PEHSU Information on Health Risks of Wildfires for Children
Guidance for Parents and Community Members – Acute phase

The Pediatric Environmental Health Specialty Units (PEHSU) Network encourage families, pediatricians, and communities to work together to ensure that children are protected from exposure to environmental hazards.

Wildfires expose children to a number of environmental hazards like fire, smoke, psychological stress, and the byproducts of burnt wood, plastics, and other chemicals released from burning structures and furnishings. During or immediately after the wildfire, the major hazards to children are fire and smoke. Stress from seeing the fires and the emotional responses of those around them can also impact children during this time. Although some of the exposures children may encounter in this setting may cause or worsen health problems (described later), there are important ways that parents can protect their children.

Children, individuals with pre-existing lung or cardiovascular problems, pregnant women, elderly, and smokers are especially vulnerable to environmental hazards such as smoke. Children are in a critical period of development when toxic exposures can have profound negative effects, and their exploratory behavior often places them in direct contact with materials that adults would avoid.

The **environmental hazards** during or immediately after the wildfire are:

- **SMOKE** consists of very small particles, liquid droplets, and gases such as carbon monoxide, carbon dioxide,and other volatile organic compounds such as formaldehyde and acrolein. The actual contents of smoke depends on the substance that is burning.
- **HEALTH EFFECTS OF SMOKE**: Symptoms from smoke inhalation can include chest tightness, shortness of breath, wheezing, coughing, respiratory tract and eye burning, chest pain, dizziness or lightheadedness, and other symptoms. Asthma symptoms may flare up. The risk of developing cancer from short-term exposures to smoke is very small.

RECOMMENDATIONS

- **Stay indoors** with windows and doors closed and any gaps in the building envelope sealed. Avoid strenuous activity.
- If available and if needed for comfort, run an **air-conditioner** on the "re-circulate" setting. Be sure to change the filter at appropriate intervals. Some electronic air cleaners and ozone generating "filters" can generate dangerous amounts of ozone indoors (see the *Wildfire Smoke – A Guide for Public Health Officials* resource). These ozone filtration systems do not remove harmful contaminants from the air and are not recommended.

- Never operate gasoline powered generators indoors – they produce dangerous carbon monoxide. Avoid smoking, using wood stoves, and other activities that add to indoor air contamination.
- If there is a period of improved air quality, open up (air out) the house and clean to remove dust particles that have accumulated inside.
- Humidifiers or breathing through a wet washcloth may be useful in dry climates to keep mucous membranes moist, although this does nothing to prevent inhalation of contaminants.
- When riding in a car, keep the windows and vents closed. If comfort requires air circulation, turn the air-conditioning on "re-circulate" to reduce the amount of outside air drawn into the car.
- Children with asthma, heart disease, and others considered at high risk from health effects from contaminant inhalation should be moved to an adequate "clean air" shelter, which may be in their home, in the home of a friend or relative, or in a publicly-provided "clean air" shelter.

Use of Masks

Paint, dust, and surgical masks are not effective obstacles to inhalation of the fine particles generated by wildfires. For information on use of respiratory protection for adults see "Wildfire Smoke – A Guide for Public Health Officials."

Although smaller sized masks may appear to fit a child's face, none of the manufacturers of masks recommend their use in children. If your child is in air quality severe enough to warrant wearing a mask, you should remove them to an indoor environment with cleaner air.

CLOSING OF SCHOOLS AND BUSINESSES may become necessary when air quality is so poor that even traveling outside from place to place puts people at risk. However, in some situations the school may be a relatively protected indoor environment with better air quality and where children's activity can be monitored.

CONSIDERATION OF EVACUATION because of smoke should weigh the effects of smoke exposure during the evacuation versus what the exposure would be while resting quietly inside one's home. A disorderly evacuation can increase the duration of smoke exposure. Remember to bring with you **at least 5 days of any medications** taken by family members.

ASH: Recent fires may have deposited large amounts of ash on indoor and outdoor surfaces. This ash may be irritating to the skin and may be irritating to the nose and throat and may cause coughing. The following steps are recommended:

- Do not allow children or animals to play in ash.
- Wear gloves, long sleeved shirts, and long pants when handling ash, and avoid skin contact.
- Wash any home-grown fruits or vegetables before eating.
- Avoid spreading the ash in the air; wet down the ash before attempting removal; do not use leaf blowers or shop vacuums.

PSYCHOLOGICAL EFFECTS ON CHILDREN: Parents and caregivers should also be alert to children's emotional health and psychological wellbeing. It is important to keep in mind the youngest members of our society may easily become saturated with graphic images and incessant talk of smoke, flames and destruction. Resulting stress and anxiety may be manifested in a variety of ways:

- Clinging, fears
- Uncooperative behaviors, irritability
- Nightmares
- Health complaints
- Changes in eating or sleeping patterns
- Regression to babyish behaviors
- Indifference

Parents and caregivers can support children in a number of ways:

- Maintain previously established routines as much as possible.
- Provide a listening ear for children; encourage the expression of feelings through music, art, journaling, and talking.
- Answer questions openly and honestly, remaining mindful of the age of the child.
- Reassure and hug when hugs are wanted; practice patience and have a peaceful demeanor, as children take their cues from their parents.

To contact your local Pediatric Environmental Health Specialty Unit with any questions about this fact sheet please visit www.pehsu.net

RESOURCES

More details on the health effects of wildfires and ash cleanup are available at the following sites, from which some of this material was adopted:

Wildfire Smoke – A Guide for Public Health Officials:
www.oehha.ca.gov/air/risk_assess/wildfirev8.pdf

Fires and Wildfires (National Library of Medicine):
sis.nlm.nih.gov/enviro/californiafires.html#a1

National Association of School Psychologists: Helping Children after a Wildfire:
www.nasponline.org/resources/crisis_safety/wildfire_teachers.pdf

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