

Domestic Electrical Wiring Safety—Protecting Your Home & Loved Ones

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Abstract: *The Silent Killer inside Your Walls. Electricity powers our modern lives, providing convenience and efficiency, but behind the walls of our homes lies an often-overlooked danger—faulty electrical wiring. Unlike visible hazards like fires or gas leaks, electrical faults remain hidden until it's too late, leading to devastating accidents. Ignoring wiring issues can put your loved ones, valuable appliances, and entire home at serious risk.*

The statistics are alarming. Every year, over 12,500 people die from electrocution in India, contributing to a staggering 100,000 electrical fatalities over the last decade. In the United States, 30,000 electrical injuries occur annually, with nearly 1,000 deaths caused by direct contact with faulty wiring, malfunctioning appliances, or unsafe outlets. Many of these tragedies result from outdated electrical systems, improper installations, or neglected maintenance.

The good news? Most electrical accidents are preventable with regular safety inspections and timely intervention. A simple Electrical Health Test can identify risks before they turn deadly, ensuring your home remains safe for your family.

So why wait for a disaster? Awareness and proactive safety measures are the key to reducing these preventable tragedies. Here, we'll uncover 10 critical warning signs of faulty wiring, explain the importance of professional inspections, and provide actionable steps to safeguard your home from electrical hazards.

I. INTRODUCTION

Modern systems allow us to achieve nearly anything we imagine. While our expectations expand, we consistently prioritize minimizing common threats to ensure stability. However, we often lack the expertise to properly assess or address these risks.

Consider the essential comforts of daily life: lighting our homes, using an electric kettle, keeping food fresh, or managing indoor temperatures. All of these facilities rely on electricity. Despite this reliance, we rarely consider the wiring inside our walls. It is important to note that as little as 40 mA (milli-ampere) is enough to stop the heart of a healthiest person.

Electricity powers our modern lives, providing convenience and efficiency, but behind the walls of our homes lies an often-overlooked danger—faulty electrical wiring. Unlike visible hazards like fires or gas leaks, electrical faults remain hidden until it's too late, leading to devastating accidents. Ignoring wiring issues can put your loved ones, valuable appliances, and entire home at serious risk.

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Electrical faults often remain undetected until they lead to severe accidents. While electricity is indispensable in daily life, faulty wiring poses a silent yet lethal threat. In India, approximately 12,500 individuals die annually from electrocution, totalling around 100,000 electrical fatalities over the past decade. These alarming figures underscore the critical need for proactive inspections and preventive measures to ensure electrical safety. Many electrical fires are caused by worn-out or damaged wiring. Rodents often chew through insulation, exposing live wires. A single spark from frayed wiring can ignite a fire, leading to catastrophic damage. Older homes are at a higher risk, as their wiring may not meet modern safety standards.

In India, electrical fires are a significant concern, with approximately 15,000 fatalities annually due to electrocution, electrical fires, and lightning incidents. In Delhi, faulty wiring has been identified as a major contributor to fire accidents. The Delhi Fire Service reports that about 60% of fires originate from electrical issues, including short circuits, overheating, overloading, use of non-standard appliances, illegal tapping of electrical wires, improper wiring, carelessness, and ignorance.

A notable incident in Delhi involved a fire in a residential building in Sadar Bazaar, where two girls lost their lives due to a short circuit in an air conditioner. Investigations revealed that substandard wiring and improper cabling facilitated the rapid spread of the fire. Faulty electrical outlets and wiring cause over 5,300 house fires in the U.S. annually. 70% of electrical fires start in wall outlets and switches, often due to loose or damaged wiring.

Electricity is essential to modern life, but faulty wiring, exposed cables, and electrical negligence continue to cause thousands of preventable injuries and deaths every year. Across the globe, electrical accidents remain a significant but often

overlooked safety concern, affecting individuals in homes, workplaces, and public spaces.

