State Coalition for Remediation of Drycleaners (SCRD): National Overview of Cleanup Strategies in the United States

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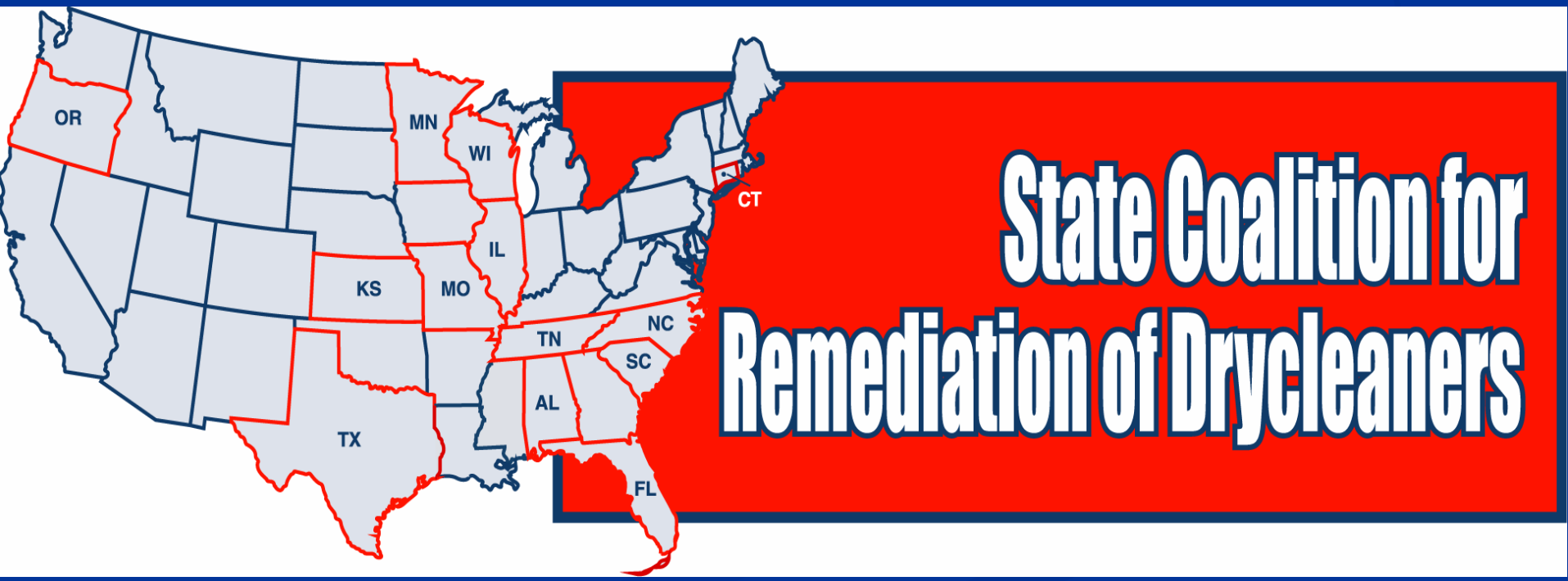


State Coalition for Remediation of Drycleaners

- Established in 1998
- Supported by U.S. E.P.A. Superfund Remediation Technology Innovation Office
- Thirteen Member States + Four Represented States
- SCRD holds annual meetings and teleconferences every six weeks

SCRD Website
http://WWW.DRYCLEANCOALITION.ORG

- Profiles on 118 drycleaning sites in remediation
- SCRD Papers on Technical & Administrative Issues
- Drycleaning Chemical Database
- Virtual Tour of Drycleaning Operation
- Reference Materials
- Many Links to State and Federal Websites with Drycleaning-related Information
- Semi-annual Newsletter

SCRD Members/Year Drycleaning Cleanup Program Initiated

- 1994: Connecticut, Florida
- 1995: Kansas, Minnesota, Oregon, South Carolina
- 1997: Illinois, North Carolina, Tennessee, Wisconsin
- 2000: Alabama, Missouri
- 2003: Texas

