CTEH®

Decision Making Using Best Available Science

Oil and Gas Act Reforms: Surface Setbacks for Oil and Gas Wells

Presented by: Michael H. Lumpkin, PhD, DABT

About Me

Board-Certified Senior Toxicologist

UNIVERSITY OF GEORGIA

CTEH®

1998 - 2002

PhD, Toxicology Department of Pharmaceutical & Biomedical Sciences

2002 - 2014

Senior Toxicologist for Federal contractor and environmental consulting firms

2014 - Present

Senior Toxicologist leading emergency response teams and performing exposure studies and human health risk assessment.

CTEH®

Presentation Overview

Overview of Scientific Public Health Evidence

- What frameworks represent best available science to evaluate OGD and health effects.
- What has been learned using these frameworks.

Considerations for New Mexico

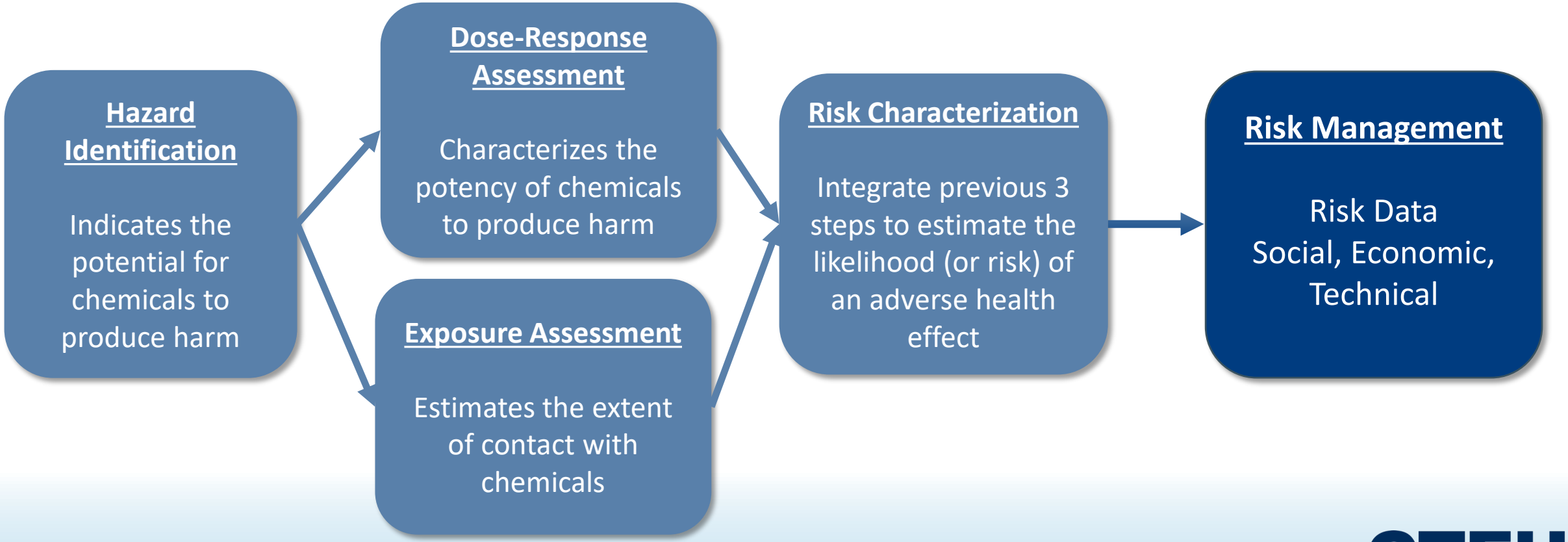
- Example of how can NM apply these frameworks to develop effective policy based on the best available science.

CTEH®

Human Health Risk Assessment:
A Well-Established Framework to Inform Risk Management and Policy

Human Health Risk Assessment

Risk Management



CTEH®

Risk-Based Questions Exposure Scientists Ask To Determine if Health Risk from Source Releases Needs to be Managed

- What are the sources of emissions released to the environment?
- How do the released chemicals move and change in the environment?
- Who may be exposed to the chemicals and at what levels?
- How does exposure occur? How often and for how long?
- What are the effects of the chemicals and how potent are they?
- How likely is it that potentially exposed populations will experience harm because of the exposures?

