharges of pollutants into a water of the United States through a point source require a permit
 - » Covers direct and indirect discharges
 - » Permit limits set by technology standards
 - » Also requires permits to dredge or fill certain wetlands under U.S. jurisdiction
 - » As a failsafe, states must set a total maximum daily load (TMDL) of pollutants for impaired waters

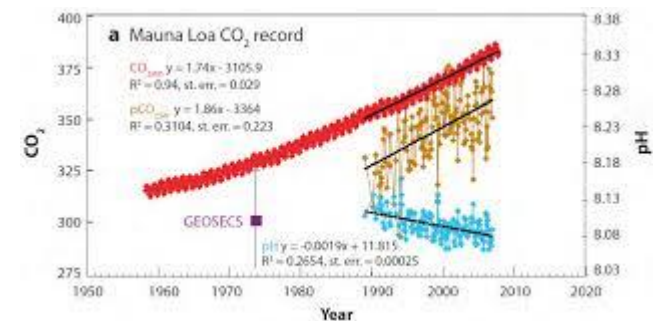


Clean Water Permitting for Climate Intervention

- » Question 1: Can the Clean Water Act require permits for certain types of climate interventions?
 - » Byproducts of specific technologies (DAC wastewaters)
 - » Marine cloud brightening spraying operations (spray up or down?)
 - » Stratospheric Aerosol Injection precipitation onto jurisdictional waters (pesticide cases)
 - » Deep current upwelling (movement of water within same watershed)

Clean Water Mandates for Climate Intervention

- Question 2: Can the Clean Water Act require, or allow, the use of climate intervention to restore waters?
- TMDLs for heat, oxygen, pH
- Direct adjustment of coastal water pH
- Natural Resource Damages Assessment and Restoration (under Oil Pollution Act as well)
- Technology selection (*UARG* for water)





13 OF 41 SUPERFUND SITES
STILL QUESTIONABLE

Superfund, Climate Change, and Climate Intervention



CERCLA Basics

- Comprehensive Environmental Response, Compensation & Liability Act of 1980
- Target – orphan waste sites and contaminated areas
- But covers much more
 - Emergency response
 - Operating facilities
 - Natural Resource Damages



CERCLA's Core Elements

- REPORTING
- REMOVAL AND EMERGENCY RESPONSE
- REMEDIATION AND PERMANENT CLEANUP
- LIABILITY





CERCLA Elements: Release Reporting

- CERCLA Section 103(a): must report a
 - “Release” or “substantial threat of release”
 - Of a “hazardous substance”
 - Into the environment
 - Above a “Reportable Quantity” within a 24 hour period
- So what’s a “release”?
- So what’s a “threatened release”?



The petroleum exclusion and climate intervention

- CERCLA excludes from the definition of “hazardous substance” any petroleum, natural gas, or constituents thereof
- Federal reporting required by Clean Water Act and Oil Pollution Act of 1990
- Affects CERCLA responses to natural gas, methane, and other natural constituents in petroleum

CERCLA Removal and Emergency Response

- » CERCLA cleanups come in two flavors: removals vs. remedial actions
- » Removal actions
 - » Limited in duration (1-2 years)
 - » Limited in amount spent (\$1 - \$2 million)
 - » Meant for quick response to dangerous conditions, but also allowed for “non-time critical” action



CERCLA Cleanups

- Remedial actions –
 - Long-term cleanups meant to achieve permanent reduction in risk
- Process:
 - Hazardous Ranking Score (HRS)
 - Preliminary Assessment/Site Investigation (PA/SI)
 - Remedial Investigation/Feasibility Study (RI/FS)
 - Record of Decision (ROD)
 - Remedial Design/Remedial Action (RD/RA)
 - Five-year Remedy Reviews



Choosing the Remedy

- “Nine Criteria” of National Contingency Plan: 40 C.F.R. Section 300.430
- Key Criteria include:
 - Protect human health and environment
 - Comply with Applicable or Relevant and Appropriate Requirements (ARARs)
 - Cost
 - State acceptance
 - Public comments

Adapting CERCLA to Climate Intervention: Fundamental Issues

- *Can CERCLA impose liability for releases of hazardous substances due to climate change? Climate interventions?*
- *Can EPA select remedial actions that incorporate elements of climate intervention (marine pH; phytoremediation with CO₂ drawdown)?*
- *Can EPA or state emergency response authorities undertake emergency actions that include climate intervention strategies?*
- *Can a state require use of climate intervention policy preferences via ARARs in CERCLA remedy choices*



CERCLA's Sleeping Giant: Natural Resource Damages and Climate Intervention

- CERCLA allows for large potential liabilities for lost use of natural resources due to spills or contamination, even if eventually restored
 - Fishing losses
 - Injured birds, vegetation, wildlife
 - Wetlands, ecosystem services
- Climate change cuts in many ways
 - Pay for restoration of resources – include repair of climate damages?
 - Pay for natural resources restoration if climate change will inevitably doom them?
 - Pay for climate intervention if needed to restore resources?



