

Fire Investigation Independent Study Continuing Education

NFPA 921 UNIT #21 – Study Guide

NFPA 921 Guide for Fire and Explosion Investigations 2004 Edition

Objective: Given an examination the participant shall demonstrate a knowledge and understanding of appliances as they relate to the investigation of the cause of fires.

Reading/study assignment: NFPA 921 Guide for Fire and Explosion Investigations, 2004 Edition, pp. 921-180 through 921-189 (Chapter 24)

Study/reference questions:

Should components of lighting systems be disassembled at a fire scene? What should be done?

How does fluorescent lighting operate?

What temperatures do the arc tube of metal halide lamp reach during normal operation?

What temperatures do the arc tube of mercury vapor lamp reach during normal operation?

How and why should the use and design of the appliance enter into the fire investigation?

How should specific appliances be recorded?

What should be done in reference to documenting appliance information?

What should be done in reference to gathering appliance parts and testing of the appliance?

How should fire patterns on appliances be used and what should be considered?

How do ceramics react to fire?

How are power cords constructed and what electrical supply is found in the U.S. for most appliances?

What should be done in reference to appliances in relationship of the appliance to the origin?

Should the area of origin be reconstructed? Why? What may be needed?

When should appliances be explored as a possible ignition source?

What are motors, what are they used for, how do they operate, how can they fail, and what should the fire investigator look for?

The softening of glass is more a function of what rather than of what?

What must be established before it can be concluded that an appliance caused the fire?

Should the investigator take measurements to establish the appliance location? Why?

What is recommended and what should be done in reference to origin analysis involving appliances?

Electrical appliances may be an ignition source. What should be referenced and considered?

What is an exemplar and how may it be used and what precautions do you need to consider?

How would an exemplar appliance be used for testing?

What should be done in reference to positions of appliance controls? Why?

What are appliance housings and what may they be made of?

Where are plastics used in appliances and how do they react to fire?

Why must the fire investigator be careful when evaluating heat damage on steel painted surfaces?

How do various steels react to fire conditions and conditions following the fire?

How can fluorescent or high intensity lighting cause a fire?

How does aluminum react to fire and what is the melting temperature of aluminum?

What should be done in reference to photographing appliance disassembly?

Is the finding of evidence that the potting material flowed out of a ballast evidence of fire cause? Why or why not?

Why are common parts or components of appliances addressed?

What other metals may be found in appliances, how do they react to fire and what are their melting temperatures?

What are some of the overcurrent devices used with appliances, how do they operate, and how what information may they provide in reference to a fire investigation?

What are solenoids and relays, what are they used for, how do they operate, how can they fail, and what should the fire investigator look for?

Where may wood be used in appliances, how does it react to fire, and how may it help the investigator?

What batteries are commonly used in appliances and can they cause a fire, if so, how?

How does glass react to fire?

How do power cords react to fire?

How do plastic appliance components affect the fire investigation?

Power sources for appliances are usually what type current and what chapter is referred to?

How are power cords and receptacles designed and can they differ according to time of manufacture?

What may patterns on an appliance indicate?

What are transformers, what are they used for, how do they operate, how can they fail, and what should the fire investigator look for?

What voltages less than 120 V. used in appliances and can they cause a fire and if so, how?

What are temperature switches, what are they used for, how do they operate, how can they fail, and what should the fire investigator look for?

Why are switches used in appliances, what should the fire investigator look for and do concerning these switches?

Where is lighting used in appliances, what type lighting is used, how may they cause a fire?

What are automatic switches on appliances and why are they used?

What Chapter is referenced as to cause analysis involving appliances?

What is alloying of steel and how does it occur?

What are fuses and circuit breakers and how do they operate?

What are heating elements, what are they used for, how do they operate, how can they fail, and what should the fire investigator look for?

What are manual switches and what information may they provide the fire investigator?

What are phenolic plastics, where may they be used, and how do they react to fire?

What miscellaneous components are discussed, what are they used for, how do they operate, and how can they fail?

Study the information concerning the following residential appliances.

Range or Oven

Coffee Makers

Toaster

Electric can Opener

Refrigerator

Dishwasher

Microwave Oven

Portable Space Heater

Electric Blanket

Window Air Conditioner

Hair Dryer/Curler

Clothes Iron
Clothes Dryer
Consumer Electronics
Lighting

What is referenced concerning the recording of a scene involving an appliance?

Study the information regarding lighting systems.