



Findings



Clothes dryers are a convenience and a necessity to many households and establishments; however, if they are not properly installed or maintained, critical fires can occur. From 2002 to 2004, the yearly national fire loss in structures for clothes dryer fires is estimated at over \$100 million. During this four-year period, these losses resulted in an estimated 46,000 fires that required the response of a fire department. Clothes dryer fires cause an annual average of approximately 400 injuries and 15 fatalities among civilians¹.

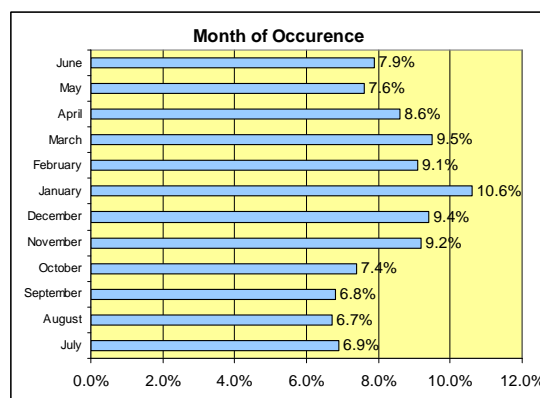
A clothes dryer is used to remove the residual moisture from a load of clothing shortly after it is cleaned in a washing machine. Most clothes dryers consist of a rotating drum, called a tumbler, through which heat is circulated to evaporate the moisture from the load¹. The tumbler is rotated relatively slowly in order to maintain space between the articles in the load. There are two general categories of rotating dryers: electric and gas. Both of these reference the method used to increase the temperature of the air flowing through the tumbler, since the tumbler is usually electrically powered¹.

The electric dryer typically uses a coiled wire that is heated with electric current. The amount of electric current is varied to adjust the air temperature. The gas dryer employs a gas burner that burns natural gas, propane or butane, which form a jet of hot gases that are directed into a chamber which pulls in and raises the temperature of ambient air¹.

This bulletin focuses on dryer fires in residential buildings, which could be defined as single or multi-family dwellings, mobile homes, hotels and motels, and dormitory-type residences. Single and two-family homes accounted for 81% of reported residential clothes dryer fires. Multi-family homes accounted for 13% of clothes dryer fires, and hotels and motels was only 4%. The final 2% occurred in rooming homes, sororities, and fraternities².

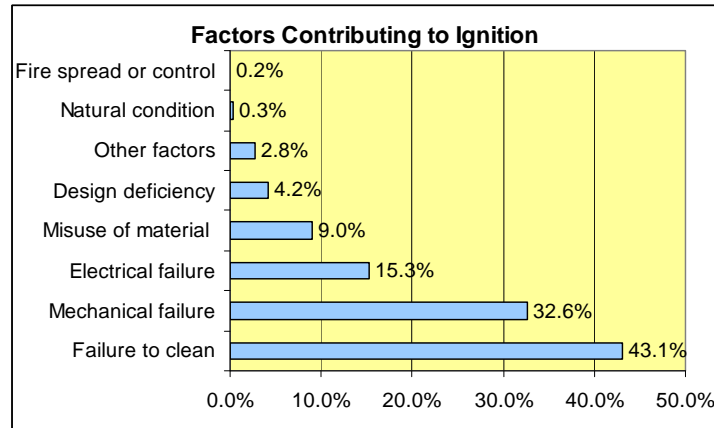
Close to all clothes dryer fires reported occur in the laundry area of the home. In previous generations of homes, the laundry area was frequently in a basement or a garage. Contemporary times have seen the location of the dryer room shifting to various locations throughout the house such as the bedroom, kitchen, family room, hallways or closets. The laundry room is currently placed with homeowner convenience in mind².

Laundry is done throughout the day and all year long. Dryer fires occur more frequently beginning in the early morning to midnight, with a constant zenith between noon and 5 PM. and also at 8 PM. The peak month for dryer fires is January. An overall increase occurs during the winter and spring months. It is believed that the quantity and type of clothing worn in the colder seasons could potentially be a defining factor in the occurrence of clothes dryer fires¹.

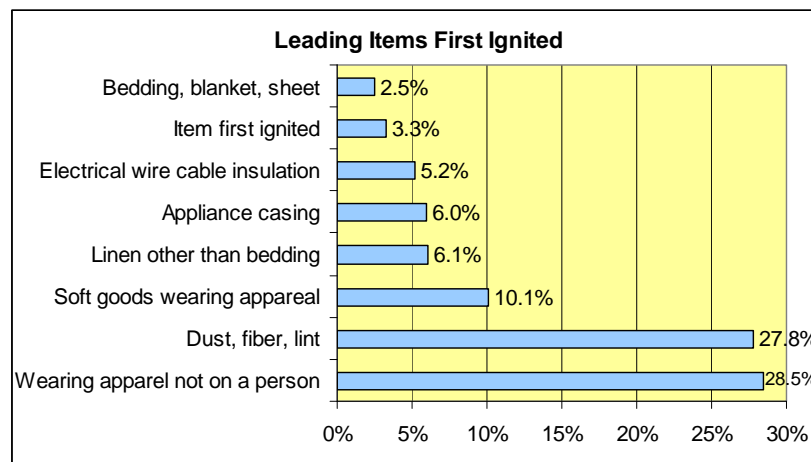




The most common factor of dryer fires is a failure to clean the lint from the traps, vents, and surrounding areas of the dryer¹. For statistics of contributing factors which led to ignition of dryer fires in residential buildings please see the graph below.



