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A 5-step Land Reuse and Redevelopment Model: Resources to Spur Local Initiatives

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Background

People who live near, or access land reuse sites such as brownfields[1] often experience disproportionate exposure to environmental pollution, which can result in poor health outcomes, including higher rates of chronic disease; toxic exposures (e.g., mercury or lead based paint) that result in adverse health effects; and cancer (Massey. 2004), (New Jersey Department of Health and Senior Seivices. 2007), (DeLeon & Schilling, Urban Blight and Public Health, 2017). To address health risks and exposures related to land reuse sites, for over a decade, the Agency for Toxic Substances and Disease Registry (ATSDR) internally integrated a public health model in land reuse and redevelopment, the 5-step Land Reuse Strategy to Safely Reuse Land and Improve Health (5-step Land Reuse Model).

In June 2015, ATSDR introduced the 5-step Land Reuse Model during a 3-day training facilitated by the American Public Health Association. The purpose of the training was to introduce the ATSDR 5-Step Land Reuse Model as a national model that could expand resources for health-focused land reuse at the local level.

The 5-step Land Reuse Model Training

Over 65 individuals participated in the training. They came from ATSDR's Brownfields & Reuse Opportunity Working Network (BROWN), Community Partnerships, and Grantees (an ATSDR funding program from 2008–2016). We authors represent each of these participant groups. The training was based around the ATSDR 5-step Land Reuse Model shown in Figure 1. A brief description of the training, based on each of the model's five steps, is provided below.

[1]The Agency for Toxic Substances and Disease Registry defines land reuse sites here: https://www.atsdr.cdc.gov/sites/brownfields/index.html

Step 1 Engage with the Development Community.

Participants shared and practiced using community engagement techniques, such as Plain Language (see: www.plainlanguage.gov) and community engagement games. ATSDR grantees shared successful community engagement techniques, such as funding of Promotores, in which community members educate and engage their communities about land reuse sites, environmental concerns, and associated health outcomes.

Step 2 Evaluate Environmental and Health Risks.

The session was grounded in environmental health basics, such as definitions and significance of exposure sources, media, pathways, toxicology and cancer and non-cancer risks. Attendees learned about and practiced using tools such as Health Impact Assessment (Centers for Disease Control and Prevention, 2016-a), Protocol for Assessing Community Excellence in Environmental Health (PACE EH) (Centers for Disease Control and Prevention, 2016-b), the NCEH Healthy Communities Checklist (Centers for Disease Control and Prevention, Undated), the ATSDR Brownfields/Land Reuse Action Model (Agency for Toxic Substances and Disease Registry, 2015) and the ATSDR Land Reuse Site Tool (Agency for Toxic Substances and Disease Registry, 2018), and Community Based Participatory Research (CBPR) (Agency for Toxic Substances and Disease Registry, 2018).

Step 3 Communicate Risk or Health Issues to the Development Community.

This session emphasized the importance of health risk communication in community buy-in for redevelopment. Expert risk communicators described basics of overall health communication; led role-playing scenarios that result in positive or negative risk communication; and provided examples of real-world community-based risk communication activities they perform.

Step 4 Redesign the Community with Health in Mind.

This session described redevelopment planning approaches to maximize health outcomes across physical, social, and economic health spectrums. Examples included energy efficiency, stormwater management, tree planting, non-motorized transportation (e.g. bicycling infrastructure), and agriculture to improve food access and build local economies were provided and supported by case examples and best practices. In addition, BROWN provided targeted technical assistance to each Community Partnership.

Step 5 Measure Success: Environment and Health Change.

This session emphasized the importance of evaluating how environmental remediation or restoration can lead to changes in health and environment over the course of redevelopment. The ATSDR Action Model was highlighted as a redevelopment tool for including measurable indicators as benchmarking outcomes. Example indicators are shown in Table 1.

Outcomes: the 5-step Land Reuse Model as a National Resource

The 2015 training provided a rich repository of land reuse and redevelopment resources, success stories, lessons learned, and opportunities for collaboration. Shortly after the

training, ATSDR developed the Land Reuse Toolkits to elevate the 5-step Land Reuse Model for public use. ATSDR incorporated the input of the training participants, who essentially represented five personas of the toolkits: Community Champions, Community Planner, Municipal Agency, Environmental or Health Professional, and Developer. ATSDR included in each toolkit resources from the training and from a book authored by BROWN members, *Land Reuse and Redevelopment: Creating Healthy Communities*. (Berman, L. and Whitehead, S., editors, 2018, In Press)

The 2015 training also launched participant collaborations. One collaboration resulted in a European Union ERASMUS award for a 2018–19 faculty and student exchange focused on health-focused land reuse between universities in Romania and the United States. In another collaboration, two BROWN members and two Community Partnerships successfully applied for a Robert Wood Johnson Foundation Culture of Health Leaders Program advocating for Healthfields: safe reuse of land to reduce exposures and achieve environmental and community health improvements. They received $380,000 for individual Healthfields projects in target communities over three years (2016–2019).

Recently, ATSDR and the National Environmental Health Association (NEHA) collaboratively designed an online Certificate Program in environmental health and land reuse based on the 5-step Land Reuse Model. The Certificate Program includes environmental health basics of epidemiology, land reuse and redevelopment, risk assessment, risk communication, and toxicology. The Certificate Program is scheduled to launch in 2019 and will be provided free of charge for continuing education by ATSDR, with a dual certificate offered by NEHA.

