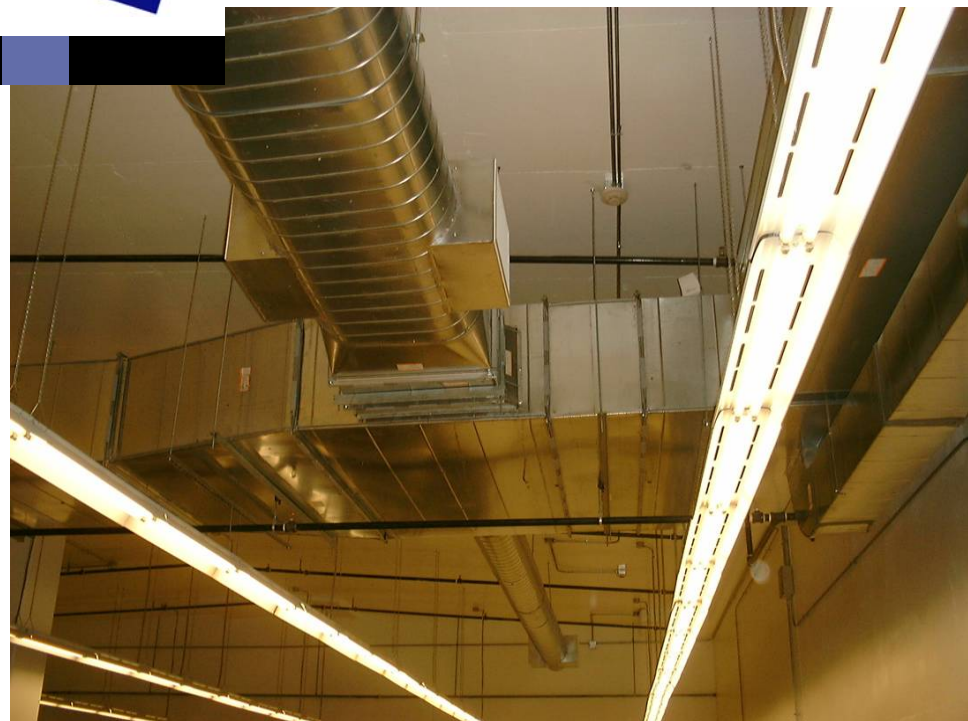
The Dutch Archival Act and Harmonisation

TNO | Knowledge for business

John Havermans

TNO
Team Conservation Technology



The Netherlands Organization for Applied Scientific Research

- **Mission TNO**
  - **To apply scientific knowledge with the aim of strengthening the innovative power of industry and government**

- **TNO Law Art. 2**
  - Make technical science, natural science and other scientific research applicable for the society and combine natural science with social science
- Team Conservation Technology
  - 3 senoir scientist + 2 medior scientist
    - Historical buildings
    - Indoor Environment
    - Analysis
    - Materials technology

Framework

IAQ

Analysis repositories

Backgrounds

Acknowledgment

Conclusion

Dutch Archival Act

- Archival act: 1995
  - Valid for legal corporations pertaining to public law
  - Authorities

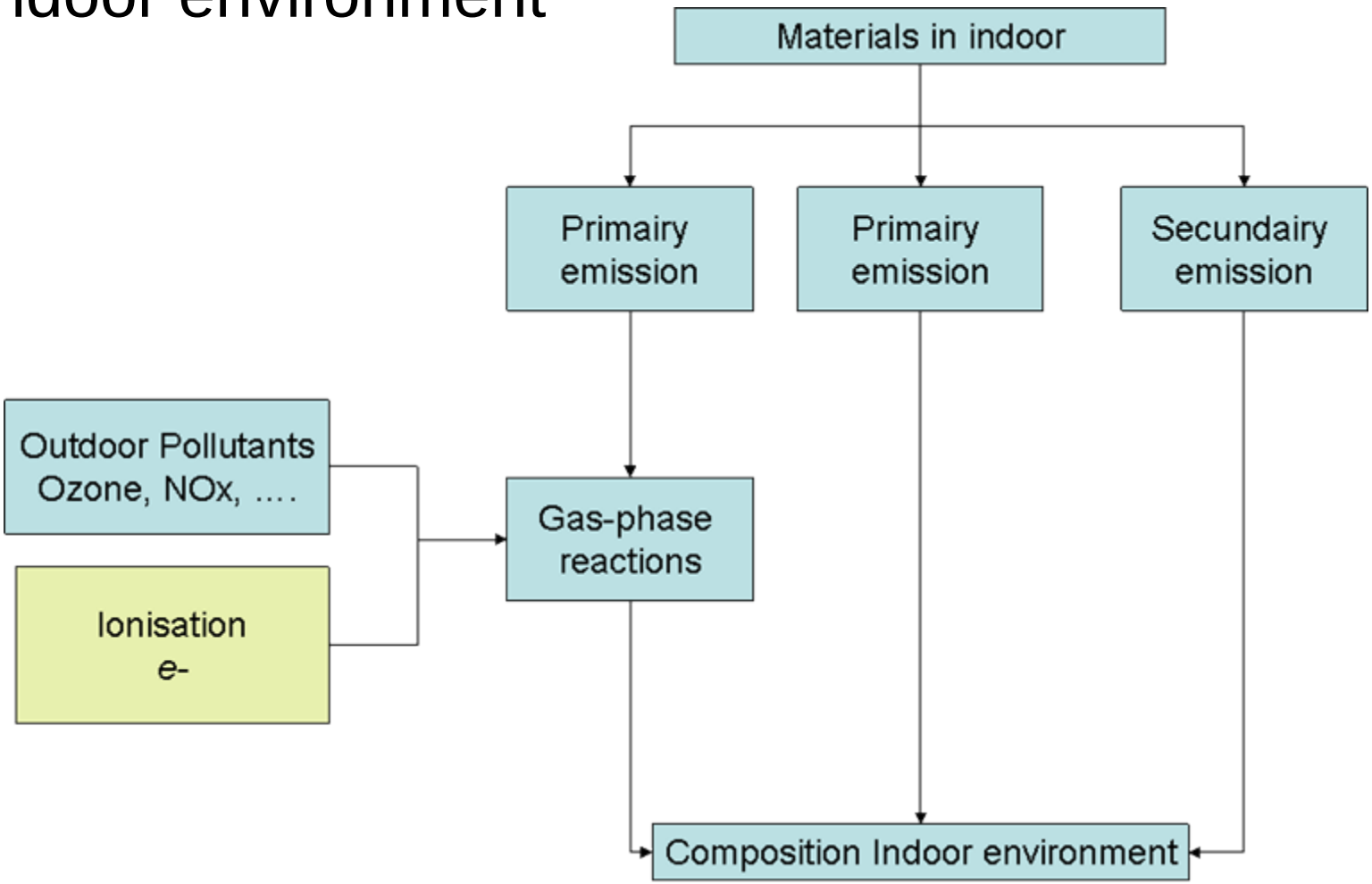
- Is focussing on
  - Formation
  - Destruction
  - Public nature/publicity

