

Hazardous Waste Policy

Zachary Tapper - ENEP - 5/6/2024



Definition & Policy Stream

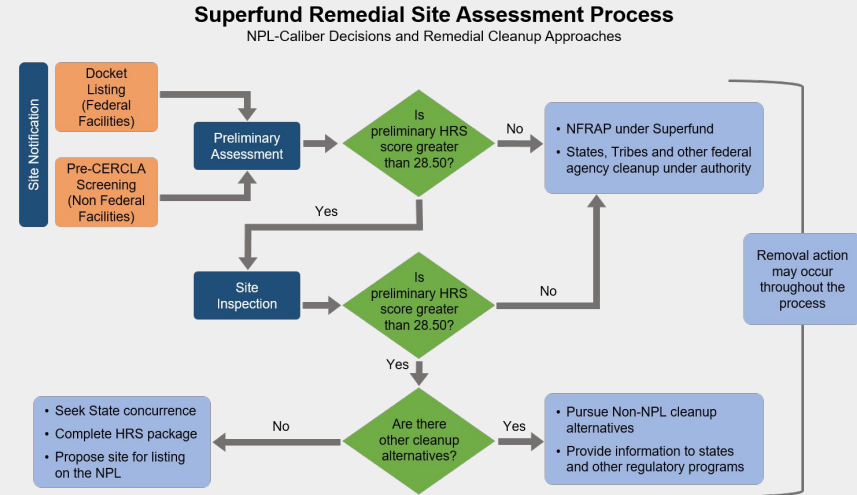
- Hazardous Waste - “ waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment” (EPA)
- Policy used to ensure suitable and sufficient arrangements are in place for the management of waste
- Three Streams
 - Problem - Definition of the hazardous waste issues
 - Policy - Development of potential policy solutions like regulations and incentives for safe disposal
 - Political - Influence of political factors, interest groups, and public opinion regarding hazardous waste



Large debris pile near to EPA's 'Household Hazardous Waste' collection PAD

Regulatory History

- Modern hazardous waste regulation began in 1976 with the Resource Conservation and Recovery Act
 - Creates "cradle to grave" system
- Comprehensive Environmental Response, Compensation, and Liability Act was enacted in 1980
 - Create a financial "Superfund" and provide for the clean-up and remediation of closed/abandoned hazardous waste sites
- US is not a signatory to the 1992 Basel Convention
 - Prohibits the export of hazardous waste to developing countries



Laws and Regulations

- Federal Level
 - CERCLA
 - RCRA
- State Level
 - Delaware Administrative Code Title 7
- Local Level
 - City of Newark does not recycle or collect household hazardous waste of any kind
 - Private Corporations Handle the disposal of hazardous waste
- Campus Level
 - Departments shall be responsible for the identification of unknown waste
 - Hazardous materials and hazardous wastes shall be properly identified and stored



Delaware Solid Waste Authority runs a free collection program for all Delawareans

Actors in Hazardous Waste Policy

| Official Actors | Unofficial Actors |
|---|---|
| - Environmental Protection Agency (EPA) | - Environmental advocacy groups |
| - State environmental agencies | - Industry associations |
| - Local government agencies | - Community organizations |
| - Legislative bodies (e.g., Congress) | - Legal advocacy groups (e.g., environmental lawyers) |
| - Regulatory bodies (e.g., waste management) | - Public interest groups |
| - Government-appointed commissions/committees | - Academic experts and researchers |

Sustainability & Equity

- Environmental Sustainability
 - Positive Impact:
 - Reduces hazardous waste generation
 - Promotes safe disposal
 - Mitigates pollution
 - Negative Impact:
 - Poor policy planning may lead to pollution and health risk
- Economic Sustainability:
 - Positive Impact:
 - Stimulates green innovation
 - Creates job in waste management
 - Reduces long-run cost associated with cleanup
 - Negative Impact:
 - Poor policy design could lead to economic strain or job losses
- Equity
 - Policies that prioritize equity ensure hazardous waste is not disproportionately borne
 - Policies may exacerbate existing environmental injustices

