IEE INDOOR ENVIRONMENTAL ENGINEERING IEE
1448 Pine Street, Suite 103 San Francisco, California 94109
Telephone: (415) 567-7700 Facsimile: (415) 567-7763
E-mail: admin@IEE-SF.com
http://www.iee-sf.com

Cleaning Up Fire Smoke and Soot Residues Fact Sheet

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During large fire events such as the recent San Diego fires, homes that are fortunate enough to escape direct impact of the fire flames are often still damaged by the immense amounts of fire smoke and soot that are released into the ambient outdoor air. This airborne fire smoke and soot air can easily penetrate through the walls of a home and enter the living spaces and deposit onto indoor interior surfaces, furnishings, and contents causing discoloration and a lingering smoke odor.

The following are some facts regarding fire smoke soot and how to remove the deposits from indoor surfaces:

• Fire smoke and soot contaminants contain:

- large carbonaceous ash particles
- volatile and semi-volatile organic compound gasses
- small condensed oily liquid particles (small 100-500 nm diameter particles)

• The large carbonaceous ash particles can be easily vacuumed from indoor surfaces. A residential vacuum cleaner with a HEPA filter is recommended so that the vacuumed ash particles are not re-released back into the indoor by the vacuum cleaner.

• The volatile semi-volatile organic compound gasses can be removed from the indoor air and surfaces by ventilating the home with large amounts of outdoor air. Install inexpensive box fans (e.g. typically about 20 inches square and 4 inches deep) into window or door openings so that they blow air into the home, and seal with plastic any remaining openings between the box fan and the window/door. Open some other windows and doors on the opposite side of the home and run the fans continuously. Replace the air filter in the

forced air heating/cooling system and turn on the system fan by turning the fan switch on the thermostat to the 'fan on" mode and run continuously.

• The small condensed oily liquid particles can be removed from soft porous items such as clothing and drapes usually through normal machine washing or dry cleaning. Hard surfaces can be cleaned by washing the surfaces with soap and water. Some semi-porous indoor surfaces such as gypsum board (i.e. sheet rock or drywall) may require repainting after cleaning to remove residual smoke staining.

• Do NOT spray deodorizers or other chemical into the indoor air. These deodorizers do not remove the smoke odor but rather just mask the odor while adding more potentially irritating chemicals to the indoor air. The solution to removing smoke odors is to remove the smoke residue and not by adding more chemicals.

• DO NOT USE, OR HAVE A RESTORATION COMPANY USE, AN OZONE GENERATOR TO MITIGATE THE SMOKE ODOR. The fact is that ozone is powerful oxidant, and while it is itself harmful to the human respiratory system, ozone reacts with other relatively benign organic chemicals commonly found in indoor air such as terpenes (e.g. alpha-pinene, d-limonene,isoprene) to form reaction products that are much more irritating than either terpenes or ozone. These reaction products include many compounds which are potent irritants resulting in further degradation rather than improvement of the indoor air.

• If after the cleaning activities above are implemented an unacceptable smoke odor remains in the home, then after thoroughly ventilating the home with fans, turn off the fans and seal over the fans with plastic, close all windows/doors open to outdoors, turn off the forced air heating/cooling system, and close all interior doors. Let the space sit for several hours and after freshening your nose outdoors, walk into each room to gauge the strength of the odor in each room and from the different surfaces in the room. It helps if you hold your nose shut as you walk from outdoors to the room your are going to smell. This will help you identify source of the lingering odor which will then require additional cleaning or possible removal.