



colorado school of public health

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## Air pollutants from UOGD

Benzene, toluene, ethylbenzene, xylenes (BTEX) and other nonmethane hydrocarbons (NMHCs); fine particles ( $PM_{2,5}$ ), and nitrogen oxides ( $NO_x$ )  $\rightarrow$  Both long- and short-term health effects.



• Diesel, Nat Gas, Hybrid, Electric Rig • Drilling mud choice

• Piping vs. trucking • Grid-powered fracturing (?) Hydraulic

**Near Unconventional Oil and Gas** 

**Development (UOGD) in Colorado: Study Overview** 

• Quiet fleet fracturing

Drilling

• Fluids handling (e.g., closed loop systems) & storage

**Pre-production activities and** early production

Emissions and their health impacts are relatively uncertain.

Pipe pulling

Flowback GROUNDWATER LEAK SPILL OR LEAK 5000-8000 FEET Production 4.58 SHALE 清清之

• Tanks vs. tankless systems

### Coiled tubing/mill-out and production tubing operations

Maintenance activities

# **Study objectives**

1. Develop community exposure profiles over the UOGD lifecycle

- Air pollutant measurements and dispersion modeling;

- Focus on pre-production activities and early production at large, multi-well pads in populated areas.
- 2. Collect noise measurements from UOGD operations to quantify potential exposures.
- 3. Contextualize results to yield new information concerning

### Denver-Julesburg Basin



community impacts by operation phase  $\rightarrow$  Emission prediction model, publicly available data and tools, and stakeholder engagement

### **Shale Play**

**Sedimentary Basin** 

## **Measurement** approach

- Deployments target specific activities - Long-term exposure monitoring : CAMML, integrated canister, noise sensors - Short-term exposure detection and characterization: PID and mobile monitoring

- Check equipment poster for more details

**Mobile monitoring** Fast measurements (sec) Move around to capture transient plumes

CO



Pad



## **Monitoring timeline:**

- Tentative start: June 2022
- Continue through 2023

### **Noise measurements:**

- 1-second intervals
- 1/3 Octave bands for noise character



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Sponsors: This program is supported with joint funding from HEI Energy's government, oil and gas industry, and foundation sponsors. All research is selected, overseen, and reviewed independently of HEI Energy's sponsors.

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