Reference: EPA Volume 1: Technical Resource Manual – Air Toxics Risk Assessment Reference Library

CTEH®

Comparison of Exposure Assessment Methods

Methods Based on Assumption

- An assumed exposure to something is compared to reported adverse health effects.
- Assumes the exposure is coming from a defined source.
- Assumes emissions from the time of study are similar to those of today.
- Results in an association of exposure-disease but stops well short of showing disease causation.

Methods Based on Measurement

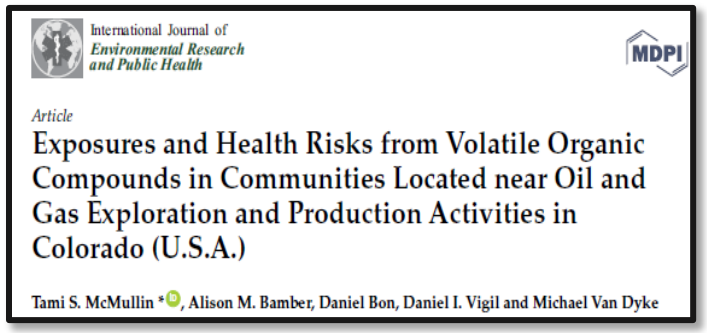
- A measured exposure is compared to levels shown to protect against adverse health effects.
- May specify whether an exposure is coming from a defined source.
- Measures actual exposures based on contemporary O&G procedures and operations.
- Results in key data that are necessary to scientifically determine the existence of disease causation.

Assumed Exposure: Studies Associating Well Distance to Health Effects

- A growing body of studies published over that last decade are consistently being used to say that living near oil and gas causes some health outcome, mainly birth outcomes and respiratory outcomes.
- CTEH systematically reviewed these studies. Here are some important points to understand, when you look at ALL the data together.
  - The majority of these studies, even if they are published recently, rely on data from an era of older O&G practices.
  - Data are from states other than new Mexico
  - Fraught with assumptions on exposure, confounders of effects, inconsistencies in results, and incoherence that should preclude them as the final basis of public health policy.

CTEH®

Measured Exposure: Distance from Wellpad(s) is Not a Reliable Measure of Exposure.

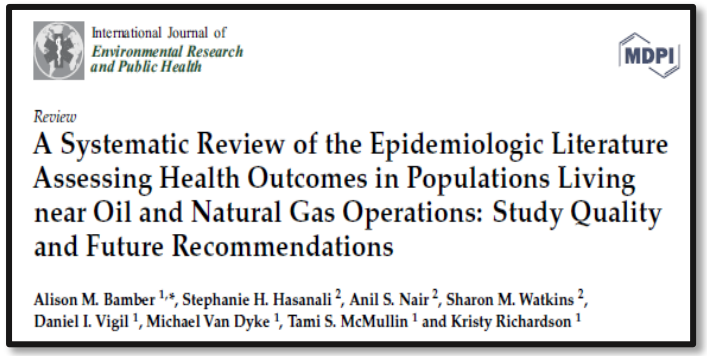

International Journal of Environmental Research and Public Health

MDPI

Article

Exposures and Health Risks from Volatile Organic Compounds in Communities Located near Oil and Gas Exploration and Production Activities in Colorado (U.S.A.)

Tami S. McMullin *, Alison M. Bamber, Daniel Bon, Daniel I. Vigil and Michael Van Dyke


