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Article: When Inkjet Prints Get Wet: First Contact to Weeklong Submersions (Abstract)

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## **When Inkjet Prints Get Wet: First Contact to Weeklong Submersions**

**Daniel Burge**

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Responders to water emergencies in museums, libraries, and other cultural heritage institutions would benefit from advanced knowledge of their collection's condition when they finally gain access to the flooded environment. This project was intended to provide just such data for modern inkjet prints. It is possible that some inkjet print types may be so severely damaged that recovery efforts should be directed towards other, potentially salvageable materials. Conversely, objects that can withstand extended periods immersed should be known so that recovery efforts can be focused on print types which have a narrower window of recovery. These results should help staff prioritize salvage which is one of the most critical components of response. In the project's experimental program, a variety of inkjet print types prints were immersed in clean tap water for time increments of 1 second, 10 minutes, 1 hour, 8 hours, 24 hours, 48 hours, and 7 days. This was done to provide an extended range timeline for print behavior in water. Multiple measures of print appearance were monitored for change with increasing time in water. These included ink bleed, paper yellowing, optical brightening agent loss, gloss change, surface cracking, and planar distortion. It was found that a large number of inkjet prints suffered extreme damage directly on contact with water, leaving no time for successful recovery. Those most affected were dye inkjet on polymer and uncoated fine art papers. Some dye inkjet on porous-coated papers, however, were able to withstand immersion for hours or several days. In general, pigment prints were more resistant to water than dye with some lasting the entire week with only planar distortion. Still, some pigment inks bled which was unexpected and should be considered when preparing a disaster response plan. Most inkjet printing papers can be used for either dye or pigment inks and behave independent of the colorant used to make the print. The papers in the simulated water emergencies suffered a multitude of damage variations including planar distortions, surface cracking, optical brightener loss, and gloss change but at different rates and to varying degrees. From the above data sets, a prioritization strategy was created to provide basic guidance on response and recovery of these materials during water emergencies.

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