- Storage is not the aim – having the objects accessible

  - This includes no significant deterioration within 100 years
    - Article11
  - Indoor air quality parameters
    - Article 13

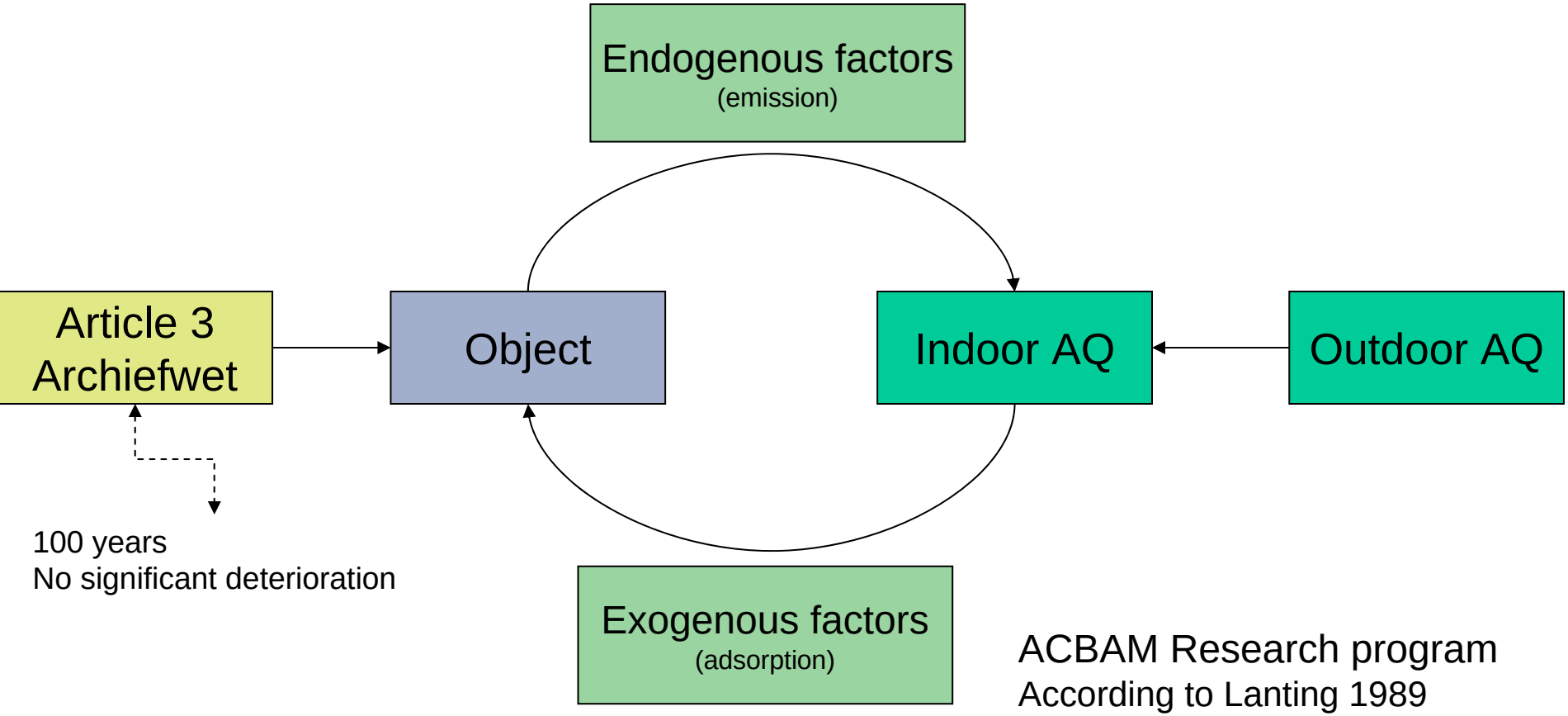
  - Recently the archival act was updated (April, 2010)

