EPA United States Environmental Protection Agency

Industrial Properties Renewed Through Agriculture

Reusing Land to Support Agriculture and Food Systems

Small towns and big cities across the country have former industrial properties that may be brownfields, with real or perceived environmental contamination hindering their reuse. Some may even have Superfund sites with more severe contamination issues. EPA's Brownfields Program tracks more than 860 industrial brownfields, many of which provide excellent revitalization opportunities due to being large, flat parcels with good access to roads, utilities and infrastructure. While these sites can support a variety of new uses, renewed interest in sustainability and local food production has fostered the emergence of new agriculture approaches.

To meet this demand, industrial brownfields may serve a wide variety of agriculture-related reuses: local food production including urban farms, green or hoop houses, community supported agriculture (CSA) and farmers markets; raising chickens and livestock; growing crops for animal forage; commodity markets or biomass production for energy generation; and providing locations for food manufacture, processing and distribution centers, as well as food waste and organics recycling and composting. Before reusing a brownfield for any of these uses, there may be important public health considerations as well as environmental and planning and zoning considerations.

Courtesy of the Chicago Botanic Garden

Windy City Harvest in Chicago has revitalized multiple contaminated sites in the Lawndale area of Chicago, including a vacant eight-acre industrial site and a quarter-acre former dry cleaning site to grow organic produce.

Recipe for Reuse:
Important Considerations

Determine if On-site Contamination is Present: Phase I and II Environmental Site Assessments should be conducted to determine whether surface soil and groundwater contamination is present based on site history or use of fill that conflicts with food production or animal crop reuse. While site contaminants vary based on industrial use, potential contaminants common at brownfields include lead, arsenic, zinc, cadmium, copper and other metals; petroleum and waste oils; volatile organic compounds (VOCs); pesticides; polycyclic aromatic hydrocarbons (PAHs); asbestos; and construction and demolition debris resulting from illegal dumping.

Risk Management/Remediation Strategies Tailored to Reuse: Risk-based cleanup goals require different levels of cleanup based on a property's planned reuse, exposures related to that reuse and the estimated risk to human health. For example, a brownfield property reused as a park will have more stringent cleanup standards than a property reused as a warehouse. Because agricultural reuses are an emerging area, no single set of risk-based goals exists, and different goals may apply depending on the nature and scale of the reuse.

Sites with horticultural production of non-food crops, biofuels, or industrial composting of organics or food wastes may be adequately cleaned to a commercial or industrial reuse, depending on state or local requirements. In some instances, such as self-contained growing systems where vegetation never comes into contact with the property, soil removal/remediation might be less of a priority, and placement of a fresh fill/clean soil cap might suffice. Conversely, a community garden or area where people and plants are potentially exposed to soils during gardening activity may require more stringent cleanup standards. Other food system uses may be categorized differently as well: a farmer's market may be considered a commercial use, while a processing or distribution center may be considered an industrial use. Each situation would likely require a different level of cleanup, but in situations where community exposure may occur and food is grown, communities are encouraged to use the most stringent standards available to ensure protection of human health. Please contact your state voluntary cleanup program or appropriate regulatory authority to determine which goals apply.

***Industrial brownfields** are properties once used for manufacturing, warehousing, or component assembly that are now vacant or abandoned due to concerns about real or perceived contamination.*

Before and after: in Philadelphia, the former site of a steel galvanizing plant is now home to Greensgrow Farm, which provides fresh produce and plants to area residents.

***Agricultural-related reuses** include urban farms, green or hoop houses, farmers markets, growing crops for animal forage, and other local food production facilities; biomass production for energy generation; and food waste and organics recycling and composting.*

Don't Forget to Consider Bioavailability: Factors such as pH, the presence of other elements in the soil, soil type, type and form of contaminant, and the type of plants being grown on the site can all affect how much of the contaminant may be taken up by the plants; where it may be stored in the plant; and whether that contaminant remains in the roots or progresses to the shoots or fruits of the plant and can be passed on to people eating the products (i.e., bioavailability). Soil amendments may reduce bioavailability, and experts can be consulted to answer questions regarding amendment efficacy. If the combination of soil type, contaminant, and plant results in a high bioavailability, that plant should not be grown for consumption. Work with your state voluntary cleanup program or appropriate regulatory authority to determine how bioavailability may affect the level of cleanup required for the property.

EPA is providing technical assistance to Toledo to help evaluate the potential for reusing a former Champion Spark Plug site for agricultural production.

Consider Emerging Food Production Approaches and Technologies: Depending on the level and bioavailability of contaminants on-site, emerging food production approaches and technologies may help mitigate public health concerns about growing food safely. These approaches or technologies include raised beds, above-ground planting beds, hydroponic or aquaponic systems, and vertical or container-based gardening systems. While systems such as these completely bypass any potential exposure pathways from site contamination, all projects using these technologies should still be vetted with the state voluntary cleanup program or local health officials to address environmental and public health concerns.

At the former Rose Township Dump Superfund site in Michigan, soybean and other crops are being tested for potential refinement into renewable fuels such as ethanol and biodiesel.

For more information:
EPA: How Does Your Garden Grow?
Brownfields Redevelopment and Local Agriculture
http://www.epa.gov/brownfields/success/local_ag.pdf

Sid Wainer & Son Specialty Foods Co., a gourmet foods distributor, constructed and now operates three 3,000 square foot greenhouses on the site of the former Alden Corrugated Box factory in New Bedford, MA's North End.

Identify Financial Impacts: Developers who choose agricultural reuses for former industrial sites often take advantage of federal tax and other financial incentives based on that reuse option. Converting a site from industrial to an agricultural use may reduce the tax liability on the property by 50 percent or more, depending on location (and whether state and local incentives also apply). These properties may also be subject to lower rates for water and other utilities than sites with commercial or industrial reuses. Qualifying farm vehicles may cost less to register with the state. In addition, grants, loans, and technical assistance are available at the state and federal levels to support agricultural uses, including sites used to grow crops for biomass production.

Lynchburg Grows cleaned up a two-acre former greenhouse site (a light industrial use) that was contaminated with lead paint and now operates growing systems in nine greenhouses covering 40,000 square feet.

Consider Agriculture as an Interim Use: Interim or short-term uses can help property owners respond to changing real estate market conditions. An interim agricultural use, though no replacement for traditional farming, can demonstrate commitment from property owners and city leaders to revitalize or revegetate the property, improve the environmental quality of the site, directly benefit the community, or generate revenue before a permanent use is introduced (e.g., residential, commercial, industrial). Agricultural production of fiber, biofuel crops or horticultural products can contribute to the green economy, urban greening, improving soil structure, green infrastructure, water management and habitat, even on sites where growing food may be unacceptable due to contamination of surface soils, groundwater, or proximity to other incompatible uses.

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