



PEHSU Information on Health Risks of Wildfires for Children – Aftermath Guidance for Health Professionals

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, e.g., fire, smoke, psychological conditions, and the byproducts of combustion of wood, plastics, and other chemicals released from burning structures and furnishings. While wildfires are burning (acute phase), the major hazards to children are fire and smoke (described in the fact sheet "Health risks of wildfires for children – acute phase").

In the aftermath of wildfires – the recovery phase - children may be exposed to a different set of environmental hazards involving not only their homes, but also nearby structures, land, and recovery activities. Some of these are easy to see, such as broken glass and exposed electrical wires, and others are not, such as soil contaminated with hazardous materials like lead or persisting hot spots which can flare without warning.

Children are especially vulnerable to environmental hazards. They eat more food, drink more liquids, and breathe more air than adults on a pound for pound basis. 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.

Key requirements for children to return to an area impacted by wildfires include restored drinking water and sewage removal, safe road conditions, removal of ash and debris, and structurally sound homes. Schools and outdoor play areas should be cleaned, cleared of hazards and made ready for use. Persisting hazards should be isolated and made inaccessible to children. Children, and whenever possible, teens, should only be permitted to return after affected areas have been cleaned up. **Children should be the last group to return.** These recommendations also apply to pregnant women.

Key facts and recommendations for children and their families in the aftermath of wildfires are highlighted below.

BEFORE RETURNING HOME

- Know the location and status of the nearest medical treatment facility and verify the route to reach it is passable.
- Be sure a clean water supply, electricity, and communication system (including 911 access) is restored, reliable, and readily accessible.
- Be certain areas not yet cleaned or not safe are not accessible to children.
- Homes and outdoor areas where children play (e.g., parks, playgrounds, yards) should be clean and free of environmental hazards.

- Thoroughly remove ash at sites where CCA (pressure treated) wood was present, such as wooden decks, play structures, and wood chips. Clean the area, as the ash may contain high levels of arsenic if these were pre-2002 structures.
- Carbon monoxide: NEVER use generators, space heaters, or any gas or kerosene appliances in enclosed spaces as this may result in carbon monoxide poisoning.

POTENTIAL HAZARDS FROM FIRE DAMAGE

- Ash: Recent fires may have deposited large amounts of ash on indoor and outdoor surfaces in areas near the fires. This ash may cause irritation of the skin, nose, and throat, and may cause coughing. Ash and dust (particularly from burned buildings) may contain toxic and cancer causing chemicals including asbestos, arsenic, and lead. For these reasons children should not be in the vicinity while cleanup is in progress. Even if careful it is easy to stir up dust that may contain hazardous substances.
- Debris: Broken glass, exposed electrical wires (whether or not they are "live"), nails, wood, metal, plastics, and other solid objects commonly found in areas of fire damage can cause puncture wounds, cuts, electrical injuries, and burns from smoldering materials.
- Watch for ash pits and mark them for safety. Ash pits are holes full of hot ashes, created by burned trees and stumps. Falling into ash pits or landing in them with hands or feet can cause serious burns. This underscores the need for children to only enter areas that have been cleaned and examined for safety.
- Children should not be permitted in the residence or permitted to play on nearby fire-damaged buildings or structures until these have been cleared by their local authorities. Unstable building structures include: flooring, stairways, railings, balconies, roofing, and fire escapes.
- Materials in storage areas may have moved into unstable positions and could fall. Doors and entryways to storage areas should be opened carefully.

HAZARDS FROM WATER DAMAGE

- Water damage to building materials and personal belongings can release potentially hazardous chemicals that could cause rashes, infections, or exposures to toxic substances.
- Wet materials are breeding grounds for bacteria and fungi. Potentially harmful microorganisms grow readily on or in non-refrigerated food and liquids. They can also grow on damp building materials, personal belongings, and dead animals.

UTILITIES

- Water: In areas impacted by the fires water pressure may have been lost or entirely out for periods of time. Check with the water provider to be sure that the water is safe to drink. If the water comes from a private well that has had damage it may require disinfection. If a family is uncertain of the cleanliness of the water it can be heated to a rolling boil for 1 minute to kill potentially harmful bacteria and other microscopic organisms before drinking. If the water looks dirty do not drink it.
- Electricity: Electrical hazards need to be repaired. Avoid downed or damaged electrical lines.
- Propane: If the home propane tank is damaged and leaking call 911 and the propane service provider. Do not transport leaking BBQ propane tanks in a car or dispose of them in the trash. Contact the hazardous materials section of the local health department for information.

