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## New Web-Based Public Health Assessment Guidance Manual — A Foundational Tool for Evaluating Exposure and Public Health Impacts in Communities

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### Background

The Agency for Toxic Substances and Disease Registry (ATSDR), in close collaboration with state partners and other stakeholders, conducts public health assessments (PHAs) to investigate exposures to environmental contaminants, evaluate potential health effects, and develop public health actions to prevent and reduce these exposures in communities. There are several ways ATSDR may become involved in initiating the PHA process, including petitions (e.g., from the public or other agency), sites proposed or listed on the National Priorities List (NPL), and requests by other agencies. During the PHA process, ATSDR and/or state partners review various types of data and information and perform a series of scientific evaluations, which can result in several types of products and different follow-up public health recommendations and/or actions (Figure 1).

The complex PHA process involves the evaluation of multiple data sets, as available. This includes environmental, exposure, and health-related data (toxicologic, epidemiologic, medical, and health outcome data) to examine the potential for harmful health effects among communities living at or near hazardous sites. Performing PHAs has become increasingly challenging because of complex sites, multiple exposure routes, multiple chemical exposures, emerging contaminants, and rapidly evolving knowledge of chemicals and their toxicities. Meanwhile, the workforce at both ATSDR and its state partners is changing. The need for and access to current guidance, tools, communication and engagement strategies, and training is essential. Having updated and clear guidance ensures that these evolving workforces understand the complexity of interdisciplinary fields and the highly specialized scientific guidance associated with the PHA process. Using the agency's available resources, ATSDR and its developing workforce can provide services and create products that meet the highest scientific standards.

The **Public Health Assessment Guidance Manual (PHAGM)** is the primary resource for training public health professionals at ATSDR and its state partners about the entire PHA

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process. The PHAGM also serves as a key resource for the public and other stakeholders to understand the PHA process and ATSDR's related products.

## Updating the Public Health Assessment Guidance Manual (PHAGM)

In recent years, ATSDR has developed new computational tools and updated the PHA process. So, in 2018, ATSDR began to update the 2005 version of the PHAGM. To seek recommendations on changes and updates from those involved in the PHA process, ATSDR conducted a wide-reaching survey and conducted focus groups among federal and state health assessors, managers, reviewers, and other scientific staff. The survey and focus group results led staff to update PHAGM with the following features:

- ATSDR's current guidance and scientific approaches
- Visual appeal with colorful graphics
- An online format that is dynamic, user-friendly, easy to update, and accessible on mobile devices

Between 2019 and early 2022, the new contents and web-based structure of PHAGM were developed, reviewed, and finalized, section by section. After updating the e-manual based on the survey and focus group findings, ATSDR conducted extensive reviews by subject matter experts to ensure high quality and current science.

On April 14, 2022, ATSDR launched the updated PHAGM (ATSDR, 2022) to provide the most up-to-date scientific methods and resources that ATSDR staff, partners, and other stakeholders can use to evaluate exposures to environmental contaminants and potentially related health effects. Also, the updated PHAGM was built into a dynamic web-based format, which offers easy-to-use navigation, a toolbox, a comprehensive resource center, an extensive search feature, a glossary, and enhanced readability.

## New Web-based PHAGM

The e-manual is organized into six main sections (Table 1). These sections provide the information necessary to guide health assessors step-by-step through the PHA process (Figure 2). The initial two sections (*Understanding the PHA Process* and *Who's Involved*) provide general information about ATSDR, the PHA process, and various stakeholders involved in the PHA process activities.

The next main section is on *Getting Familiar with the Site*, which teaches health assessors about the types of information they will need to collect about the site and the community. This is followed by the *Engaging the Community* section, which was informed by several guidance documents, including ATSDR's [Community Engagement Playbook](#) (ATSDR, 2021). The Playbook provides specifics on the phases of community engagement activities needed throughout the entire PHA process at a site.

The PHA process is primarily driven by data that are used to understand exposures. The fifth main section—*Selecting Sampling Data*—guides health assessors on how to evaluate the usability and quality of environmental sampling data, and in some cases, biological or

modeled data. The sixth section, *Conducting Scientific Evaluations*, is the largest section in PHAGM. It includes four sub-sections, each with multiple scenarios and examples, that focus on ATSDR's rigorous approach for determining if harmful exposures were possible from a site or release in the past, present, or future. This involves the following steps:

- Evaluating exposure pathways
- Determining contaminants that are of concern by comparing all of those found at a site against health-protective media-specific screening levels
- Estimating exposure point concentrations (EPCs)
- Calculating exposure doses, EPC-adjusted air concentrations, hazard quotients, and cancer risks
- Determining if harmful non-cancer or cancer effects are possible by performing an in-depth toxicological effects analysis.

In addition, two new sections are currently under development (Table 1). The *Putting It All Together* section will guide health assessors in formulating their conclusions, recommendations, and public health actions, and using clear and effective communication strategies to convey this information to the public. Finally, ATSDR is developing a future *Health Equity Module*. The goals are to determine the best strategies and approaches for engaging socially and environmentally burdened communities around our sites and to provide guidance for health assessors on how to integrate and evaluate these factors into the PHA process.

To supplement the materials in the main sections, the PHAGM website includes several key tools:

- A *Resources* page stores various types of information that one may need when performing the different phases of the PHA process, such as ATSDR guidance documents and available data sources.
- A *Toolbox* contains items (such as checklists and templates) that are linked with the individual PHAGM sections.
- A *Glossary* provides definitions for terms used in PHAGM and words used by ATSDR in communications with the public.
- A *Search* function allows users to easily find materials on a topic presented in any part of the PHAGM.

