Subrogation & Recovery

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News Concerning Recent Subrogation & Recovery Issues

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Dryer Fires

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A. Overview

The U.S. Consumer Product Safety Commission (“CPSC”) estimates that at least $84.4 million in property damage results annually from fires caused by clothes dryers. The four main reasons dryers catch fire include installation error, user error, manufacturing defect and design defect. However, because dryer fires often result from a combination of installation and user error, the exact reason can be difficult to ascertain. Even if a manufacturing defect is found, the challenge remains of ruling out and/or minimizing user and installation error. Dryers will work properly when there is adequate airflow through the exhaust duct. Blocked or inadequate airflow through the exhaust duct is the most common source of dryer fires. This can occur from lint build-up inside the exhaust vent, metal ducting that is too long or crimped, and from other obstructions such as a bird’s nest or leaves where the duct vents to the outside of the house.

B. Talk to the Insured

The most important source of information when investigating a dryer fire is the insured, who can provide information regarding the make, model, model number, serial number, and year of manufacture or purchase of the dryer; and whether there were any recent repairs to the dryer. Specific queries for the insured by an electrical engineer (if you have an electric dryer) or mechanical engineer (if you have a gas dryer) include:

1. What was being dried inside the dryer?
2. Could the items in the dryer have had combustible liquids on them such as vegetable oil, wood stain or cleaning products?
3. Were they drying anything with rubber or plastic, such as tennis shoes?
4. How long had the dryer been on when the fire occurred?
5. Had they noticed before the fire that the subject dryer was taking a long time to dry clothes? (this can indicate a blocked exhaust vent)
(6) What kind of exhaust duct did they have? Metal, foil or plastic?

(7) Where did the exhaust duct vent? Outdoors, inside the crawl space or to the attic?

(8) When was the last time they cleaned the lint trap?

(9) When was the last time they had the entire exhaust duct cleared of lint?

(10) If the exhaust duct vents to the outside, were their rodent or bird screens?

(11) If this was a new home (built 1999 or after), was the outlet for the dryer a four or a three prong plug with matching receptacle?

C. Further Investigation

Following an interview with the insured, further investigation is necessary to determine whether the fire was caused by improper installation, user error or a manufacturing defect/design.

1. Improper Installation

When considering improper installation as a cause of a dryer fire, the manufacturer’s instructions and applicable building and electric codes for standards regarding proper installation are important. Specifically, information regarding the type and length of the exhaust duct is critical. Most manufacturers now require that electric dryers have an exhaust duct of solid metallic material instead of vinyl (PVC) and foil, which are combustible. The duct for a gas dryer must be metallic because the duct also serves as a flue for the exhaust gas from the burner. UL Standards 560 and 2158 for clothes dryers require that all dryers listed must have all metal dryer venting, unless otherwise tested. The manufacturer’s instructions also should specify the maximum length allowed for the ducting. Typically, the exhaust duct should not exceed 25 equivalent feet. Most building codes require that the exhaust duct vent to the outdoors. The exhaust duct should not vent to a crawl space or the attic because such ducting does not allow for proper airflow.

2. Insured’s Maintenance and Use

A common defense to dryer fires is user error caused either by lint buildup or drying inappropriate items. To rule out lint build-up, the insured can provide dryer maintenance details. A lint trap should be cleaned out before every drying cycle. The inside of the dryer cabinet should be cleaned periodically by a qualified individual at least every two to three years, depending on usage. Because there is a question regarding flammability of lint, tests on the lint from the insured’s dryer should be considered. The insured also needs to be careful about what is placed inside the dryer. For example, even after being washed, rags may remain embedded with wood stain, grease or cleaning material. Once inside the dryer, chemicals can overheat and catch fire. Other materials that can overheat and cause a fire include natural or synthetic rubber, rubber coated sneakers, galoshes, foam pillows, or any clothes with foam padding (such as blouses with shoulder pads, bras, bicycle shorts or tennis shoes).

