Disinfectant versus Sanitizer

We use the words *Disinfectant* and *Sanitizer* interchangeably in our conversations, in our professional literature and in our work documents. To be sure, both word derivations mean much of the same thing to us: to reduce or eliminate germs from an environmental surface. However, there is a distinct difference between the two in their meaning and application. This distinction is becoming more important when we are working with the ICM concept and evaluating new technologies, equipment and chemicals. Believe it or not, their mode of action and end-points are decidedly different. To recognize this difference is important in our ICM experiments, where we don't always have the luxury of comparing "apples to apples".

In making the distinction between *Disinfectant* and *Sanitizer,* we generally go to the regulatory literature, but we rarely see the two words used together. I recently came across an excellent short lexicographic essay; with a bit of history attached to it that I would like to share with you. It was written by some unnamed individual at Hillyard Chemical who deserves my thanks and admiration for doing so. I am taking the liberty of paraphrasing this marvelous piece of common sense for brevity of explanation. Here goes.

The difference between a "Disinfectant" and a "Sanitizer" is one of specific application. Whereas those of us who work in the health care and health care related industry are mainly interested in "disinfectant" data, those of us who work in public health and particularly in food service related industries are guided by the Public Health Service and are primarily concerned with "sanitizer" claims. The actual difference between the two terms is, to some extent, a matter of legal definition.

In current American regulatory language, a disinfectant is a product which completely destroys all specific test organisms in 10 minutes under conditions of the AOAC Use Dilution Test; whereas a sanitizer is a product which destroys 99.999% (or five-logs) of specified test bacteria in 30 seconds under conditions of the Official Detergent Sanitizer Test; also referred to as the Weber & Black Test. Obviously, the two tests deal with different aspects of the same problem: killing bacteria.

Interest in the use of germicides used in hospitals and other health care facilities centered on completely destroying all possible microorganisms. In the normal course of hospital application it was felt practical to allow at least ten minutes of contact time to accomplish this objective. As a result, most disinfectant tests were developed to ascertain whether any bacteria survived ten minutes of germicide contact … nothing more, nothing less. As a matter of fact, when contact times significantly less than ten minutes are allowed, it becomes very difficult to get any kind of meaningful results out of the Use Dilution Test. For this reason, when using a disinfectant at proper use concentration, it is vital to ensure an actual ten-minute contact time.

In food service and other public health related industries, interest in germicides took a different approach. Historically, the public health community sought to destroy harmful

organisms, or if they could not be totally destroyed, at the least, to bring them to a “safe” levels where they pose an insignificant threat to health. It became obvious that the conditions of use were dissimilar than in hospitals and that tests based on ten minutes contact time could not be satisfactorily interpreted. The Public Health professionals reasoned that in many cases 30-seconds was about all the contact time they could realistically expect. But the prevailing disinfectant tests could not yield 30 second results. So they developed their own test - which is now the Official Detergent Sanitizer Test.

Because the Public Health scientists did not anticipate that they could actually get complete kill in 30 seconds with any practical chemical agent, they developed a test in which bacteria are actually counted, as opposed to the Use Dilution Test which indicates presence of bacteria but yields no counts. They found that a 99.999% or five-log reduction in 30 seconds with practical cleaning agents was quite acceptable, if not perfect for the intended application and adopted this standard. To distinguish these products from disinfectants, they called them *Sanitizers*.

The five-log reduction rule of sanitizing took on new meaning when applied to clean rooms and newer methods for getting surfaces biologically clean. Validation of surface cleanliness with particle counting and ATP let us redefine “clean” in a completely different context; where the five-log reduction in organisms could actually be obtained through the physical act of cleaning. This meant that on a smooth surface, we can accurately measure the initial bioburden in negative log numbers by increasing the sampling area. After cleaning, we can now fairly easily determine if we reached the five-log reduction estimates by measuring total ATP on the just-cleaned surface. Since microbial removal is part and parcel of particulate cleanliness, it can be assumed that we can achieve a state of ‘sanitization’ using the same criteria we do for hot water rinses in ware washers, or the application of heat in laundry processing.

Therefore, in evaluating different germicides and cleaning methods, we need to distinguish between the two terms and two approaches. And, we need to consistently use the proper terminology in presenting the result of our ICM efforts to all stake holders.