NIOSH Interim Guidance on Health and Safety Issues Among Clean-Up Workers Involved with Burning of Hurricane Debris

Background

The National Institute for Occupational Safety and Health (NIOSH) provides the following interim guidelines for preventing injury and illness among clean-up workers in the response to Hurricane Katrina. Guidance is already available for firefighters involved with firefighting operations related to Hurricane Katrina: http://www.cdc.gov/niosh/topics/flood/ff-katrina.html

The large amounts of debris caused by Hurricane Katrina will involve an extended clean-up involving many methods of debris disposal. In the hurricane-affected areas, clean-up workers, who may be less familiar than firefighters with fire safety, may be involved with burning as a method of debris disposal. Various federal, state, and local regulations may apply to the handling and disposal of hurricane debris. From environmental and public health perspectives, burning generally is no longer an acceptable disposal method due to potential effects of the smoke and fire. However, in disaster situations with large amounts of debris, burning may be conducted in accordance with all local, state and Federal emergency orders and under the supervision of trained official(s) or their designee(s).

Potential Health and Safety Issues related to Burning Hurricane Debris

Smoke Inhalation

Smoke is made up carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organics, and a variety of other substances. Many types of toxic substances may be present in smoke and increase with the burning of specific hazards such as lead paint, weatherized lumber treated with arsenic or chromate, insulation (including asbestos), used tires, and plastics. The health effects of smoke inhalation can range from irritation of the eyes and respiratory tract to more serious disorders including chronic lung disorders. The potential for health problems related to exposure to toxic substances in smoke will depend on the concentrations of substances in the smoke, the duration of exposure, and individual susceptibility. Information concerning smoke from large fires, including information on persons who may be sensitive to exposure to smoke, is available at: http://www.deq.state.mt.us/FireUpdates/WildfireSmokeGuide.pdf

Heat Stress

Heat-induced occupational illnesses and injuries can occur with excessive exposure to a hot work environment including burning debris. Factors leading to heat stress include high temperature and humidity, direct heat, extreme exertion and inadequate tolerance to hot workspaces. Heat stress occurs when the body is unable to cool itself by sweating and associate disorders may include transient heat fatigue, heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. Information on the occurrence and prevention of heat stress is available at: http://www.osha.gov/Publications/osha3154.pdf and http://www.cdc.gov/niosh/topics/heatstress/

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Fire-related Injuries

Severe burns can also occur as a direct result of incidental contact with hot surfaces and flames. The Centers for Disease Control and Prevention (CDC) and other organizations have guidelines available concerning issues related to fire safety. The following web sites offer practical safety guidelines to professional fire fighters as well as others who may be participating in the burning of debris: http://www.dfr.state.nc.us/fire_control/fire_debrisburning.htm; http://www.npwrc.usgs.gov/resource/tools/burning/safety.htm; and http://www.fws.gov/policy/241fw7.html

Guidance to help prevent health effects related to the burning of hurricane debris:

- Coordinate the burn with the local official(s)
  - conduct the burning when the wind is blowing away from roadways and populated areas.
  - burn between 9:00 am and 6:00 pm to achieve the best natural dispersion of the smoke and visual observation of the burn.
  - provide on-site supervision during the burn.

- Avoid exposure to and inhalation of smoke from the fire
  - stay upwind from the smoke
  - spend time indoors (some buildings may provide insufficient protection due to ventilation, infiltration rates, and leakage)

- Use respiratory protection, as appropriate
  - due to the variety of substances that may be present in the smoke, persons experienced with occupational respiratory protection should be consulted concerning appropriate respiratory protection.
  - particulate-filtering respirators can effectively remove dust from inhaled air but not gases or vapors.
  - for more intense exposures, firefighters and other emergency responders may require air-supplied respirators for adequate protection.
  - Information concerning the types of respiratory protection, and appropriate use, is available from both NIOSH and the Occupational Safety and Health Administration (OSHA) at: http://www.cdc.gov/niosh/npptl/topics/respirators/default.html and http://www.osha-slc.gov/SLTC/respiratoryprotection/index.html

- Use other personal protective equipment, as appropriate:
  - Other protective measures may include wearing appropriate goggles to protect the eyes from smoke. Guidance concerning eye protection is available from NIOSH at: http://www.cdc.gov/niosh/eyesafe.html
  - insulated and padded work gloves may offer protection when handling hot or sharp debris

- Debris that should not be burned:
  - asbestos-containing materials, tires, shingles, insulation, plastics, plastic sheeting, wood painted with lead paint, weatherized wood (treated with arsenic or chromate), household chemicals, industrial waste, contaminated soils, paint or paint buckets, oil containers or

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chemical containers, engines and motors, appliances, batteries, and toxic or hazardous waste.
- alternative disposal options other than burning should be used for these types of debris

- Debris that may be burned include:
  - natural vegetation such as tree limbs, stumps, and leaves
  - wood shavings and wood chips
  - furniture
  - clothing
  - cardboard boxes
  - construction and demolitions debris, such as wood (exemptions above), metal, brick, mortar, etc.

- Other sources of information pertaining to safe practices of handling debris include:

  - The Federal Emergency Management Agency (FEMA) (http://www.fema.gov/) includes information on disaster preparation and prevention. Through the Web site, users can access a whole disaster debris planning program, which includes a Debris Management Guide and a Debris Management Training Course.

  - The Alameda County, California, Disaster Waste Management Plan (http://www.stopwaste.org/home/index.asp) presents a coordinated disaster debris management approach to help areas afflicted with a disaster situation achieve maximum diversion from landfilling.

  - The California Integrated Waste Management Board (CIWMB) Disaster Information and Preparedness Plan (http://www.ciwmb.ca.gov/Disaster/Default.htm) provides guidance to assist in the expeditious recovery of areas affected by natural disasters or emergencies while providing for the protection of public health and safety. CIWMB will form partnerships with local jurisdictions in the development of debris management plans to recycle, reuse, or otherwise divert disaster debris from disposal.

  - The Volusia County, Florida, 2001 Disaster Preparedness Guide (http://volusia.org/storm/default.htm) provides information on preparing for, and recovering from, disaster situations.

  - The Louisiana Office of Emergency Preparedness Sample Debris Management Plan (http://www.loep.state.la.us/disrecovery/debrismgtsampleplan.htm) outlines a strategy to facilitate and coordinate the removal, collection, and disposal of debris following a disaster.

  - EPA's Planning for Disaster Debris (http://www.epa.gov/epaoswer/non-hw/muncpl/disaster/disaster.htm) [Adobe PDF (http://www.epa.gov/epaoswer/non-hw/muncpl/disaster/dstr-pdf.pdf), 1,060K, 28pp, About PDF (http://www.epa.gov/epahome/pdf.html) || ASCII Text File (http://www.epa.gov/epaoswer/non-hw/muncpl/disaster/disaster.txt)] details how several communities managed waste after natural disasters. It includes case studies from the

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Northridge earthquake that occurred near Los Angeles, California; floods in Lincoln County, Missouri; and the devastation from hurricanes Andrew, Hugo, and Iniki in the Southeastern United States.