Indoor environment

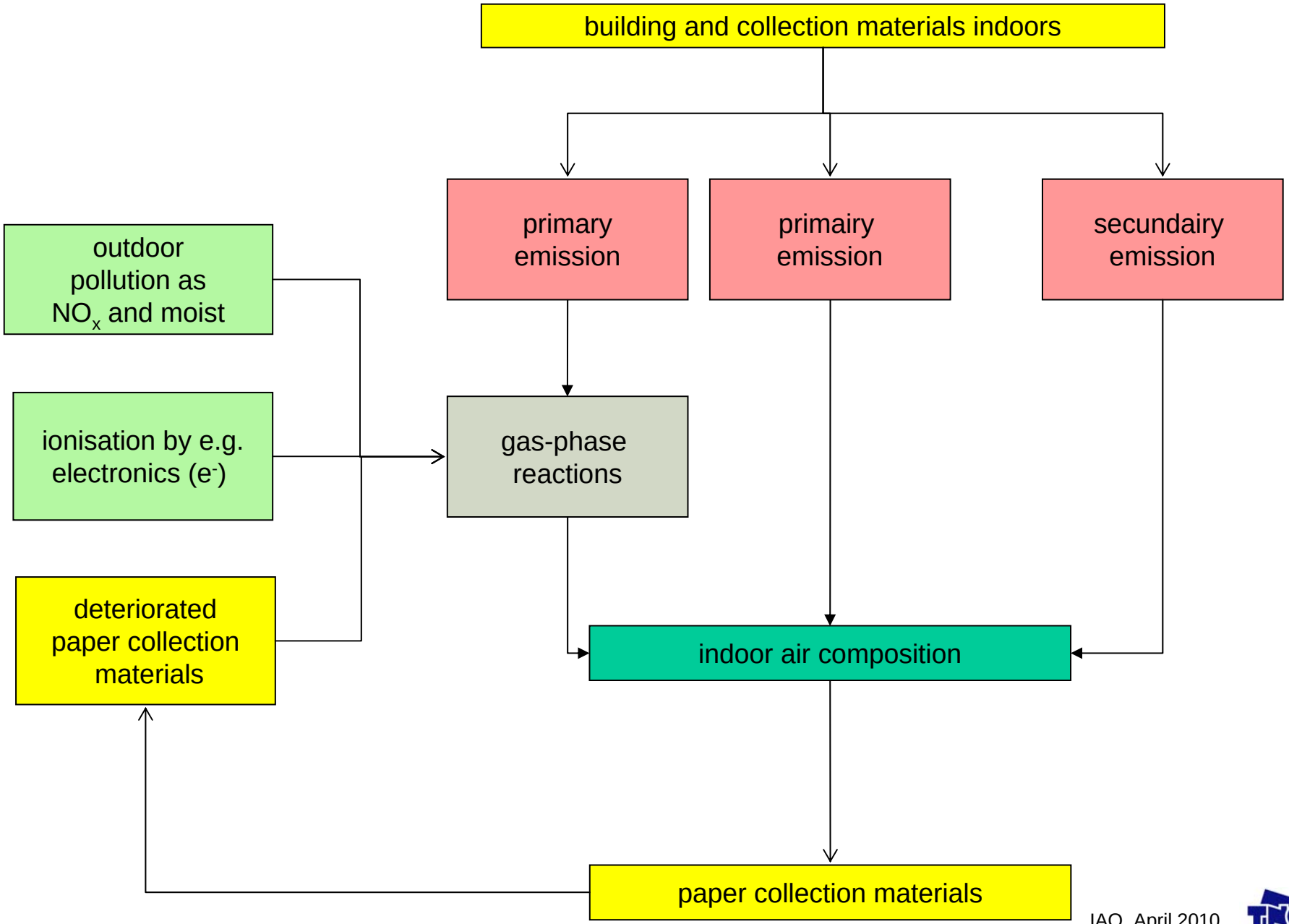


Origin according to Uhde and Salthammer 2007, modified by Havermans 2009

Relation with the archival Act



ACBAM Research program
According to Lanting 1989
& Havermans 1990


building and collection materials indoors
primary emission
primairy emission
secundairy emission
outdoor pollution as NO_x and moist
ionisation by e.g. electronics (e^-)
deteriorated paper collection materials
gas-phase reactions
indoor air composition
paper collection materials

And it refers to standards (some examples)

- Paper and self adhesive labels: NEN 2728
- Packaging materials for photographic objects: ISO 18902
- Quality guidelines according to ICN
  - (however ICN is not existing anymore, it is now a part of RCE)

- Open sprinklers are not allowed
- Small Fire extinguishers allowed (CO_2). Only to be used by trained staff
- Newer systems as oxygen reduction are allowed

- Distance between upper tray in cabinet and ceiling: 30 cm

- Emission free building materials

A look at the archival storage room of the ministry

Not OK

OK

Not OK

Not OK

More historical facts

- 1998 - 1996 : Deltaplan for Conservation
  - 1990-1994: STEP project on paper degradation by pollution
  - 1994: first report by Vosteen with recommendation on the indoor air quality in Archives
  - Development of the filter system: DELTA 1
  - This system was incorporated in the Archival Act (1998 and 2001)
    - Article 5: indoor environment for archival rooms
    - Article 32 – 42: indoor environment archival depots

Framework

IAQ

Analysis repositories

Backgrounds

Acknowledgment

Conclusion

needs for purification and IAQ levels

- Article 37
  - Air should be purified from SO_2, NO_x, NH_4 and O_3
  - Only on locations with high traffic movements and the average outdoor pollutants are
    - 15 µg/m^3 SO_2 (5,6 ppb)
    - 25 ppb NO_x (no µg/m^3mentioned)

- Monitoring IAQ by OnGuards (Article 36)
  - 40 Ångstrom (Å) per 30 days
  - This is 7.5 times lower, than ISA class G1

  - Note: It was not mentioning which metal is applied

What about ISA/ISO and Chris Muller

Value presented in	*Corrosion In Å*	*SO_2 In ppb*	*NO_x In ppb*	*O_3 In ppb*
ISA G1	< 300	< 10	< 50	< 2
DELTA 1 (NL, Vosteen)	40	< 1,33	< 6,67	< 0,27

ANSI/ISA S71.04-1985 and
NEN-EN-ISO 1184-1, Corrosion of metals and alloys
Classification of low corrosivity of indoor atmospheres

Paper by Chris Muller

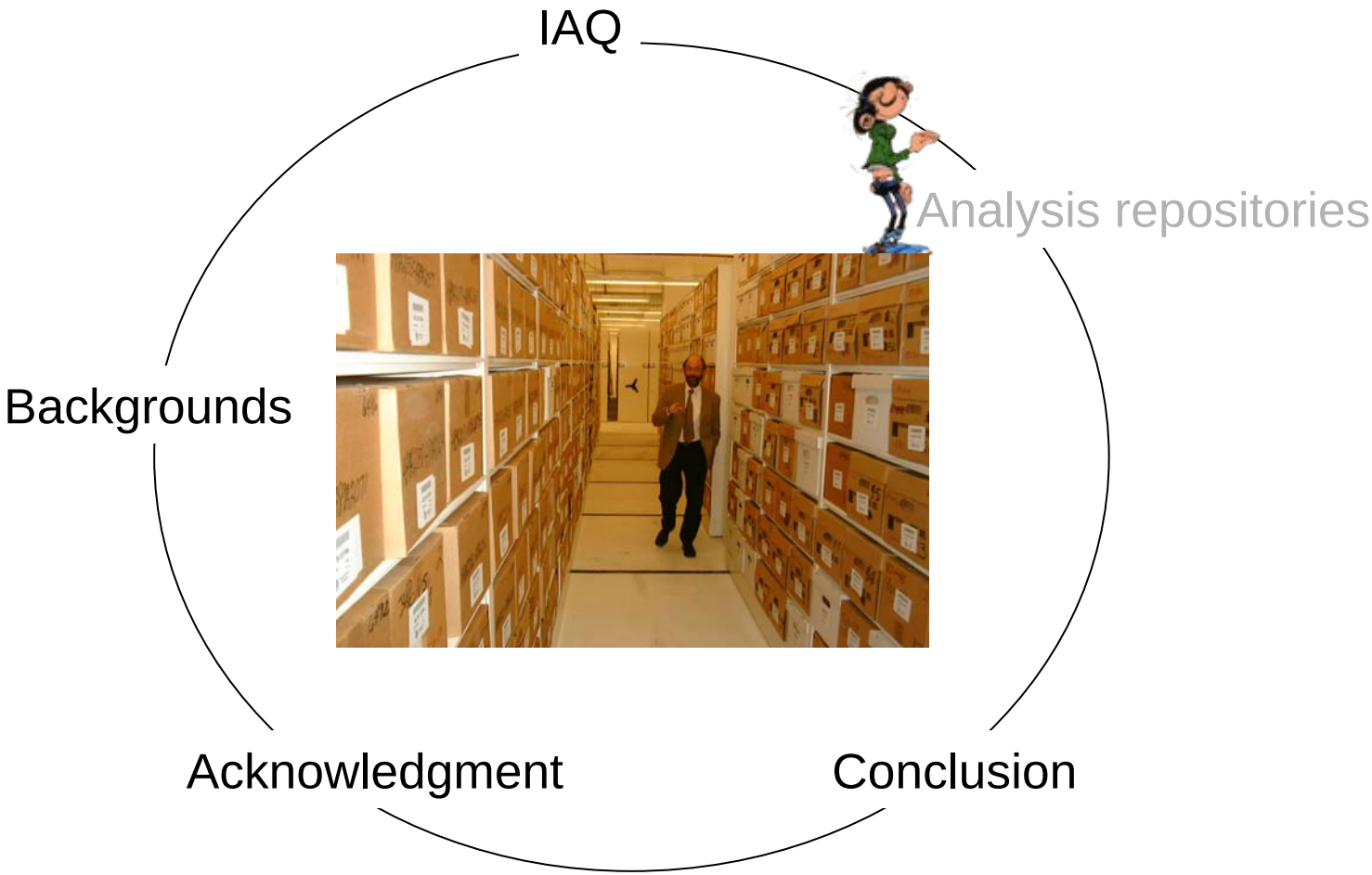
Class S1: 40 Å per 30 days (Ag)
Class C1: 90Å per 30 days (Cu)

