HDR | HydroQual

April 11, 2011

Subject: Adenovirus Validation of the Atlantium Technologies Ltd. RZ-104 Hydro Optic Disinfection System

To whom it may concern:

This is to certify that Adenovirus validation testing has been satisfactorily completed for the Atlantium RZ104 Hydro Optic Disinfection System in compliance with the USEPA Ultraviolet Disinfection Guidance Manual (UVDGM, November 2006). The test plan for this validation was written by HydroQual Environmental Engineers and Scientists, P.C., Dr. Karl Linden of the University of Colorado at Boulder, Dr. Chuck Gerba and Dr. Akrum Tamimi of the University of Arizona and approved for implementation by Atlantium Technologies.

HydroQual Environmental Engineers and Scientists, P.C. (now known as HDR|HydroQual) supervised all testing, sampling and analysis, data analysis and documentation, and prepared the final validation report, which compiles the results of the validation tests and presents the validated adenovirus disinfection performance summary for the subject system. The calculation of the validation factor for credited RED and virus log inactivation is in conformance with the UVDGM.

Note that the Adenovirus validation tests were part of a larger program in which HDR|HydroQual successfully validated the RZ-104 by MS2, Qβ and T1 coliphage biodosimetry, in compliance with the UVDGM across a RED range between 20 and 161 mJ/cm^2. These tests defined a broad operating envelope and the resulting RED algorithm was used in making the Adenovirus credited log inactivation calculations. To reach a credited AD2 log inactivation of 4.0, an MS2 RED_{gg} of 118.3 mJ/cm^2 is required. Similarly, 2- and 3-log inactivations require an MS2 RED_{gg} of 51.9 and 80.0 mJ/cm^2, respectively.

Testing defined the validated operating envelope for achieving LT2 and GWR 4-log virus disinfection credits for the RZ-104 Hydro Optic Disinfection system to power levels between 40 and 100%, flows less than 248 gpm, and UVT greater than 85.3%. The MS2 RED_{gg} should be limited to levels greater than 23.5 mJ/cm^2.

These results demonstrate that the RZ104 UV reactor can accomplish 4-log virus inactivation as required by the UVDGM dose requirements in Table 1-4, making this unit a feasible and acceptable technology choice for Groundwater and LT2 Rule compliance.

Very truly yours,
HDR|HYDROQUAL

O. Karl Scheible

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cc: Phyllis Posy, Atlantium

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