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ATP Testing to Determine if Cultural Artifacts are Contaminated with Active Biological Materials

Jessica Keister, and Jessica Silverman

Presented at the 2017 PMG Winter Meeting in Kansas City, Missouri.

In late October 2012, Hurricane Sandy caused major flooding to huge areas of coastal New York and New Jersey. Storm flooding also caused extensive damage to materials held by archives, galleries, and other cultural institutions throughout the Mid-Atlantic. The hurricane-damaged archives of a New York City fine art gallery were subsequently brought to the Conservation Center for Art & Historic Artifacts (CCAHA) in Philadelphia, Pennsylvania for salvage.

Reports reached Philadelphia of heavy metal, organic, and biological contaminants present within the hurricane flood waters. Safety precautions were taken during the initial salvage, but these reports raised questions not only in further salvage, but for use of the archive materials once returned to the gallery. To this end, water samples were collected during subsequent treatment of the photographic materials in the collection. They were analyzed using the industrial water ATP Test, which detects actively growing microorganisms by tagging the adenosine triphosphate (ATP) present within all bacteria, mold, fungi, and algae. The ATP test is a firefly luciferase assay, producing digital output roughly quantitative to the biological mass present within the sample.

This paper will outline the salvage operation and safety precautions taken during the salvage operation, as well as the ATP testing and implications for future use of the archival materials.

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