While many people assume that electrical dangers are limited to industrial sites or construction zones, statistics reveal that homes are among the most common places for fatal electrical accidents. The data from India and the United States underscores the urgent need for better electrical safety awareness, regular inspections, and proactive intervention.

🔦 Case in Point:

- **Electrocution of a 19-year-old in Lucknow:** In October 2024, a 19-year-old girl named Saloni from Nigohan, Lucknow, was electrocuted while attempting to start a submersible pump at her residence. As she tried to connect the wire to the electricity board, she received a fatal electric shock. https://www.hindustantimes.com/cities/lucknow-news/two-electrocuted-in-separate-incidents-101729624598138.html?utm_source
- **Father and Son Electrocuted in Chinhat:** In August 2024, a laborer, Ram Sahayani, and his son, Tillu, were electrocuted while repairing a submersible pump at their home in zhinhat, Lucknow. The incident occurred when Sahayani attempted to fix an exposed wire, leading to both receiving fatal electric shocks. https://timesofindia.indiatimes.com/city/lucknow/electrocution-tragedies-recent-incidents-in-different-parts-of-india/articleshow/112480078.cms?utm_source
- **Electrocution of a 28-year-old Man in Delhi:** In October 2024, a 28-year-old man named Prabhat Singh was electrocuted at his home in Jaitpur, Southeast Delhi. While enjoying the rain on his terrace, he allegedly came into contact with an electrical leakage, possibly from a water tank alarm system, leading to his untimely death. https://www.hindustantimes.com/cities/delhi-news/2-including-12-year-old-electrocuted-in-separate-cases-in-delhi-101722534725534.html?utm_source

Despite these tragedies, awareness and media coverage of electrical safety issues remain limited, leaving many families unaware of the precautions needed to prevent such incidents. While the U.S. has stricter electrical regulations and safety standards, electrical injuries still account for more than 30,000 incidents per year, with approximately 1,000 resulting in death. These numbers highlight the hidden dangers present even in technologically advanced countries. United Kingdom: More than 20,000 electrical fires occur each year, often linked to faulty installations and outdated wiring.

Who is at higher risk?

1. Pregnant Women are more susceptible to electric shocks than men due to differences in body composition and resistance levels.
2. Children are at high risk, as curiosity often leads them to play with electrical outlets, power cords, and appliances.
3. People with medical implants, such as implantable cardioverter-defibrillators (ICDs), are highly sensitive to even small electrical currents, which can interfere with the device's function and lead to fatal consequences.
4. Young people are at high risk due to low body resistance, aged persons are more vulnerable for Hyporeflexia.
5. Children are naturally curious and often explore electrical outlets, power cords, and appliances without understanding the dangers involved. Hundreds of electrical injuries involving children occur each year because of

Inserting objects into electrical sockets.

Touching exposed wires or appliances with wet hands.

Playing with electrical extension cords or chargers.

A significant portion of electrocution incidents in India occur within homes. Studies have shown that 71.6% of electrocution victims were exposed to low-tension domestic supply, with 67.8% of these incidents happening at home due to contact with household appliances like irons, switches, and coolers. Over 2,400 children suffer severe electrical shocks and burns each year due to tampering with electrical outlets.

Many electrical injuries and fatalities could be prevented through better awareness, education, and proactive safety measures. Unfortunately, most people don't recognize electrical dangers until an accident happens. With thousands of lives lost each year to preventable electrical accidents, the best way to safeguard homes and communities is through regular inspections and improved awareness.

- Schedule routine Electrical Health Check-up of house wiring & installation.
- Ensure all electrical installations meet updated safety codes.
- Upgrade old or outdated wiring in homes built before the 2000.
- Educate family members about basic electrical safety rules.
- Fix loose, damaged, or faulty outlets and switches immediately.

Electricity is an essential part of modern living, but many misconceptions about electrical safety persist, often leading to serious risks. People tend to overlook the hidden dangers of faulty wiring, overloaded circuits, and poor safety practices. These myths can create a false sense of security, making individuals unknowingly expose themselves and their families to potential electrical hazards.

