

INVESTIGATION GUIDELINE



Appendix 115
February 9, 1998

Automatic Dishwashers

I. Introduction

When it is possible to conduct either an on-site investigation or a telephone interview, complete both the narrative and data recording sheet sections of the guidelines using information from on-site or phone interviews, photographs of the incident scene, product manuals, and other reports (e.g. medical examiner's report, fire department reports, etc.). Attach all documents to the Epidemiologic Investigation Report Form 182. The amount and type of information collected by the investigator will vary with each dishwasher incident.

A. Background Information

Approximately 50 percent (50 million) of U.S. households owned dishwashers in the early 1990's. The number owned has been increasing at an annual rate of 2-3 percent with annual sales of about \$4.6 million in 1995. The average life expectancy was about 9 years. Dishwasher fires and related injuries have shown a steady increase through 1994, with a slight drop in 1995 (Table 1). Property damage was estimated at \$8.7 million in 1995. In 1996, 500,000 major brand-name dishwashers were voluntarily recalled due to various fire-related hazards. There were also recalls in 1995 and 1993.

The purpose of this investigation is to provide details about dishwasher-related fires and electrical malfunctions that may be potential fire hazards. Sources of ignition may include failure of thermostats, control panels, switches, or wires and wiring connections. All sources of ignition should be considered during the investigation. Information from these investigations will be used to help focus efforts towards effective prevention of injuries and deaths.

INVESTIGATION GUIDELINE

Table 1. Number of Residential Fires and Fire-Related Injuries and Deaths Associated with Dishwashers, 1990-1995

Year	Fires	Injuries	Deaths
1990	400	20	-
1991	600	20	-
1992	900	30	10
1993	1,000	30	10
1994	1,300	50	-
1995	1,000	40	10

Source: Smith, L and Ault, K. *1995 Residential Fire Loss Estimates*, U.S. Consumer Product Safety Commission/EHHA

B. Product Class Description

1. Definitions and General Description

- Automatic dishwashers are electrically powered.
- Unit can either be undercounter or freestanding. See Figures 1 and 2 below.

INVESTIGATION GUIDELINE



Figure 1.
Undercounter Model



Figure 2.
Freestanding Model

2. Specific Items of Interest-

- Describe all automatic dishwasher fires and electrical malfunctions.
- Include diagrams of the dishwasher from the manual.
- Complete the data recording sheet (attached) in addition to the narrative section of these guidelines.

C. Headquarters Contacts

Brenda Gillum, EHHA - 301/504-0470 x1258

Kimberly Ault, EHHA - 301/504-0470 x1269

Hammad Malik, ESEE - 301/504-0508 x1297

Bill King, ESEE - 301/504-0508 x1296

INVESTIGATION GUIDELINE

II. Instructions for Collecting Specific Information

A. Free Text Summary

- Provide a summary of the sequence of events that occurred prior to, during and subsequent to the fire incident.
- Prior to the fire incident, did the appliance's operation give any clue that the appliance was not operating properly?

Examples: Not cleaning properly, unusually loud noises, leaking noises, etc.

- Describe if water appeared to be a factor in the cause of the incident.
- Examples: Ruptured hose or leaking valve.
- Describe in detail any role plastics may have played in contributing to the spread of fire.

B. Description of Victim/Operator of Dishwasher and Contact With Product: (Victim/Product Environment Interface)

- Describe incident scenarios including any injury or death sustained.
- Indicate how frequently dishwasher was used (specify how many times a day/week, etc.).
- Indicate age and sex of all victims and the extent or severity of their injury (e.g. if they were hospitalized, their diagnosis, etc.).
- Indicate whether the victim was also the operator of the dishwasher at the time of the incident.
- If the victim was also the operator of the dishwasher, indicate victim's age, sex, height, any competence reducing factors (e.g., impaired vision, physical handicap, medication).

INVESTIGATION GUIDELINE

- If the victim was also the operator of the dishwasher, indicate their experience and knowledge of product (e.g. read and understood operating instruction manual) and perception of hazard.

