

A laboratory radiant combustion/exposure apparatus is being used to evaluate the corrosion of copper test probes due to smoke from burning polymers. This apparatus, which is under consideration as an ASTM standard test method, was developed at Southwest Research Institute (SwRI) under contract to the National Institute of Building Sciences (NIBS). Although it was designed for smoke toxicity studies, the significant features of the device make it equally suitable for smoke toxicity and for smoke corrosivity investigations.

The ever-increasing uses of computers and other electrical and electronic equipment have made the subject of smoke corrosivity an important one. A relatively small fire could potentially cause corrosion that would cost much more money than the actual fire damage. The increasing dependence on automation makes it even more urgent that the topic of corrosion due to smoke atmospheres be understood.

Small specimens are burned under controlled radiant combustion conditions, and the smoke is captured in an enclosed volume. Copper resistance probes are used to evaluate the corrosive properties of the smoke. Some of the variables that are still under consideration in the development of a standard test method include the following: the heat flux level, specimen size, and duration of combustion; the corrosion probe, its location and orientation; atmospheric conditions such as humidity, and exposure and post-exposure duration. The results from this test method will be valuable in the assessment of the fire hazard of products in use.