

## Static Electricity...What You Should Know

With the recent low humidity and cold weather that we have been experiencing, our repair shop has recently seen a rash of computer component failures, such as motherboards, random access memory (RAM), hard drives and central processing units (CPU).

There can be many reasons why these components are failing but one of the overlooked causes of these failures, especially during these cold days with low humidity, is static electricity discharge, or ESD. For sensitive components inside of a PC, static can be a killer.

The amount of voltage involved in static electricity sounds impressive. Walk across that rug and touch a grounded metal object, and the voltage can be in the 10,000-to-12,000 volt range. The voltage is harmless to the average person and the "spark" is more of an annoyance than a danger. It is amps, not volts, which are dangerous and the amperage is miniscule with ESD.

Voltages with ESD must be 3500 to 4000 volts before we feel it. It's the voltage below that level that is very common on cold, dry days. It is entirely possible to turn on your PC, touch your keyboard, or touch your mouse and you will not feel a static zap but it is possible that you are zapping the electronic components inside your PC. That is because the integrated circuits can be damaged or destroyed by static voltages as low as 400 volts.

The components in your PC may not react immediately when zapped. Your PC may seem to work fine but days, weeks, or months later, your PC may lock up or start acting strangely. The best way to fix a problem related to ESD is to take precautions and try to prevent it from happening in the first place.

It used to be easy to "ground" yourself and discharge static by simply touching your computer case while the system was turned off and plugged into an AC outlet. With today's PC's there is still electricity flowing through the motherboard even when the system is off.

Using a ground is still the most effective way to minimize the potential damaging effects of static electricity.

1. Use an inexpensive antistatic wrist strap, which connects to an AC ground. Follow the manufacturer's instructions carefully to connect it. You may need to check the AC outlet with a meter to determine if the outlet is grounded. In some of the older homes (and even in newer homes where contractors may have rushed through a job) the outlets on the wall may have a "ground" but does not necessarily mean the outlets are properly grounded. You can purchase a wiring checker to determine if the outlet is grounded. If you find that the outlet is not grounded, you may wish to call an electrician to fix the condition.
2. Use other antistatic components such as grounding mats. Keyboard mats are relatively inexpensive and they connect to an AC ground. Simply touch this mat before you touch your keyboard, mouse, or turn on your PC. If your workspace is carpeted, invest in floor mat with an AC ground. One of the worst creators of static electricity is a rolling desk chair.
3. Avoid the temptation to pet your furry dog or cat. Rubbing your hands through pet fur is a great way to build up static.
4. Control the humidity. The lower the humidity, the more likely that damaging static charges will build up. Try to keep the humidity between 35 – 50 percent in your work area. If you can't control the humidity, touch a screw on an AC wall plate to discharge the static on those cold days or even warm days when the air conditioning is cranking.
5. Prepare your work area. Keep plastic desk accessories, wastebaskets, and telephones away from your computer and work area. Sliding these components over a desk or

carpet will generate static electricity and that static will be transferred to you as you slide them to and fro.

While these precautions can't guarantee that ESD discharge will not be prevented, they will at least reduce the chances of creating damage to your sensitive electrical components.

We provide free advice, tips, and articles on our website <http://www.drgigabytes.com>.

If you have any questions related to the above topic, have any other related PC questions, or would like more information about our workshops, please contact us at [questions@drgigabytes.com](mailto:questions@drgigabytes.com) or call us at (508) 336-4600.