International Journal of Environmental Research and Public Health

MDPI

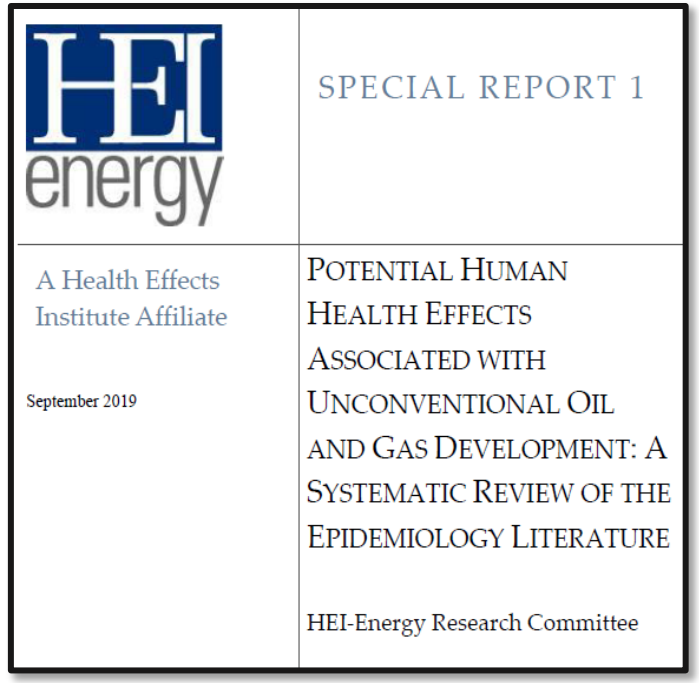
Review

A Systematic Review of the Epidemiologic Literature Assessing Health Outcomes in Populations Living near Oil and Natural Gas Operations: Study Quality and Future Recommendations

Alison M. Bamber [1,*], Stephanie H. Hasanali [2], Anil S. Nair [2], Sharon M. Watkins [2], Daniel I. Vigil [1], Michael Van Dyke [1], Tami S. McMullin [1] and Kristy Richardson [1]

Distance from wellpad(s) ≠ Exposure

Distance from wellpad(s) ≠ Disease Causation


HEI energy

A Health Effects Institute Affiliate

September 2019

SPECIAL REPORT 1

POTENTIAL HUMAN HEALTH EFFECTS ASSOCIATED WITH UNCONVENTIONAL OIL AND GAS DEVELOPMENT: A SYSTEMATIC REVIEW OF THE EPIDEMIOLOGY LITERATURE

HEI-Energy Research Committee

- Studies of measured air in communities have repeatedly shown airborne VOC levels below those anticipated to cause long-term health effects to those living at distances 500 feet or greater from oil and gas activities
- Systematic epidemiology analysis indicates low risk of harm from acute exposures to VOCs from oil and gas operations at these distances.

CTEH®

Presentation Overview

Overview of Scientific Public Health Evidence

- What frameworks represent best available science to evaluate OGD and health effects.
- What has been learned using these frameworks.

Considerations for New Mexico

- Example of how can NM apply these frameworks to develop effective policy based on the best available science.

