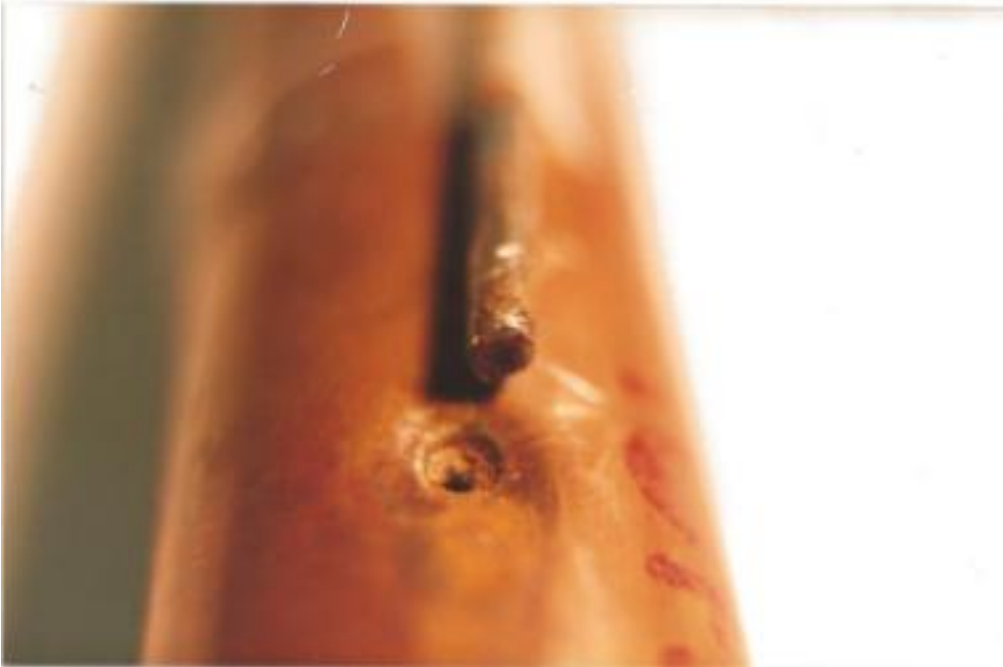


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MECHANICAL LATENT DEFECT:

The above photograph is a magnified view of a hole in a $\frac{3}{4}$ " copper water pipe and the nail which had caused the hole. A severe water leak developed from this hole in a new home six months after it was constructed. We tore the wall around this pipe apart to expose the pipe with the corroded nail protruding from it. A drywall installer had driven this nail into the pipe while the house was being built. The interesting fact is that it took the corrosion process six months to open the mechanical junction between the nail and the surrounding hole before it caused severe flooding. Cases such as this are not uncommon and it is also not uncommon for months to transpire before the flooding occurs.

ELECTRICAL LATENT DEFECT:

If the chemistry at a mechanical latent defect can take six months to operate, it is not surprising that the chemistry in the plastic insulation of electrical cables can take 20 years after the cable is damaged before an electrical short circuit is created. We have observed a number of cases where plastic or rubber insulated cables inside walls have short circuited to cause a fire 15 or 20 years after the wall was built. During that time, no one had entered the wall and thus no one but the original installer could possibly have damaged the insulation on the electrical cable to cause the fire. It is also possible that the insulation was damaged at the time of its manufacture, but we believe that to be a rare phenomenon. The

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electrical insulation is always consumed around the area of the short circuit, and so it is never possible to determine the exact nature of the fault in the insulation by examining the insulation alone. We have had numerous cases where we could tell that a power cord had been pinched, say between a refrigerator and a wall, but we have only had a very few cases where we could tell that the cause was a manufacturing defect in the insulation. Thus, we believe most cords and cables short circuit because they have been damaged rather than because of a manufacturing defect.



The above photograph shows a small fire which was quite obviously caused by a short circuit in a plastic-insulated aluminum 12-2 (with ground) electrical cable, because no other source of heating power existed in any of the burn damage. Moreover, no one had entered the wall and ceiling space around this cable since the house was constructed in Louisville, Kentucky thirteen (13) years before.

Latent defects also occur in plastic or rubber insulated electrical power cords and extension cords. These cords also often short circuit to cause a fire long after they have been damaged by their users.

Sincerely,

Frederick F. Franklin, P.E.
Forensic Engineer