PREVENTIVE MEASURES

- Personal hygiene: If a child has had contact with any potentially hazardous substance in a fire-damaged area, wash their hands and any other exposed body part thoroughly with soap and water or bathe them. Remove any exposed clothing and wash separately as soon as possible.

MASKS

- Use of protective masks is recommended for adults cleaning up areas at which ash particles cannot be controlled (see Respiratory Protection in *Wildfire Smoke: a Guide for Public Health Officials*). Although smaller sized masks may appear to fit a child's face, no manufacturer recommends their use in children. If a child is in an area that warrants wearing a mask, they should be taken to an area with cleaner air.

FOOD

- Loss of power to refrigeration and freezer units can cause food to spoil, for example, meats, milk, and egg products. Do not feed children such foods that have warmed, e.g., close to room temperature for more than 2 hours. Immediately discard cooked and uncooked foods that may have spoiled. Frozen foods that have thawed to room temperature for more than 2 hours should also be thrown away. If food smells bad or looks bad, or if the family is just not sure it's safe, throw it out. Also, discard any food that may have come in contact with hazardous materials, e.g., fire retardant, ash. **When in doubt, throw it out!**

PSYCHOLOGICAL HAZARDS

- During the recovery phase, children may experience significant emotional distress, resulting from excess anxiety and grief associated with loss and trauma related to having lived through a natural disaster. Children may suffer from fears connected to the smell of smoke, feelings of anxiety when weather conditions indicate a heightened potential for fires, or overwhelming guilt at having survived the wildfires with little or no damage to their property. If children experience the loss of a loved one or their home, their sense of personal safety and security is often destroyed as well.
- Parents and caregivers may observe children displaying one or several of the following reactions during the recovery stage:
 - Irritability, fatigue, indifference
 - Physical complaints; i.e., stomach aches, headaches, general complaints of feeling unwell
 - Clinging; difficulty separating, returning to "babyish" behaviors
 - Eating or sleeping too much or too little, nightmares
 - Difficulty concentrating or focusing at home and/or on school work
 - Aggression or outbursts of anger, fears
- Parents and caring adults are well-positioned to provide significant support to children during times of emotional distress. Even if circumstances require a family to relocate to temporary housing, the sooner routines previously in place are re-established, the more quickly children will begin to experience the return of feelings of security and safety. Parents should reassure children that their feelings and fears are normal and should encourage them to express their emotions with words, play and writing.

The following recommendations will assist parents in their efforts to support children experiencing significant emotional challenges as a result of the recent wildfires. Tell parents:

- Maintain continuity and familiar routines in the child's life, both at home and school.

- Listen, listen, listen with an open heart and mind, without judging or attempting to fix the problem.
- Imagine how the child feels; let children know their feelings are normal.
- Encourage expression of feelings through conversation, role-playing, music, visual art, and writing (letters, diaries, journals).
- Provide honest and accurate answers to the questions children ask, keeping in mind the child's age and ability to make sense of your response.
- Reassure them with words, for children gain confidence and comfort from your strength.
- Provide hugs and comforting touches, remembering children thrive on loving human contact.
- Practice patience. Children may need a bit more time and encouragement, as well as overall understanding at this time.
- Emphasize a child's personal strengths and help the child recognize his/her coping skills already in place.
- Help children to see there were heroes and helpers who tried to make things better for the community during a time of need.

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

RESOURCES

Wildfire Smoke: a Guide for Public Health Officials:

www.arb.ca.gov/smp/progdev/pubeduc/wfgv8.pdf

Safe Cleanup of Fire Ash: www.calepa.ca.gov/Disaster/Fire2003/FireAsh.pdf

Fire Response and Recovery: Cal/EPA Emergency Response and Disaster Preparedness:

www.calepa.ca.gov/Disaster/Fire/#DebrisCleanup

U.S.D.A. Forest Service: Wildland Fire – chemical clean-up:

www.fs.fed.us/rm/fire/wfcs/documents/cleanup.pdf

National Association for the Education of Young Children: Helping Young Children After a Disaster:

http://www.naeyc.org/newsroom/Resources_on_coping_with_disasters

National Association of School Psychologists: Helping Children after a Wildfire:

www.nasponline.org/resources/crisis_safety/wildfire_teachers.pdf

National Association of School Psychologists: Responding to Natural Disasters: Helping Children and Families: www.nasponline.org/resources/crisis_safety/naturaldisaster_teams_ho.aspx

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