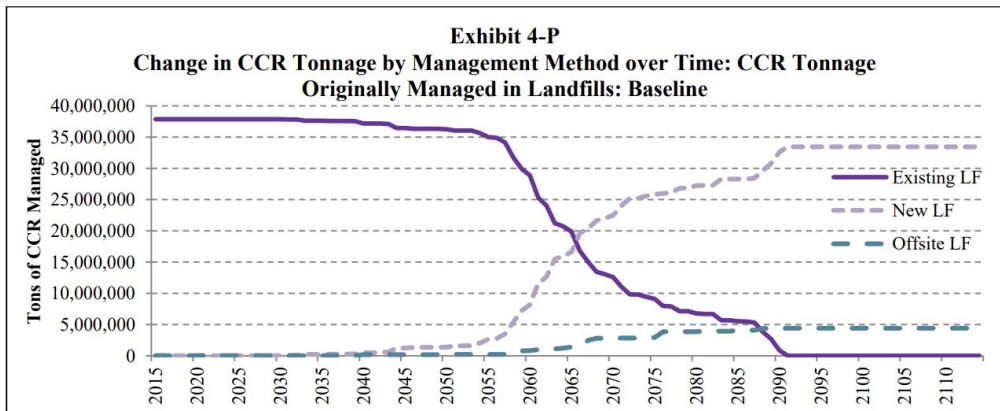
Exhibit 3-F

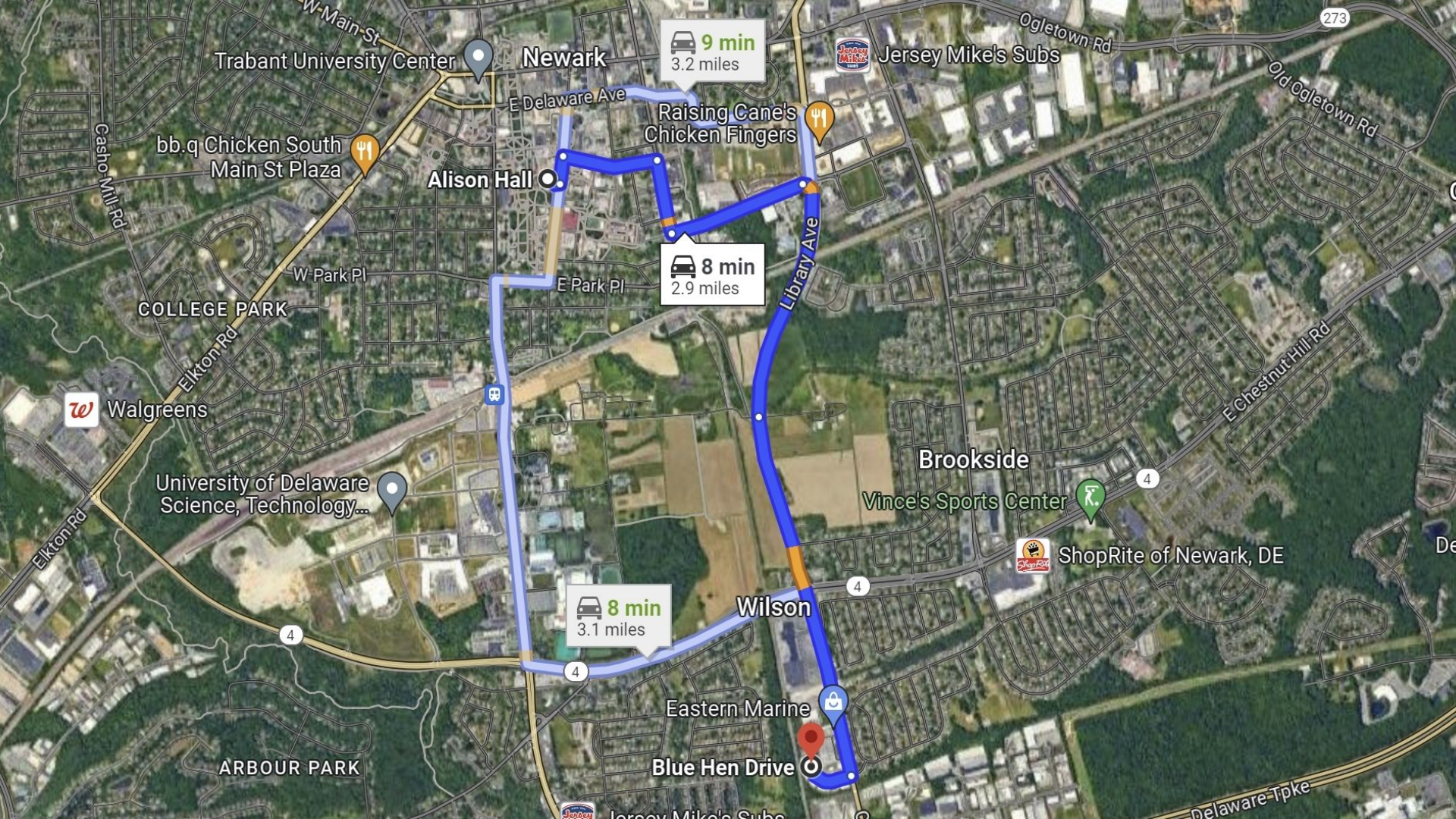
Baseline Cost to Industry and State Governments for Impoundment Structural Integrity Evaluations

