Wildfire Fire Preparedness and Response and Public Health

Quick Facts and Policy Recommendations

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Big picture – wildfires have growing importance to health and environment. Much can be done to reduce impacts, but policies and legislation are needed to promote best practices and address complexity, interdisciplinarity and data gaps.

WILDFIRES POSE SIGNIFICANT THREAT TO PUBLIC HEALTH

- Evident by summer 2023 experience – some of the worst air quality ever recorded in Michigan
- Fire emissions/smoke can travel thousands of miles and affect millions of people, create local, regional and national air quality problems for $PM_{2.5}$ and ozone. Wildfire smoke now represents a considerable fraction of $PM_{2.5}$.
- Demonstrated and emerging health impacts result from breathing smoke, including increased mortality, asthma, diabetic outcomes, birth outcomes, chronic obstructive pulmonary disease (COPD), and likely many others.
- Disproportionately affects vulnerable populations, such as *children* whose lungs are developing, the *elderly*, *individuals with preexisting conditions*, *unhoused populations*, and *low-income communities* (without adequate cooling in homes or ability to purchase air cleaners). Other vulnerable groups include *outdoor workers* and *first responders*, such as agricultural and construction workers and firefighters.

THREATS OF BAD AIR QUALITY, HIGH EXPOSURE AND ADVERSE HEALTH EFFECTS FROM WILDFIRES ARE INCREASING

- Climate change and extreme weather (heat waves, droughts, diminished snowpack, drier soils) increase the size of fires (area burned) and the severity of fires.
- "Wildland-urban interface" is expanding – people moving into previously uninhabited areas that may be fire prone.
- Forest management practices has increased fuel loads in many areas.

ENHANCED PREPAREDNESS AND RESPONSE CAN PROTECT PEOPLE AND SAVE LIVES

Many short, medium and long-term actions can be taken before, during and after a fire. *Most actions need better delineation and verification.*

<u>Before fire</u>

- Increase fire-resistance and performance of buildings by material selection, stricter fire code enforcement, appropriate landscaping, land use, understory and forestry practices – especially at the wildland-urban interface.
- Make buildings more smoke resilient – heating ventilation and air conditioning system with appropriate design, dampers, filters and controls that allow "smart and safe" operation, and envelopes with low smoke penetration.
- Provide safe spaces (clean cooling centers and fire shelters) especially for low-income communities – requires designating, promoting, equipping, maintaining, verifying performance

<u>Just before and during fire</u> - if smoke or fire is imminent or present:

- Publicize, activate and provide transport to safe spaces
- Reschedule events
- Use appropriate protections: ventilation, filtering, masking

<u>After the fire</u>

- Address water, soil and building contamination, including firefighting flame retardants
- Surveillance and assistance to affected populations

ENHANCED PREPAREDNESS AND RESPONSE CAN PROTEST PEOPLE AND SAVE LIVES (continued)

Forecasting – *When will smoke arrive and go away? How intense? When will smoke be at its worst?*

- Informs response recommendations
- Monitoring network in many communities is too sparse to document local smoke exposure
- Goal to generate credible community-specific forecasts
- "Hybrid" forecasts combine monitoring and satellite data, atmospheric chemical transport models, and ground conditions

Effective and just-in-time communication and messaging

Can children play outside? Is it safe to run or hold a sports event? Should school be cancelled?

- Get actionable scientific information that people pay attention to.
- Federal, state, local agencies and others must collaborate
- Need political will, multidisciplinary collaborations, research to support science and effective risk communication

POLICY RECOMMENDATIONS

1. **Promote safe indoor environments**

   Especially needed in schools, senior homes, residences and other buildings

   Ensure appropriate air filters, ventilation, cooling, and weatherization (to seal gaps and improve efficiency)

   Assist low-income communities

   Develop and adopt certification system to verify safety and performance - similar to the EPA Indoor airPLUS program, a set of voluntary construction specifications that seal the home from outdoor elements and reduce the transfer of pollutants such as wildfire smoke into the home. Certification can apply to both new and existing buildings.

2. **Promote safe spaces (clean cooling centers) and their use**

   Especially needed in low income communities where transport may be needed

   Ensure appropriate air filters, ventilation, cooling, and weatherization (to seal gaps and improve efficiency)

   Develop and adopt certification system for the safe– to verify safety and performance

3. **Disseminate enhanced wildfire smoke forecasts and health alerts**

   Provide community specific forecasts of smoke giving where, when, how long, and how bad. Extend prediction period to several days. Ensure appropriate monitoring coverage – deploy low cost sensors in rural areas without monitoring. Develop Michigan modeling system using hybrid approach.

   Recommend and disseminate appropriate responses to reduce exposure. Coordinate HHS, EGLE, MIOSHA, DNR, country and city health departments.

   Identify most effective messaging. Evaluate effectiveness of messaging campaign.

4. **Assess impacts of wildfire smoke exposure and program effectiveness**

   Develop registry of first responders and displaced persons for assistance and epidemiological follow-up

   Establish intergovernmental steering committee for program review and planning.