

Mercury Alert

“Silent Switch”

Elemental Services & Consulting, Inc. (ESCO) was retained to assess and remove elemental mercury from a bathroom. The homeowner flipped on the light switch and heard a loud “pop” inside the wall and multiple lights and appliances immediately lost power. Upon checking the fuse box (no fuses were blown), the homeowner removed the switch cover and switch from the wall, and discovered mercury beads inside the wall.



Brief History of “Silent” Switches

Manufactured prior to 1991, by many manufacturers, mercury light switches (generally referred to as “silent switches”) contain about 2 grams of mercury. Mainly found in older buildings, these devices look like typical wall switches, but they do not make the audible “click” sound when activated. The mercury switch has a small hollow cylinder, partially filled with mercury. When in the “off” position, a small electrical contact is above the mercury level. When flipped to the “on” position; the electrical contact is immersed in mercury - this establishes contact between the two terminals and provides power to the light fixture.

Discussion

Mercury vapor concentrations within the home were elevated to 6.6 µg/m³ on carpeting adjacent to the bathroom. This was likely caused by tracking of the mercury when the homeowner removed the switch cover and switch from the wall (mercury beads inadvertently fell to the linoleum bathroom floor).

Rationale For Mercury Vapor Levels

Safe indoor mercury vapor levels (recommended) have been established by the Agency for Toxic Substances and Disease Registry (ATSDR) and are generally accepted and used by local health departments and Ohio Environmental Protection Agency (EPA). The following table shows these levels as published by ATSDR in December 2000.

Indoor Air Concentration	Action Level	Setting
<1.0 µg/m ³	Residential occupancy level	Residential Setting
10 µg/m ³	Isolate residents from exposure	Residential Setting
3.0 µg/m ³	Based on residential occupancy level but adjusted for the shorter duration exposures typical of most workplaces	Occupational Setting

Photos by ESCO

Mercury Alert provided by:

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