| Paperwork Burden Element* | Labor hours | Cost (2006\$) | Cost per Plant | Annualized Cost per Plant ^b |
|---|--|---------------|-----------------|--|
| Industry Costs | | | | |
| Purpose: Prepare 10-year evaluation plan, involving evaluation of geotechnical, hydrologic, hydraulic and other engineering factors to construct or improve surface impoundment structures to avoid impoundment releases | 1,300 | \$70.07/hour | \$91,091 | \$9,109 |
| Revisions to Impoundment Safety Plan prepared by mining company engineer ^c | 40 | \$70.07/hour | \$2,803 | \$280 |
| Fire Extinguishing Plan prepared by mining company engineer or supervisor | 20 | \$70.07/hour | \$1,401 | \$140 |
| Annual Status Report and Annual Certification prepared by company engineer Purpose: To determine whether impoundments are operated and maintained according to approved engineering safety plan | 2 | \$70.07/hour | \$140 | \$140 |
| Recordkeeping and weekly inspections. ^d Purpose: To determine whether any signs of instability have developed | 42.5 | \$30.27/hour | \$1,286 | \$1,286 |
| Subtotal Industry Costs (2006\$) | | | | \$10,829 |
| Subtotal Industry Costs (2013\$)^e | | | | \$12,858 |
| State Government Costs | | | | |
| Review of Impoundment Safety Plans | 160 hours tech review + 2 hours admin review | \$30.27/hour | \$4,952 | \$495 |
| Review of revisions to Impoundment Safety Plans | 30 hours tech review + 2 hours admin review | \$30.27/hour | \$978 | \$98 |
| Review and prepare responses for impoundment abandonment plans | 1 | \$30.27/hour | \$31 per plan | \$3 |
| Review of annual inspection Status Reports and Certifications | 1 | \$30.27/hour | \$31 per report | \$3 |
| Subtotal State Government Costs (2006\$) | | | | \$599 |
| Subtotal State Government Costs (2011\$)^e | | | | \$711 |
| ^a Elements, labor hours, and labor costs are based on the "Supporting Statement" for the March 2008 DOL/MSHA ICR 12-19-0015, "Refuse Piles and Impounding Structures, Recordkeeping, and Reporting Requirements" at: http://www.msha.gov/regs/fedreg/paperwork/2004/04-24046.pdf ^b Assumes plans are valid for 10-years similar to the length of RCRA permits. ^c Assumes one revision to the plan will be made during 10-years. ^d Average labor hours per inspection between inspections at sites with monitoring instruments (3 hours) and at sites without monitoring instruments (2 hours). Labor hours calculated as 2.5 hours per inspection x 17 inspections per year. ^e Inflated to 2013 dollars: 124.2 December 2013 BLS Employment Cost Index for professional, scientific and technical workers/104.6 December 2006 index = 1.1874 | | | | |

