

CMST



Participating countries: AT, BE, CZ, DK, EE, FI, MK, FR, GR, IE, IL, IT, MT, NL, NO, PO, PT, RO, SI, SK, ES, SE, CH, TR, UK & USA
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www.enviart.org



Figure 1: Acetate negatives deteriorates themselves as they pollute their microenvironment due to natural ageing.
 (Taken from the collection of the National Archives, the Netherlands)

Objectives:



- **ENVIART**
Explore chemical interactions between cultural artefacts and typical indoor environmental conditions.
- **Chemical impact** of pollutants on CH materials, thus also considering environmental aspects, materials technology, chemical analytics, emission and harmonization.
- Indoor Environmental parameters.
Relation Outdoor-Indoor environment.
- **Six Focus Areas** combined in three working Groups with common focus:
 - Fundamental Research,
 - Dissemination and Education
- **Preservation**
 - ✓ 1.1 Degradation and Stabilisation
 - ✓ 1.2 Prevention
- **Analysis**
 - ✓ 2.1 Materials
 - ✓ 2.2 Indoor Environment
- **Guidelines**
 - ✓ 3.1 Methods
 - ✓ 3.2 Storage & Health

Working Group 1: Preservation

WG 1 has two focus areas: *Degradation & Stabilisation* and *Prevention* - to understand the changes in chemistry of an object due to the environment. Methods include: AFM, HPLC synchrotron FTIR and XRD and NIR. Since the strategic conference in Ohrid (2007) experimental techniques on ageing experiments have been improved. Mechanisms such as the role of light and indoor chemistry, and methods of evaluating materials were studied, including modelling outdoor and indoor air. Improvements were established in showcase development, and the role of microclimate and control methods such as anoxic environments considered.

Working Group 2: Analysis

Analysis of heritage materials and environments is challenging as we are dealing with complex systems. COST Instruments such as workshops, training schools and small conferences were used to discuss indoor air chemistry and non-destructive characterization of material changes. The state-of-the-art was discussed at the recent workshop on NIR/chemometrics for cultural heritage and a Workshop on environmental analysis. It is important to mention the role of industry, as companies have been closely involved in workshops on NIR/chemometrics for cultural heritage and have launched their products and services. Other innovative tools are being developed and evaluated for analyses of the chemical composition of indoor air, studies of stability of inks used for labels in natural history collections, and volatile degradation compounds and their role in long-term preservation and identification of heritage materials.

Working Group 3: Guidelines

The cooperation of D42s Workgroup3 on harmonisation of *methods* and *storage and health with* CEN TC346 'WG4-Environment' is proving fruitful. Recently 2 prEN standards have been adopted for voting: on measuring the air and surface temperature, and the limitations of T and RH. And on specifications for light and lighting for exhibitions of art are being drafted. Serious interest has been shown by nonCOST countries such as USA and Jordan. One important working item is the description of environmental conditions for storage and exhibition for a variety of materials with different properties and behaviour. A novel method was developed for the effects of the emissions of volatiles on organic materials.

Main Achievements:

- Multi-disciplinary collaboration.
Novel applications in Cultural Heritage Research
- Collaboration in COST strategic workshops, summer schools and EU conferences
Exchange of researchers
- Prevention - Analyses - and Guidelines
New input for guidelines at CEN TC346 by scientific discussions between COST D42 and CEN TC346 members
- Improved view on the application of artificial ageing experiments
Novel insights in deterioration and indoor environment