Many people assume that as long as their appliances function properly, there are no electrical issues. However, electrical wiring can deteriorate due to age, wear and tear, and unseen damage inside walls. Even if an outlet powers a device, there could be frayed or overheating wires behind it, posing a significant fire hazard. A 15-year-old home with old wiring must not be able to handle the load of modern appliances like air conditioners, gaming consoles, and home automation systems, Induction oven, OTG, Electric Kettle. Undetected wiring issues can lead to overheating and fires, even if everything seems to be working fine.

With the rise of online tutorials and DIY culture, many people attempt to fix electrical issues themselves. While it may seem simple to replace an outlet or rewire a switch, improper handling of electrical components can result in serious injuries or even fatal accidents. An untrained or unlicensed electrical person cannot see the hidden risk. They don't know about measuring instrument which is most crucial for post installation verification.

- DIY electrical work may not meet safety codes, leading to unsafe wiring.
- Poorly done repairs can create short circuits, increasing fire risks.
- Incorrectly installed grounding can lead to electric shocks when using appliances.

Many households rely on extension cords and power strips to plug in multiple devices, believing this is a safe and effective solution. However, overloading a single outlet can generate excess heat, damaging the wiring and increasing the risk of an electrical fire.

- An overloaded circuit can overheat and melt electrical wiring, leading to sparks and fires.
- Older homes are not designed to handle today's high-power appliances, such as air conditioners, space heaters, or large TVs.
- Plugging too many high-wattage devices into a single outlet can cause circuit breakers to fail, increasing the chance of electrical surges.

In India, electrical fires are a significant concern, with approximately 60% of fires in Delhi attributed to electrical origins, often due to short circuits, overheating, overloading, use of non-standard appliances, illegal tapping of electrical wires, improper wiring, carelessness, and ignorance. In 2023, a family in Mumbai experienced a devastating fire in their apartment. They had connected multiple high-wattage appliances, including a heater, refrigerator, and microwave, into a single power strip. The power strip was not designed to handle such a load, leading to overheating and eventually igniting a fire that caused extensive damage to their home.

Many people underestimate the dangers of water and electricity. While most people understand that submerging electrical devices in water is dangerous, they often ignore smaller risks, such as using appliances near sinks, bathtubs, or wet hands.

- Even a minor splash or dampness can conduct electricity, increasing the risk of shock.
- Wet skin reduces the body's natural resistance to electricity, making shocks more severe.
- Water-damaged appliances can develop internal faults, making them dangerous even after they appear to have dried.

A teenager in India was electrocuted while using a phone connected to a charger in a bathroom. Water from the sink splashed onto the extension cord, causing an electric shock that proved fatal.

- ✓ Licensed and insured to carry out electrical work.
- ✓ Depth knowledge in electric circuit/cable selection/ load calculation/ grounding.
- ✓ Knowledgeable about local and national safety regulations.

“Uneducated person for electrical repairing are responsible for thousands of house fires annually. Don't take the risk—hire a licensed professional instead” Approximately 60% of Domestic fires are of electrical origin, often due to short circuits, overheating, overloading, use of non-standard appliances, illegal tapping of electrical wires, improper wiring, carelessness, and ignorance. Poor insulation and grounding are among the leading causes of electrocution and electrical fires. Grounding protects people from dangerous voltage levels, while insulation prevents wires from coming into contact with other conductors or combustible materials. A single faulty wire, an overloaded circuit, or an ageing electrical panel can turn into a life-threatening hazard in seconds. Every year, thousands of lives are lost, and millions in property damage occur due to preventable electrical accidents. Ignoring the warning signs—flickering lights, buzzing outlets, frequent breaker trips, or burning smells—can put your family, home, and valuable belongings at serious risk.

“Domestic Electrical wiring Health Check-up is not a luxury—it's a necessity”

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