From ISA to normal values

- SO_2: 1.3 ppb (3.4 µg/m^3)
- NO_x: 6.7 ppb (13 µg/m^3 NO_2 and 21 µg/m^3 NO_x)
- O_3: 0.3 ppb (0.6 µg/m^3).

So,
now it is clear what the indoor levels should be

Framework


IAQ
Analysis repositories
Backgrounds
Acknowledgment
Conclusion

Analysis and locations

- SO_2
  - API 100 Fluorescent SO_2 analyser
- NO_x
  - API 200 Chemiluminescence NO_x analyser
- O_3
  - API 400 Absorption O_3 analyser

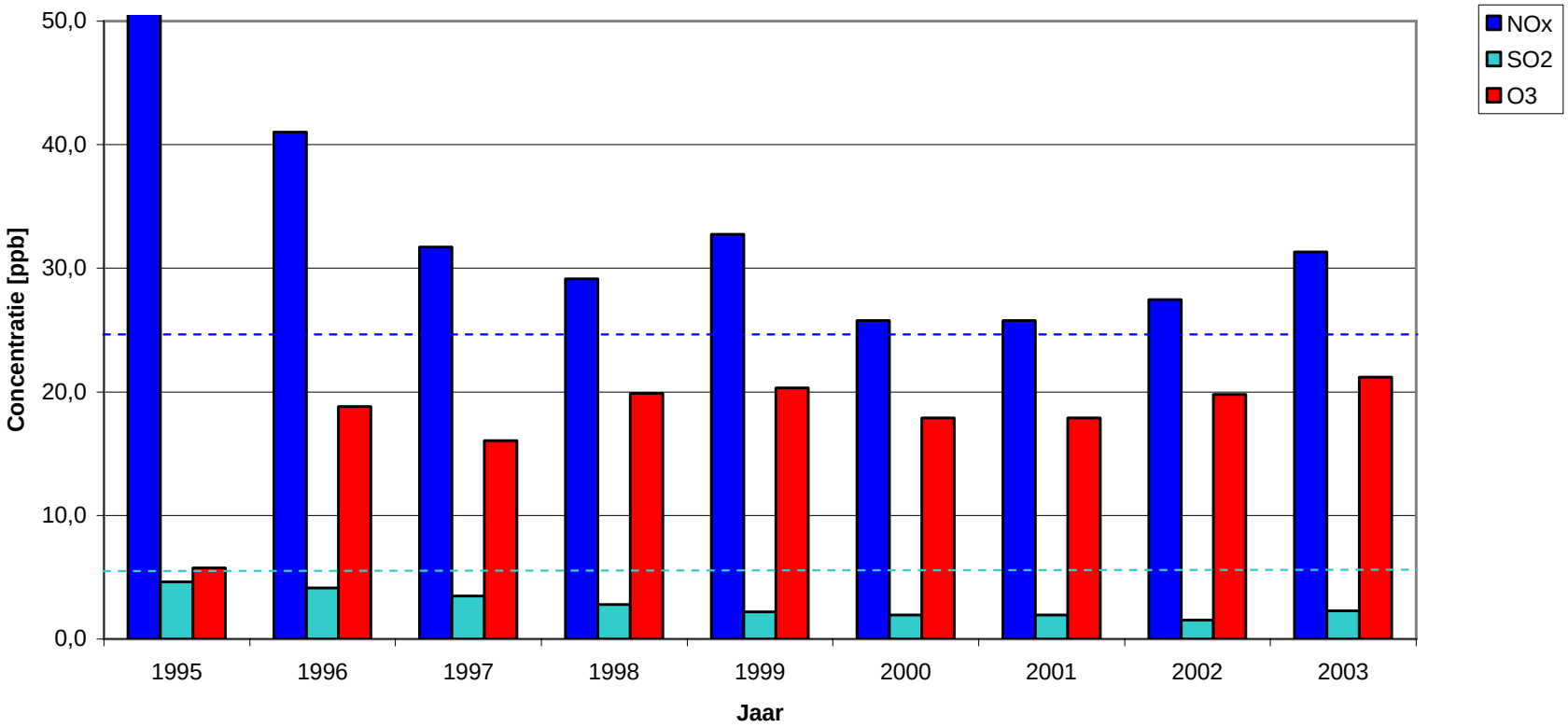
The Hague

National Archives

Royal Library

Archival storage room ministry for Culture

There is a need for purification (Article 37)

