

## Static Electricity and Cochlear Implants

### Information for recipients and carers

#### What is static electricity?

Static electricity is an electrical charge that can collect on a person or object, often without being noticed. It can occur when there is friction between materials, or when two materials are suddenly separated (e.g. when someone takes off a synthetic coat).

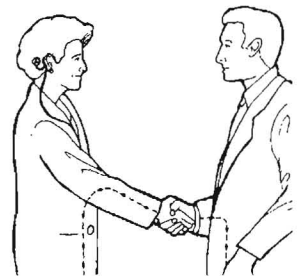
You may notice static electricity when it discharges and produces “static” or electrostatic discharge (ESD). This happens when two objects or people with different levels of static electricity come into contact (e.g. when a person with a low level of static electricity touches a car door with a high level).



#### How does static build up?

“Conductors” (e.g. your body, metal, moisture, perspiration) provide a safe path for static electricity to travel through to the ground, so there is no chance for static to build up. In “non-conductors” (e.g. glass, plastic, rubber, synthetic cloth, dry air), static can sometimes build up to significant levels.

Because dry air is a non-conductor, you may notice more static on dry (low humidity) days or in airconditioned environments.



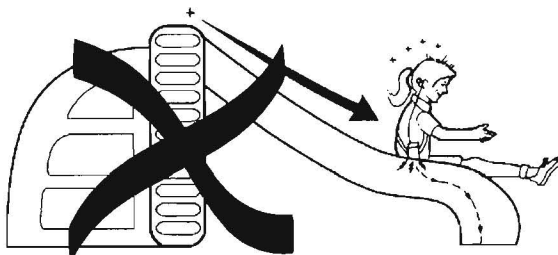
It is only when static builds up significantly that it may cause problems for electronic devices such as your cochlear implant system. This build-up is not common, but it is important to understand the risks.

## What are the risks to your cochlear implant system?

Your cochlear implant system has features to protect against static. However, there is still a small chance of damage if the level of static build-up is high enough. This can occur even when your implant system is turned off.

A discharge of static electricity could damage the electronic components of the implant system or corrupt the program in the speech processor. There is also a very low risk that ESD could damage the implant itself.

One activity that has been known to cause damage is sliding down a plastic slide while wearing the speech processor and headset.



**Take off your headset and speech processor before you do this.**

## How can you manage static every day?

The risks associated with static do not mean that you need to restrict your lifestyle, but there are some simple things you should do to manage static.

- Try to avoid situations where there is friction between non-conductive materials (e.g. synthetics).
- Be careful on days when the humidity is low, and in areas where there is forced-air heating or airconditioning. These devices decrease humidity and can therefore cause static to build up.
- If you live in an area where dry air is an issue, you might consider buying a humidifier.
- Try using fabric softeners or anti-static spray on clothing, carpet, car seat covers etc.
- Try to wear clothing and buy furnishings that minimise static build-up, and avoid those that do not.

## More about materials

	<b>Low risk of static</b>	<b>Higher risk of static</b>
<b>Carpet</b>	Anti-static nylon, wool	Nylon, acrylic, polyester
<b>Flooring</b>	Wood, ceramic tiles	Vinyl, waxed wooden floors
<b>Furniture</b>	Metal, wood	Plastic (especially on carpet), painted, varnished & finished surfaces
<b>Shoes</b>	Leather soles	Rubber soles
<b>Clothing</b>	Natural fabrics (e.g. cotton, silk, wool*)	Synthetics (e.g. acrylic nylon, polyester, rayon)
<b>Playgrounds</b>	Wooden or metal	Plastic, especially in airconditioning (e.g. slides, crawl-through tubes, plastic sit-in cars, rooms full of balls), trampolines, gym mats

\* Cotton and silk fabrics are better than wool, but all natural fabrics are better than synthetics.



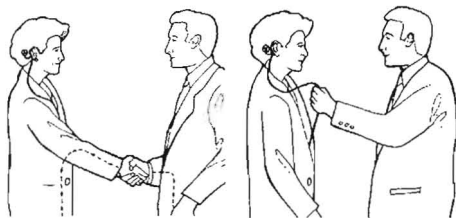
At work, you can manage static by using wrist-grounding straps, anti-static work surfaces and leather shoes. If necessary, you can place an anti-static shield over your computer monitor screen and anti-static mats under the chair, keyboard and mouse.

## Precautions

It is advisable to take the following precautions, especially on dry days when static build-up is more likely.

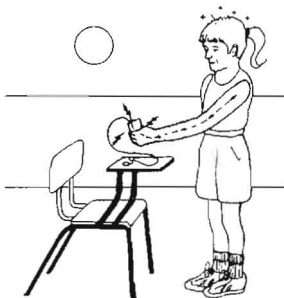
### Touch someone first...

Touch someone or have them touch you immediately before they touch your speech processor or headset. This discharges any static build-up.



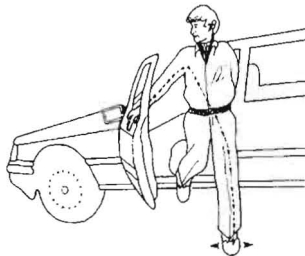
### Touch an object first...

Touch a conductive object (e.g. metal, wood) before you touch your speech processor or headset. In this example, the child should touch the metal desk first.



### Touch the ground first...

As you get out of a car, hold onto a metal part (e.g. the door frame or handle) until your feet touch the ground. Don't allow your implant system to brush against the car before you do this.



### Keep your cables clear...

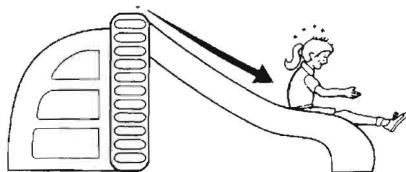
Wear your cables next to your skin (under all your clothing), so that any static will go through your body to the ground. Don't wear the cables where they can brush up against objects with high static such as TVs and computer monitors.



### **Before you slide...**

Remove your speech processor and headset before you use plastic playground equipment, especially slides. Behind the ear speech processors are less likely to be damaged by sliding than body worn speech processors, but you should still remove them. Turning the equipment off will not always prevent damage.

Before you touch your speech processor and headset to put them back on, touch another person or object to discharge any build-up of static.

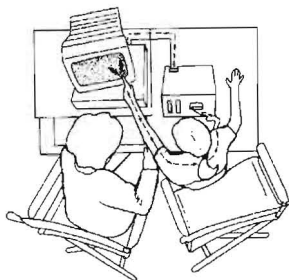


### **Important...**

Never touch devices such as Van de Graaff generators (commonly found in science museums and school science labs) that are designed to generate over a million volts of static electricity.

### **Tips for parents and carers**

- Buy clothing for your child that can be easily removed (e.g. cardigans and jackets rather than pull-overs).
- When your child's speech processor is connected to a computer during a MAPping session, ensure that they do not touch the computer screen.
- Remove your child's speech processor and headset before they play in areas where there might be a high level of static (e.g. airconditioned indoor playgrounds, rooms full of plastic balls, inflatable carnival rides).



## If you suspect damage

If you feel a shock from static electricity, in most cases, your cochlear implant system will not be damaged. This is because your body provides a safe path for the static to reach the ground.

However, if any part of the system receives a shock directly, whether or not you feel it, there is a greater chance that it could be damaged. Symptoms may include poor or changed sound quality. If you suspect that your system has been damaged, contact your clinician or Cochlear representative.



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