Electrostatic discharge (ESD) is known as “the invisible threat.” ESD events occur all the time, but most go undetected because they occur below the level of human sensory perception. Electronic equipment is much more sensitive than we are to electrostatic discharge: Without proper safeguards, static impulses zap digital telephony equipment, fry circuit boards and micro processors, and knock out networked systems. In fact, static discharge can damage or destroy most state-of-the-art electronics. The result? A $5 billion problem affecting manufacturing facilities and environments that use electronic parts.

Electronics equipment manufacturers need zero-tolerance, static-free environments to produce parts and assemblies. International manufacturing standards require the use of special anti-static footwear, static-shielded packaging, and grounded wristbands—but these standards are not always enforced, and workers are often lax. In both the static-free manufacturing world and end-user environments, maximum static protection can only be achieved by implementing fault-tolerant solutions.

How pervasive is this problem? Product losses among component manufacturers average 16%-22%; among end users, the average is 27%-33% (see table).

### Assessing Good and Bad News

Fortunately, installing the right anti-static flooring eliminates the source of ESD problems. Unfortunately, most companies don’t understand the risks and don’t install flooring that meets correct specifications. Part of the problem is a disconnect among the architects, flooring distributors, manufacturers, contractors, and customers. Without sound technical advice, architects, contractors, and facility managers are apt to make faulty assumptions that lead to ineffective flooring recommendations. At Staticworx, unlike generic flooring manufacturers, we don’t sell through distributors—we eliminate unnecessary middlemen, ensuring seamless communication between our technical department, your contractor, and you. (Cont.)

### Product Losses Due to Static Discharges

<table>
<thead>
<tr>
<th>Description</th>
<th>Min. Loss</th>
<th>Max. Loss</th>
<th>Est. Avg. Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Manufacturers</td>
<td>4%</td>
<td>97%</td>
<td>16-22%</td>
</tr>
<tr>
<td>Subcontractors</td>
<td>3%</td>
<td>70%</td>
<td>9-15%</td>
</tr>
<tr>
<td>Contractors</td>
<td>2%</td>
<td>35%</td>
<td>8-14%</td>
</tr>
<tr>
<td>User</td>
<td>5%</td>
<td>70%</td>
<td>27-33%</td>
</tr>
</tbody>
</table>

Source: Stephen Halperin, “Guidelines for Static Control”

*www.staticworx.com*
Choosing the right supplier is even more critical today due to advances in high-speed electronic equipment. Computer chips have become smaller and faster...and less able to withstand electrical charges. Many environments now require zero-tolerance ESD (less than 100 volts) protocols like constant grounding of personnel.

Adding to this problem, new studies show that circuit boards and systems may be more vulnerable to ESD than the microelectronic components comprising them. Again, misunderstanding is rampant. And misdiagnosis leads to very costly mistakes, including incorrect Class-0 ESD controls, excessive protection like shielding bags and air ionizers, unnecessary humidification controls—and more costs incurred through corrective action.

Ultimately, most ESD problems are not controlled through product design and voltage control. The best way to avoid needless investments and future headaches is to get it right the first time through the right flooring choice.

**Assessing the Costs**

Let’s review the various levels of costs often associated with this issue: ineffective static controls at the factory, incorrect problem diagnostics, equipment malfunction, shutdowns, repairs, component replacements, and related lawsuits.

Some ESD events are “catastrophic,” in which ESD destroys the assembly before it leaves the factory. Sometimes, they are latent, causing partial product degradation, leading to substandard equipment performance followed by field failures and malfunctions.

The situation is probably even worse since many incidents aren’t reported. What follows are documented examples of the havoc caused by ESD:

- **Fires and explosives.** Hundreds of explosions at plants and fires in operating rooms.
- **Damage to electronic parts.** Catastrophic and latent ESD damage that results in billions of dollars in lost revenue.
- **Critical communications errors.** Missed signals at 9-1-1 call centers, flight control areas, etc.
- **Multi-million-dollar law suits.** Includes one against Palm Pilot in which static was transferred from Palm cradles and then fried PC motherboards.
- **Sensitive medical equipment.** Electronic equipment in hospitals—such as dialysis, MRI machines, and fetal monitors—damaged by ESD.

The problem is pervasive and formidable, and it won’t go away unless companies perform due diligence. That means adhering to best practices and partnering with a trusted, knowledgeable solutions provider.

At Staticworx, we remove risks. We protect companies from the bottom up, and that includes the bottom line.