HEI's 21st Century Oil and Natural Gas Development Project

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In 2014, HEI was asked to convene a Special Committee

- The Committee's charge:
 - Develop an impartial guide for research about potential adverse impacts of onshore unconventional oil and gas development
- The guide should recommend and prioritize research to <u>better understand</u> and to <u>prevent or minimize</u> potential impacts on:
 - Human health and well-being
 - Communities
 - Ecological health
 - Environment



HEI's Special Committee



George Hornberger, Vanderbilt Alison Cullen, UW Jeffrey Daniels, Ohio State Alan Ducatman, WVU John Jackson, Stroud Water Research Center William Kappel, Retired, USGS Richard Krannich, Utah State Vince Matthews, Leadville Geology; former State Geologist of CO Allen Robinson, Carnegie Mellon Dale Sandler, NIEHS Susan Stout, Federal Liaison, USFS Deborah Swackhamer, UMinn Junfeng Zhang, Duke

Special Advisors to the Committee: Bernard Goldstein, UPitt; Alan Krupnick, RFF; Michael Parker, Parker Environmental and Consulting

Our Progress

June 2014	First Committee Meeting and Public Workshop			
\downarrow	\downarrow			
October 2015	Release of the Final Strategic Research Agenda			
\downarrow	\checkmark			
Spring 2016	Planning for a new HEI research program to begin in 2016			



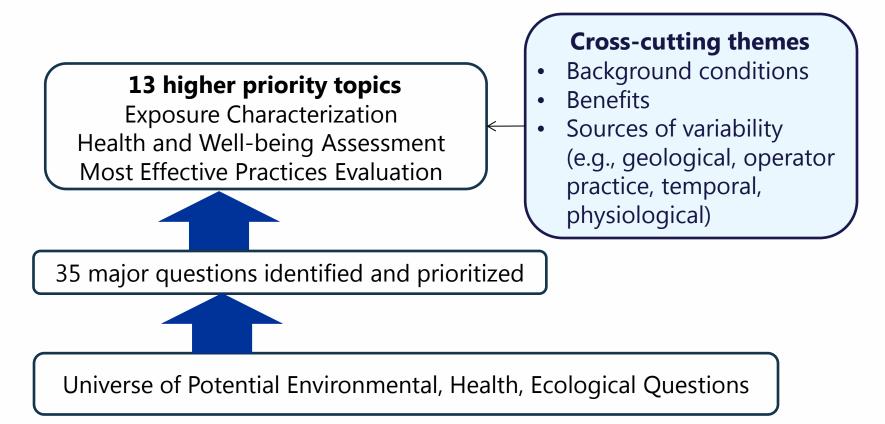
HEI					
HEALTH EFFECTS INSTITUTE October 2015	Strategic Research Agenda on the Potential Impacts of 21st Century Oil and Natural Gas Development in the Appalachian Region and Beyond HEI Special Scientific Committee on Unconventional Oil and Gas Development in the Appalachian Basin				
101 Federal Street, Suite 500 Boston, MA 02210, USA +1-617-488-2300 www.healtheffects.org	 Funding provided by private foundations in Pennsylvania and West Virginia, including: Richard King Mellon Foundation Henry L. Hillman Foundation Claude Worthington Benedum Foundation Henry C. and Belle Doyle McEldowney Fund of The Pittsburgh Foundation 				

Strategic Research Agenda

- Released in Fall 2015 after extensive stakeholder consultation and expert review
- Identifies key research questions as a foundation for moving forward



The Committee's research priorities**



** Complement (don't duplicate) past and ongoing research efforts that fit within the Research Agenda framework



Focus of a new HEI research program based on the Strategic Research Agenda

- Answer key questions that have arisen in recent years about potential human exposures and health effects
- Begin with exposure studies and proceed to health studies as warranted and feasible based on exposure data



An illustration of the need for better exposure information

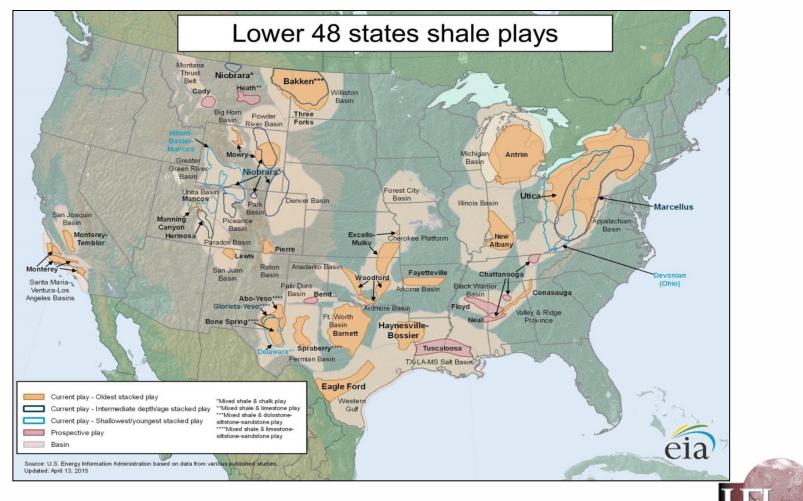
Health Studies in the Headlines

Pennsylvania. PLoS One

Exposure Metric

McKenzie et al. 2014. Birth outcomes and maternal residential proximity to natural gas development in rural Colorado. <i>Enviro Health Perspect</i>	Inverse distance weighted natural gas well counts within a 10-mile radius of maternal residence
Casey JA et al. 2015. Unconventional natural gas development and birth outcomes in Pennsylvania, USA. <i>Epidemiology</i>	Inverse-distance model incorporating distance to maternal residence; dates and durations of development activities and production volume during the pregnancy
Jemielita et al. 2015. Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates. <i>PLoS One</i>	# of wells per zip code and, separately # of wells per km ²
Stacy SL et al. 2015. Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest	Inverse distance weighted count of unconventional wells within a 10- mile radius of maternal residence

A high research priority: Comparative studies of potential human exposure among key U.S. Regions



HEI's planning for a new research program

(**DRAFT** Pending Consultation with Sponsors and HEI Board of Directors)

Fiscal Year:	Planning	FY2017	FY2018	FY2019	FY2020	FY2021
	Jan-14 to Jun-16	Jul-16 to Jun-17	Jul-17 to Jun-18	Jul-18 to Jun-19	Jul-19 to Jun-20	Jul-20 to Jun-21
Products (in <u>italics and</u> <u>underlined</u>) and Milestones	Strategic Research Agenda Implementation Plan Bibliography Literature Summaries - Stressor Characterization - Exposure studies - Health studies Einpanel Committee of HEI Board and new Research Committee to oversee the new research program	Assessment Point 1: What exposures warrant study? Research Committee convenes an Exposure and Risk Screening Workshop - <u>Workshop report</u> with exposure research recommendations - <u>Review article</u> with findings of exposures that do and do not warrant study <u>Expos are study Request</u> for Application (RFA):	Phase I of exposure studies in multiple regions underway: Identify OGD chemical stressors and their source	workshop to review Phase I findings -Workshop	Preview, kation of Se I results Studies in derway: Detailed ulation exposures Workshop report	tor b to hase II study complete Peer review, Publication of

Next Steps

- Continue with design of the research program
 - Conduct research in important oil- and gas-producing regions throughout the United States
 - Focus on human exposure studies
 - Where warranted and feasible, initiate health studies
- Employ the same HEI model used since the 1980s to provide impartial scientific information to inform policy decisions.
- Continue engagement with potential government and industry sponsors to achieve adequate, balanced funding to begin the research program in 2016

