



INVESTIGATION GUIDELINE

Wall Covering Fires

**Appendix 118
February 1999**

I. INTRODUCTION

A. Background

National fire loss data indicate that in 1996 there were an estimated 16,300 residential structure fires in which an interior wall covering was the first material ignited. These fires caused an estimated 190 deaths, 550 injuries, and \$297 million in property loss. Available data indicate that the heat sources in these fires commonly were various kinds of fixed and portable heating equipment, kitchen ranges, and wiring components, among other items.

The purpose of this data collection is to learn more about the characteristics of the materials ignited and about the nature of the heat to which it was subjected before it ignited (e.g. flame versus long-term heat). When we know that, we will have a better idea about how to proceed to reduce the number of such fires. Some possible future actions include improvements to the fire resistant characteristics of some materials, or changes to building codes to require insulation of a heat source from adjoining materials or to require non-flammable materials in certain locations.

Because common data sources such as newspaper clippings and consumer complaints usually focus on the heat source rather than the material ignited, these sources may not be particularly useful in identifying fires involving ignition of wall coverings. It is expected that fire departments will be the most productive sources.

A data record sheet is attached at the end of this guideline to record selected items that we expect to be important to each case. The information entered in the sheet still needs to be included in the narrative, along with additional relevant details.

B. Product Description

Fire departments normally code the material first ignited in a fire. This data collection project will include any residential structure fire in which the fire department cites "interior wall covering" as the first material ignited. In the

coding system most fire departments use, interior wall coverings are coded as "15" under the variable "Form of Material First Ignited." Investigators will need to verify the appropriate code with each department when they begin the project. Review of the available fire data indicates that investigators can expect to see a variety of wall coverings reported--paneling, wallpaper, particle board, plywood, etc. Since CPSC is trying to identify the variety of wall coverings involved, any material cited by the fire service as a residential interior wall covering is in-scope. (Note that the CPSC product code for wallpaper is 1863.)

It is of equal importance to identify the heat source that ignited the wall covering. This could be a wide variety of items, including heating equipment, cooking equipment, or installed electrical components, among others.

C. Specific Items of Interest

- 1) Description of the wall covering ignited, including material, labeling, age, condition, and installation features. Collect sample and photograph when possible.
- 2) Description of the heat source, its electrical rating, installation, age, use characteristics (on the day of the fire and in general), indication of unusual product operation or failure, and distance from material ignited.
- 3) Description of the type of heat that ignited the wall covering, whether flame, heat only, sparks, etc., and any other information about ignition sequence .

D. Headquarters Contacts

Linda Smith, EHHA, 301-504-0470, x 1275
Kimberly Ault, EHHA, 301-504-0470, x 1269
Linda Fansler, LS, 301-413-0153, x 1307

II. INSTRUCTIONS FOR COLLECTING SPECIFIC INFORMATION

A. Synopsis

Describe the products involved in the fire, both the material ignited and the heat source. Describe the distance of the heat source from the material and the type of heat to which the wall covering was subjected (flame, heat only, sparks, etc.) Cite the number of deaths and injuries.

For computer data retrieval, please use the following key words as appropriate: wall covering, wallpaper, paneling, particle board, plywood, paint, electric, gas, kerosene, fireplace, chimney, range, fixed heater, portable heater, furnace, outlet, water heater.

B. Description of Incident Environment

Pre-incident

Describe structure age and type (single family dwelling, apartment, manufactured housing, etc.). Describe installation of the wall covering ignited, indicating layers of materials and ages of all materials. Was there any indication of heat damage to the wall covering before the fire occurred? Indicate the cleanliness and general condition of the immediate and surrounding areas. In particular, indicate the presence of grease or other combustible materials that may have contributed to ignition.

Describe the heat source involved. If fixed, describe its location and details of installation, including any insulating materials. If portable, describe its placement at the time of the fire. Describe the heat source's past and current usage. Where was it commonly used, for how long, and at what heat settings? What were the settings at the time of the fire? Describe the duration of its use on the day of the fire. Describe, as specifically as possible, the distance of the heat source from the ignition location.

Describe the activities going on in the home at the time the fire started. Describe any unusual environmental conditions that may be relevant to the initiation or spread of the fire. Specify location of all occupants when the fire started. We are particularly interested in those that were injured or died.

Incident

Describe how the fire began. Describe the type of heat that ignited the wall covering; flame, long-term or short-term heat only, sparks, etc. and any other information about the ignition sequence. Was the initial fire ignition witnessed? Describe the operation of the heat source--normal operation, indications of abnormal operation, etc. Describe the progress of the fire in terms of whether it spread quickly, smoldered, resulted in flashover, etc.

Post-Incident

Describe the extent to which the wall covering contributed to fire spread. Describe extent of damage to the wall covering-- how much was damaged by flame, how much by charring, etc. Describe other items that were major contributors to fuel load in the fire (items that caught fire or contributed to fire spread).

