

# VERSION 2.0 WORK IN PROGRESS: Evidence Related to Environmental Health July 2019



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This document represents findings from a scan of the literature related to environmental public health. It is not meant to be an exhaustive search. If there are other resources on this topic of which you think PHAB should be aware, please contact Nicole Pettenati at [npettenati@phaboard.org](mailto:npettenati@phaboard.org).

## Environmental Health Scope

Environmental health covers a wide variety of programmatic activities:

- Healthy People 2020 environmental health objectives focus on six themes: outdoor air quality, surface and groundwater quality, toxic substances and hazardous wastes, homes and communities, infrastructure and surveillance, and global environmental health.<sup>1</sup>
- The National Environmental Health Association features the following topic areas: air quality, water quality, food safety, healthy homes, preparedness, climate change, vectors & pests, and tracking & informatics.<sup>2</sup>

Most health departments provide environmental health services. Of the top five population-based services provided by local health departments, four fall under the umbrella of environmental health including:

- Environmental health surveillance (85%),
- Regulation of food service establishments (79%),
- Food safety education (77%), and
- Public health nuisance abatement (76%).<sup>3</sup>

In addition, approximately half of all local health departments provide vector control services.<sup>3</sup> Health departments provide up to 34 different environmental health services; however, the number of services provided by an individual health department varies greatly based on population size, number of EH FTEs, region, governance type, and jurisdiction characteristics.<sup>4</sup> Among state health departments, the most common environmental health activities are environmental epidemiology (90%) and food safety training/education (80%).<sup>5</sup>

Furthermore, EH workers make up about 8% of local, state, and federal public health workforce, comprising the biggest segment behind administrative/clerical and public health nurses.<sup>6</sup>

Environmental health is also changing to address emerging threats including “natural and man-caused disasters, new potential health threats from climate change, new materials and processes, demographic shifts, and increased travel and trade resulting in the transport of infectious agents around the globe.”<sup>1</sup> Some of these changes are addressed below.

## Data

CDC's Environmental Public Health Tracking Network “is a multitiered, online surveillance system with components at the local, state, and federal levels”<sup>7</sup> that links data on environment (e.g., climate change, outdoor air, community water, homes, community design); exposure (e.g., pesticide exposures, childhood blood lead testing, biomonitoring population exposures); and health effects (e.g., asthma, birth defects, cancer, carbon monoxide poisoning, heart attacks, heat stress, reproductive and birth outcomes, developmental disabilities)<sup>8</sup> with Public Health Actions (PHAs). “PHAs include activities such as identifying populations at risk, responding to environmental health threats, developing interventions, and informing policies.”<sup>9</sup>

Lessons learned from the Tracking Program include the importance of data use, technical infrastructure, workforce capacity, and partnerships to address public health issues, like identifying vulnerable populations for disease outbreak, influencing policy, and improving outreach to the public.<sup>7,10</sup>

Future directions of the Tracking Program include “activities on improving operational efficiencies and exploring innovative approaches in planning, implementing, and evaluating environmental public health surveillance”<sup>9</sup> and looking to the built environment, social environment and socioeconomic context, climate change, social determinants of health, and multifactorial exposures, as well as using Tracking Program data to inform community health needs assessments (CHNAs) and health impact assessments.<sup>4</sup>

Other directions for Tracking and other data-related efforts include the use of nontraditional data sources (e.g., mobile technology sources), reporting to national pharmaceutical databases, and citizen science, which allows the public to actively engage in data collection, analysis, and interpretation.<sup>4,11</sup>

## Health Impact Assessments

A health impact assessment (HIA) evaluates how a policy, project or program may affect the health of a population, as well as the distribution of those effects<sup>12</sup> and is a promising method for integrating health considerations into policies, including health in all policies (HiAP) approaches,<sup>13</sup> and can improve communication between decisionmakers and health departments.<sup>12</sup>

- “HIA has four characteristics: assessing a policy proposal to predict population health and equity impacts, a structured process for stakeholder dialogue, making recommendations, and flexibly adapting to the policy process.”<sup>14</sup>
- While there are barriers/challenges to HIA, including time, resources, training, and political sensitivity, there is room for state health agencies to support local jurisdictions in HIA work through technical assistance and providing infrastructure.<sup>13</sup>
- Koehler et al. recommend that “HIAs should be adopted as a core tool and competency for environmental health practitioners. HIAs should be increasingly quantitative, both in terms of health consequences and benefits and in terms of economic costs and benefits.”<sup>11</sup>

## Environmental justice

"Environmental justice (EJ) research seeks to document and redress the disproportionate environmental burdens and benefits associated with social inequalities" and includes issues around energy, food (animal feeding operations), drinking water, flooding, and sustainability initiatives.<sup>15</sup> "People living on the low end of the socioeconomic spectrum are the very ones most susceptible to illness or injury when environmental protective barriers do not exist"<sup>16</sup> and yet those communities are often left out of the conversation when establishing environmental health policies, and those policies tend to focus on mitigation versus prevention.<sup>17</sup>

The literature indicates that when community members know they are at risk for exposure to contaminants, they make efforts to reduce their exposure, meaning that it is critical to involve the community in the development of solutions.<sup>15</sup> Furthermore, these community members can provide data through participatory research to raise awareness about disproportionate exposures to hazards to push for policy change.<sup>18</sup>

## Climate change

The literature highlights the importance of environmental health surveillance capacity to quantify climate-change related health impacts by developing baseline data and monitoring changes, and to assess the impact on already vulnerable populations.<sup>19,20,21</sup>

The Building Resilience against Climate Effects (BRACE) framework, developed by the CDC, is "an iterative approach to adaptively manage the health effects of climate change" and has links to PHAB requirements including stakeholder engagement and partnerships, use of best practices and evidence-based interventions, forecasting and assessment, developing plans, and evaluating impacts.<sup>22</sup>

Furthermore, those health departments trying to affect behavior change to address climate change will have to use effective motivators of behavior change, e.g., the Health Belief Model, which indicates that personal perception of risk is a strong motivator for behavior change.<sup>23</sup>

## Other

Other themes that emerged from the literature included:

- QI projects related to EH. For example, the Tulsa Health Department, in Oklahoma, mapped mosquitos and used that for resource allocation, which led to increased efficiency in West Nile virus testing of collected mosquitos.<sup>24</sup>
- The emergence of cross-jurisdictional sharing to help with cost-savings and ensuring access to environmental health services and expertise, particularly for smaller jurisdictions.<sup>25</sup>
- The importance of cross-sector partnerships for solving environmental health problems, delivery of environmental health services and assessment and evaluation of policies.<sup>11,26,27</sup>
- The importance of communicating the role of EH in keeping the community safe to a variety of audiences.<sup>11,28</sup>

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<sup>3</sup> National Association of County & City Health Officials. National profile of local health departments. [http://nacchoprofilestudy.org/wp-content/uploads/2017/10/ProfileReport\\_Aug2017\\_final.pdf](http://nacchoprofilestudy.org/wp-content/uploads/2017/10/ProfileReport_Aug2017_final.pdf). Published August 2017.

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