

## Unconventional Oil and Natural Gas Development: Reviews of the Literature on Potential Exposures and Health Effects to Inform Research Planning

### INTRODUCTION

Unconventional oil and natural gas development (UOGD) has expanded rapidly in the United States in recent years and, with it, questions about potential human exposures and health effects. HEI-Energy, a nonprofit affiliate of the Health Effects Institute (HEI), is chartered as an independent research organization to provide impartial and policy-relevant science about potential human exposures and health effects associated with UOGD. To inform planning for this research, the HEI-Energy Research Committee (the “Committee”) reviewed relevant exposure and health literature.

### REPORTS

#### Potential Human Health Effects Associated with Unconventional Oil and Gas Development: A Systematic Review of the Epidemiology Literature (FINAL REPORT)

Special Report 1 is a systematic review of epidemiology studies about the health effects of UOGD. The review was designed to yield a transparent, reproducible, objective, and critical assessment, which underwent independent peer-review. The Committee evaluated the strengths and limitations of 25 studies that met inclusion criteria, and qualitatively assessed the studies and whether exposures originating directly from UOGD might have led to the assessed health outcomes. *Where to access the final report:* <https://hei-energy.org/publications>.

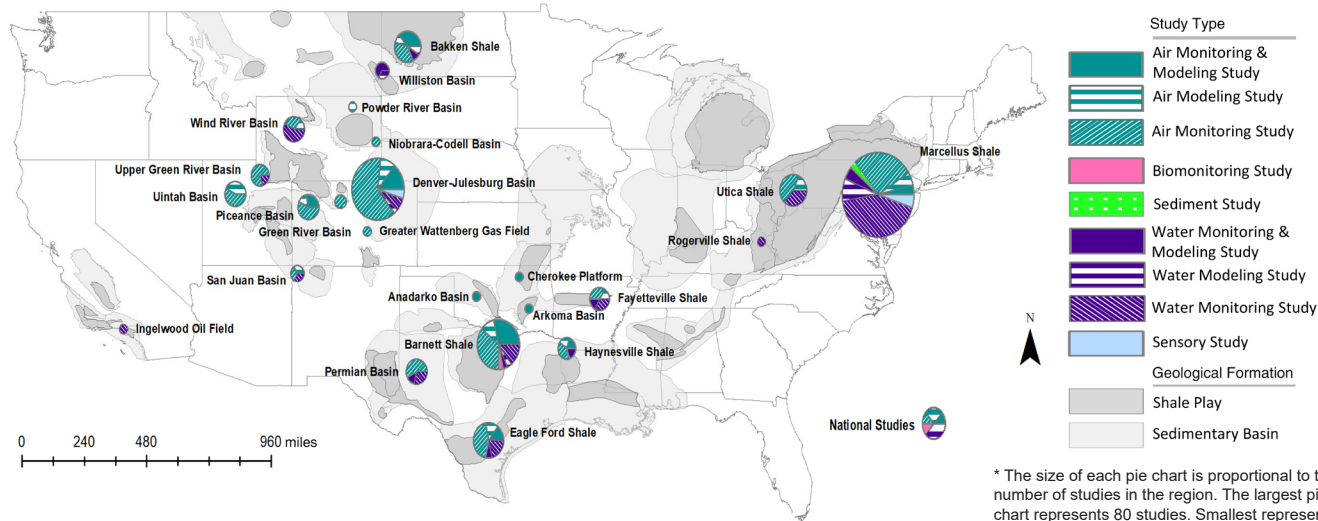
#### Human Exposure to Unconventional Oil and Gas Development: A Literature Survey for Research Planning (FINAL COMMUNICATION)

Communication 1 is a survey of exposure studies with diverse objectives that provide information about potential UOGD exposures (see figure below). The Committee surveyed the literature to understand who might be exposed, how exposures might arise, and how exposures vary over time and across regions. Based on its survey, the Committee identified important gaps in knowledge and defined a set of characteristics critical to high-quality and policy-relevant research. *Where to access the final communication:* <https://hei-energy.org/publications>.

### HOW THE REPORTS WILL BE USED

The HEI-Energy Research Committee (the “Committee”) conducted these reviews to understand the current state of the science and identify gaps in knowledge of UOGD exposures and their health effects. Informed by its reviews of the literature and input received from workshop participants, the Committee is preparing a Research Solicitation, seeking multidisciplinary teams with the skill and capacity to conduct exposure studies in multiple oil- and gas-producing regions of the United States. HEI-Energy expects to release a Request for Applications in 2020.

**Exposure study locations relative to shale basins and plays, by media investigated.\***



\* The size of each pie chart is proportional to the number of studies in the region. The largest pie chart represents 80 studies. Smallest represents 1.

**SPONSORS:** This program is supported with funding from HEI-Energy’s government and industry sponsors: U.S. Environmental Protection Agency, Chevron, ConocoPhillips, Equinor, Halliburton Energy Services, Inc., Noble Energy, Schlumberger, Shell Oil Company, and ExxonMobil.

**DISCLAIMER:** Although the reports were produced with partial funding by the United States Environmental Protection Agency under Contract No. 68HERC19D0010 to the Health Effects Institute–Energy, they have not been subject to the Agency’s review and therefore do not necessarily reflect the views of the Agency, and no official endorsement by the Agency should be inferred. Private institutions also provided funding to produce the reports; however, they have not been subject to their review and therefore do not necessarily reflect the views of any of the private institutions, and no endorsement by them should be inferred.