

The 3 Most Popular Misconceptions about Environmental Monitoring

An Exclusive Interview with Dr. Jeff Banks, Food Quality and Safety Expert

February 22, 2021

The first misconception about environmental monitoring is the idea that if there is a pathogenic organism in the environment, you are going to find it by testing for it. That is simply not the case. Finding an organism in a factory is like trying to find one particular star in the whole universe. It is even more difficult because you do not have a telescope that allows you to spot where these particular stars [microorganisms] are as they are invisible to the naked eye. You might get around to sampling one percent of your factory environment within a whole year, but you will never be able to afford the time or the resources to swab every last corner. Furthermore, if you take a sample at random, you will get a random result. However, if you have a good idea of where the microbe is, your chances of finding it will increase significantly. That is why knowledge about where these microorganisms tend to be is incredibly important.

The second misconception is that if you sample at the right spot, you will definitely detect the pathogen. Let us assume that you have the necessary knowledge, and you know which spots have the highest probability for contamination. Are you going to be one hundred percent successful if the bug is right where you think it is? The answer is no. The misconception is that you will be able to detach the bug from its niche, it will end up on your swab and you will be able to detect it with your method of choice. That just simply is not true and overly optimistic to say the least. Bugs will not readily yield to being sampled. Some microbes are so sticky that you cannot possibly get them off, even if you scrub using any variety of tools. It is quite incredible. If you get a negative test, does that mean the bug was not there? Possibly. It could also mean that it was so firmly attached to the spot that you were unable to remove it. That is why you should go back on a regular basis and resample that same area even if your previous tests were negative. This does not mean that environmental monitoring is a waste of time. It just means that you have to be aware of your limitations and your constraints.

The third misconception is that a negative test in a particular place means that the organism is gone for good. This might seem like an obvious one, but it is actually more common than one thinks. When you take a sample, it is a reflection of the hygiene status of that exact spot at that given point in time. But after the testing was done, some food might have passed it, maybe some cleaning was done and maybe a cross-contamination occurred. Some bugs will remain at a spot and are very difficult to dislodge, remove and destroy – they are called ‘persistent pathogens’ and are rightly considered to be especially problematic. Other bugs come and go – we call those transient contaminants. Maybe you had one bad item in a batch of ingredients. One moment the line was clean and suddenly the whole conveyer belt is contaminated. That is why it is so important that you do not just sample your equipment and your environment after you have cleaned it. It is not representative of the microbiological condition of your factory during the most important time, which is when you are making the food. Cross-contamination is the single biggest risk in modern food factories. Organisms are unintentionally transferred by people, by movement of air across the equipment or even some tiny splashes of water from the cleaning. It’s ironic that there are countless examples where foodborne outbreaks were a direct result of people having cleaned the wrong way.

Really, your best shot at effective risk management of your factory environment is a ‘seek and destroy’ approach using detection tests that are rapid, simple and can be applied on-site, along with the knowledge of where best to look, and a dynamic and structured programme that is scaled in volume and intensity to match the size and complexity of your production site.



Dr. Jeffrey Banks is a renowned food quality and safety expert with a career of more than 30 years in the food industry. He holds a PhD in Food Microbiology and has worked for and with some of the biggest names including the Campden BRI, DuPont, Cadbury, Kraft Foods and Barry Callebaut. He continues to challenge and redefine the status quo of quality and safety standards around the world.