From Regulatory Impact Analysis (RIA) for EPA's 2015 Coal Combustion Residuals

- According to information collected by EPA for 33 states, 21 states have regulatory baseline corrective action requirements for CCR management units
- RIA assumes cost to be effectively \$0 in the baseline because it assumes that all baseline CCR management units used by electric utility plants are not regulated under RCRA





Trabant University Center Newark

9 min
3.2 miles

Jersey Mike's Subs

bb.q Chicken South
Main St Plaza

Raising Cane's
Chicken Fingers

Alison Hall

8 min
2.9 miles

COLLEGE PARK

Walgreens

University of Delaware
Science, Technology...

Brookside

Vince's Sports Center

ShopRite of Newark, DE

8 min
3.1 miles

Wilson

Eastern Marine

Blue Hen Drive

ARBOUR PARK

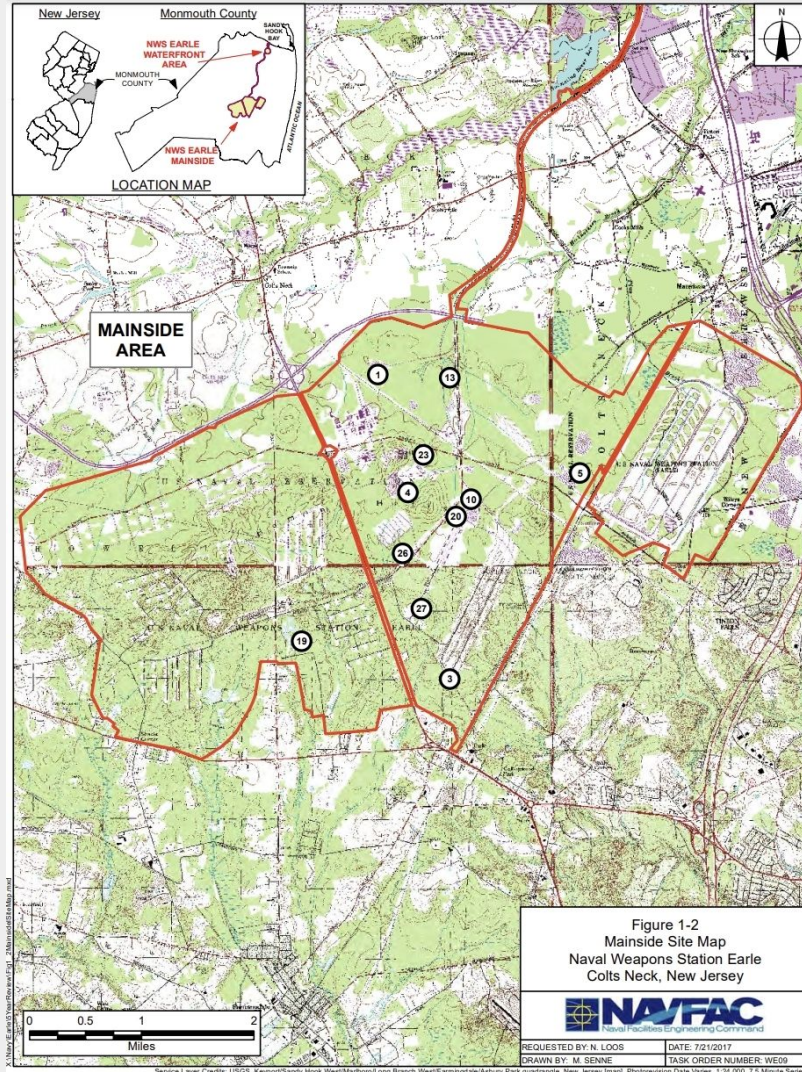
Jersey Mike's Subs

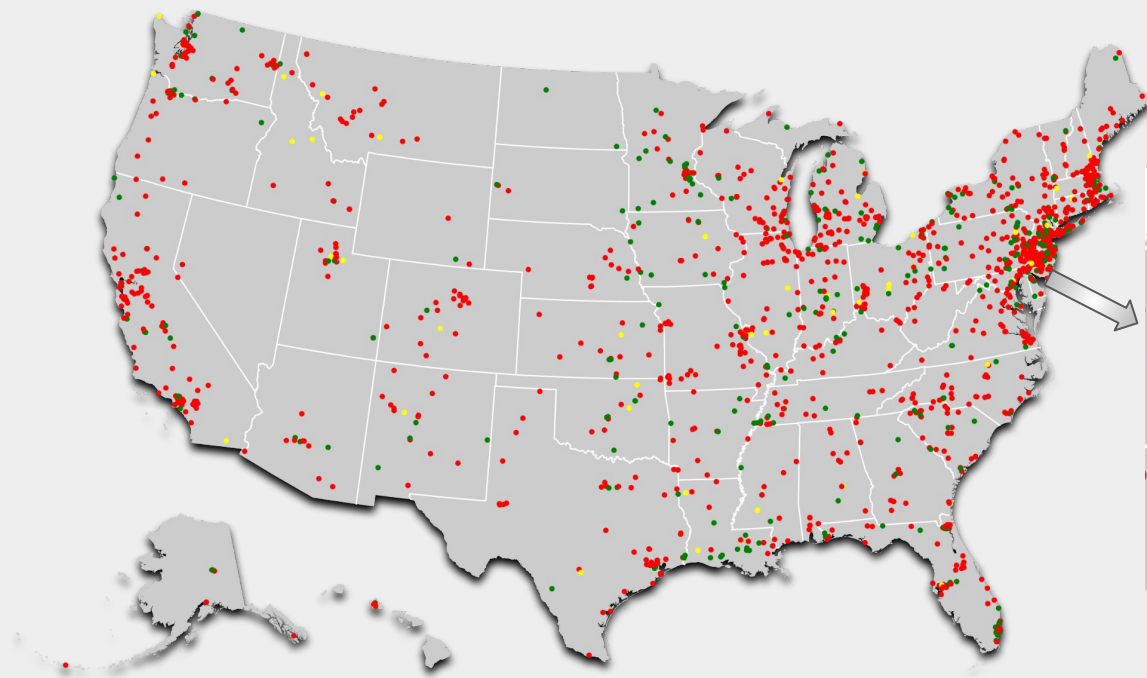
Delaware-Tpk

Table ES-2: Remedy and Protectiveness Summary

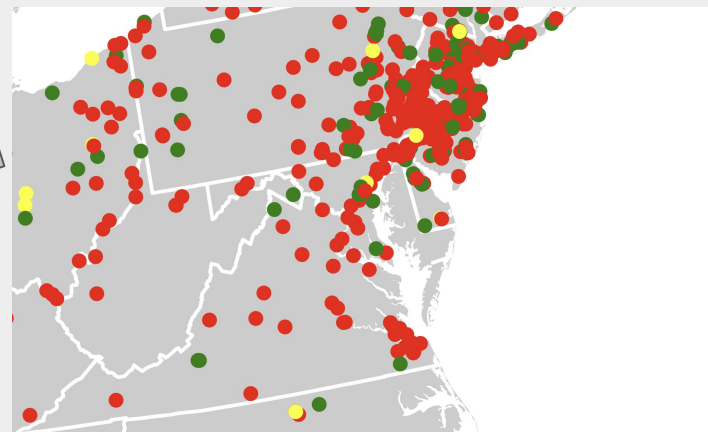
| Operable Unit | Site Number | Site Name | CERCLA Status | Remedy Components | Remedy in Place? | Remedy Recommendation/ Comments | Remedy Protectiveness |
|---------------|-------------|--|---------------|--|------------------|--|-----------------------|
| 1 | 4 | Landfill West of "D" Group | ROD, 1997 | Cap; LUC - Landfill Contents and Groundwater; LTM | Yes* | None | Short Term Protective |
| | 5 | Landfill West of Barracks | ROD, 1997 | Cap; LUC - Landfill Contents and Groundwater; LTM | Yes* | None | Short Term Protective |
| 2 | 19 | Paint Chip and Sludge Disposal Site | ROD, 1997 | Soil and Sediment Excavation; LUC - Groundwater; LTM | Yes | UU/UE pending – Site Closure RACR planned | Short Term Protective |