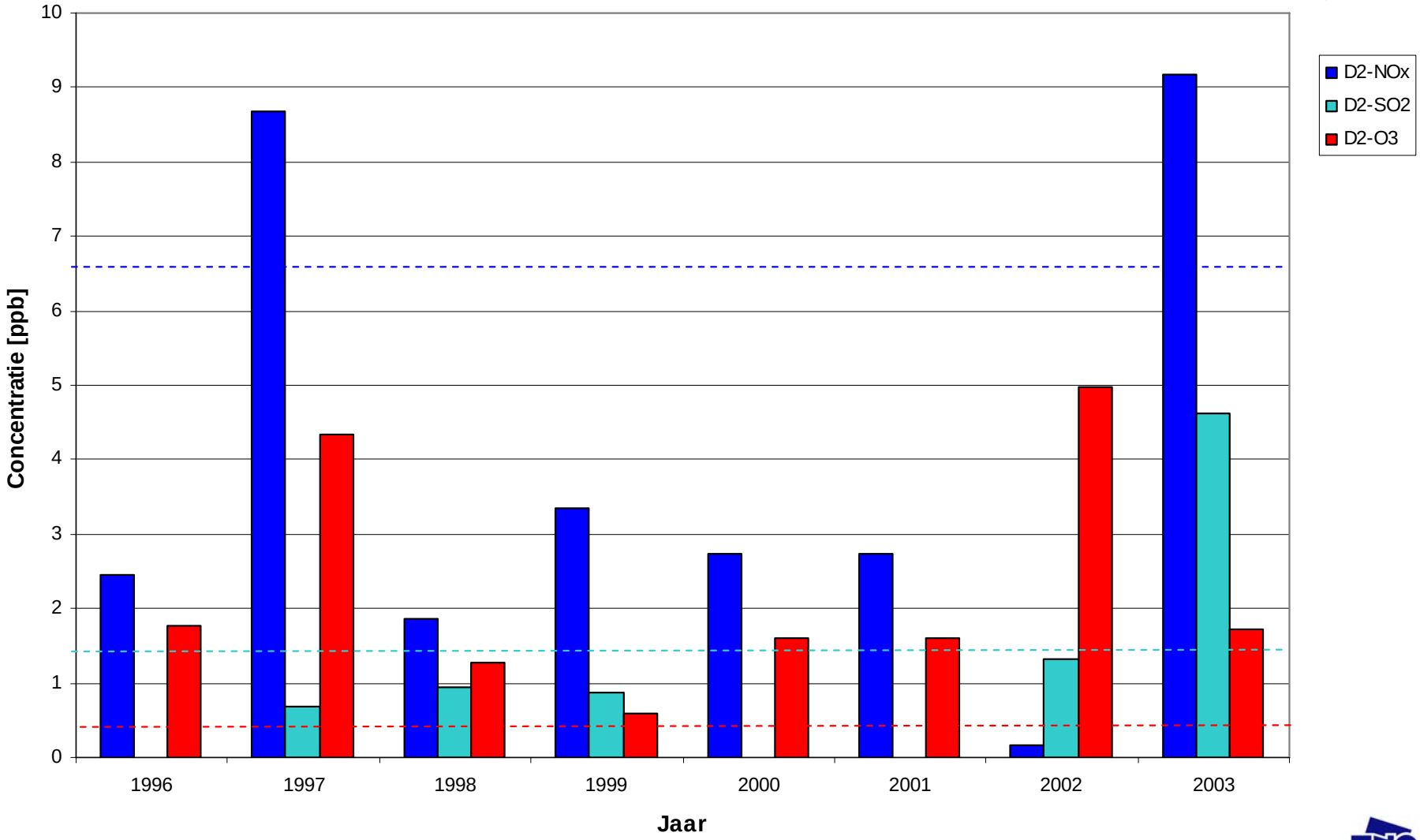


Data from LML, RIVM/TNO

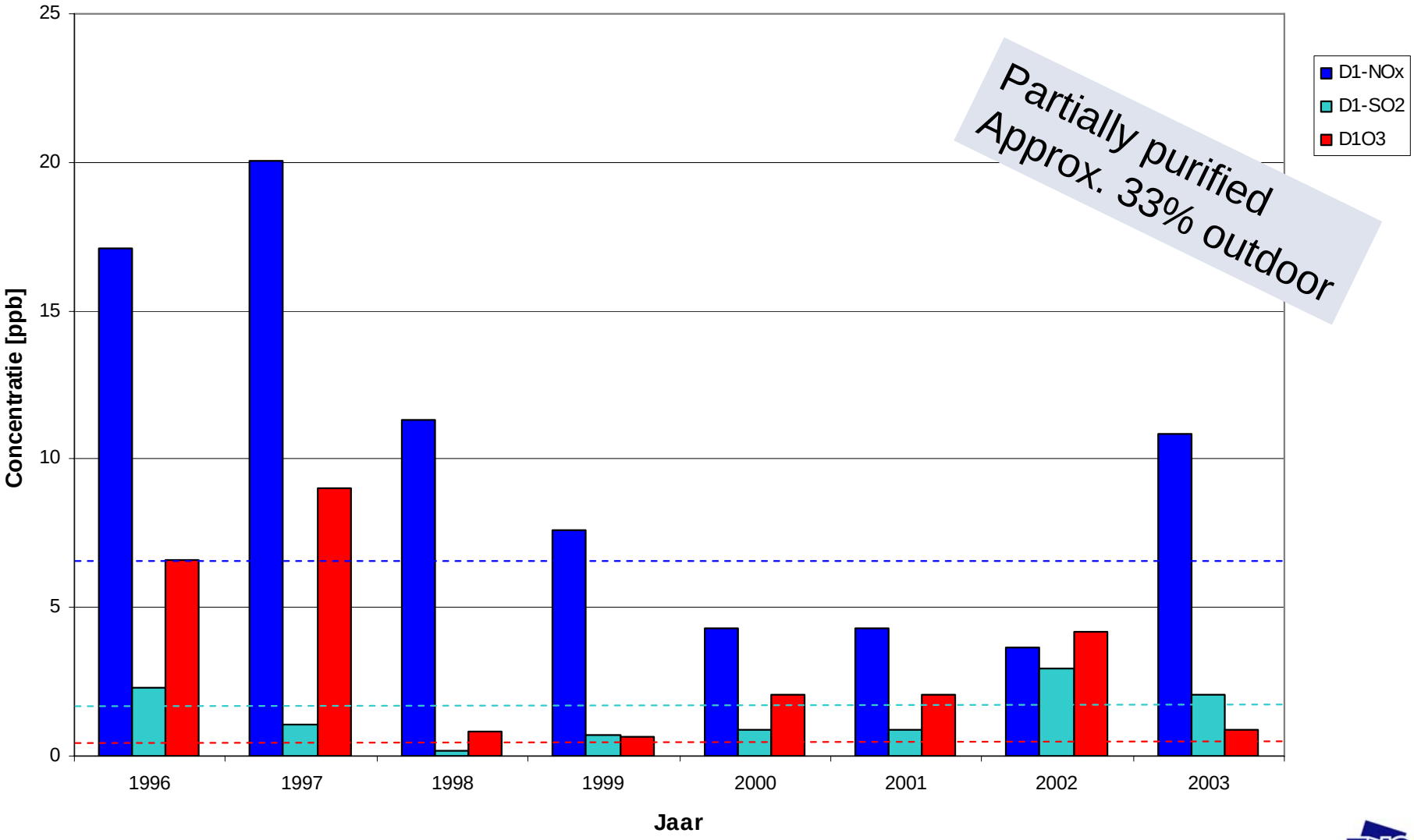
For NO_x: average is 28 ppb >25 ppb

National Archives (1994 – 2004)

purified



National Archives (1994 – 2004)



