The significant increase in restaurants during the 1940s and 1950s brought a realization: the number of structure fires occurring within buildings supporting cooking processes was escalating. Thus was born the recognition of a need to provide methods for controlling the accumulation of flammable cooking byproduct within kitchen exhaust removal systems. In this early period when Americans were discovering dining out, kitchen exhaust systems were simple. No safety features existed such as the grease removal devices, fire extinguishing systems, and stringent construction features dictated by model building codes of today.

Kitchen exhaust systems were not originally designed or constructed with cleaning considerations in mind, and therefore an evolution would occur with the construction requirements concerning serviceability, as well as the actual cleaning processes, to provide effective control of the hazard.

Prior to positive cleaning methods being a routine component in the protection of life and property from fire at eating establishments, kitchen exhaust systems were “fireproofed” by introducing a mixture of calcified lime and sodium bicarbonate into the exhaust hood plenum and exhaust ductwork to saponify liquid grease residue deposited within the system between treatments. Often “hood cleaning” was limited to only the exhaust hoods, and perhaps the exhaust blower when the unit was installed in an accessible location. The early cleaning techniques were simply a manual scraping process and perhaps scrubbing of these areas. Only a few fireproofing contractors used hot water
hoses, and use of a wash process was generally limited to the exhaust hoods themselves.

Cleaning the exhaust ductwork, when it was done, involved sweeping the accumulated fire retardant grease mixture out with a broom. However, cleaning the exhaust duct interior was seldom done due to little or no accessibility and a lack of available tooling for cleaning the interior of smaller exhaust ductwork. At this point in time, the fireproofing process was considered sufficient for treating the system for the purpose of fire safety. The thought was that when exposed to fire, the mixture of powder applied to the interior of the system would produce CO₂ gas when its temperature was elevated by the fire.

Repeated “powdering” of the exhaust ductwork posed long term challenges for exhaust systems when not accompanied by a removal process, since the repeated depositing of flame retardant powder on top of grease reduced exhaust airflow, and increased the rate of grease deposition within the duct work. Large quantities could add weight in excess of the designed load for the duct to carry, and in many instances completely occlude the duct interior.

As the frequency of fires in cooking establishments increased, and the need to provide actual removal of the grease and powder was evidenced, early steam cleaning equipment and some pressure washing equipment began being available. Very few fireproofing contractors used this type of equipment due to the cost and the complications of washing the exhaust ductwork.

Early model building and fire codes began to develop the construction techniques and materials used in the exhaust systems, and some early manual-release CO₂ and sodium bicarbonate fire systems began to be employed. However, all the way up to the 1970s, these code guidelines did not include the features required to facilitate cleaning.

Acceleration of the oxygen supply by the exhaust blower could cause duct fires to burn at temperatures exceeding the exhaust duct containment ability, and transferring of the fire to building components was a regular concern. Manufacturers of exhaust hoods were attempting to provide source contaminant removal at the hood and prevent the depositing of grease residue within the exhaust ductwork by including grease filters constructed of mesh. Additionally, water wash hoods were being developed as higher efficiency grease removal devices with built-in fire safety features such as thermostats, fire dampers, and wash systems to help eliminate human error associated with the maintenance of the primary grease removal devices.

Many of these components, and the routine application of fire dampers, added complexity for the exhaust cleaners when considering the actual cleaning of the exhaust systems in lieu of the older practice of fire proofing.

Later development of automatic fire extinguishing systems increased the level of protection by offering coverage for the cooking appliances, grease removal devices, and the exhaust ductwork. Nonetheless, statistics continued to indicate that the leading source of fires involving eating and drinking establishments was the cooking areas, with foodstuffs being the first material ignited.

High-rise structures further complicated the cleaning of exhaust systems as the ductwork could extend through the building in vertical and horizontal configurations. The strategy of designers appeared to be to build the exhaust systems to withstand fire conditions rather than to offer features to increase access supportive of cleaning.

Early exhaust cleaning contractors were not organized in any fashion to adequately effect change of the model codes, so cleaning firms were faced with attempting to clean the accessible portions of kitchen exhaust systems as best as their
ability and the available equipment would allow. Throughout the 1970s, many systems remained with ample fuel load within portions of the exhaust ductwork to propagate fire, and frequent losses were recorded in structures supporting cooking processes.

Naturally, the insurance industry recognized that the exhaust cleaning firms were one of the responsible parties involved with the fire safety of the kitchen exhaust systems, and as a result, could be an actionable party to the loss in the event fire was to propagate through the exhaust system. Exhaust cleaning firms now could be held liable in a court of law in the event of the loss of the exhaust system, or the building, by fire while under their care.

In the late 1980s, a small group of individual exhaust cleaning firms from across North America recognized the need to improve the image of exhaust cleaning contractors, effect changes to the model building codes to reflect construction details supportive of cleaning processes, and build guidelines for the exhaust cleaning industry to follow in their effort to protect life and property from fire.

The International Kitchen Exhaust Cleaning Association (IKECA) was formed in the year 1989, and representatives were appointed to serve on the National Fire Protection Association (NFPA) Committee on Venting Systems for Cooking Appliances (NFPA 96 Technical Committee). Prior to individual exhaust cleaning contractors and representatives from IKECA serving on the committee, no installers or maintainers were represented on the committee. Feedback on actual conditions from the field began to foster changes within the NFPA Standard 96 as a result of input from the maintenance sector.

Additionally, IKECA has led the industry through formation of multi-level certification programs for cleaning personnel and continuing education credit requirements to help members keep abreast of current technology.

Today, as in the past, there are three methods for exhaust cleaning: manual removal of cooking byproduct, steam cleaning, and pressure washing. Many cleaning firms use a combination of these processes to prevent fire by removal of the fuel from within the kitchen exhaust systems.

Considering the complexity of modern kitchen exhaust systems, liability issues, insurance requirements, and compliance requirements, choosing a contractor that is best qualified for kitchen exhaust byproduct management should begin with contacting the IKECA headquarters in Rockville Maryland at (301) 230-0099, or info@ikeca.org

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Editor’s Note: PWNA offers, among other certifications, Kitchen Exhaust Cleaners Certification. Visit www.pwna.org for information.