

## Brainstorming on Research Gaps

### IAQ 2018 Conference in Krakow, Poland

During the conference, the participants were invited to submit ideas about research gaps or questions. Those information were compiled without analysis or prioritization to bring them available to our community. Hope that some of those elements may inspired you in your future research.

#### The questions asked were:

What are the knowledge gaps for the field of IAQ in museums, archives...?

What are the problems we have?

What are the tools/sources do we wish to have?

What are the questions you have about IAQ?

#### Here the compiled list (not edited):

- An understanding of what is tolerable pollution-related degradation in relation to use. E.g. NO<sub>2</sub>-induced colour change may not be relevant in some cases, but brittleness might.
- How do we prioritise investment into pollution prevention compared to T and RH – what are the situations where we really achieve a decisively big impact with filtration instead of T and RH control?
- What is the effect of mixed pollutants?
- Effect of aldehydes on reactivity of acid with materials
- Efficiency and proper passive use of poll scavengers at <1ppm level in display cases.
- Effect of fire smell killer device (active oxygen, ozone, electron or such) on the rest of the collection (in theory bad but may be acceptable in practice)
- Prediction of effects of RH/T/poll on diff materials over time (excluding RH/T on cellulose).
- What is the state of the art to direct reading devices of key pollutants at less than 100 ppb?
- if threshold for poll – material exists, we need to find those data.
- Dose respond of O<sub>3</sub> on diff organic materials.
- Do flame retardants are dangerous to objects by contact or from their VOCs?
- All single materials for showcases tested by Oddy and pH, despite showcases shows hazing, what about different pollutants working together?
- We need small inexpensive air filters for showcases (positive pressure or recirculating mode)
- Validation of Low-price sensors for pollution + link their output with threshold/damage risk
  - PM sensors often is counts/m<sup>3</sup> not in ug/m<sup>3</sup> - adjust acceptable range to these units
- What is the effect of ashrae(?) on the environment?

- Can we use air pressure to improve the IAQ?
- To develop test methods to evaluate emissions emitted from “low emission” products used in display cases – are they really low emission?
- Accelerating ageing studies on parchment leather involving volatile organic acids (acetic, formic) at 50% RH. Textiles -> cotton, linen.
- Better guidelines on how to choose the best display case for your collection? What are the most important parameters to consider?
- Why is there no different standards for archives (full of materials = buffer) vs. museums (empty room)?
- Suppose we don't know the relationships between environmental parameters & degradation rates, how do we determine good & bad?
- Gather information to make it more accessible (gaseous and particulate pollutants)

Which pollutants, which effect or not on collection?

Which method for diagnostic and what types of measuring instruments to take a diagnosis: do I have a problem even if I do not see anything on my collections?

Mitigation

Tools on IAQ.DK website?

- Ozone infiltration about(?)

Dust in museum

Fine and coarse particles,

recycled air, detection of particles, suspension...

On collection