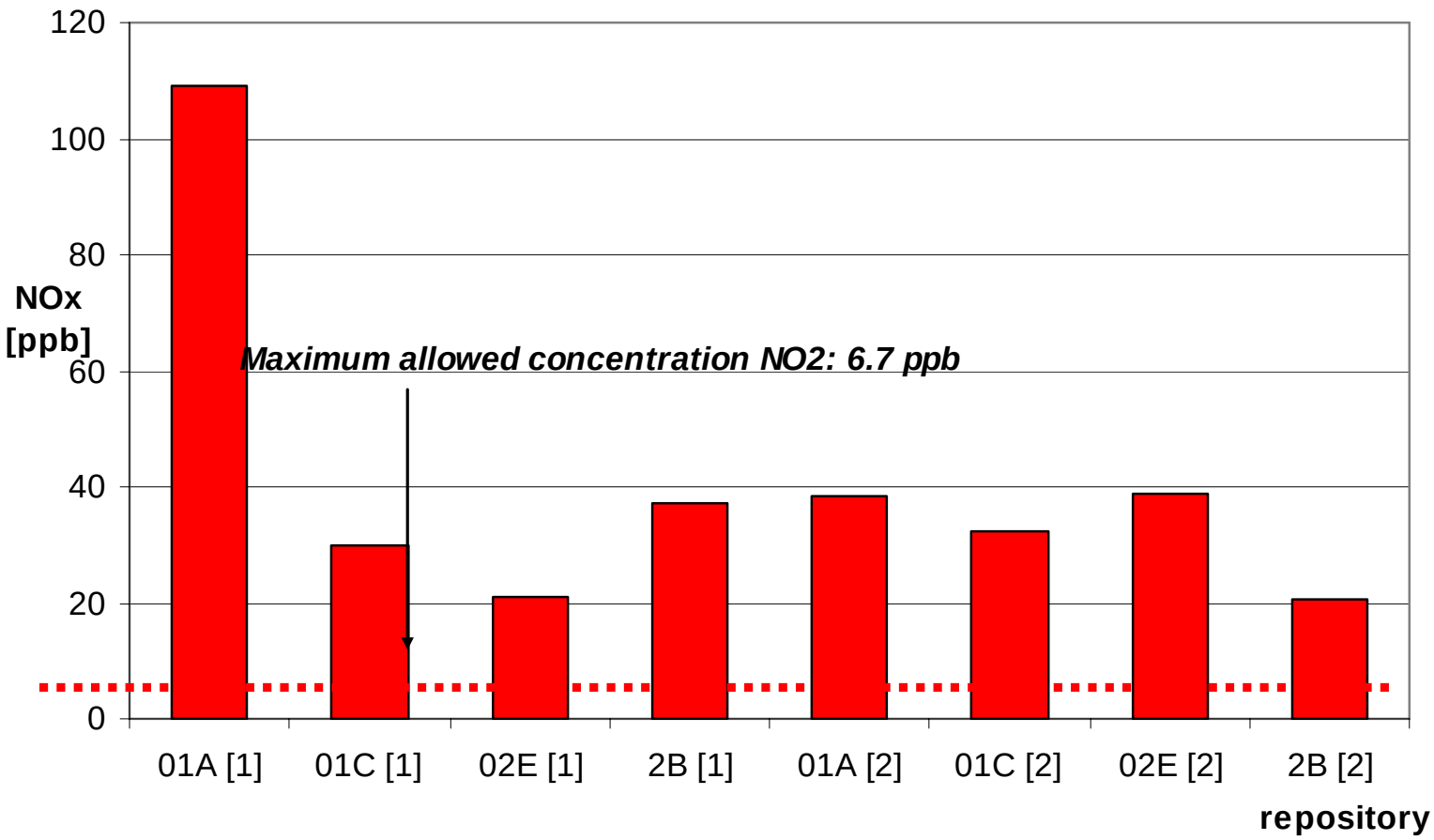
National or Royal Library

4 repositories

No.	*Code*	*Type*
1	01A	19th century collection (books)
2	01C	Newspaper
3	02E	Modern Journals
4	2B	Rare collection incl. handwritings

