

## How to Wire a Lamp

### Information Sheet

#### Scientific Background

In those places where we spend most of our time, we should avoid exposure to power frequency fields. This is especially true for sleeping areas, when the human body is particularly vulnerable to external electromagnetic stressors. All wiring, lighting and electronic equipment in close proximity to a person should ideally be shielded.



Let's assume the source is an incandescent light bulb. When the body is close to the source, a large voltage is induced. With the body away from the source, there is little if any voltage.

At night when the bedside lamp is turned off, the light goes out, but not all electrical phenomena have disappeared. The switch cuts off the current flow to the lamp, but the plugged-in supply, lamp base and extension cord is still "live" (energized to 120 volts), which means it still radiates an AC electric field that can easily sweep across the bed. Generally speaking, a distance of about 1 to 2 meters (3 - 6 ft) from the electric field source is necessary to enjoy a restful sleep.

#### Fixing the Problem

From a technical point of view, it is fairly easy to contain AC electric fields by means of shielded cables and appliances. Most homes, however, are wired with standard building wire that is not shielded but contributes to elevated electric field exposure in our living spaces.



To shield a lamp, you must replace the two-wire cord with a three-wire cord. Three-wire cords are available at most hardware stores either as replacement cords or you can use a three-wire extension cord from which you cut off the receptacle end. The lamp base must be metallic; plastic and wood bases will not shield electric fields. *Note: this will only work in homes that have a three-wire grounded building wiring system.*

1. Remove the bottom plate from the base of the lamp.
2. Bore a hole on the side of the lamp near the bottom plate. The size of this hole depends on the size of the bolt and nut used in Step 9. We use 1/8" bolts.
3. Cut the wires that feed the lamp – cut them close to the bottom plate of the base.
4. Remove the two-wire cord from the base of the lamp and feed the "new" three-wire cord through the existing hole.
5. Using a continuity meter, determine which of the two original lamp wires is the neutral – that is, goes to the threaded portion of the socket.
6. Using a continuity meter, determine which wire of the "new" three-wire cord is neutral – that is, goes to the large spade of the plug.
7. Connect the neutral wire of the lamp to the neutral wire of the three-wire cord using a wire nut.
8. Connect the hot wire of the lamp to the hot wire of the three-wire cord using a wire nut.
9. Connect the ground wire of the "new" three-wire cord to the base of the lamp using a machine threaded bolt and nut in the hole bored during Step 2. Brass is the preferred material.
10. Replace the bottom plate to the lamp.

