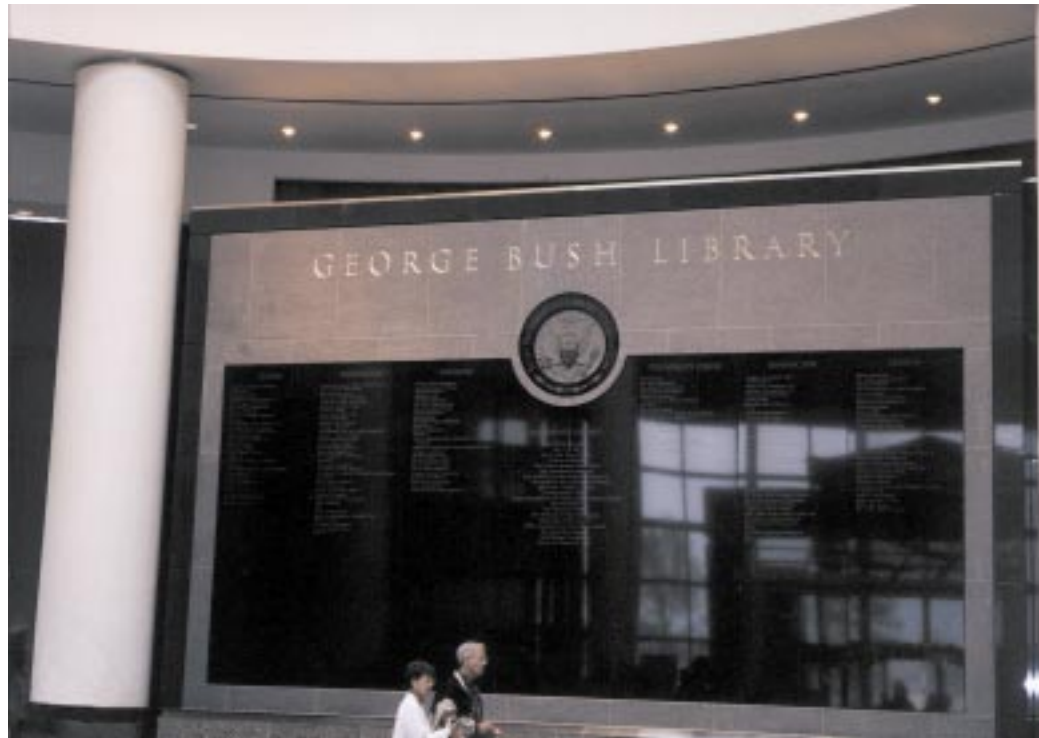


## Gas Phase Filtration for Libraries and Museums

**E**nvironmental forces play an important role in establishing the preservation characteristics of artifacts in a conservatory. Museums, and library curators have known for many years that a deficient environmental control strategy within a museum will result in severe damage or degradation of the materials on display or in long/short term storage.

As a result, typically four critical factors must be considered when attempting to control the environmental impact on precious artifacts. Temperature, humidity, particulate concentrations, and gaseous pollutants must be controlled so as to achieve a stable, non-hazardous environment. Most archival storage facilities constructed today, include control techniques integral to their design for the reduction of undesirable gases and particulates. The George Bush Presidential Museum is one such facility that utilizes gas phase filtration systems to control the introduction of potentially hazardous chemicals into the space.

Strong oxidants such as ground level ozone, and acid gases including sulphur dioxide and oxides of nitrogen are present in outdoor air. These chemicals when present in a humid environment will cause severe damage to any cellulose based material.



*George Bush Presidential Library and Museum*

### **SURVEYOR PLUS** Electronic Air Quality Monitoring System

The Library/Museum is protected from harmful pollutants by the use of strategically designed gas phase filters that can absorb pollutants before they enter the protected space. At every outdoor air ventilation point, a Circul-Aire side access filtration housing is positioned to guarantee complete removal of the entire spectrum of contaminants normally found in environmental air. Circul-Aire's environmental classification system Surveyor Plus is designed to characterize the corrosion potential of the environment. Strategically positioned, the monitoring system is used to ensure that all of the purification systems are functioning as designed and intended.

Public access area during construction phase



## Chemical Media Designed for UL Class I Criteria

In order to address the full spectrum of contaminants normally present in outdoor air, a combination of specially formulated potassium permanganate and activated carbon were used. This combination of Circul-Aire's MULTI-MIX® (MM-1355) media was prepared specifically to be installed in a two-stage media module system.

The two stage design provided the George Bush Presidential Library and Museum with a contaminant residence time of 0.2 seconds, thereby providing complete removal of outdoor air gases including nitric oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), ozone (O<sub>3</sub>) and general hydrocarbons. Final filters were added to the Circul-Aire air purification USAH system as a last stage of particulate removal, up to 90% efficiency.

A UL Class I certification was provided on all filters installed. Both particulate filters, chemical media and chemical media holding modules were UL Class I listed for fire suppression and non-flammability.

The 10 USAH filtration systems were constructed of a zinc coated steel, 2" double wall assembly. This unique construction provides for side access servicing of the entire filter section in order to facilitate both particle filter, and chemical media changeout.

## TECH-CHEK Service for Maintenance Monitoring

The maintenance of the USAH Air Purification Systems has also been simplified with the TECH-CHEK Service supplied by Circul-Aire. With this exclusive service, media samples are tested in order to verify consumption rates.

This lifetime service is monitored by a computerized program from Circul-Aire that indicates the appropriate schedule for media replacement.

This customized service, supplied at no additional charge, not only provides a precise maintenance schedule, but also ensures the highest performance of the USAH Air Purification Systems installed at the George Bush Presidential Library and Museum.



Typical USAH-404 filtration unit.

FOR MORE INFORMATION ON A SPECIFIC APPLICATION, PLEASE CONTACT YOUR LOCAL REPRESENTATIVE OR CIRCUL-AIRE.

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