Zinc Whiskers

Zinc Whiskers are a common phenomenon when it comes to data centers, yet they can go unnoticed for years before they become a nuisance. To say that the problem 'grows' is accurate; the whiskers are formed from pressure lifting off zinc substance from metal to create microscopic threads that get longer and longer over time. Environmental conditions are not a factor affecting the formation of whiskers, and in most cases they are inevitable. The consequences of not dealing with them proactively can result in power failures, circuit shortages, damaged data and decreased reliability when new devices are installed.

Zinc whiskers form beneath the raised floor in data centers and when disturbed, usually due to equipment being moved around, they can detach from the metal surfaces they formed upon to become airborne substances. Once in the air, these metal particles, still capable of conducting electricity can float until they land within servers, affecting other metal pieces which can be detrimental, especially now that hardware pieces are more and more micro-sized, creating perfect crevices for the tiny zinc pieces to nestle in and destroy electronics.

Data centers with floors that are made of wood or concrete and covered with a metallic zinc layer on the bottom of the panels are most at risk. Zinc is commonly used for plating to prevent corrosion. Solid concrete or certain kinds of metal finishing will reduce whiskers. It is typical of older structures to be more at risk than newer ones. The whiskers can be seen with the naked eye, though the help of a flashlight and side view to be able to look downward might be necessary.

There are two solutions to dealing with zinc whiskers. First, if you let the floor boards alone and don't plan on any rearrangements in your data center, you can rest assured they won't create a hazard. So long as they are stuck to their metal surfaces, they can't float around and land where they are unwelcome. If moving equipment is, however, necessary you will have to replace the entire floor. Cleaning the floor boards or coating them is only a temporary solution since nothing can stop the re-growth of zinc whiskers.

To prevent zinc whiskers from being a problem, choose a data center that has a plan in place for dealing with them, or one that uses special filters capable of preventing them from floating onto your server's electronic components.