C. Description of Product

- Describe size/capacity, conformance with specific standards, other information on rating plate, etc.
- Describe any special feature(s), and type of controls.
- Where is the control panel located?
- Specify wire size of cord, type of wire insulation (check for visible deterioration or damage, and indicate whether 2 or 3 wire). Copy all markings on cord and plug.
- Describe product history: previous problems, repairs, modifications or alterations, etc. If repaired, specify date, type of repairs, (what parts were replaced) and by whom repairs were made. Describe any routine maintenance.
- Describe what material the tub is made of (e.g. metal or plastic).

D. Description of Environment

- Specify if the unit was wired directly into the circuit or whether a three-prong grounded plug was used.
- Specify if there were other appliances on the circuit, and if so, specify their amperage requirements. To determine if there are other appliances on the circuit, ask the homeowner. If unknown, ask the homeowner's permission to check the circuit. To check for other appliances on the circuit, observe which appliances turn off when you switch off the current by "tripping" breakers in the circuit breaker panel (Figure 3) or disconnecting fuses in the fuse box (Figure 4).

INVESTIGATION GUIDELINE

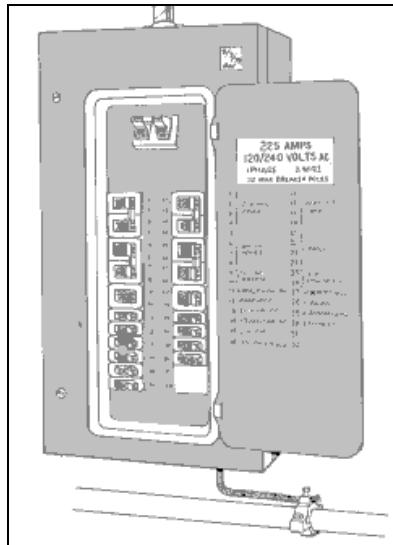


Figure 3.
Circuit Breaker Panel

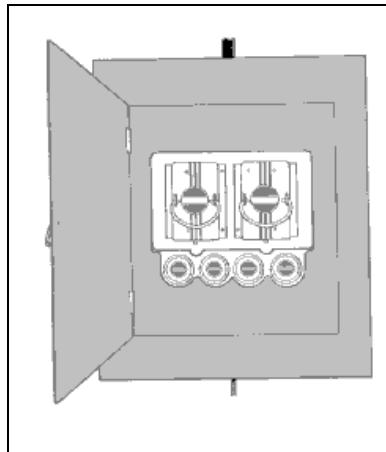


Figure 4.
Fuse Panel

- Specify whether a ground fault circuit interrupter (or GFCI) was present on the branch circuit or wall outlet, and whether it shut off the current at the time of the incident. If GFCI did not shut off current, indicate its age, manufacturer, model number, etc.

INVESTIGATION GUIDELINE

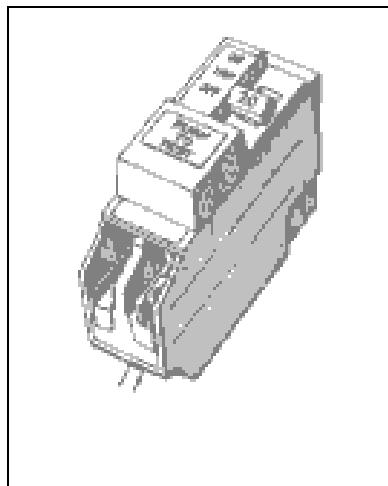


Figure 5a.
GFCI Circuit Breaker

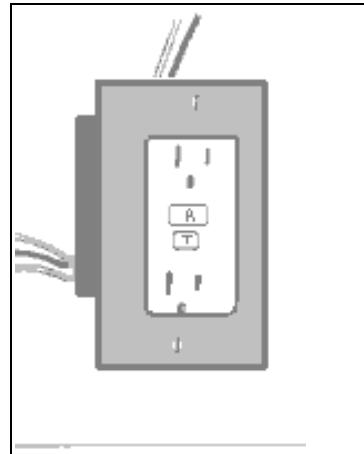


Figure 5b.
GFCI Receptacle

(Note: The GFCI's in Figures 5a and 5b are safety devices (often with a reset button) which protect against electrical shock in a branch circuit. A branch circuit provides electricity to receptacle outlets, lights and appliances throughout the home. They are fed by the wires coming from the electrical panel. Additional information can be found in the *CPSC Guide to Home Wiring Hazards*, 1990.)

