

Impact assesement on organic materials in selected European museums

Elin Dahlin¹, Terje Grøntoft¹, Mihalis Lazaridis², Joel Taylor³, David Howell⁴, Nigel Blades³, Thodoros Glytsos² and Jan Henriksen¹

1. Norwegian Institute for Air Research, P.O. Box 100, NO-2027 Kjeller, Norway.

2. Technical University of Crete, Polytechniopolis, EL-73100 Chania, Greece

3. University College London, Centre for Sustainable Heritage, The Barlett School of Graduate Studies, Gower Street, London WC1E 6BT, UK.

4. Historic Royal Palaces, Hampton Court Palace, Surrey KT8 9AU, UK

This presentation will focus on the development of evaluation criteria for environmental impact assessment on organic materials in selected European museums investigated during the EU funded MASTER project (EVK-CT-2002-00093).

In museums, historic buildings and archives all over the world organic objects such as fibre materials are being affected either at display or during storage conditions. Unsuitable indoor environmental conditions are a serious cause of decay. The key to the survival of these objects is achieving an acceptable indoor climate environment. The MASTER project aims to provide conservator staff of museums, historic buildings and archives with a new preventive conservation strategy for the protection of cultural property. An important part of the preventive conservation strategy is knowledge about the environmental impact.

Early warning sensors are exposed in the 10 European museums and in a controlled environment in the laboratory in order to assess and calibrate the effect of the environmental parameters on the sensors. Analysis of the risks of degradation on organic material exposed in museums will be made through comparison of the effects on the sensors and on objects. Research on the correlation between the environmental parameters and the decay on organic materials such as fibre materials is going on within the MASTER project and some preliminary results will be presented

Concentration estimations of the most important environmental parameters such as NO₂, SO₂, and O₃ is an important issue within the MASTER project. The three gases are monitored indoors and outdoors at the 10 different European museums with different environmental conditions. A simple outdoor indoor mass balance model will be implemented for different infiltration and ventilation scenarios. Monthly values of O₃, NO₂ and SO₂, already measured during the first six months of the project, will be used as input parameters in the model. The aim is to evaluate the effect of infiltration and ventilation on the concentration of the most important gases and to predict the optimum ventilation conditions for each museum in order to avoid high indoors concentration values of the hazardous gases.