

Defendable Standards to Validate Impact from Wildfires



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The Issue

- To evaluate whether a structure has been impacted by wildfire exposure and, if so to assess the extent of that impact, so that a legally defensible insurance coverage determination and an appropriate monetary allocation can be made.

Wildfires-What We Know

- Fire Activity has increased in terms of frequency, severity, and acreage burned worldwide;
- Number of acres burned in the USA as a result of wildfires has doubled since 1960 and the fire seasons are getting longer and more severe;
- Increase is the result of climate change (temperature, precipitation, wind, humidity, lightening strikes), increasingly plentiful fuel for fires, and increasing urbanization of wild places

Wildfires-What We Know

- What Does This Mean To You?
 - More Claims
 - More Often
 - More Geographic Impact
 - More Monetary Impact

Wildfire- Smoke

- When a Wildfire Occurs:
 - Plume extends for hundreds of miles
 - There is evidence of WILDFIRE SMOKE which includes the following:
 - ❖ Damage to properties in PROXIMITY to the fire
 - ❖ PROXIMITY however can be affected by the TIME OF TRANSPORT- people, wind, and other movable objects can be transporters of wildfire particles.
 - ❖ Therefore...sampling nearer the time of the event will generally show a greater concentration of particles from that event.
 - ❖ The longer the period since the wildfire at issue, the greater the likelihood that particles have moved through the system and have been diluted with newer particles added to the stream.

Wildfire-Smoke Signature

- When a Wildfire Occurs:
 - Smoke damage from a wildfire carries a SIGNATURE or an ASSEMBLAGE of characteristic particles (much like DNA evidence or a fingerprint) that clearly identify wildfire impact.

Wildfire Signature-Assemblage

- ASSEMBLAGE- Collection of things that have something in common
 - Source
 - Place
 - Time
 - Chemistry
 - Process
 - Particle Type



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Wildfire Signature

- **WILDFIRE SIGNATURE ASSEMBLAGE MUST BE PRESENT TO VALIDATE IMPACT FROM A WILDFIRE AND SUBSTANTIATE SUBSEQUENT WILDFIRE DAMAGE CLAIMS !**
- **WILDFIRE SIGNATURE ASSEMBLAGE CONSISTS OF 5 CHARACTERISTIC PARTICLE COMPONENTS- 4 OF WHICH MUST BE PRESENT TO FORM THE REQUISITE ASSEMBLAGE AND VALIDATE A CLAIM FOR IMPACT FROM WILDFIRE SMOKE !!**

Wildfire Signature

- Assemblage Analysis
 - Wildfire Signature Criteria- At least 4 of the “CHARACTERISTIC” particles must be present to VALIDATE THE SOURCE
 - “CHARACTERISTIC”
 - ✓ Examination of the type of particle
 - ✓ Examination of the form (shape) of the particle
 - ✓ Examination of how each particle relates to each other
 - ✓ Examination of how each particle relates to the environment
 - THE SPECIFIC CHARACTERISTICS OF EACH ELEMENT (PARTICLE) MUST MATCH EACH OTHER AS WELL AS THE FUEL AND NATURE OF THE FIRE.
 - EACH ELEMENT (PARTICLE) IDENTIFIED AS WILDFIRE INCREASES THE PROBABILITY OF OTHER ELEMENTS (PARTICLES) AS BEING FROM WILDFIRE AND MOVES YOU CLOSER TO WILDFIRE VALIDATION !!

