

DROPS OF WATER INFORMATION

Laboratory Notes from Water Systems Engineering

ATP: Adenosine Tri-Phosphate Bioluminescence Test

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Adenosine triphosphate (ATP) is present in all living cells, thus, its assay can be used to measure total viable biomass. The firefly luciferase test for ATP in living cells is based on the reaction between the luciferase enzyme, luciferin (enzyme substrate), magnesium ions, and ATP. Light is emitted during the reaction and can be measured quantitatively and correlated with the quantity of ATP extracted from known numbers of bacteria.

Since the ATP is only present for about 15 seconds after a cell dies, only live bacteria are counted. The test can be run in less than 15 minutes and has an excellent repeatability. It has been successfully used in assessing biofouling in potable wells, remediation wells, recovery wells, monitoring wells, etc. Measurements of ATP have also provided useful information on the health of lakes, rivers and streams. Another area ATP analysis has proven very useful is in quantifying biological contamination in water of commercial use, such as for oil field injection, cooling towers, and paper processing. This rapid quantification is extremely useful in testing the effectiveness of biocides.

For additional information or assistance in identifying your well's problem, please contact our office.

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