

Fact Sheet



Commercial Cooking Establishments Unique and Somewhat Yucky Dilemma – Rooftop Grease Saturation. A Safety Guide to Degreasing Roofs

Architecture in Utah is some of the most creative, functional and beautiful in the world.

With the striking front, side or rear aspects of these beautiful works of art, we are drawn into the romantic and technological aspects that coincide with the healing of traditional theory when it comes to architecture and regarding these most imaginative works.

Old intermingled with new gently engaging modern biomimetic, hydroponic, cybernetic feedback systems, micro-ecologies, electronics and traditional construction methods which arise with natural materials and vertical landscapes to help calm us and help remind us of our humanity.



With that being said, let us rise up and now look down upon our subject roof structures that are truly-out-of-sight and out-of-mind.

Commercial Cooking Establishments from “fast-food” kitchens to the most elegant dining experience, all struggle with this one unavoidable concern, the *Greasy Roof Syndrome*. The Greasy Roof problem has of course little to do with the customer, the gourmet or food critic, but more to do with the chef, owner, franchiser, risk managers, insurance companies and of course firefighters.

Rooftop Grease, More Than Simply Ugly

Rooftop grease saturation is a serious and costly hazard – rooftop grease saturation causes:

- Roofing material deterioration
- Roof leaks
- Structural damage
- Employee safety and liability concerns
- Fire code violations and fire acceleration
- Health code violations
- Runoff water pollution



Maintaining a grease free roof is the simplest way to avoid all of these very real problems.

How Does Simple Kitchen Grease Cause Problems?

Kitchen exhaust fans draw cooking oils, soot, toxins and grease out of the kitchen. The draw, 500 cfm, allows grease to evacuate the duct, settle on the duct and fan housing walls, while dispersing a fine mist into the air. These oily substances now collect on duct walls draining into collection troughs in the kitchen and on the roof and diffuse small fine particles into the air. Oil or cooking grease settles on to the roof as troughs overflow or oil is forced out of the trough with rain water on to the roof deck.

Grease Saturation



The formula for cooking oil shows that fats and oils contain three ester functional groups, i.e., tri-alcohol, glycerol or glycerin, commonly called triglycerides or triacylglycerols. The chemical formula $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$ is a combustible waxy solid called stear or tallow, the term stearate is applied to the salts and esters of stearic acid.

Cooking grease is an acidic residue with salts and esters that tend to break down roof coverings and become a flammable material (*Biodiesel*) when mixed with other combustible elements.

The acids found in kitchen grease breaks down roofing materials. In time and with heat it causes swelling, blistering and cracking of the roof

membrane. Once these materials are compromised, rainwater with oil saturate leaks into roof substructure causing metal to rust and wood to swell and crack when heat is applied to the substructure. Pyrolysis takes place in the wood, where combustible grease and oils saturate and remain in the wood, leaving this accelerant material inside the weakened wood member.

This phenomenon does not appear overnight. It happens slowly. In time the roof substructure will settle, causing leaks to worsen and combustible fuels to become accelerated fuel for fire.

Anyone who has experienced a kitchen fire knows that grease burns.

A roof structure saturated with grease requires only a lightning strike, stray spark, open flame or a grease duct fire and the whole roof becomes involved and burns out of control.

Cleaning Solves Most Everything

Having a kitchen exhaust duct, fan housing, fan blades, and roof surface professionally cleaned regularly will insure that *Greasy Roof Syndrome* is replaced by a pristine protective roof covering. Fire cannot extend beyond the stove top when the exhaust systems are “bare metal” clean. Inspecting the roof above the kitchen regularly is a sure way to protect and insure the business of cooking continues and with proper attention, the roof can reflect the beauty and grace of the functional architecture it covers long into the future.

