

How could Zinc Whiskers affect my computer room?

What are zinc whiskers?

Zinc whiskers originate from zinc-electroplated surfaces commonly used in a variety of building applications, including computer rooms. The zinc is used to coat metal fixtures to prevent rusting or oxidation occurring. The whiskers are typically 2 microns in diameter and, over time, can grow to several millimetres in length.

Where are they found?

Any zinc-electroplated surface may experience whisker growth, however it is certain types of floor tiles used in computer room raised floor applications which are of most concern. These tiles tend to have large surface areas and are often disturbed and /or moved during normal activity, causing the whiskers to shed into the environment.

What are the implications?

Zinc is a metal and a good conductor of electricity. Because the subfloor voids in most computer rooms are used as air ducts, the susceptible surface of the tile is within the supply airflow. The whiskers are brittle, can become dislodged easily and, if they come to rest on an exposed circuit card inside your equipment, they can cause short circuits, voltage variances and other signal disturbances, often intermittently. In the majority of cases, the same short circuit caused by the whisker will either "vaporise" the offending contaminant or else the whisker will become dislodged when the board or card is removed, leaving definitive fault analysis difficult.

It has been said that:

"Zinc whiskers could turn out to be the single most failure-causing anomaly of electronic and computer equipment in data centres and computer rooms."

Zinc whiskers are not known to pose a threat to health. While there is no published research on exposure, overexposure is not thought to be a factor, since indoor concentrations are relatively low.

Why have zinc whiskers appeared?

For the past few years, both the electronics industry and the metal and plating industry have been aware of this phenomenon. More recently, two contributing factors have increased the recognition of zinc whiskers as a potential risk within computer rooms:

First, quite simply the floors are now old enough to have grown reasonably sized whiskers which may have broken off and entrained in equipment.

Second, older electronic designs were less susceptible due to the size of the equipment. The continual shrinking of electronic assemblies has meant that the lead pitch (lead to lead spacing) on integrated circuits and other components is now so small that zinc whiskers have a much better chance of causing a short. Even a small whisker can now short two leads.

We have designed a specific, cost effective audit of computer suites. For further information, please contact us.

This guide is of a general nature; specific advice can be obtained from Assurity Consulting.

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