Types of Cleanup Programs

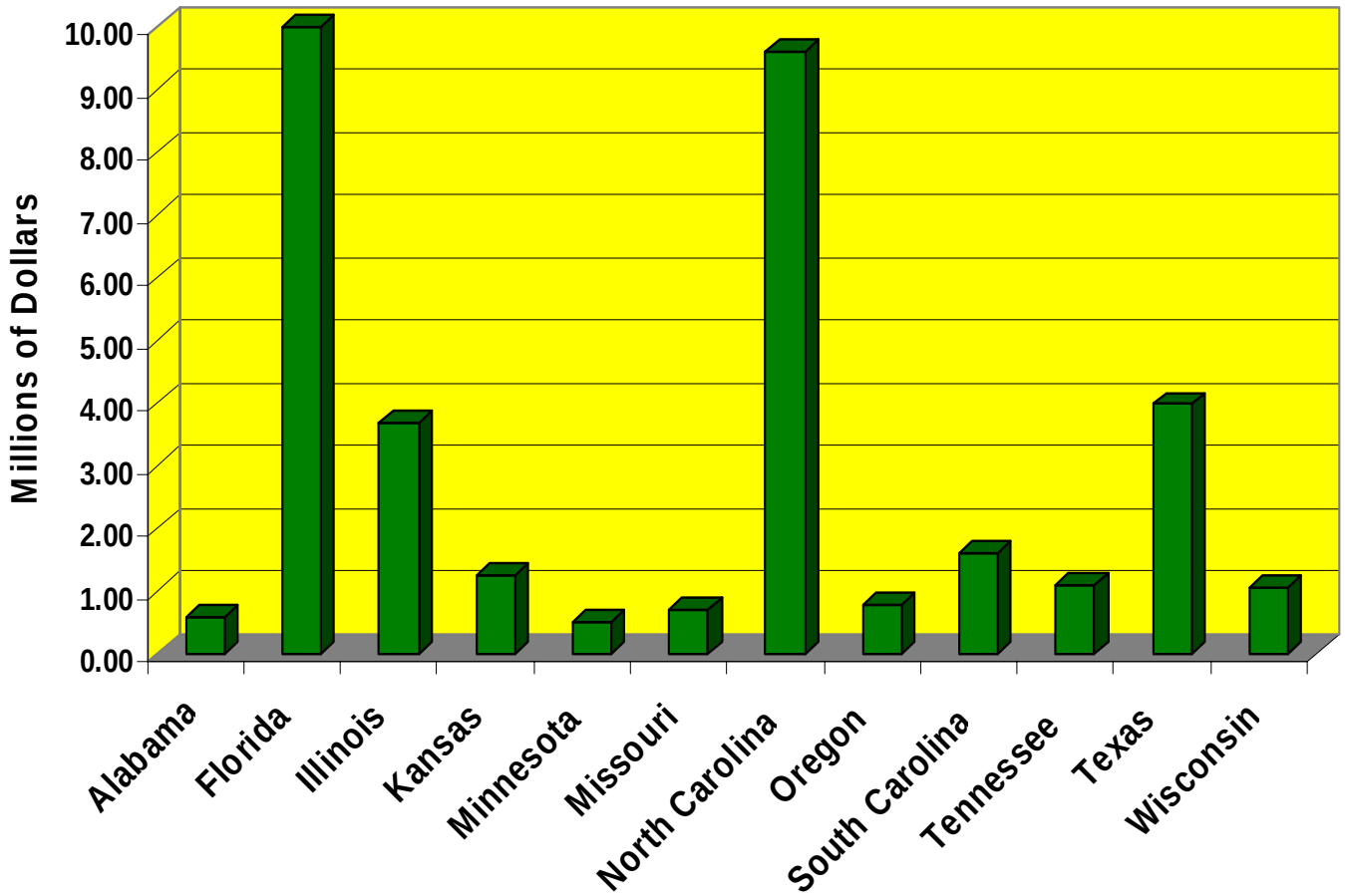
- State Lead Programs: Florida, Kansas, North Carolina, Oregon*, South Carolina, Texas

- Reimbursement Programs: Alabama, Connecticut, Illinois, Minnesota, Missouri, Oregon*, Tennessee, Wisconsin

State Programs Funding Sources

- Gross Receipts Tax
- Sales Tax
- Solvent Tax
- Deductible Fee
- Registration Fee
- Penalties & Fines

Annual Funding State Drycleaning Solvent Cleanup Programs



Pollution Prevention

- Secondary Containment
- Closed-loop/Direct Coupled Solvent Delivery
- No Wastewater Discharge to Sewer/Septic System
- No PCE Transfer Machines
- Spill Reporting Requirements
- Drycleaning Operator Certifications Requirements
- Best Management Practices
- Floor drains must be sealed.

