

The Benefits of Superfund: Developing a Framework

April 3, 2004

Michael Hancox

E² Inc.

Sandy Hausrath

David Slutzky

Terri Suomi

E² Inc.



Alex Farrell

Energy & Resources Group
UC Berkeley



in collaboration with

Outline*

What are the benefits of the Superfund program?

Data limitations preclude a complete, final analysis.

- Components of the Superfund program
- Existing literature on Superfund
- Framework for the Superfund Benefits Analysis (SBA)

* All opinions are those of the presenter and do not necessarily reflect the views of the funding organization, U.S. EPA.

Components of the Superfund Program

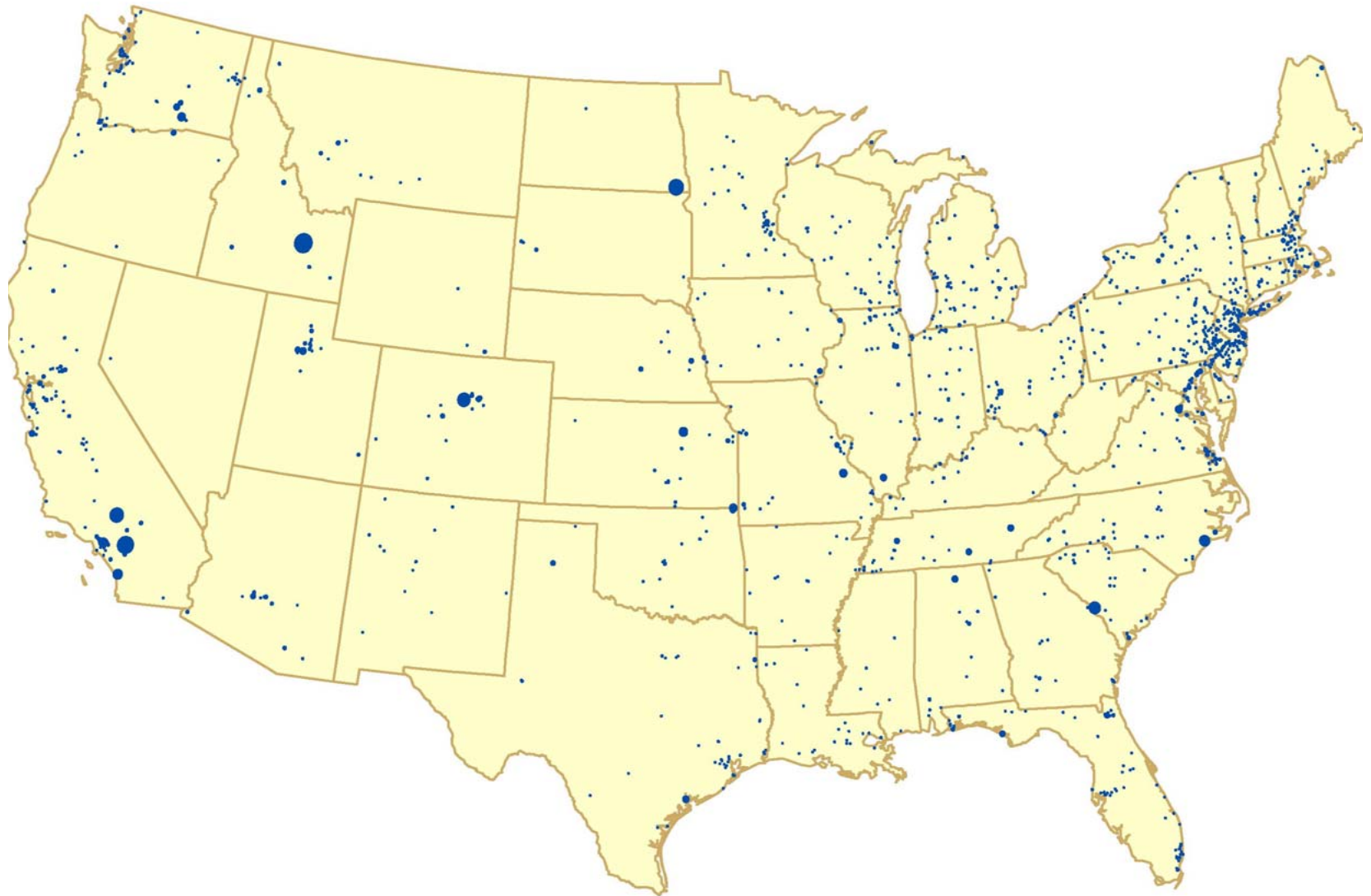
- Remedial program (National Priorities List - NPL)
- Removal program
- Liability provisions
- Other program components

