BS1 Wildland Fires of Electrical Origin — Deaths and Litigation

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After attending this presentation, attendees will better understand some of the causes of wildland fires resulting in deaths, injury, and litigation, resulting in a more effective understanding of forensic methods and issues.

This presentation will impact the forensic science community by providing information to the legal, insurance, electrical utility, and forensic engineering industry as well as authorities having jurisdiction that become involved in wildfire losses, claims, litigation, and investigation. At the outset, the cause of a wildfire is often not known. Investigation after the "smoke" has cleared requires specialized knowledge and methodology in order to determine the origin, cause, and reason for the initiation of a wildfire. Spoliation issues will also be discussed.

California, Australia, and Florida share a high number of wildfires caused by or involving power lines, lightning, animals, carelessness, vehicles, arson, etc., and other unusual causes. Wildfires have caused thousands of deaths (directly and indirectly), property destruction of dwellings and infrastructure, and business interruption. The millions of dollars of loss invariably result in civil litigation if a chance of monetary recovery is likely. Criminal litigation is also likely if the proper circumstances exist.

Issues such as sag and tension of power lines before and after a fire and line-to-line and line-to-ground voltages need to be considered. Clearances from vegetation (trees) and clearances to ground at various temperatures often require not only measurements but catenary calculations and elongation characteristics of copper, aluminum, and Aluminum-Conductor Steel-Reinforced (ACSR) wires. Sometimes energized power lines sag into vegetation due to the heat from a fire below and then make contact with vegetation. The track left by the arcing event may sometimes be interpreted as causal as opposed to resulting.

The importance of accurate surveys of sections of overhead distribution lines along with the ground below are often necessary to determine if the overhead line was built according to applicable codes and standards.

Animals and birds sometimes cause short circuits on lines and at hardware on poles. Animals may fall to the ground while on fire and initiate a wildfire at the base of the pole, giving the appearance of the fire having been caused by utility apparatus. The origin will be at a pole, the cause will be the bird/animal, but the reason will be known only to this critter. Responsibility is sometimes focused on the electric utility and not on the animal. Laboratory simulation tests in a high-voltage lab as well as field tests with portable equipment can be of assistance at these times. Lightning discharges on electrical lines, poles, and hardware can also start wildfires.

The Topanga Canyon wildfire of 1993 near Malibu, Los Angeles County, CA, burned 19,000 acres at a high speed in a span of a few hours; burned 739 structures, homes, and cars; killed three people; and, provides an example of a criminal arson investigation gone awry.

The Cavendale fire of 1996 burnt about 3,000 acres of mostly vineyards in Sonoma and Napa Valley, CA, as well as a few structures. Did a tree grow into a line or did a line sag into a tree? Did a Steller's Jay bird commit animal electrical suicide? Did California wines develop a smoky taste that year? More than $30,000,000 was at stake in the ensuing litigation.

Wildfires are here to stay and death, destruction, litigation, and the rebirth of forests and fields continues.

Wildfire, Electrical, Litigation