E. Other

- Specify general estimated property damage (if any) including fire spread and dollar loss.

III. Instructions for Photographing and/or Diagramming Incident Scene and Factors Related to Incident Sequence

When available, obtain copies of fire department photographs of the fire scene and any fire department reports. If there are no fire department photographs and it is possible (and safe) to photograph the fire scene on-site, perform the following steps to thoroughly diagram and photograph the incident scene and factors related to incident sequence:

1. If fire escaped appliance and damaged surroundings, describe point of origin (if location of dishwasher). For example, "The area of the fire was limited to the inside of the dishwasher which suffered smoke and

INVESTIGATION GUIDELINE

fire damage. The surrounding kitchen area was not effected." If available, attach and refer to fire department report for this description.

2. Take a sequence of several photographs of the area in which the dishwasher was located starting from the area of no fire-related damage, progressing towards the area of the most damage. Number the photographs in sequence. This is done to clearly indicate the point of origin and document that it indeed was at the same location that the dishwasher was located. Clearly mark point of origin on photo with an "X". Mark an assumed north and use as reference for description of locations in write-up.
3. Photograph the dishwasher involved in incident. Include closeup photos of fire-related damage to dishwasher components described in this report.
4. Photograph location of dishwasher to illustrate cleanliness or neatness of area.
5. Draw a sketch showing the shape of the kitchen or room where the dishwasher was located (e.g. square, rectangular, L-shaped). Indicate the place you were standing (with a circle) and the direction you were facing (with an arrow) when you took the photograph. The numbered photographs (in sequence) should correspond to the numbered circles in the sketch (Figure 6).

INVESTIGATION GUIDELINE

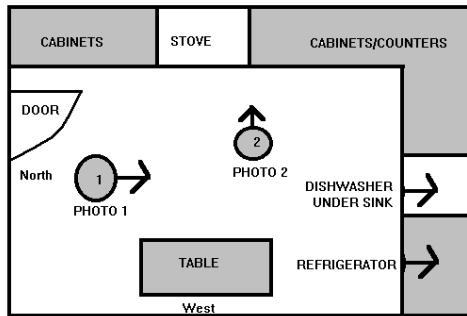


Figure 6.
Sketch of Kitchen

6. Use the sketch of the kitchen area to show location of appliance, location of furniture within same room, and location of other appliances within same room at time of incident (Figure 6).
7. On the dishwasher diagram (see Figure 7 below), mark the area of the dishwasher with the most severe fire-related damage (e.g. smoke damage, burned) by drawing a circle around that entire area. If known, mark with an "X" the component that most likely failed, causing the incident.
8. Indicate whether more than one room or the entire building suffered fire-related damage. This may be shown or described by fire department photographs and reports. If not available, photograph and sketch these areas as described above if it is safe and/or possible to perform these activities.

