



Museums & Preservation

About the Dutch State Archives

For the past 13 years, the Dutch State Archives and Purafil, Inc. have aggressively researched the real effects of air purification on the degradation of paper. As the chief source of historical research for the Netherlands, it is the responsibility of the Dutch State Archives to manage and preserve all state records, including charters (sealed certificates on parchment) and maps. To date, the Dutch State Archives manages a total of 88,000 charters and 525,000 maps with more than 1,500 new maps added annually.

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Purafil Protects the Dutch State Archives



Dutch State Archive in Limburg

The ACBAM and STEP Projects

The results of two major research projects forced the Dutch State Archives to improve the air quality in museum repositories. The first project, entitled "Degradation of Cellulose containing materials in Libraries, Archives and Museums" (ACBAM), was launched in 1985. As a result of the ACBAM project, researchers concluded that air purification was a necessity in storage rooms housing paper and other cellulose-based materials. The second of the two projects, entitled "Science and Technology for Environmental Projection" (STEP), was initiated in 1992. The STEP project was funded by the European Commission, with Sweden, France and the Netherlands as supporters.

As part of the STEP project, the Dutch State Archives selected the General State Archives in Hague as the site for a real life study of paper degradation and the first pilot study of gas-phase air filtration. Two repositories within the General State Archives were selected for the study; both would store a wide selection of paper grades (softwood, groundwood, cotton-cellulose, acid, deacidified, old and new), but only one would be filtered of airborne contaminants. Scientists from Purafil, Inc. were asked to provide the necessary dry chemical media and air filtration system for removal corrosive gases, including: sulfur dioxide (SO₂), nitrogen dioxide (NO₂) and ozone (O₃). The result was a gas-phase air filtration system which contained two beds of Purakol and Purafil Chemisorbant media.

The air-agressivity of both environments is monitored using Purafil's OnGuard Atmospheric Corrosion Monitors. The OnGuard calculates real-time corrosion in Angstroms. The classification used for the safe storage of

archival materials is 2 Angstroms per day with a limitation of 40 Angstroms in 30 days.

Project Results

After three years of continuous monitoring, the first measurable differences in paper samples appeared. Papers stored in the repository without Purafil's gas-phase air filtration system showed significant discoloration or yellowing. "On the one hand we are glad with Purafil's results," states Theodore Steemers, Preservation Policy Officer for the Dutch State Archives. "On the other hand it is rather frightening that visual signs of degradation show up in a period of three years."

Direct gas monitoring of both repositories also revealed higher levels of airborne contaminants in the non-filtered repository. Recorded figures of airborne contamination levels are as follows:

Non Filtered Repository	Filtered Repository
30 ppb with peaks of 250 ppb	0-5 ppb

Corrective Action

The results of these studies were presented by Theodore Steemers, Preservation Policy Officer for the Dutch State Archives, to the 80 attendees of the 1998 Nordic Conference at the Royal Library in Stockholm. Museums, libraries and archives in various countries around the world were represented, including: Norway, Finland, Italy, Sweden, Denmark, Portugal, Belgium, the United Kingdom, Iceland, Estonia, Germany, France, Lithuania, Mongolia and Trinidad.

As a result of the ACBAM and STEP projects, the Dutch State Archives is conducting a damage survey. Of the papers dating from 1800 - 1990, more than 7.8% were found to be endangered (brittle or weak) and subject to conservation treatment. At present, papers are being randomly sampled and classified according to their level of degradation. By prioritizing the damage, the Dutch State Archives will be able to cost-efficiently preserve those documents in greatest need.



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