Wildfire Impact vs. Home

- Every Home...
 - Is impacted by combustion sources UNRELATED to wildfire
 - Is impacted by soot/combustion products which originate from vehicle exhaust, fireplaces, neighbor's fireplaces, house fires, yard burning, pellet stoves, power plants, industrial sources, incandescent light bulbs, baseboard electric heat, oil furnaces, natural gas fireplaces, smoking, candles, burning incense, burnt toast,
 - Is impacted by black particles BUT most black particles in homes are NOT SOOT and are NOT related to COMBUSTION
 - THEREFORE...IT IS **CRITICAL** TO DIFFERENTIATE COMBUSTION SOURCES FROM A WILDFIRE VS. THOSE NATURALLY FOUND IN THE HOME ENVIRONMENT

Wildfire Impact vs. Home

- Black Particulates in a Home...
 - Usually sampled because it is assumed this is the result of wildfire impact
HOWEVER...
 - Not all black particles are the result of wildfire impact and
 - Not all non-black particles are NOT the result of wildfire impact

Sampling

- Where/What/When To Sample
 - Horizontal Hard Surfaces
 - Higher Floors (Chimney Effect) will show greater impact, but not higher levels within a room on a floor
 - Random Different Surfaces as every surface has different cleaning history
 - Random Different Rooms- IF A HOME WAS EXPOSED TO WILDFIRE, EVERY ROOM WILL HAVE HAD EXPOSURE
 - WHATEVER THE CLIENT WANTS YOU TO SAMPLE-We recommend that the investigator ask the client to identify areas of highest impact
 - Sampling near the time of the event will show the highest concentration of particles from that event

Sampling

- Where/What NOT to Sample
 - Vertical Surfaces
 - TVs, Computers- electrostatic interference
 - Light Bulbs/Electric Baseboard Heaters-char settled dust interference
 - Rusty Surfaces, Weathered Wood, Stucco, Painted Surfaces-surface particle interference
 - Movable Objects- transport interference
 - Upholstery, Insulation, and other “hairy things”- historical interference
 - Ductwork, Attics- historical interference and always high in soot
 - DO NOT TAKE AIR SAMPLES- snapshot in time interference

Sampling

- CRITICAL WILDFIRE LABORATORY ANALYSIS ERRORS
 - **IF A LAB IS DOING A SOOT ANALYSIS THEY ARE NOT DOING A WILDFIRE SMOKE ANALYSIS-ALTHOUGH THEY MIGHT BE DOING A DIESEL FUEL SOOT ANALYSIS**
 - **IF A LAB IS DOING A CHAR ANALYSIS THEY ARE NOT DOING A WILDFIRE SMOKE ANALYSIS-ALTHOUGH THEY MIGHT BE DOING A LIGHT BULB CHARRED DUST ANALYSIS**
 - **IF A LAB IS DOING AN ASH ANALYSIS THEY ARE NOT DOING A WILDFIRE SMOKE ANALYSIS- ALTHOUGH THEY MIGHT BE DOING A CIGARETTE USE ANALYSIS**

Sampling

- CRITICAL WILDFIRE LABORATORY ANALYSIS ERRORS
 - Wildfire particle identification is not well addressed in any ASTM, NIOSH, EPA, or other published standard
 - Many labs will utilize Visual Area Estimation (VAE) to quantify the amount of particles however this analysis is very UNRELIABLE below a 5% limit of detection. Therefore, a finding of <5% of a certain particle utilizing VAE should be suspect
 - Therefore a finding of 1% Char by a laboratory using VAE is NOT ACCURATE and if the Char is not part of a wildfire signature, no wildfire impact can be concluded.

Sampling

- What the Laboratory Should Include in a Report
 - Administrative Information such as name of analyst, date of analysis, chain of custody (COC), etc.
 - Does the analysis meet the signature criteria for wildfire exposure? If yes, why. If no, why not?
 - ✓ Qualified labs **CAN DISTINGUISH** wildfire impact from other types of combustion impacts (ex. fireplace evidence- wood burns from inside out and typically include hard woods vs. wildfires that burn from outside in and typically include twigs, leaves, etc.)
 - Degree of Impact
 - What samples were analyzed
 - What samples were NOT analyzed and why
 - Composition of particulates if not related to wildfire

Managing Risk

- Claim Validation Criteria
 - Wildfire at Issue?
 - Inspection/Investigation Date?
 - Potential interfering sources identified?
 - Sampling- Type, Location?
 - Analysis Criteria?
 - Were particulates identified as wildfire and not just combustion by-product?
 - Remediation Recommendations

Questions

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