



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** 

• 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

# **Sedimentary Basin**

## **Monitoring Site**

**Shale Play** 

**Air Study Location** 

### 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

Weekly integrated canister **Photon Ionization Detector (PID)** 



CO

SPOD1033

Weekly integrated canister Methane and 50 NMHCs, including BTEX **Photon Ionization Detector (PID)** Fast measurements of total volatile organic compound (VOC); Trigger a short-duration canister when a plume is detected

CAMML



- 1 min CH4, NOx, PM2.5

**Mobile monitoring** 



For more information about HEI Energy: HElenergy.org energy@healtheffects.org

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