FrontLine®
Information for Today's
Agri-business Professional

Practical Considerations for the use of the Charm novaLum® ATP Detection System

The Charm novaLum is an advanced instrument and swab system (Pocket Swab Plus) that is used to detect the presence of ATP (adenosine triphosphate) from bacterial cells and organic matter. (ATP, a molecule present in all living cells, is used to transfer chemical energy within cells.) The novaLUM is primarily used to rapidly assess sanitation procedures, determining if those procedures are adequate to assure the removal of contamination on food preparation and delivery surfaces, which could result in food safety risk. The swab is rubbed over various types of surfaces and then placed in a receptacle that contains an enzyme and substrate combination that reacts with ATP and produces a glowing light reaction. The chemical process is similar to that of the glowing light of firefly insects. The magnitude of the light emitted is in direct correlation to the amount of ATP that is removed from the surface by the swab and is then measured by the novaLum to provide a quantitative assessment of the adequacy of sanitation.

In food service sanitation audits, swabbing a 16 square inch surface area is recommended in order that standardization can be established for acceptable cut points. Those cut points for stainless steel, plastic and rubber surfaces are 1,000, 2,500 and 4,500 RLUs (relative light units) respectively. The swab samples are always taken after the surfaces have been cleaned and sanitized following a facility's standard procedures. If the novaLum results are above the recommended cut points, the cleaning and sanitation procedures are re-evaluated and the process is repeated until acceptable novaLum results are achieved. It is important that standardized procedures be utilized in this process because of the risk potential to human health of poorly designed cleaning and sanitation procedures. These cut points are specific to the Charm system and are not applicable to other brands of ATP detection systems.

Applying this technology to the cleaning and sanitation of animal feeding equipment should follow the same basic principles and procedures as the human food service industry. However, official cut points have not been established for animal feeding equipment. In addition, being able to swab the recommended 16 square inches of surface area is often not possible or practical in some types of commonly used animal feeding equipment. As a result, the potential exists for false negative results to occur and the nature of feed preparation in barnyard types of environments may cause the cut points for food service to be questionable for animal use. Experience, however, has shown that the human food service cut points are achievable in farm situations and can serve as reasonable goals. When applying to feeding surfaces on the farm, variations of 2-5 times the target RLU level of those used in human food services may still be acceptable considering that very contaminated surfaces will have results that are often in the hundreds of thousands to millions of RLUs. In many situations, however, there is a huge opportunity for cleaning and sanitation procedure improvement, particularly in calf milk preparation and feeding areas.

Although it is tempting to apply this technology to areas where it is not meant to be used, such as bacteria levels in milk, colostrum, water or other common feedstuffs or surfaces, this technology is meant to be applied to surfaces that have been cleaned to assess the effectiveness of sanitation procedures. It is important to remember that ATP exists in all living cells and in cellular remnants of dead cells. Application of ATP bioluminescence technology will be misleading wherever there is the presence of ATP from somatic cells, epithelial cells, plants cells and bacterial cells. It is virtually impossible to assess what combination of cellular material contributes to the RLU result that is measured from the swab that is placed in milk, colostrum or other organic materials.

Milk Products
The Milk Replacer Source®

FOR MORE INFORMATION, VISIT OUR WEBSITE WWW.MILKPRODUCTSINC.COM
P.O. Box 150, Chilton, Wisconsin 53014, (920) 849-2348, Fax (920) 849-9014

Practical Considerations for the use of the Charm novaLum® ATP Detection System

It is possible to use the Pocket Swab Plus to assess bacteria levels in water that comes directly from a well or municipal water pipes. Theoretically, water should have very low or zero levels of bacteria or organic matter; therefore, the RLU measurement from water should be very low. If there are no RLUs measured, it may mean that the Pocket Swab Plus is not sensitive enough for this purpose and that another type of Charm swab, Water Genie, should be used for water assessments of biological contamination.

The enzyme and substrate chemicals within the swab receptacle have potential to be impacted by direct sunlight. There is a special type of swab that is available for outdoor use; however, a good practice for Pocket Swab Plus is to obtain the sample, place it back into the barrel of the device, but not allow the swab to come in contact with the chemicals. Move to an area out of direct sunlight and complete the final step of twisting the barrel and putting the swab into the chemicals can be completed after the samples are all taken and then returned to an area out of direct sunlight. Once the swab has become activated, it should be read in the NovaLUM within 60 seconds.

This valuable tool helps farm managers and employees assess the effectiveness of their cleaning procedures. It is very important to remember that the novaLum system is best used after typical cleaning has been completed to assess the effectiveness of sanitation procedures and, if necessary, make improvements to achieve acceptable results. Periodic evaluation helps prevent procedural drift and maintain a healthy environment, particularly in calf raising facilities. The wrong type of bacteria can cause disease with very small numbers of pathogens in susceptible animals. High numbers of less pathogenic bacteria can cause ongoing demands on an animal's immune system resulting in animals that become more susceptible to disease.