| 3 | 26 | Explosive "D" Washout Area (TCE Plume) | ROD, 1998 | Soil Excavation; AS/SVE; LUC - Groundwater; LTM | Yes* | None | Short Term Protective |
| 4 | 20 | Grit Blasting Area at Building 544 | ROD, 1999 | LUC - Soil | Yes | UU/UE achieved– Site Closure RACR planned | Protective |
| | 23 | Paint Disposal Area, Building D-5 | ROD, 1999 | LUC - Soil | Yes | UU/UE pending – Site Closure RACR planned | Protective |
| | 27 | Projectiles Refurbishing Area | ROD, 1999 | LUC - Soil | Yes | UU/UE pending – Site Closure RACR planned | Protective |
| 5 | 13 | Defense Property Disposal Office Yard | ROD, 2004 | Cap; Excavation/ Consolidation of Soil and Sediment; LUC - Landfill Contents and Groundwater; Fencing and Signage; LTM | Yes | None | Protective |
| 6 | 3 | Landfill SW of "F" Group | ROD, 2006 | Removal of protruding landfill contents; Cap; LUC - Landfill Contents and Groundwater; Fencing; signage, LTM | Yes | None | Short Term Protective |
| | 10 | Scrap Metal Landfill | ROD, 2006 | Cap; LUC- Landfill Contents and Groundwater; Fencing; signage, LTM | Yes | None | Short Term Protective |
| 7 | 26 | Explosive "D" Washout Area (PCE Plume) | ROD, 2007 | LUC - Groundwater; LTM | Yes* | None | Short Term Protective |
| 8 | 1 | Former Ordnance Demilitarization | ROD, 2005 | LUC - Groundwater; LTM; Notation in the BMP | Yes | UU/UE achieved – OU Closure RACR concurrence pending | Protective |
| 9 | 6 | Landfill West of Normandy Road | ROD, 2007 | LUC - Groundwater; Fencing; LTM | Yes | None | Protective |