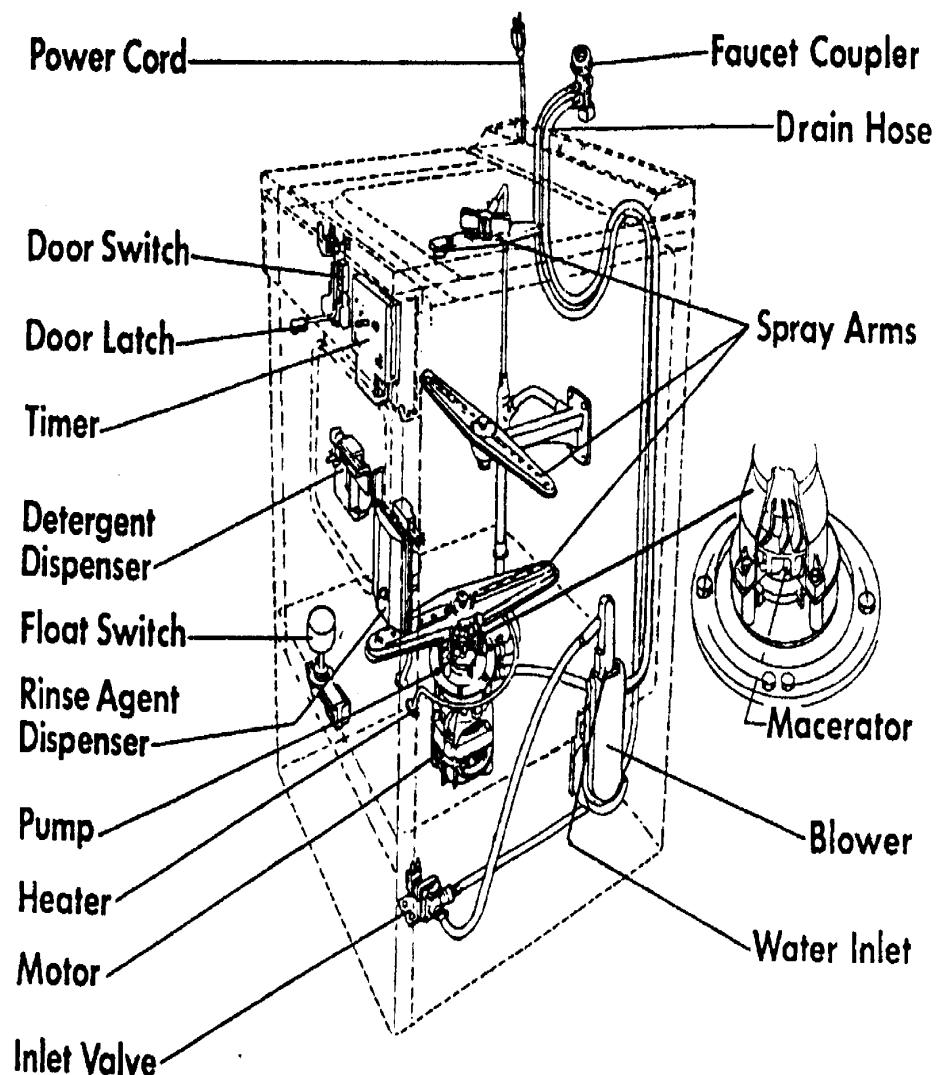
IV. Instructions for Obtaining Samples and Documents Related to the Investigation

- Stipulate whether the fire department was summoned and obtain a copy of the report (if available).
- Obtain copies of the incident report, investigation report, and casualty report (if available or applicable).

INVESTIGATION GUIDELINE

- Obtain copies of any insurance or repair reports (if possible).
- Obtain operating instruction manual (if possible).
- Collect component of dishwasher that was involved in incident (if possible and easily discernible). Send samples to the Sample Custodian at the CPSC Warehouse and notify EHHA staff that a sample was collected.

INVESTIGATION GUIDELINE



Standard Parts of Automatic Dishwasher

Figure 7. Automatic Dishwasher Diagram



INVESTIGATION GUIDELINE

Attachment A DATA RECORDING SHEET FOR DISHWASHER FIRES

Complete for all fires and attach to CPSC Form 182, Epidemiologic Investigation Report, along with a copy of the Fire Incident Report and Casualty Report (if applicable). (Note: "Unk" is abbreviation for "unknown". Please limit the use of unknown below whenever possible.)

Task Number_____ Incident Date (MM/DD/YYYY)_____

A. SOURCES(S) OF INVESTIGATIVE INFORMATION

1. Completion of this data recording sheet is based on (check all that apply):

- Visual inspection of unrepainted product by investigator
 Information from interviewing another person(s)
 Written reports (e.g. from fire department)
 Other, specify _____

B. PRODUCT IDENTIFICATION

Copy all information on rating plate or tags.