CERCLA Liability: an Engine for Environmental Restoration

- Liability:

- Release
- Hazardous Substance
- Caused Incurral
- Response Costs
- Consistent with National Contingency Plan

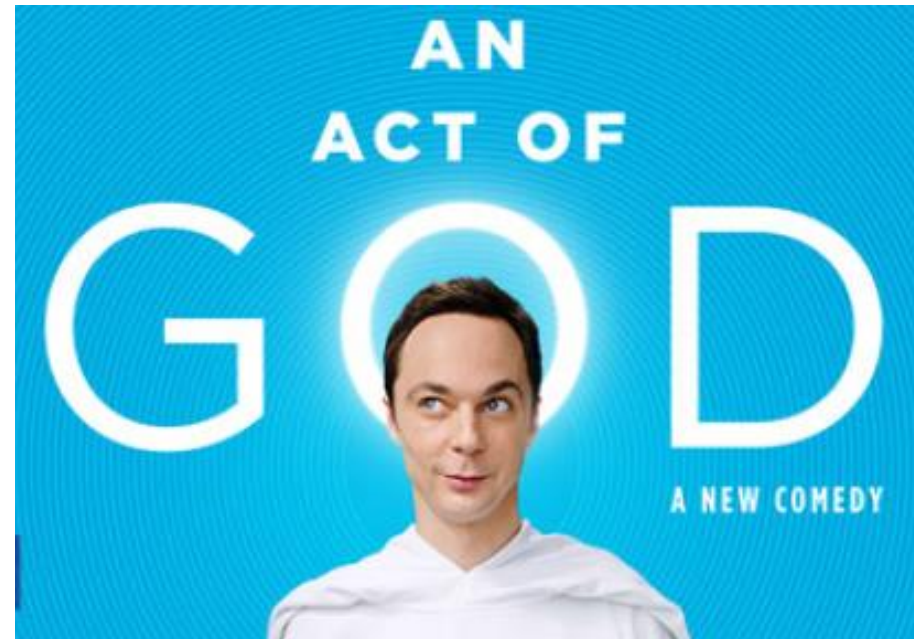
AND

- Potentially responsible party
 - Owner or Operator
 - Prior Owner or Operator if Disposal Occurred
 - Transporter who selected site
 - Arranger for treatment or disposal



Defenses to CERCLA Liability

- Act of God
- Act of War
- Act of Third Parties (with no contractual relationship)
- Or any combination of the three
- What counts if climate change foreseeable, and climate intervention available?

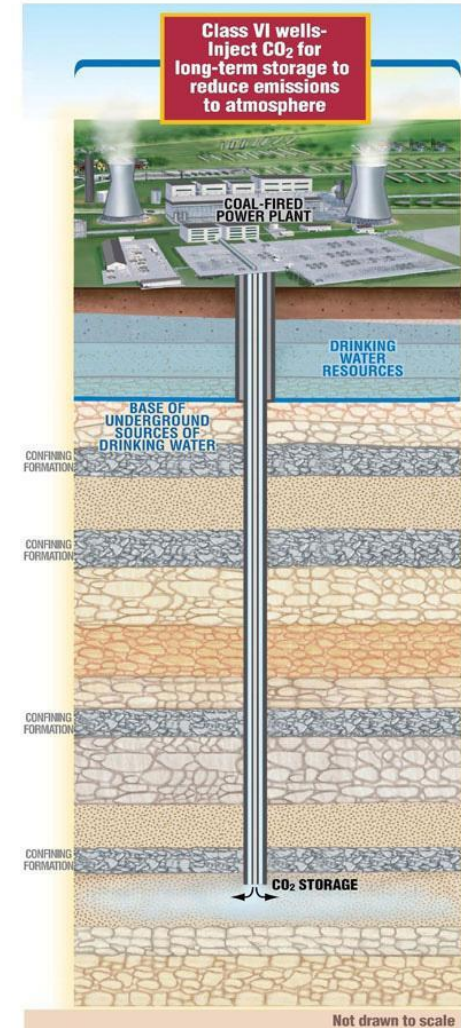


RCRA and Climate Intervention

- Resource Conservation and Recovery Act: the primary federal statute governing solid and hazardous waste disposal
- Requires permit or approval if you generate, transport, or treat/store/dispose of hazardous wastes
 - Must meet management and technology standards for handling the waste
 - Must identify and correct historical contamination at TSD facilities
 - Includes emergency planning requirements and spill planning and prevention

RCRA and Climate Intervention

- RCRA permits for climate intervention projects
 - Waste streams from projects (DAC condensate, fuel production)
 - What to do with captured CO₂ (waste?)
 - Emergency planning for spills and releases

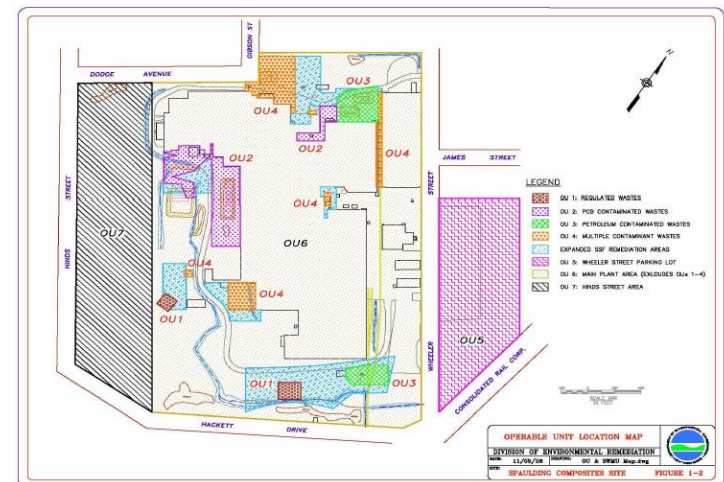


RCRA and Climate Intervention

- RCRA mandates for climate intervention action
 - Selected technologies for waste remediation (mine tailings)
 - Corrective action (SWMUs)
 - Emergency response authority (Section 7003) and omnibus permit authority



Figure 8. (left) A “hardpan” of carbonate formed on waste slag mounds at former steelworks in Consett, United Kingdom. (right) Carbonate precipitation in waters egressing from a waste landfill in Scunthorpe steelworks (photograph courtesy of Carla-Leanne





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