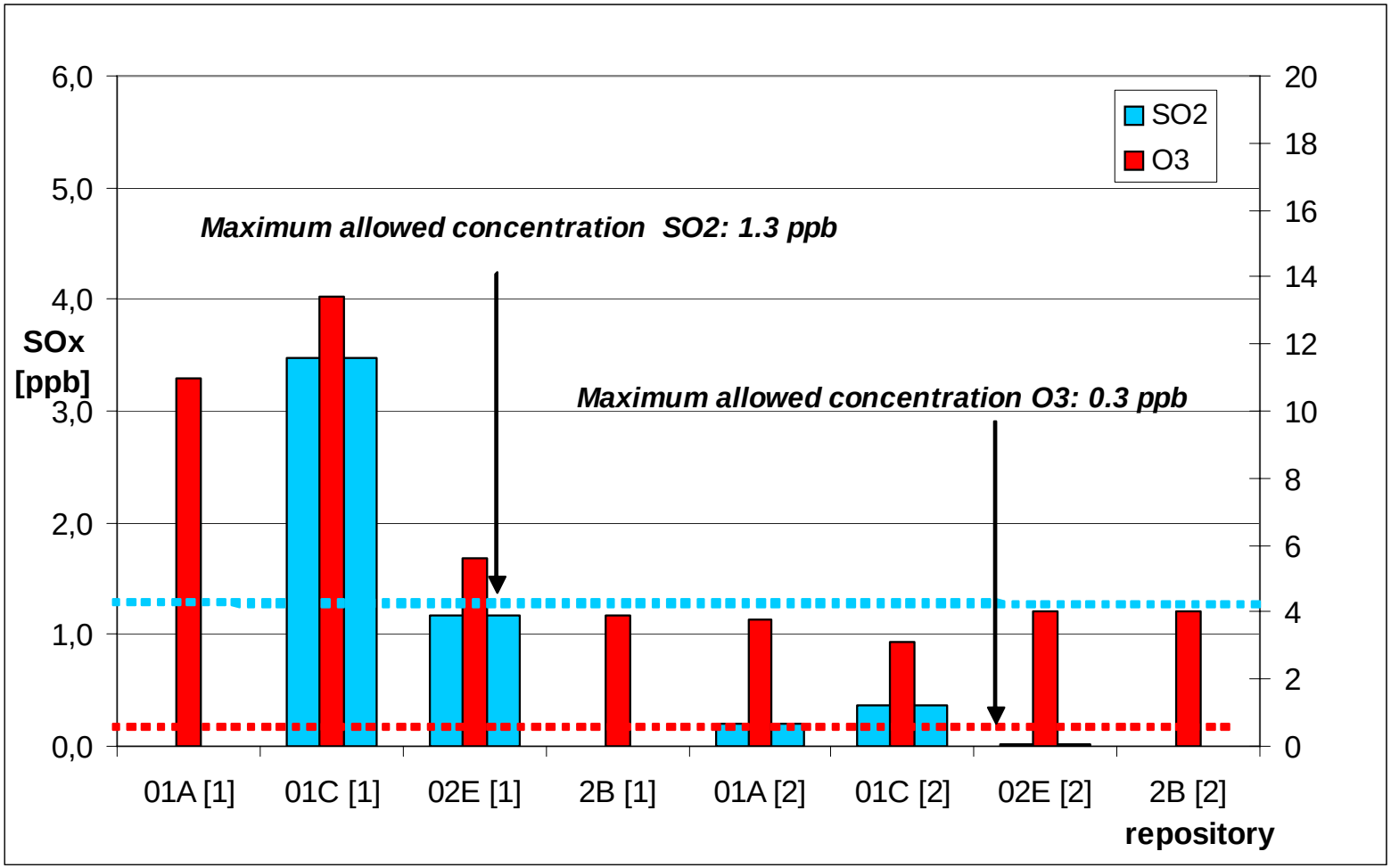
National or Royal Library

NO_x in repositories

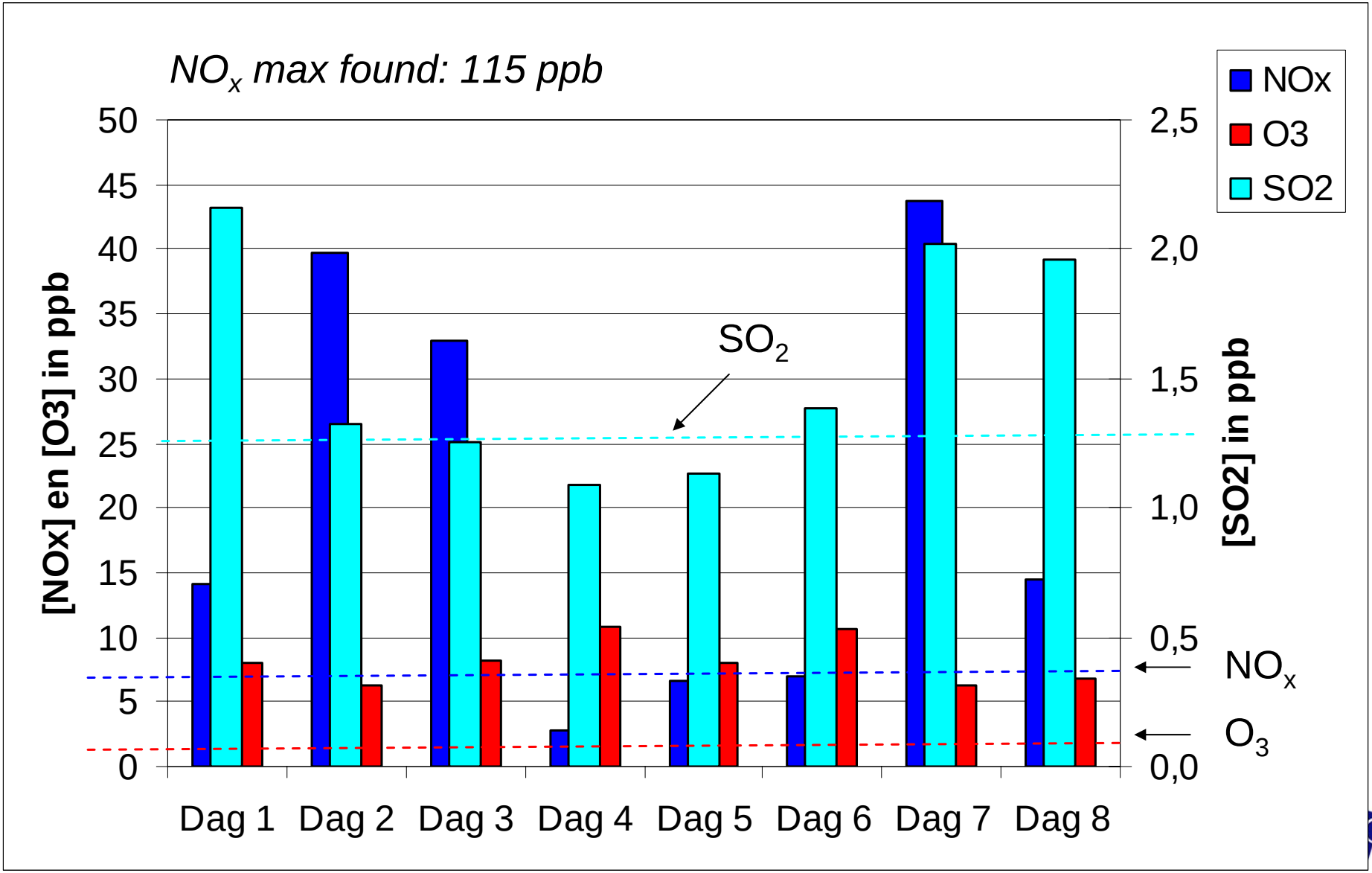


National or Royal Library

SO_2 and O_3 in repositories



Repository of the Ministry of Culture



Framework

IAQ

Analysis repositories

Backgrounds

Acknowledgment

Conclusion

Discussion - 1

- Archival act
  - Not that easy for interpretation
- Backgrounds missing
  - For application of the Ag/Cu corrosion
  - Art. 36: x Å per y days
- ISA and ISO
  - Are not that clear.
  - ISO classification in mg/m^2
- Monitoring is important
  - Please note, more companies are making apparatus like the OnGuard
  - What to monitor?