Generally, 62% of clothes dryer fires were confined to the object of origin and 27% were confined to the room of origin. Less than 4% of fires remain confined to the floor of origin. However, the percentage of fires confined to the building of origin increases slightly to 7%. The likelihood of clothes dryer fires spreading beyond the building is very small: less than 1% of these fires extend beyond the building of origin¹. The average dollar loss per fire confined to the room of origin is less than \$5,000 which is due to smoke damage, the loss of the dryer unit itself and the clothing in the dryer¹.



Ventilation is the one of the most important factors that could curtail the possibility of dryer fires. As mentioned above, modern construction trends now place the laundry in nontraditional areas of the home. As a result, dryer vents must now cover longer distances to reach the outside wall³. The area the vent must cover could contain sharp turns and bends throughout the structure of the home. When lint has to pass more than 6 feet it is almost impossible to do so efficiently. If lint is not free to escape it can accumulate in pockets along the vent. Therefore, it is of great importance that the homeowner regularly inspects and cleans out the dryer vent to eliminate any possible lint buildup².

Another fire hazard is the incorrect installation of dryer venting which instead of exhausting outside terminates in the attic, crawl space, or interior walls. This faulty installation can lead to the buildup of



mold and cause air deterioration in the home. Animals can also lead to a fire hazard as some species of birds and mammals can nest in dryer vents and obstruct the air flow, preventing lint from properly escaping to the outside³.

Homeowners can possibly stop clothes dryer fires by observing indications of their appliances' poor performance. If heavy clothes such as blue jeans or towels take a longer than normal time to dry, or if clothing feels hotter than usual at the end of the drying cycle, then the homeowner should inspect and may need to clean the vent. He or she could hire a dryer vent service to clean the vent if it is too complex of a project for the homeowner.

It is important to clean and inspect the dryer duct by disconnecting it². This process should be done every one-to-two years by the homeowner or a professional company. Some dryer ducts require more frequent inspection: dryers that have more than 6 feet of duct from the outside, stack dryers and dryers that are older and do not have moisture sensors or high temperature safety limit controls³.

The outside dampers for venting should have a covering that will keep out the elements. Wire screening should not be used to protect the opening because lint can accumulate and clog areas. In the majority of cases, clothes dryer fires can be prevented from causing injury, death, and property loss for homeowners². A clogged vent occurring from a buildup of lint could make the dryer operate inefficiently and dangerously as there is a chance that the temperature of the dryer machinery might be made hot enough to ignite lint or combustibles³.

In summary, when the consumer follows the installation guidelines and performs regular inspections on dryer vents, they further protect themselves from dryer fires. If the consumer does not feel comfortable cleaning or inspecting the dryer vent, a professional duct cleaning service can be hired³. A large portion of clothes dryer fires are small in nature and confined to the object and room of origin. The average dollar loss consists of damage to the dryer itself and the clothes within the dryer². However, it is still important these fires receive attention and are handled by professional fire departments. It should also be highlighted that there is a household need for the owner to keep a fire extinguisher and a working smoke alarm near the clothes dryer¹.

Loss Control Recommendations:

Per the U.S. Consumer Product Safety Commission (CPSC):

1. **Clean the lint screen/filter before or after drying each load of clothes** – If clothing is still damp at the end of a typical drying cycle or drying requires longer times than normal, this may be a sign that the lint screen or the exhaust duct is blocked.
2. **Clean the dryer vent and exhaust duct periodically** – Check the outside dryer vent while the dryer is operating to make sure exhaust air is escaping.
3. **Replace plastic or foil, accordion-type ducting materials with rigid or corrugated semi-rigid metal duct** – The flexible plastic or foil type duct can more easily trap lint and is more susceptible to kinks and crushing, which can greatly reduce the airflow.
4. **Take special care when drying clothes that have been soiled with volatile chemicals** – Special care is required when drying clothes exposed to gasoline, cooking oils, cleaning agents, finishing oils and stains. If possible, wash the clothes more than once and, preferably, hang the clothes to dry. If using a dryer, use the lowest heat setting and a drying cycle that has a cool-down period at the end of the cycle.



LOSS HISTORY BULLETIN - Dryer Fires

Loss History 1002
08/2008

4 of 4

Resources:

1. "Clothes Dryer Fires in Residential Buildings". Topical Fire Research Series. U.S. Department of Homeland Security. U.S. Fire Administration. Volume 7, Issue 1. January 2007.
2. Al's Home Improvement Center, "Venting Clothes Dryers,"
<http://alsnetbiz.com/homeimprovement/dryervent.html>
3. The Laundry Alternative, "Clothes Dryer Fire Prevention,"
www.laundryalternative.com/clothes_dryer_fire.htm

Graphical information was harvested and modeled after data from "Clothes Dryer Fires in Residential Buildings."

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