

ACCIDENTS AND PREVENTION

#17 A Power Plant Safety Program. W. C. Kramer
 Coal Utilization 11, 21-22 (June 1960).

The prime requisite for a successful safety program is the enlistment of full cooperation from all plant employees. The author presents a program which does not use incentives or rewards and still has been highly successful. Before a safety program can get off the ground, the principles and objectives must be spelled out. The following could be called to a company's safety philosophy: (1) Every employee has a responsibility for safety. (2) Safety is an integral part of doing a job right and is made a vital part of all job training. (3) No job is so urgent or emergency so great that it cannot be taken care of safely. (4) Top management must be sincere and active in their pursuit of safety if such an attitude is to prevail. When this attitude reaches and is accepted by first line supervisors, the safety program works because employees adopt the attitude of those for whom they work. (5) Safety on the job and off the job are equally important. A proper attitude toward safety is a way of life.

#18 Understanding the Electron. J. G. Huffman.
 Natl. Safety News 82, 38-39, 171-172 (July 1960).

Last year in the United States about 1,000 persons met death by accidental electrocution; another 5,000 received serious injury from electrical causes. Property damage ran into millions. Electron flow or movement along a conductor is called an electric current. A rate of 6×10^{18} electrons per second is equivalent to one ampere. When current flows, it releases energy. An electrical current of only 25/1000 ampere passing through the human body can be lethal. Fortunately, it usually requires considerably more, especially when the current path does not cross the heart or important nerve centers. Even though not lethal, serious burns can result where higher currents are involved. Three things are necessary for sufficient current to pass through the human body to be dangerous. First, the circuit has to be complete. The current must have points of contact where it can enter and leave the body. The second condition is that the voltage must be high enough to cause a large enough current to flow. Finally, the source must have the capacity to supply the current, whatever the voltage. The commonest situation which can provide the three necessary conditions for serious shock is contact with an ungrounded portable device, such as a hotplate, a stirrer, or a pH meter. These devices often develop an electrical path between the internal wiring and the frame. If this path is a metallic one, it's called a short; if it's due to dirt or a breakdown of insulation, it's called a leak. In either case, the frame of the device would be hot electrically to ground. This hazard can be almost completely eliminated by the use of a 3-wire receptacle, plug, and cable. Heating tapes with thin porous insulation represent a class of potentially hazardous devices which cannot be made safe easily. Leakage sometimes exists from the heating wire in the tape through the insulation to the surface. It can be due to the insulation being worn torn or to some conducting material having soaked into it. There is no metal frame to ground, so a third wire is of no value. Other precautions to be observed in handling electrical equipment in the laboratory are discussed by the author.