The new web-based PHAGM reflects the most-current scientific methods, tools, and up-to-date resources. It will provide public health professionals at ATSDR, its state partners, and even colleagues around the world a method for evaluating complex environmental exposures and potential health effects in communities near contaminated sites. The new PHAGM will lead to broad and long-lasting positive public health impacts by providing timely and accurate assessment of environmental hazards and protecting communities from harmful exposure.

## Acknowledgements and Disclaimer

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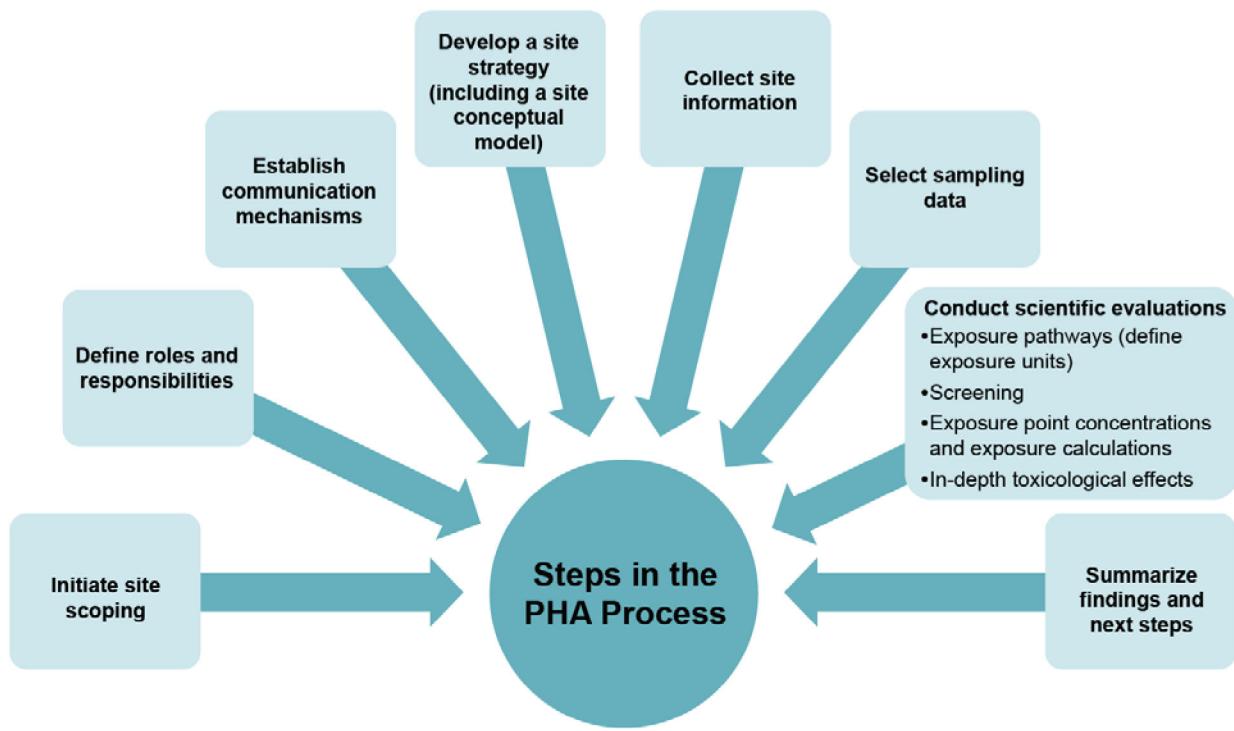
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**Figure 1.**  
Basic components of the public health assessment process



**Figure 2.**  
Steps in the public health assessment (PHA) process.

**Table 1.**

Public Health Assessment Guidance Manual (PHAGM) section description

Sections	Description of Content
<b>Understanding the PHA Process</b>	Describes ATSDR's mission, goals, mandate, purpose of guidance, general factors to consider, and public health assessment (PHA) process steps.
<b>Who's Involved</b>	Explains ATSDR's role in the PHA process and describes the various entities involved in the PHA process activities.
<b>Getting Familiar with the Site</b>	Describes the steps for gathering pertinent site information during the PHA process, the types of information to collect, and available resources for gathering this information.
<b>Engaging the Community</b>	Introduces the goals and phases of the community engagement process; describes valuable strategies, actions, tools, and activities.
<b>Selecting Sampling Data</b>	Describes how to evaluate the usability and quality of environmental and biological sampling data (and, in some cases, modeling data) to examine environmental contamination at a site.
<b>Conducting Scientific Evaluations</b>	Describes ATSDR's scientific process for evaluating exposure pathways, screening contaminants, estimating exposure point concentrations, performing exposure calculations (exposure doses, EPC-adjusted air concentrations, hazard quotients, and cancer risks), and conducting the in-depth toxicological effects analysis.
<b>Putting It All Together (under development)</b>	Describes how to formulate conclusions and recommendations from the evaluations conducted during the PHA process. It also provides information about how to structure written documents to ensure they use clear and effective communication.
<b>Health Equity Module (under development)</b>	Describes how to integrate and evaluate social vulnerability and environmental justice factors into the PHA process. At present, ATSDR is formulating strategies, approaches, and content ideas.