

The Do's and Don'ts of Swabbing

An Exclusive Interview with François Bourdichon, Food Safety Microbiologist

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First of all, it is important to note that the entire approach of swabbing has been standardized under the [ISO standard 18593:2018](#). While many people refer to the standard, they don't necessarily read it in detail. Within this standard, there are three specific points that I would like to elaborate on when it comes to the Do's and Don'ts of swabbing.

Firstly, the timing of the swabbing is incredibly important. There are a lot of food manufacturers that mistake environmental with cleaning monitoring. Environmental samples are to be taken at least two hours after the start of the production shift and four hours after the last cleaning step. Thus, environmental monitoring happens during the production process when people are working, maybe even right before the next cleaning. But it should never be done directly after the cleaning, because then you are not monitoring the environment, but the efficacy of your cleaning practices. **The timing of the swabbing is key. If samples are collected at a wrong time, it can give you a false sense of security, which can be dangerous.** Personally, I had a case where a company had very good results based on the data we received. But when we visited the factory, it was an absolute mess. Why? Because they were sampling after the cleaning. And this is indeed mentioned in the scope of the ISO standard.

Secondly, the surface area that you swab has to make sense. One of the big points we changed in the ISO standard is the surface area that you are swabbing because the previous version specified 10cm x 10cm, so 100cm². The issue was that people read the example that was given and simply looked for 10x10 frames, swabbing precisely between the corners. But let's say you sample a keyboard; this format does not make any sense. If you insist on it, this can even lead to cross-contamination. We changed that in the current version of the ISO standard dating from June 2018. Now, you must be able to accurately describe the surface you swabbed, but there is no limitation in terms of size. It does not matter whether it is big or small but it has to make sense. Taking the example of the keyboard once more: I will swab the entire keyboard which is probably more like 15cm x 30cm. Or if I test a button that is frequently used in the production

process, I will swab the area of 4cm x 4cm of that specific button. It is not a big surface at all, but it is highly relevant. Equally, if I want to see whether a wall or giant homogenous surface is clean, I am not going to limit myself to 100cm² but rather test 1m². **The surface area must be chosen based on what I am looking for and what I am swabbing.** And most of the swabbing is done while looking for a specific pathogen. You must be able to describe the surface: if you need to come back after a positive result, you have to be able to do further investigations. That is why the capacity to take pictures becomes an incredibly useful tool. A picture supports the explanation why a swab was taken and why that specific point was a concern at a given time.

Thirdly, the type of equipment you need is critical. There is no one-size-fits-all swabbing tool. It really depends on what you are looking for. Personally, I prefer stick swabs and cloths, while avoiding contact plates and sponges. Contact plates have no mechanical force and are limited to the surface of the actual plates. Also, the environment has to be cleaned after the sampling. Sponges, on the other hand, are destroyed by abrasive surfaces and leave organic matter in the environment. That is why cloths and stick swabs on my opinion offer a better approach. **With stick swabs and cloths, you are able, in my opinion, to cover 99% of all the samples you need to take.** If it is a bigger surface that is easily accessible, cloths are the right choice. If it is a smaller area and/ or difficult to access, stick swabs are the right tool. And the rest of the samples are most likely organic matter that you can scrape off with a knife for further testing. So, the choice of equipment is something we could not standardize in the ISO standard.

Overall, swabbing requires more than just a simple protocol. You need to think about what you are looking for, what you want to see and how you are going to use the results. It requires actual training in order to understand why you are sampling in certain places and not others. That is something that has been proposed in the [IDF factsheet 13/2020](#): routine vs. investigative sampling. Routine samples are samples which are defined on a routine bases, playing the role of gatekeepers. And there are also investigations, for scouting. If I need to go in a processing zone to take 20 samples: 15 will be defined, and around 5 are up to my own determination. That requires me to be aware of where it makes sense to swab and which kind of tool I will use. I should neither be sampling because I need to 20 swabs before the next break, nor because my supervisor has asked me to do so. Start with WHY: I should be swabbing because I believe there

is a risk of contamination that could affect the products. The difficulty of this job is that sometimes it involves “schizophrenia”. You are looking for pathogens really hard, but at the same time you hope that you will fail in your endeavors. Because if you find something, it means you have an issue. But if you don’t find anything, you also have an issue because you might not be looking where you should. The ambiguity of this approach is that you are doing your best to fail. But the more you fail, the harder you try not to fail again. **You should never forget that one positive is something you can build upon, more than you could on 100 negatives.**



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