Components of the Superfund Program: **The Remedial Program**

- National Priorities List (NPL) – 1,572 sites
- Average of 31 listed per year (1994–2003)
- 40.3 million people within 2.5 miles of an NPL site
- Locations and characteristics of NPL sites
- Average of 67 sites construction completed / deleted per year (1994–2003)

NPL Sites in the U.S.

NPL Site Area + 2.5 mile Buffer



Components of the Superfund Program: **The Removal Program**

- Short-term actions to address imminent risks
- Limited to one year and \$2 million
- ~7,000 removals to date
- ~300 removals ongoing per year
- Types of removals:
 - Emergency
 - Time-critical
 - Non-time-critical

Components of the Superfund Program: **Liability Provisions**

- CERCLA's liability provisions
 - Joint
 - Strict
 - Several
 - Retrospective
- Effects of liability
 - Deterrence
 - State program support
 - Voluntary cleanups

Other Superfund Program Components

- Emergency Response Team (ERT)
- Agency for Toxic Substances and Disease Registry (ATSDR)
- Environmental justice and community involvement
- Research and development

Existing Literature on Superfund

- Previous studies – Considerable emphasis on remediation program, costs and liabilities, and some health risks to current generations.
 - Various GAO studies
 - *Superfund* (Hird 1994)
 - *Analyzing Superfund* (Revesz and Stewart 1995)
 - *Calculating Risks* (Hamilton and Viscusi 1999)
 - *Superfund's Future* (Probst and Konisky 2001)
- Issues with previous studies

Framework for the Superfund Benefits Analysis

- Previous lenses used to view Superfund
 - Hazard: focus on the dangers of haz waste
 - Risk: focus on the risks of haz waste, but of current or future generations?
 - Cost: focus on costs and liability
- Looking at Superfund through a benefits lens
 - Includes risk, but is broader
- Comparing two scenarios: Superfund vs. no Superfund

Framework for the SBA: Benefit Categories

Benefit Category	Desc.	Quant.	Mon.
Mortality: Accidents, Cancer	Y	Y	Y
Morbidity: Accidents, Cancer, Birth Defects, Cognitive Impairment, Other	Y	Y	Y
Amenities: Removal of Unsightly Facilities, Reduction in Perceived Risks	Y	Y	N
Ecological: Market Products	Y	Y	Y
Ecological: Recreational, Ecosystem Services	Y	Y	N
Non-use: Existence and Bequest	Y	Y	N
Materials Damage: Commercial / Ind. Property	Y	Y	N
Environmental Response Team (ERT)	Y	N	N
Research and Development (R&D)	Y	N	N
Agency for Toxic Substances & Disease Registry (ATSDR)	Y	N	N
Environmental Justice and Community Involvement	Y	N	N
State and Voluntary Cleanups	Y	Y*	Y*
Prevention	Y	N	¹¹ N

Describing Benefits

- Description of benefits
- Example of described benefits
 - Prevention

Quantifying Benefits

- Quantification
- Example of quantified benefits
 - Ecological services

Monetizing Benefits

- Hedonic price studies of residential property
- Effect-by-effect analysis
 - Cost of illness studies
 - Ecological market product valuation
 - Contingent valuation studies

