1.) Have a Certified Industrial Hygienist (CIH) [1], who has experience with smoke clean up projects, personally survey the property and have them develop the remediation plan. The plan must have achievable remediation goals. The plan must have clearance criteria so the completion of the clean up is documented and defensible.

The survey must include an evaluation of the ash and smoke damage, usually by transmission electron microscopy (TEM). An evaluation by a licensed California Asbestos Consultant (CAC). A heavy metals screen or evaluation. An assessment of the pH levels and the evaluation of the smoke and ash debris in the attic and possibly in the wall insulation and drywall components. The laboratory work can easily exceed $2000.00 for standard turn around times. The evaluation should include a PM 2.5 evaluation, usually a direct reading instrument.

The following is a typical direction for a smoke and ash cleanup. Most homeowners will not be able to do many of the tasks because they do not have negative air machines, true HEPA Vacuum Cleaners. Access to appropriate respirators and protective suits, gloves etc.

2.) Establish a negative pressure system and avoid, minimize any dust generation. During the initial stages use full body protection (Tyvec FBC, Gloves and eye and foot protection with a minimum of a ½ Face NPR with a combo organic/particulate filter). Review with CIH for downgrade after HEPA Vacuuming.

3.) Use a HEPA 99.97 % vacuum to gross clean floors and walls, first pass.

4.) Begin thoroughly cleaning all vertical and horizontal surfaces. Use a commercial cleaning soap that is specially designed for Smoke abatement.[2] Note the smoke source and select the detergent based on the source of the smoke. Smoke typically has an acid content that can be expressed as pH, this is one of the factors what cause the damage from smoke exposure. This must be considered and treated before

[1] https://gobgc.org/ Board for EHS Credentialing

[2]Bio Zapp Smoke Odor Control, Neutron Industries No Smoke Odor Eliminator - Spring Fresh, Dry Master, No Smoking Liquid Cleaner.

any repainting is planned or implimented. Consider both the acid and grease content when selecting the correct detergent.

5.) Establish a large open area in a room that is clean and ash free, "Clean Room". Wet clean the horizontal and vertical surfaces. The ash is an acid, so the cleaner must be used to neutralize the acid. Begin staging soft goods that can be either dry cleaned or laundered. Place contaminated goods in plastic bags for transport to either a laundry or dry cleaner. All linen, and clothing should be staged for dry cleaning or laundering. Large items that cannot be washed with a water based detergent will need to be disposed. The determination may require that the item be tested for lead content after cleaning. Cleaning must meet current EPA HUD Guidelines.

6.) Collect all Area rugs, fold or roll them and take them to a specialty rug cleaner.[3]

7.) Locate all hard goods and smoke resistant furniture. EG Leather upholstered furniture, Furniture previously covered with protective covers. Any items that are relatively odor free should be kept in the "Clean Room" during detailed wet cleaning.

8.) Isolate and clean the HVAC ducts. Have an HVAC Specialist determine if the ducting can be brushed under a vacuum to remove ash. Some ducting is not feasibly cleaned and must simply be replaced. Older HVAC systems may have asbestos content and the asbestos content materials must be removed or left undisturbed.

9.) Attic spaces and wall cavities must be evaluated for the condition of the insulation. If the attic has an accumulation of ash and smoke remove and replace the attic and wall insulation as feasible.

10.) Treat the property with a deodorant. Commercially available systems are recommended.[4]

11.) Have the CIH conduct a final survey to confirm that the dangerous elements have been mitigated successfully.

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[3]Thomas Bros Rug Cleaners, 3000 Riverside Dr Los Angeles, CA 90039 (323) 660-7388

Warnings and disclaimers, smoke damage is not widely studied, there are many alternate methods that are effective when used appropriately. Smoke has very fine and small particles. It has a nano content and can be hazardous for sensitive individuals. The dangers of smoke inhalation are not well defined, smoke has many sources and depending on what the source of the smoke was different illnesses and physical damage may have happened. Smoke has been an intimate part of human existence. We treat food with smoke to improve the flavor. We know that some components of smoke are carcinogenic. So a careful and thoughtful approach is required. We need to know more about this problem and there are no easy simple answers. If you have more questions you can always call me, Dan Napier, MS, CIH at 800-644-1924 X 103 if you miss me and the recording picks up, please repeat your number slowly and I will call you back as soon as I can. Dan@cihcsp.com