Ann Carroll
US EPA
Office of Brownfields & Land Revitalization
“GROWING PAINS” PANEL

New Partners for Smart Growth,
Baltimore, MD
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Growing Pain Speakers

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What is a Brownfield?

“real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”

A More Common Language
Brownfields Definition

• A brownfield property – is or is perceived to be contaminated

• Brownfields can be:
  – Former industrial sites and dry cleaners
  – ‘Drug lab’ sites contaminated with “controlled substances”
  – ‘Low risk’ sites contaminated by petroleum products, old gas stations
  – Mine-scarred lands
Past Brownfield Locations
Typical Brownfield Contaminants?

- Petroleum, fuels and hydrocarbons
- Lead and other metals
- Polycyclic Aromatic Hydrocarbons (PAH)
- Volatile Organic Compounds (VOC)
- Pesticides
- Asbestos, mixtures …
<table>
<thead>
<tr>
<th>General Source</th>
<th>Examples of Previous Site Uses</th>
<th>Specific Contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint (before 1978)</td>
<td>Old residential buildings; mining; leather tanning; landfill operations; aircraft component manufacturing</td>
<td>Lead</td>
</tr>
<tr>
<td>High traffic areas</td>
<td>Next to heavily trafficked roadways or highways; near roadways built before leaded fuel was phased out</td>
<td>Lead, Zinc, PAHs</td>
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<tr>
<td>Treated lumber</td>
<td>Lumber treatment facilities</td>
<td>Arsenic, chromium, copper</td>
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<tr>
<td>Burning wastes</td>
<td>Landfill operations</td>
<td>PAHs, dioxins</td>
</tr>
<tr>
<td>Contaminated manure</td>
<td>Copper and zinc salts added to animal feed</td>
<td>Copper, zinc</td>
</tr>
<tr>
<td>Coal ash</td>
<td>Coal-fired power plants; landfills</td>
<td>Molybdenum, sulfur</td>
</tr>
<tr>
<td>Sewage sludge</td>
<td>Sewage treatment plants; agriculture</td>
<td>Cadmium, copper, zinc, lead, persistent bioaccumulative toxins (PBTs)</td>
</tr>
<tr>
<td>Petroleum spills</td>
<td>Gas stations; residential/commercial/industrial uses (anywhere an aboveground or underground storage tank is or has been located)</td>
<td>PAHs, benzene, toluene, xylene, ethyl benzene</td>
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<tr>
<td>Pesticides</td>
<td>Widespread pesticide use, such as in orchards; pesticide formulation, packaging and shipping</td>
<td>Lead, arsenic, mercury, chlordane and other chlorinated pesticides</td>
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<tr>
<td>Commercial/Industrial site use</td>
<td>PAHs, petroleum products, solvents, lead, other heavy metals (such as arsenic, cadmium, chromium, lead, mercury and zinc)</td>
<td></td>
</tr>
<tr>
<td>Dry cleaners</td>
<td></td>
<td>Stoddard solvent and tetrachloroethene</td>
</tr>
<tr>
<td>Metal finishing operations</td>
<td></td>
<td>Metals and cyanides</td>
</tr>
</tbody>
</table>

EPA's Toxic Release Inventory (TRI) database can provide information to communities about sites where contaminants were released into the environment.

EPA’s Brownfields & Land Revitalization Program

Grants and Technical Assistance:

- Area-Wide Planning (BF AWP)
- Environmental Workforce Development & Job Training
- Assessment
- Cleanup/ Revolving Loan Fund
- State & Tribal Response

**TA-Targeted Brownfields Assessment (TBA)**
**TA-Technical Assistance to Brownfield Communities (TAB)**

- Deconstruction, Demolition, and Removal
- Cleanup, Remediation, and Waste Management
- Design and Construction for Reuse
- Sustainable Use and Long Term Stewardship
Locally grown / sold, produced food and urban Ag!

- Uses and restores vacant lands and infill areas
- Increased environmental and social benefits
- Minimizes environmental impacts of food transportation
- Increases food access in underserved areas
- Introduces youth to growing healthy food
- Catalyzes revitalization and stormwater management
Garden Cautionary Tale?
Sacramento, California

- Garden for >30 years
- Tested, found lead, PAHs, pesticides
- 1,900 yd³ soil, 24-48 inches removed
- $423,000 leveraged for cleanup/ garden
Vacant lot/Dump to Garden
Somerville, Massachusetts

Vacant since 1950s, an illegal dump
City acquired in 2003, found PCBs, VOCs,
Metals, coal/wood ash
EPA Cleanup helped remediation to garden in 2007 - ~$400,000
From Boyles Galvanizing to Greensgrow Farm, Philadelphia

- Superfund removal, cap, 5 ft gravel
- Now Farm earns >$800,000 annually, two bee hives, catalyzing area change
Brownfields to Gardens and greenhouses

- Boot Camp Farm ribbon cutting, Sept 2013, Bridgeport, CT (top)
- Spruce Street garden, Lawrence, MA (bottom right)
- Cleveland, Ohio (bottom left)
Brownfield to Farmer’s Market

Brownfields to Farmers Market (before/after) Shelton, Connecticut (above) & Santa Fe, New Mexico (below lft) and Bellow Falls, Vermont (below rt)
48.6 acre Brownfield
- Used for auto salvage, Tire and scrap disposal
- 1,234 tons of metal debris, 926 tons of garbage, and 400,000 waste tires removed for recycling
- $4 million in cleanup, $218 million in investment
Brownfields, Urban Ag & Other Food Options

- Edible landscaping
- Community/school gardens and orchards
- Urban farms/hoop and Greenhouses
- Green roof and/or walls
- ‘City chickens’ & Beekeeping
- Aquaculture or Horticulture
- Farmer’s Markets
- Commercial kitchen
- Groceries and supermarkets
- Food manufacture
- Food ‘safety net’ or food bank
Urban Ag Info

www.epa.gov/brownfields/urbanag