3. Manufacturing and Design Defects

In manufacturing defect cases, installation and user error must first be ruled out as potential causes of the fire. To date, only a few dryers have been recalled for defects. In 2002, Whirlpool recalled 17,000 24-inch combination washer and gas dryer units due to overheating concerns. In addition, certain dryers built in Canada by Kelvinator, White Westinghouse and Frigidaire between January 1987 and October 1990 were recalled. In these dryers, and under certain conditions such as improper installation, obstructed ventilation or poor maintenance, the heating element may sag and contact the grounded metal enclosure of the heating element assembly. This may allow part of the heating element to be energized and create a potential fire hazard.
D. The CPSC Study

Another investigative source for determining the cause of dryer fires is the findings set forth in the CPSC Clothes Dryer Project Study, which was initiated in 1998 to assess the adequacy of the applicable voluntary safety standards for electric and gas dryers. The project included an assessment of incident statistics, applicable reports, governing industry safety standards and the societal costs associated with dryer related fires. The project also included physical testing of new electric and gas dryers. The results of the CPSC engineering staff’s findings were presented in a February 2000 article titled, “Final Report on Electric and Gas Clothing Dryer.” CPSC also contracted with an independent engineering analyst of clothes dryer fires and their possible causes. The results of FTI’s study were presented in a November 18, 1999 report titled, “Engineering Analysis of Gas and Electric Clothes Dryer Fires – Final Report.”

Of significance, the CPSC Report found that lint accumulation and restricted airflow are the primary contributing factors to the cause of clothes dryer fires. As such, the CPSC staff concluded that safeguard systems should be included in clothes dryers, which would shut down the dryer when airflow is obstructed. According to the CPSC, these mechanisms should be evaluated for their reliability and consideration should be given to incorporate these into voluntary safety standards.

The FTI Report builds on the findings of the CPSC study to provide a slightly more comprehensive analysis of dryer fires. Based upon its investigation and analysis of clothes dryer fires, FTI offers several conclusions in its report, including the following:

1. Despite the various alterations and improvements to residential electric and gas clothes dryers since the 1980’s, they continue to be the cause of 3 to 4% of all the yearly reported residential fires.

2. The two most likely identified causes of dryer fires are electrical, dominated by malfunction of the drum-drive motor, and restriction of the normal airflow through the dryer.

3. Adequate detection and/or protective devices have not been provided by the manufacturers to minimize the fire potential from malfunctions of the drum-drive motor, or from restricted airflow.

4. The voluntary standards should be revised to require a vent transition assembly and an exterior exhaust system for all clothes dryers.

5. Further evaluation is needed to address the feasibility of accelerated aging testing for fire hazard items found in both electric and gas clothes dryers.

The FTI Report makes the following specific recommendations for purposes of minimizing the risk of residential fires caused by electric and gas clothes dryers:

1. The installation of a device(s) to detect restricted airflow through the dryer. The detection device could be either a positive airflow switch or a set of differential pressure detectors at the inlet and discharge of the blower. The detection of a restricted airflow condition should disable (turn off) the heat source, stop the drum-drive motor, and warn the operator.

2. The location of a fused thermal device at the discharge flow side of the heat source.

3. The factory installation of a fabricated vent transition assembly to assure the proper installation of the user’s exterior venting system.

4. The installation of thermal limit warning devices on the impeller-end bearing of the drum-drive.

5. The use of totally-enclosed-fan-cooled (TEFC) type drum-drive motors.

6. The installation of a smoke detection alarm located in the interior of the control panel.
This device would shut off the drum-drive motor and the heat source and at the same time would sound an alarm as to the presence of smoke. (It could also be offered as a fire code change recommendation to place a residential smoke detector above clothes dryers.)

7. The installation of a cumulative running time clock device to provide an audible and visual “service required” indication at the appropriate use interval. This device could only be reset by a qualified dryer serviceman.

8. Further research should be conducted to better define ignition scenarios, risks and to determine the combustion characteristics of a variety of lint.

The findings and recommendation set forth in the CPSC and FTI Reports provide persuasive and objective evidence regarding existing fire hazards in presently manufactured clothes dryers. Moreover, these reports clearly establish the manufacturers are on notice of the existing risks, as well as the recommended safety measures that should be taken to prevent future fires. In fact, the cover letter to the CPSC Report even states that the CPSC staff plans to send both reports to Underwriters Laboratories and CSA International recommending that they review the results set forth therein and consider revising the product safety standards to address the risk of fire in clothes dryers that result from restricted airflow caused by lint accumulation in the lint traps and/or exhaust systems. For further reference, complete copies of the CPSC and FTI reports can be found at the following Internet addresses:

http://www.cpsc.gov/LIBRARY/FOIA/Foia00/brief/clothes.pdf
http://www.cpsc.gov/LIBRARY/FOIA/Foia00/os/clothes.pdf

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