

Structural Fire Alert



Date May 17, 2023 **Control Number**

Subject Spontaneous Combustion of Grease and Oil-Soaked Rags

Target Audience Park Structural Fire Coordinators (PSFCs), Commercial Services Program Managers/Staff, Park Safety Officers, Structural Firefighters

Approved by

Issue: Improper laundering and storage of grease and oil-soaked rags/towels have caused seven reported incidents of spontaneous combustion in NPS concession kitchens, and buildings under renovation, over the last two years. In one incident, oil-soaked towels had been laundered by the housekeeping staff. The staff removed the towels from the dryer, placed them in a crate, and stored the crate in the kitchen's dry storage room. Later, the night auditor smelled something in the kitchen and investigated. The towels were discovered smoldering/flaming. The fire was quickly extinguished with a portable fire extinguisher.

In a second incident, smoke was visible in a commercial kitchen and was banking off the ceiling, though the source of the smoke could not be located. Eventually, a milk crate filled with oil-soaked rags was found in the kitchen on a table. A thermal imaging camera (TIC) displayed a temperature of 300 – 400 degrees Fahrenheit. The crate was carried outside. Once outside, the crate ignited in the hands of the firefighter, who placed the crate on the ground. The fire was extinguished with a portable fire extinguisher.

At another park in March, kitchen towels had been washed, dried in a dryer, and folded. A concession employee noticed a smell and observed a small amount of smoke coming from the towels. The employee submerged the towels in water, then removed them from the building.

In the first two incidents, the fire alarm activated and structural firefighters were dispatched to the scene. Fortunately, considerable damage, building loss, or injuries did not occur in any of these incidents. These preventable incidents were close calls.



Burnt towels from a restaurant in Blue Ridge Parkway. NPS

**Hazard
Details:**

Spontaneous combustion or spontaneous ignition, as it is often called, is the occurrence of fire without the application of an external heat source. Due to chemical, biological, or physical processes, combustible materials self-heat to a temperature high enough for ignition to occur. Rags and towels soaked with oils (e.g., cooking, linseed, or motor oils), hay, compost, mulch, manure, and leaf piles can spontaneously combust under the right conditions. The fire can spread to nearby combustibles and cause severe damage, building loss, and injuries to building occupants and firefighters.

**Operational
Response:**

Improper laundering and storage of grease and oil-soaked rags/towels have caused seven reported incidents of spontaneous combustion in NPS concession kitchens, and buildings under renovation, over the last two years. In one incident, oil-soaked towels had been laundered by the housekeeping staff. The staff removed the towels from the dryer, placed them in a crate, and stored the crate in the kitchen's dry storage room. Later, the night auditor smelled something in the kitchen and investigated. The towels were discovered smoldering/flaming. The fire was quickly extinguished with a portable fire extinguisher.

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**Fire
Prevention
Strategies:**

Spontaneous combustion or spontaneous ignition, as it is often called, is the occurrence of fire without the application of an external heat source. Due to chemical, biological, or physical processes, combustible materials self-heat to a temperature high enough for ignition to occur. Rags and towels soaked with oils (e.g., cooking, linseed, or motor oils), hay, compost, mulch, manure, and leaf piles can spontaneously combust under the right conditions. The fire can spread to nearby combustibles and cause severe damage, building loss, and injuries to building occupants and firefighters.

Prevention of spontaneous combustion begins with good housekeeping practices.

- Never store oil-soaked rags/towels in a pile.
- Use only commercial-grade appliances and detergents designed to clean oil-soaked rags/towels. Standard washers, dryers, and detergents are not capable of effectively removing grease from rags/towels.
- Pre-soak rags/towels to remove as much oil as possible before laundering.
- Remove rags/towels from the dryer as soon as the cycle is over or hang them to dry.
- Allow rags/towels to dry and cool before folding and stacking.
- Store clean rags/towels in metal cabinets and dirty rags in UL certified metal containers with self-closing lids, away from heat sources such as furnaces and water heaters.
- Consider using an outside vendor who specializes in laundering oil-soaked rags/towels.

**Additional
Resources:**

[Firehouse Magazine: The Phenomenon of Spontaneous Combustion](#)

[NFPA Tip Sheet: Safety with Oily Rags](#)

[Fires Caused by Spontaneous Combustion or Chemical Reaction Fact Sheet](#)

[UL: Dry, Dunk, Dispose to Safely Treat Oil-Soaked Rags](#)



Structural firefighters extinguish a fire caused by the spontaneous combustion of oil-soaked rags at a store in Yellowstone National Park. NPS