Discussion - 2

- Non purified storage rooms/repositories
  - NO_x and O_3 far to high (act-classification)
- Act should also include
  - Library and other paper based collections
- Missing
  - Effect of indoor pollutants (VOC, mVOC)
- Classification
  - S1/C1

Recommendation based on current classification

Gas	Max. in ppb	Max. in µg/m³
SO_2	1.3	3.4
NO_2	6.7	13 (or 21 as NO_x)
O_3	0.3	0.6

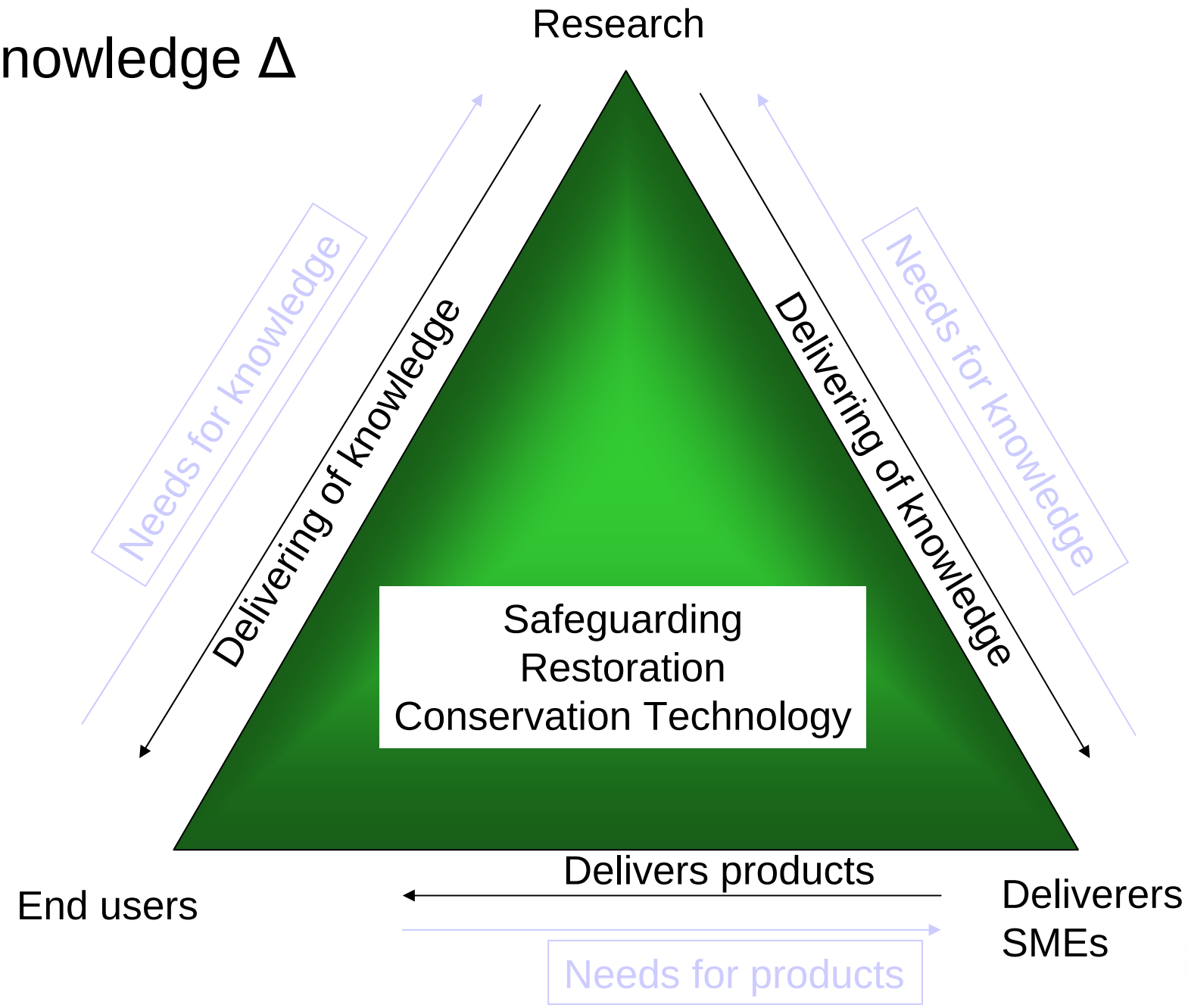
Discussion – 3 Update Archival Act in 2010!

- **Till 2010**
  - Continue monitoring with OnGuard
  - Cu/Ag corrosion
  - ISO 11844-1:2006
    - Class S1:
      - 40 Å per 30 days (Ag)
    - Class C1
      - 90Å per 30 days (Cu)
  - SO_2
    - 1.3 ppb = 3.4 µg/m^3
  - NO_2
    - 6.7 ppb = 13 µg/m^3
  - O_3
    - 0.3 ppb = 0.6 µg/m^3
- Article 36 & 37
  - Regeling Bouw en inrichting archiefbewaarplaatsen

- **From 2010**
  - No continue monitoring of the pollution needed?
  - Only T & RH ?
    - Article 52: guarding storage conditions
  - SO_2
    - 5.5 ppb = 14.5 µg/m^3
  - NO_2
    - 10 ppb = 19 µg/m^3
  - O_3
    - 5 ppb = 9.9 µg/m^3
- Article 51
  - Regeling Bouw en inrichting archiefbewaarplaatsen

What went wrong?

Knowledge Δ


Research
Needs for knowledge
Delivering of knowledge
Delivering of knowledge
Needs for knowledge
Safeguarding
Restoration
Conservation Technology
Delivers products
End users
Deliverers
SMEs
Needs for products

Framework

IAQ

Analysis repositories

Backgrounds

Acknowledgment

Conclusion

Conclusion

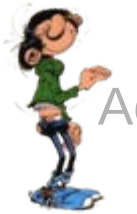
- Administrators need scientist for e.g. interpretation and updating
- Scientist must be involved in discussions on evaluation National Acts, as the archival act
- Need for standardization of environmental storage parameters and monitoring systems
- In case of validity of the old Archival act
  - NOx is a main problem and replaces in most areas SO2
  - Archival storage conditions should be applied to library storage
- The new archival act is again under discussion

Framework

IAQ

Analysis repositories

Backgrounds



Acknowledgment

Conclusion

Acknowledgement

- National Archives, The Netherlands
  - Ted Steemers
- Royal or National Library, the Netherlands
  - Henk Porck
- Ministry of Culture

- Colleagues at TNO
  - Eric Cornelissen, Hadeel Abdul Aziz, Paul Molenberg

- COST Action D42
- EU FP2 program STEP
- ESF

- Local Organizers of this nice IAQ Event
  - Christian Degrigny

- SMEs: Helicon, Twin Filter, Wagner, Preservation Technologies, Breukijn
- Intermediairs: NEN, Restauratoren Nederland

To be or not to be stored