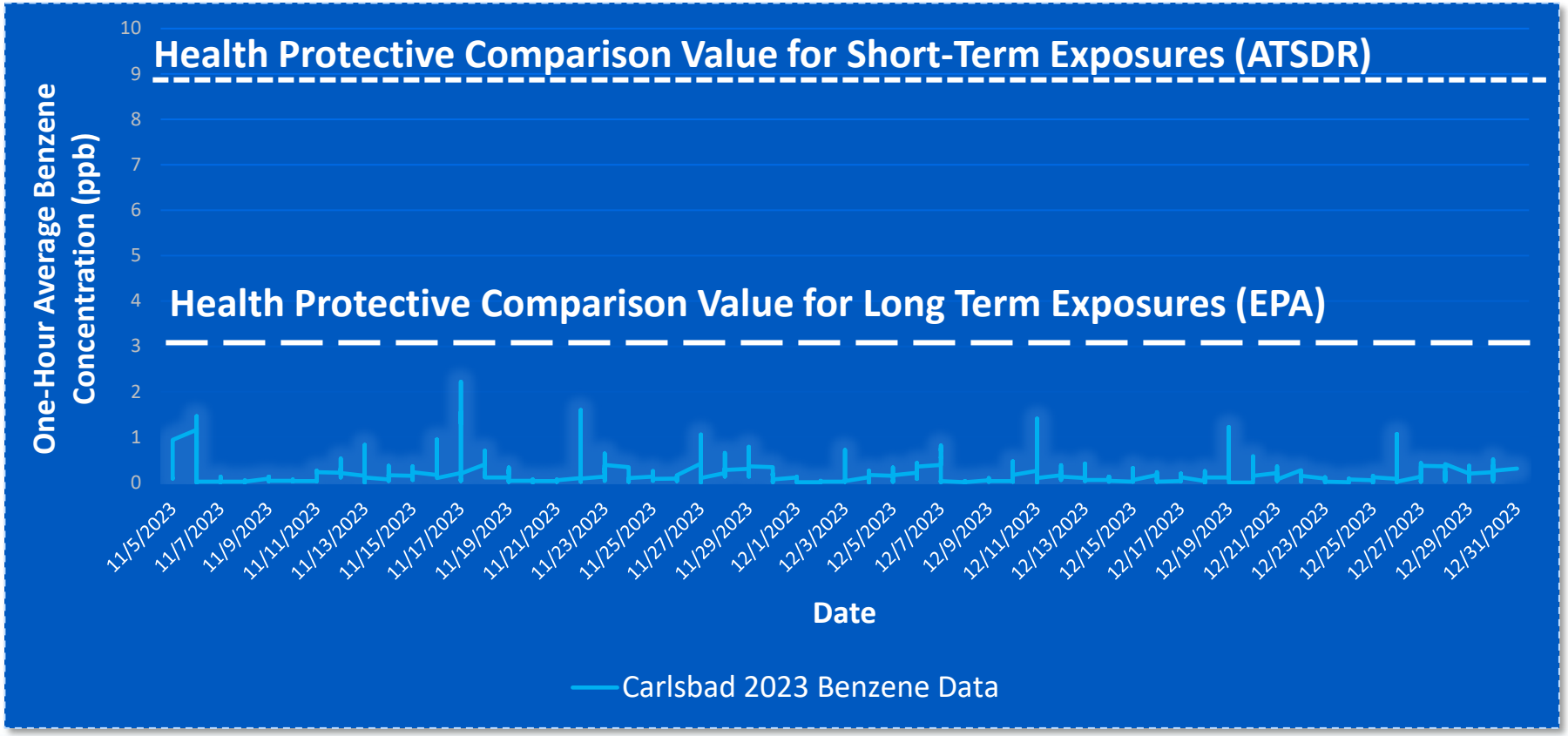
CTEH®

Existing Example: What NMED data already tells us about benzene exposures in New Mexico communities near O&G?

- New Mexico Environment Department (NMED)
  - Air monitoring station in Carlsbad.
  - BTEX (benzene, toluene, ethylbenzene, xylenes) Special Monitoring Project.
  - "*The NMED-AQB is committed to addressing environmental justice concerns related to the air quality network. Based on EPA's EJ Screen for ozone and $PM_{2.5}$, NMED's air monitoring network is providing representative data and monitoring sites have appropriate number of sampling equipment. Additionally, monitoring sites are located in areas that coincide with the pollution concentration percentages*." (Air Quality Bureau 2022 Annual Network Review)

CTEH®

When correctly averaged, do benzene concentrations in Carlsbad air indicate potential risk of adverse health effects?



- In 2023, all 1-hour benzene measurements are below the short- and long-term health protective comparison values.
- Therefore, benzene would not be expected to cause health effects to a person that breathed this air, even continuously over long time periods.

CTEH®

Leveraging Best Available Science for New Mexico

Health outcome studies of assumed exposures are largely inconsistent, lack cohesiveness of findings, and cannot be reliably used to show causal evidence that O&G emissions cause specific adverse health outcomes.

Measured exposure data collected in communities near oil and gas development in NM and other states, along with formal risk assessments, have shown chemicals NOT to been at levels of concern for adverse health risks.

Performance of additional environmental measurement and risk assessment analysis in NM would reduce scientific uncertainty and public concern for public health impacts.

A policy mandating a prescriptive, “one-size-fits-all” setback is NOT a public health policy based on best available science.

A process using established frameworks would allow best available science to inform policy to protect New Mexico citizens.

CTEH®

CTEH®

Questions?

Presented by:

Michael H. Lumpkin, PhD, DABT

mlumpkin@cteh.com