Current SCRD Statistics

- 3388 Drycleaning Sites in Member Programs
- 1449 Contamination Assessments Initiated at Sites
- 680 Contamination Assessments Completed at Sites
- 357 Remedial Systems Installed
- Remediation Completed at 138 Sites
- 290 Sites Closed

Problems

Drycleaning Cleanup Program Problems

- $$$ - Many sites, expensive cleanups, few dollars!
- Revenue Collection
- Ongoing Compliance Issues
- Prioritization
- Site Access
- Permitting Issues
- Co-mingled Plumes
- Offsite Notification of Contamination
- Vapor Intrusion
- Remedial Strategies

Range of State PCE Cleanup Target Levels

- Soil: 0.030 to 100 mg/Kg
- Groundwater: 0.0002 mg/l to no groundwater assessment required


Compliance Issues

Soil Remedial Technologies Utilized

- Soil Vapor Extraction
- Excavation/Removal
- Passive Venting
- Mobile Injection Treatment Unit
- "Heated" Soil Vapor Extraction
- Chemical Oxidation ($KMnO_4$)
- Hydrogen Release Compound

Heated Soil Vapor Extraction System

TRENCHBOX INSTALLATIO

ISR - EXCAVATION

AIR SPARGING BACKFILL W/WELLS

Groundwater Remedial Technologies Utilized

- Pump & Treat
- Air Sparging
- Dual/Multi-phase Extraction
- Recirculating Wells
- Chemical Oxidation Using: Fenton's Reagent, $KMnO_4$, $NaMnO_4$, Ozone
- Biostimulation Using: Molasses, HRC, HRC-X, ORC, EOS, Potassium Lactate, Ethyl Lactate, Dextrose
- Biostimulation continued: sodium lactate, corn syrup
- Bioaugmentation Using: EOS B_{12}, Bio-Dechlor Inoculum, Pseudemonous
- Co-Oxidation
- Zero-Valent Iron
- Co-Solvent Flushing
- Surfactant-Enhanced Aquifer Remediation (SEAR)

