Community Engagement Core

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INTRODUCTIONS

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The mission of the OSU EHS CC is to a) improve environmental public health and b) improve the understanding of the relationships among environmental exposures, human biology, and disease.
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CORE GOALS

Facilitate and evaluate bi-directional communication between communities, stakeholders and EHS CC members in support of research planning.

Translate and disseminate EHS CC research into public health.

Evaluate novel stakeholder-engaged approaches to advance the field of co-production of knowledge and environmental health communication.
**CORE CAPABILITIES**

### EVALUATION CORE:
1. Evaluate CEC and integration into Center
2. Available services to EHSC investigators

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TEAM BUILDING GOALS
Wildfire smoke exposure and infant health

Klamath County
High rates of:
• Infant mortality
• Preterm birth
• Low birthweight

Concern over prenatal exposure to wildfire smoke

Bootleg fire, Oregon.
BACKGROUND

I. Klamath County – high rates of infant mortality, pre-term birth, low birthweight

II. Large number of ‘unhealthy’ days for wildfire smoke

III. Studies indicating association between exposure to wildfire smoke and poor infant health measures

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY 2021b. Wildfire Smoke Trends and the Air Quality Index. Oregon Department of Environmental Quality: Laboratory and Environmental Assessment Division.
GOALS

I. Build a team to develop a research question and study design

II. Submit a pilot project to gather preliminary data in Klamath County, OR

III. Develop a larger, longitudinal study and submit to NIEHS
BUILDING A TEAM

Community Engagement
Clinical
Toxicology
Public Health
Environmental Epidemiology
Maternal/Infant Health
Chemistry
Air Quality
.........
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| Wildfire smoke    | Concern over prenatal exposure to wildfire smoke and subsequent infant health outcomes | Infant mortality
                    |                                                                                 | Preterm birth
                    |                                                                                 | Low birthweight
                    |                                                                                 | Others?                 |
| TARGET POPULATION |                                                                                  |                                      | Personal sampling
                    | Pregnant individuals                                                           | Environmental sampling
                    |                                                                                 | Publicly available data
                    |                                                                                 | Surveys                 |
| TIME PERIOD       |                                                                                  |                                      | Medical data                        |
                    | Prenatal exposure
                    | Post-natal exposure
                    | Longitudinal study                                                            |
QUESTION & CONCERN

This study is derived from community requests for research. KCPH has identified the following preliminary hypothesis: *pre-natal exposure to wildfire smoke is contributing to adverse infant health in Klamath County.*
Birth Weight

CONCLUSIONS: Pregnancy during the 2003 Southern California wildfires was associated with slightly reduced average birth weight among infants exposed \textit{in utero}. The extent and increasing frequency of wildfire events may have implications for infant health and development.


Pre-term Birth

Exposure to wildfire smoke PM$_{2.5}$ during the second trimester was positively associated with preterm birth. Specifically, each 1 g/m$^3$ increase in trimester-average wildfire smoke PM$_{2.5}$ over the second trimester was associated with a 13.2\% increase in the odds of preterm birth.

CHEMICALS OF INTEREST

- Gaseous pollutants (NO, CO)
- Hazardous air pollutants (PAHs, Dioxins)
- Particle pollution (PM$_{2.5}$, PM$_{10}$)
- Metals

https://www.epa.gov/wildfire-smoke-course/why-wildfire-smoke-health-concern
DATA COLLECTION TOOLS

- Sample Collection
- Exposure History (Questionnaires)
- Environmental sampling (food, air, water, soil)
- Epidemiology
- Exposure Modeling

Increasing uncertainty at the individual level

Increasing certainty at the population level
TIME PERIOD

- **Wildfire before**
- **Wildfire during**
- **Wildfire after**

### Wildfire Event Timeline

- **1st trimester**
- **2nd trimester**
- **3rd trimester**

#### Time Periods

- **January 2003**
- **April 2003**
- **July 2003**
- **October 2003**
- **January 2004**
- **April 2004**
- **July 2004**
- **October 2004**

**Unexposed (delivered before)**

**Unexposed (conceived after)**
Individual data within context of the study population or other contexts

De-identified, community-level data
TIMELINE

Nov 9  
Kick-off Meeting

Jan 15  
Pilot Project due

March  
Finalize longitudinal study plan(s)

Submit to NIEHS  
Data collection & Grant writing
NEXT STEPS

I. **SURVEY:** Interest level, Feedback on study elements, Scheduling

II. **PLAN:** Continue meeting, Plan pilot project proposal (due January 15, 2022)

III. **EXPAND:** Develop a larger, longitudinal study and submit to NIEHS

https://ehsc.oregonstate.edu/outreach/wildfire-health