| | 15 | Sludge Disposal Site | ROD, 2007 | LUC - Soil; Fencing and Signage; Soil LTM | Yes | None | Protective |
| | 17 | Disposal Site Behind Training Barge | ROD, 2007 | LUC - Groundwater; Fencing; LTM | Yes* | None | Short Term Protective |

* Sampling/study underway to support CEA determination





A map of Superfund sites as of October 2013. Red indicates currently on final National Priority List, yellow is proposed, green is deleted (usually meaning having been cleaned up).



There are currently 14 active superfund sites in DE, 20 sites in MA, and 29 sites in VA. NJ has the most active sites, numbering at 115 as of December 2023.

Policy Options & Solutions

- Status Quo: Continue reliance on existing regulations and practices; potentially lacking innovation and flexibility.
- **Enhanced Regulation and Enforcement:** Strengthen regulations and enforcement efforts to improve accountability; may increase costs.
- **Promotion of Recycling and Waste Reduction:** Incentivize waste reduction and promoting recycling to lower environmental impacts; requires education and infrastructure.
- **Investment in Clean Technologies:** Support research for cleaner waste treatment; costly initially and technologically challenging.
- **Community Engagement and Environmental Justice:** Empower affected communities for better decision-making
- **Public-Private Partnerships:** Collaborate with private sector for innovative and cost-effective solutions; requires careful oversight.



A sign identifies a Superfund removal site at a former high school in Birmingham, Alabama

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