

TABLE 2-4 *Subtle electric shock***"Hot"**

Equipment bearing the UL label may become dangerous later because of environment or misuse	
Equipment may be hot even though turned OFF	
Unfamiliar circuits, unpredictable types of component breakdown	
Hot cabinets—a result of failure to replace insulating spacers between chassis and cabinet	
Hot TV antenna—component failure giving rise to shock path through set balun through twinlead to antenna	
Replacing push-on knobs with knobs having metal setscrews which can become hot	
Insulation around collapsible rabbit-ear TV antennas may fail; if chassis is hot, rabbit ears become hot	
Items on top of TV chassis may be hot	
Exposed metal screws and control shafts on equipment with plastic cases may be hot	
Fallen power line that does not crackle or pop can be harmless one minute and lethal the next	
Interlocks and bleeder resistors may fail	
Capacitors that can discharge more than 50 joules	

downtight sneaky. Like a hard-to-find roof leak, they may cause their damage some distance from their source. A component failure in one equipment rack, for instance, may create a hazard in the rack next to it. New equipment with unfamiliar circuits may trap the unsuspecting technician. The previous owner or user of a device may forget to warn you of the dangers. Instruction manuals may have been lost. And of course there's always the problem of: "Familiarity breeds contempt."

In research laboratories particularly, the nationally recognized and local electrical codes and standards may not provide satisfactory safety. The Atomic Energy Commission points out that the element of the unknown is inherent in all research, and therein lies the possibility of direct and indirect electrical hazards for which there can be no previous record or experience. Thus, there must be special efforts in such labs to recognize and control shock hazards.

More recently it has become apparent that normally safe electrical and electronic equipment can become treacherous when placed in environments other than those for which it was designed.

Consider the fantastic array of new electronic equipment acquired in recent years by the nation's hospitals for use in diagnosis and treatment (see Figures 2-5 and 2-6). At some time during his stay at a hospital, the average patient may be connected to one or more of these medical electronic instruments—even several at one time if he has had a heart attack. The benefits of such equipment are unquestionable; patients and physicians alike profit from their use. Unfortunately, in some situations this equipment may deal the patient a fatal shock. Although the specific number of patients electrocuted each year in our hospitals is debatable, there is no denying that