2. Type of dishwasher (check one):

Undercounter model Freestanding model Unknown

3. Manufacturer or Brand name (list): _____ Unk

4. Model number (list): _____ Unk

5. Serial number (list): _____ Unk

6. UL listed? Yes No Unknown

INVESTIGATION GUIDELINE

7. Rating (list from product): Volts: ____ Watts ____ Amps ____ /_/Unk
8. How old is the dishwasher (give approximate number of weeks, months OR years)? ____ weeks ____ months ____ yrs old /_/ Unknown
- 8a. Was the dishwasher new when purchased? /_/ Yes /_/No /_/ Unk
- 8b. Date of purchase (use MM/DD/YYYY format): ____/_____. /_/ Unk
9. Has the dishwasher ever been repaired? /_/ Yes /_/ No /_/ Unk
- 9a. If it was repaired, who did the repair? Check one.
- /~/ Professional repair person (for example, a plumber)
- /~/ Homeowner or do-it-yourselfer
- /~/ Unknown
10. Date of last repair (use MM/DD/YYYY format): ____/_____. /~/ Unk
11. Who originally installed the dishwasher? Check one.
- /~/ Professional installer (for example, plumber)
- /~/ Homeowner or do-it-yourselfer
- /~/ Unknown
- C. INCIDENT
12. Was the dishwasher on during the incident? /~/ Yes /~/ No /~/ Unk

INVESTIGATION GUIDELINE

13. What dishwasher cycle (setting) was the dishwasher on at the time of the incident? Check one.

- Normal wash cycle Air drying cycle
 Light wash cycle Rinse and hold cycle
 Pots and pans cycle Other, specify _____
 Heat drying cycle Unknown

14. At the time of the incident, was the dishwasher set for delayed start?

- Yes No Unknown

15. Was an energy saver feature on? Yes No Unknown

16. Type of incident (Check all that apply):

- Fire from dishwasher Warm or hot when touched
 Smoke from dishwasher Other, specify _____
 Sparks Unknown
 Fumes (unusual odors)

17. Was someone present in residence at time of incident?

- Yes No Unknown

18. Was the heating element (heater) on during the incident?

- Yes No Unknown

INVESTIGATION GUIDELINE

19. To what component or area of the dishwasher was there fire-related damage (that is, burned parts or smoke-covered) (check all that apply)? Refer to dishwasher diagram (Figure 7).

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> Power cord | <input type="checkbox"/> Door Switch |
| <input type="checkbox"/> Heater | <input type="checkbox"/> Door Latch |
| <input type="checkbox"/> Motor | <input type="checkbox"/> All parts of dishwasher damaged |
| <input type="checkbox"/> Timer | <input type="checkbox"/> Other, specify _____ |
| <input type="checkbox"/> Spray arms | <input type="checkbox"/> Unknown |

20. How was the power disconnected at time of the incident? Check one.

- | |
|--|
| <input type="checkbox"/> Unplugged the power cord from the receptacle outlet |
| <input type="checkbox"/> Tripping or opening the circuit breaker |
| <input type="checkbox"/> Removing or "blowing" a fuse in the fuse box |
| <input type="checkbox"/> Other, specify _____ |
| <input type="checkbox"/> Unknown |

D. VICTIM(S)

IF NO INJURIES OR DEATHS, GO TO QUESTION 27.

21. Number of victims deceased: _____ Unknown

22. Number of victims injured: _____ Unknown

23. Give age and sex of most severely injured victim:

- | | | |
|---|---------------------------------|----------------------------------|
| <input type="checkbox"/> less than 1 year old | _____ years old | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Male | <input type="checkbox"/> Female | <input type="checkbox"/> Unknown |

INVESTIGATION GUIDELINE

24. Did the most severely injured victim visit the emergency room? Yes No Unknown

25. Was the most injured victim hospitalized? Yes No Unknown

26. If the most injured victim did not go to the hospital, did he/she visit a doctor's office? Yes No Unknown

27. Give the age and sex of the person operating the dishwasher at the time of the incident: _____ years old Unknown

Male Female Unknown

27a. Was there any injury to the person operating the dishwasher at the time of the incident? Yes No Unknown

E. OTHER

28. Is there a smoke detector in the dwelling? Yes No Unknown

29. Did the smoke detector alarm go off during the incident?

Yes No Unknown

30. Type of Residence (check one):

House Other, specify _____

Apartment building/ Unknown

Mobile home or trailer