Co-Oxidation

Cedarburg Drycleaners - Wisconsin

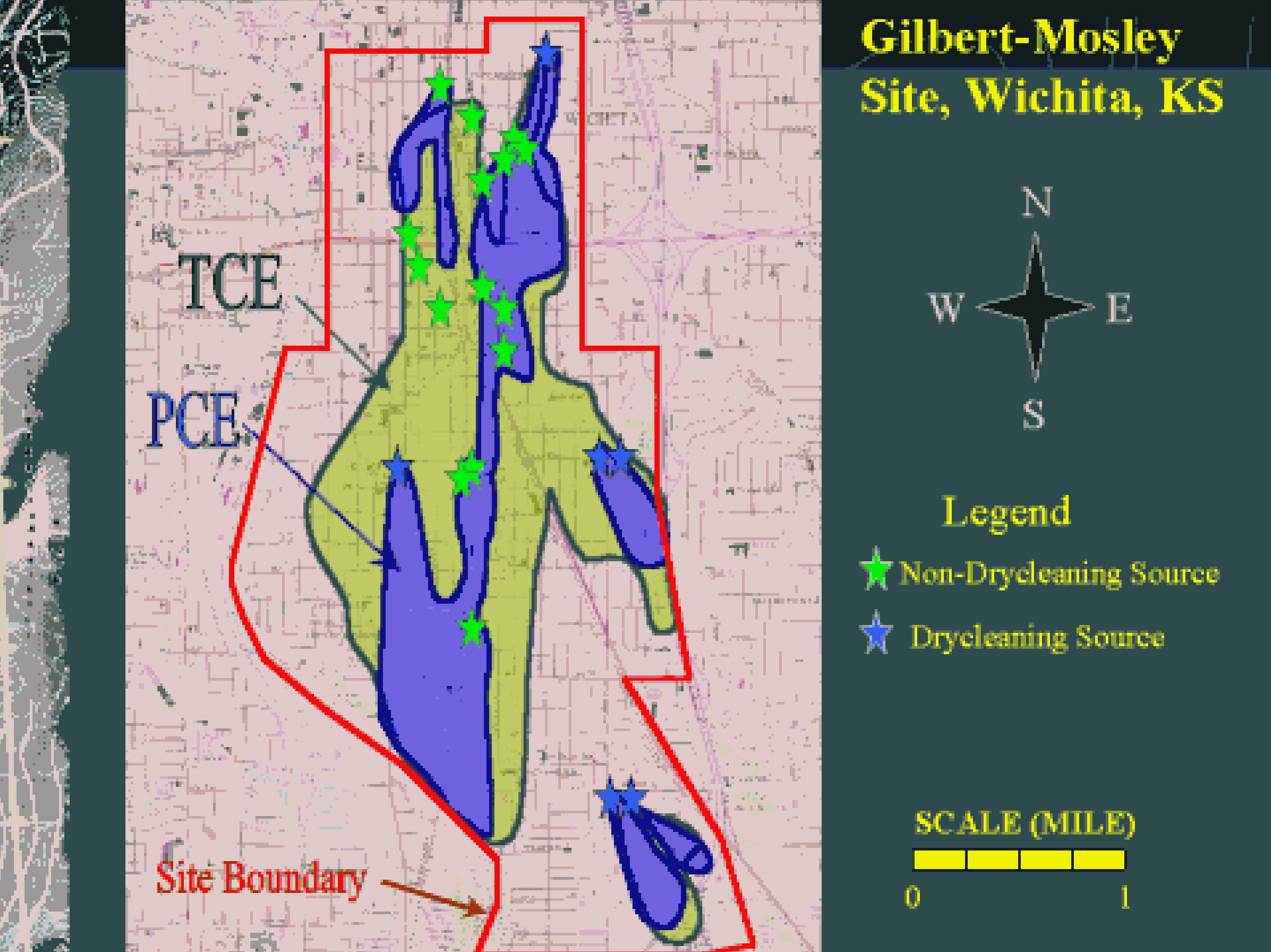
SVE, Thermal Treatment of Soils &
In-Situ Biostimulation (Molasses)-


Molasses Injection

Horizontal Well Installation – Tiger Cleaners, Tennessee

Gilbert-Mosley Site

- 3,850 Acres in the site
- 2,115 acres above MCL, 1,221 acres above ACL
- Site is approx. 4 miles (N-S) x 2 miles (E-W)
- Six plumes defined by City of Wichita (acres > ACL)
  - Plume A – 470 Acres
  - Plume B – 250 Acres (partial drycleaner)
  - Plume A-B – 8 Acres
  - Plume C – 60 Acres
  - Plume D – 33 Acres (drycleaner only)
  - Plume E – 360 Acres (partial drycleaner)
  - Plume F – 40 Acres (drycleaner only)


Gilbert-Mosley
Site, Wichita, KS
TCE
PCE
Site Boundary
N
W
E
S
Legend
Non-Drycleaning Source
Drycleaning Source
SCALE (MILE)
0
1

Remedial Strategies

- Remediate Entire Plume to Cleanup Target Levels
- Remediate the Contaminant Source Area
- Contain the Plume
- Remediate Soil, Utilize Monitored Natural Attenuation for Contaminated Groundwater
- Employ Risk-Based Corrective Action

Costs/Strategies

- Low end cleanup costs (assessment + remediation) = $ 250,000
- High end cleanup costs ???? $Millions
- "Success" is dependent on assessing risks, prioritizing work and allocating resources to the sites that represent real threats to receptors.
- In order to be successful, there must be fundamental changes in the way states approach site cleanup.
- Cleanup eligibility must be directly tied to regulatory compliance for active drycleaning facilities.

For everyone that says it can't be done……