Describe the final extent of flame damage, smoke damage, and property loss. Describe number of injuries and deaths, including age, sex, and extent of any treatment. If anyone died or was injured, describe any factors that may have prevented escape or contributed to injury, if applicable.

Indicate whether there were smoke detectors or sprinklers in the property. If so, specify their locations and whether they operated as expected. If they did not operate as expected, explain why not, provide product identification (model, type), and describe installation features. If smoke detector was battery-powered, was the battery present? If sprinklers were present, gather the information requested for the sprinkler study as well. The investigations will count toward both studies.

Describe any post-fire repairs to the heat source and property and the results of any evaluations of fire cause and spread.

C. Description of Injured Person(s) and Product Interaction

Describe incident scenario, including all injuries and/or deaths sustained. Indicate if the injured person was hospitalized, for how long, treatment, and prognosis.

Indicate injured person's age, sex, any competence-reducing factors (e.g., mental or physical handicaps, medication, narcotics, alcohol). Describe perception of hazard and extent of knowledge of appropriate use of heat source and material ignited.

Describe activities of the household members that contributed to or reduced resulting injuries. Describe attempts to control fire and/or escape.

D. Description of Product

1) Wall Covering

Describe the material ignited (paper, vinyl, wood composite, paint, decorative coatings, adhesives, etc.). If available, provide labeling, manufacturer, material, and voluntary standards markings, as well as instructions for installation. Specify age and condition before the fire. If there are layers of wall coverings, provide information for each, including coatings and adhesives. For example, there may have been plaster or sheet rock underneath the wallpaper. If possible, specify who installed the wall covering and when.

2) Heat Source

Describe the heat source as specifically as possible. Provide manufacturer, brand name, model, and voluntary standard markings. If electrical, provide electrical rating- -watts, amps, and all other rating information. Describe available settings. If installed, provide details of installation; who installed it and when. Provide copies of any instructions for installation. Describe the condition of the product before the fire and any previous history of problems.

E. Product Safety Standards

Wall covering installations are usually controlled by building codes based on the four major model building codes administered by BOCA, SCBBI, ICBO, and CABO. These model codes are generally based on the National Fire Protection Association's Life Safety Code, NFPA 101.

NFPA 101 specifically prohibits the use of cellular or foamed plastic materials as interior wall or ceiling finish. For textiles, the NFPA 101 Life Safety Code requires testing according to NFPA 265, which requires a full-scale room test. All other materials must meet the less stringent NFPA 255 (ASTM E-84 and UL 723 are basically the same). Most residential interior wall coverings receive a Class C or III classification, the fastest flame spread permitted. Smoke development performance is also regulated. In general, flame spread requirements are less stringent for one and two family dwellings than for other types of buildings.

Although the test methods based on ASTM E-84 have been used by the code groups for many years, there are some acknowledged limitations to applying the test to wall coverings. An NFPA technical committee currently is working on an improved standard for general purpose wall coverings.

III. INSTRUCTIONS FOR PHOTOGRAPHING AND/OR DIAGRAMMING FACTORS RELATED TO THE INVESTIGATION

Photograph the extent of damage to wall covering and immediate area surrounding ignition site. We are interested in distinguishing between the amount of flame damage and the amount of charring. If several layers of wall covering exist, photograph in place. Diagram location of ignition site and position of heat source, specifying distance involved.

IV. INSTRUCTIONS FOR OBTAINING SAMPLES AND DOCUMENTS RELATED TO THE INVESTIGATION

Obtain a copy of the fire incident report, casualty reports, and any other fire department investigative reports of the incident. Obtain copies of any insurance or engineering reports on fire cause and circumstances involved. Obtain summary of medical records if an injury or death occurred.

Obtain an approximate 12" x 12" sample of the wall coverings involved if possible. If multiple layers are present, the sample should include them all. Since the sample is needed for identification of the product, collect the sample from an area near the point of ignition, but without fire damage. Send to the sample custodian, to the attention of Linda Smith, EHHA.

**Summary Data Record Sheet
Wall Covering Fires**

Task Number: _____

Date of Fire: _____

Structure:

Type (single family structure, apartment, etc.) _____

Age: _____

Estimated Property Loss: _____

Wall Covering Ignited First: (repeat these items on a separate sheet if more than one wall covering type ignited, specifying order of ignition)

Type (wallpaper, paneling, etc.): _____

Material Composition: _____

Age: _____

Condition: _____

Labeling: _____

Installer (homeowner, contractor, etc.): _____

Source of Heat:

Equipment type (heater, wiring, etc.): _____

Energy type (electric, kerosene, etc.): _____

Energy rating (amps, watts, BTU's, etc.): _____

Distance of heat source to ignition point: _____

Type of heat causing ignition (flame, heat only, sparks, etc.): _____

List age/sex of each fatality : _____

List age/sex of each non-fatal injury: _____

Smoke Detector:

Present in Household? (yes/no) _____

Alarmed? (yes/no) _____

Should have alarmed? (yes/no) _____

Sprinkler:

Present in Household? (yes/no) _____

Operated? (yes/no) _____

Should have operated? (yes/no) _____