

Product Bulletin

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RE: **Role of ATP monitoring system in assessing High-Level Disinfection**

Adenosine Triphosphate (ATP) is an energy molecule that is present in all living cells. ATP monitoring systems have been developed to gauge cleanliness in the food industry, healthcare and on environmental surfaces. What once took three days to culture and read can now be performed in less than one minute, giving one almost real time information.

There are some key issues involved with using the ATP system, the most critical being controlling background. Background comes mainly from two origins 1) sources of photons unrelated to the presence of ATP from microorganisms, this is usually extraneous light 2) free ATP or any extracellular ATP not attributed to the presence of microbial contamination.¹ Also, according to an Ecolab representative in an Infection Control Today (ICT) article, "Within the healthcare industry, the use of ATP as an educational and training tool may have some merit because there is some relationship between RLU (relative light units) readings and environmental cleanliness. However, the use of ATP as a hygiene audit tool is not recommended because the relationship between RLU and environmental cleanliness is not directly equivalent to microbial monitoring, as both living and recently killed organisms spill ATP on surfaces at various rates. Consequently, there is no known correlation between ATP level and numbers of microorganisms, and therefore potential pathogens, present on a surface. Additionally, ATP is not produced in certain microbes, most notably viruses."² One final issue pertains to the residual disinfectant left behind; previous reports indicate that several standard surface disinfectants may alter ATP detection as noted in JAALAS (Journal of the American Association for Laboratory Animal Science). Bleach, hydrogen peroxide/peracetic acid and quaternary ammonium were analyzed; the residual bleach shows the potential to provide false-negative readings.³

ATP measuring has worked extremely well in the food industry for decades in assessing how well areas have been cleaned. It is a very quick way to receive information about specific sites including dry surfaces and liquids. Since ATP results do not correlate with microbial counts (metabolic state, temperature and oxygen availability for the microbes all affect the reading counts) and have limitations due to background noise and residual disinfectant, this method is not ideal for measuring disinfection. Medivators agrees that ATP readings can help guide overall cleaning practices but they do not accurately reflect high-level disinfection results.

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References:

- 1 Using ATP in Healthcare Settings. Infection Control Today. December 7, 2010
- 2 Ceresa & Ball. Using ATP Bioluminescence for Microbiological Measurements in Pharmaceutical Manufacturing. PDA. Pg. 8. 2000.
- 3 Efficacy and Limitations of an ATP-Based Monitoring System. J. Am. Assoc. Lab Animals Sci. 2010 March; 49(2): 190-195.



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