Conclusion:

The June 2015 training participants represented interest groups frequently at the table in community-driven land reuse and redevelopment projects. Ultimately, the training led to several participant collaborations, the development of Land Reuse Toolkits, and the creation of the ATSDR and NEHA Environmental Health and Land Reuse Certificate Program. Overall, the training met ATSDR’s goal to elevate the internal 5-step Land Reuse Model into a national model to support local, health-focused redevelopment projects.

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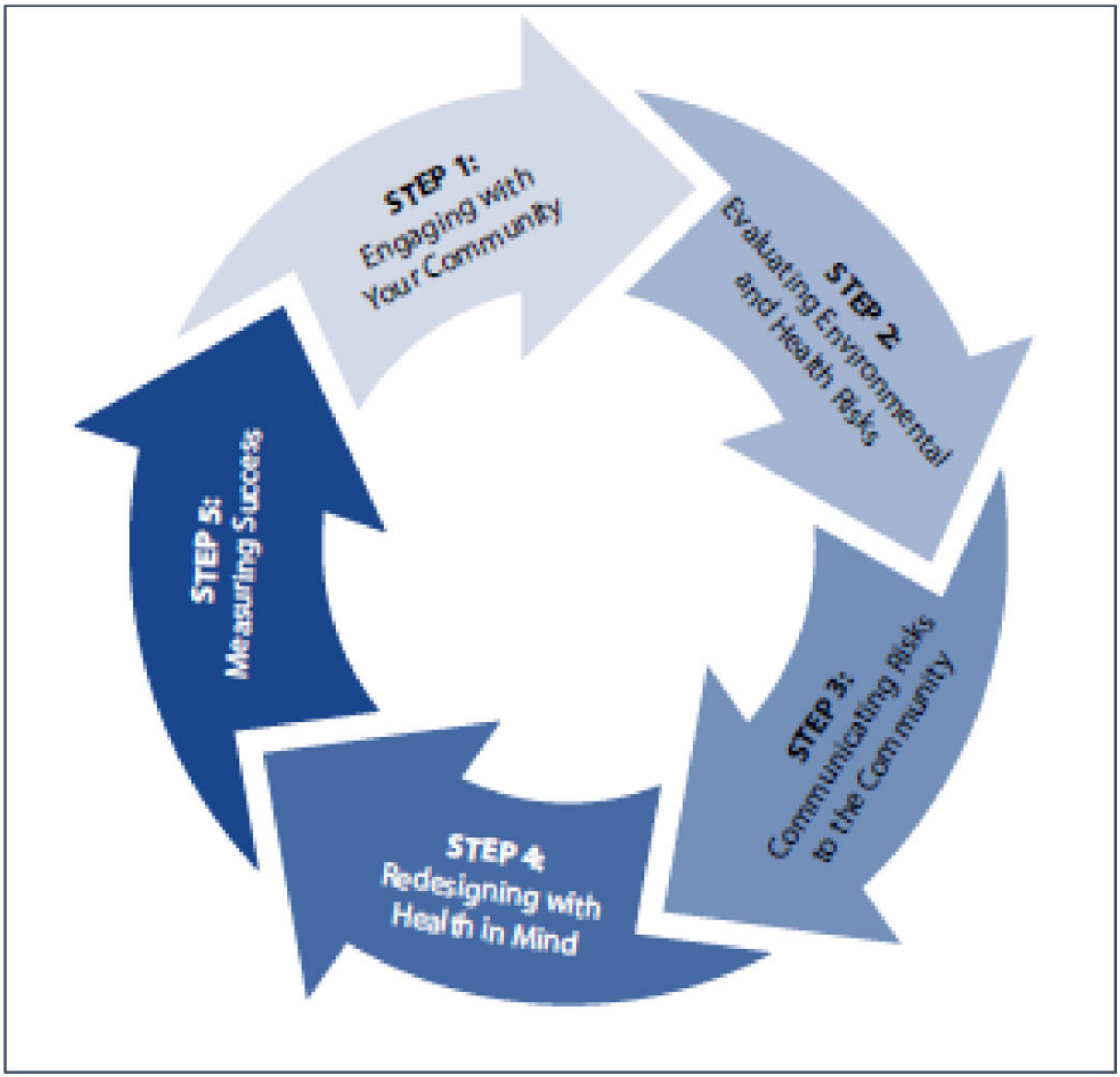

Figure 1.
ATSDR 5-Step Model to Safely Reuse Land and Improve Health (5-step Land Reuse Model) (Source: ATSDR Land Reuses Toolkits (Healthfields Toolkits): https://www.atsdr.cdc.gov/sites/brownfields/land_reuse_toolkits.html)

Table 1.

Example Issues and Corresponding Redevelopment Indicators

Issue	Indicator
Pollution of River	Water Quality monitoring data
Contaminated Properties	Inventory of # of contaminated properties and types and nature of contamination
Odor from Waste Transfer Facility/Rodents	Odor survey, rodent control data
Habitat Concerns	Wildlife survey, environmentally friendly lighting installations, habitat preservation efforts
Lead from Industrial Past and Older Housing Stock	Blood lead level data, age and condition of housing and commercial/industrial properties, inventory of lead emissions
Air Pollution	Asthma and/or other respiratory ailments incidence rate; number of major highways and proximity to them; number and type of industrial facilities emitting pollutants into the atmosphere
Lack of Access to Green Space and Recreation	# of parks and acreage of open/green spaces, # of people using parks, types of recreation observed
Lack of Access to Fresh Foods and Vegetables	# of urban gardens, # of grocery stores in the neighborhood
Lack of Access to Medical Care	# and types of clinics and healthcare providers in redevelopment area
Neighborhood Blight and Economic Condition	# of vacant homes and land, # of boarded homes and/or properties; # of foreclosures; # of closed businesses or inactive commercial activity