QA/QC and NIS in Austria

WS on QA/QC in National Inventories
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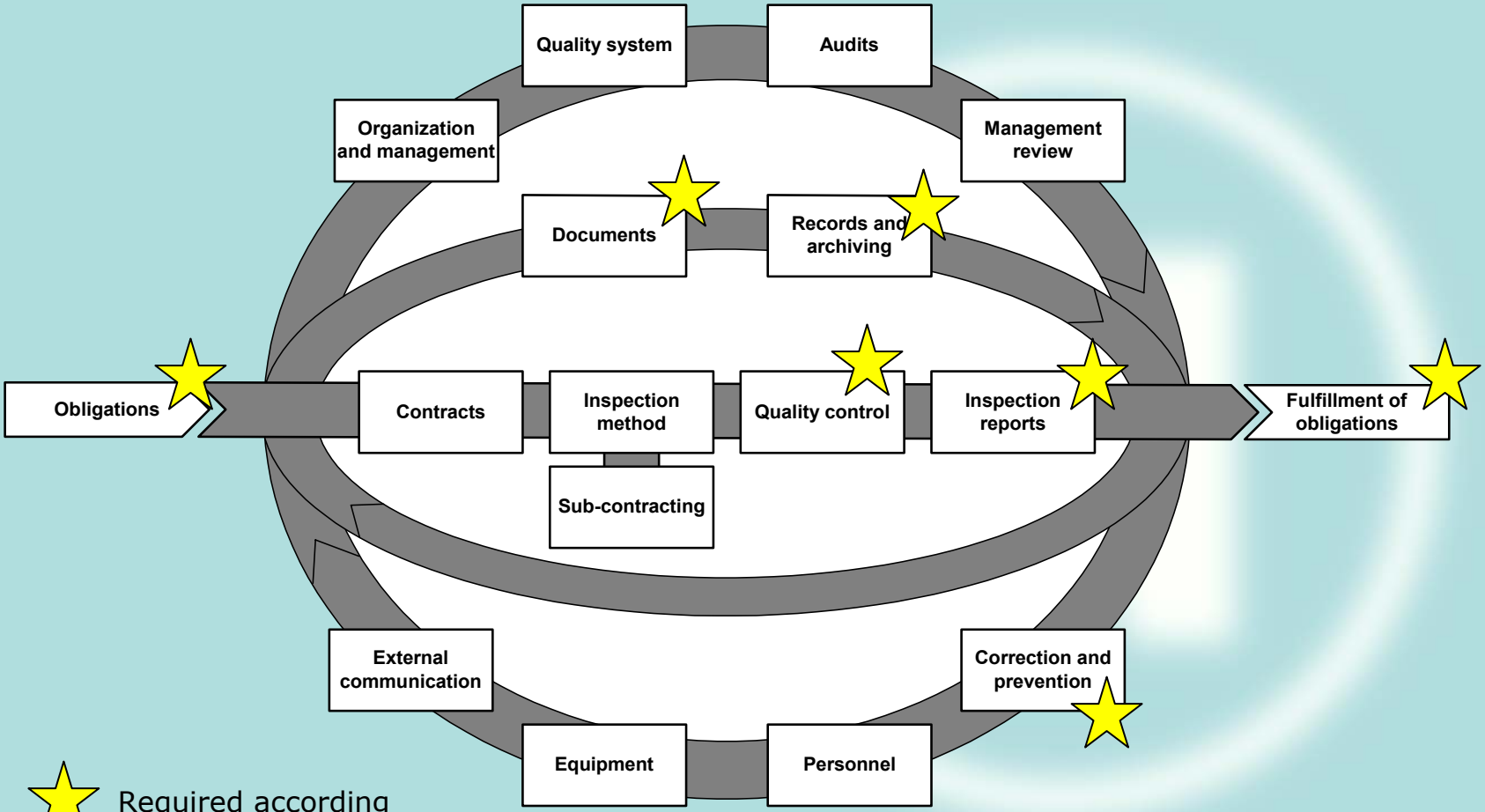
Quality Management System

- A quality management system according to EN 45004 has been designed and implemented in 2003
- EN 45004 „General Criteria for the operation of various types of bodies performing inspection“: takes into account standards of the ISO 9000 series and goes beyond (ensures strict independence, impartiality and integrity)
- Department for Air Emissions is seeking accreditation as inspection body in 2004/2005 (application has been made in June)

EN 45004 and requirements of GPG



Quality Manual

Three levels:

- 1: General (general information, description of QMS, responsibilities,...)
- 2: Detailed (checklists, SOPs,...)
- 3: Documentation of QC activities (filled out checklists,...)

Documentation, Archiving

- Archiving system for literature, mails, documents, calculations
- System for transparent documentation of inventory data and information (clear references, documentation of all assumptions made, recalculations, planned improvements, uncertainties,...) that allows reproduction of inventory

Ref	Emissionfactor [g/Mg]
(1)	100
(1)	100
(2)	107
(3)	103
(3)	103

Documentation:

Emissionfactors

Ref (1): taken from Study [L001]

Ref (2): see calculation sheet [B001]

Ref (3): based on assumption that...

QA/QC Plan

Activities to be conducted written down in the Quality manual:

- QC Checklists
- Audits
- Documentation (Data, References, Communication,…)
- Plan of methodologies (needs approval from the formal contracting body)
- Inventory Improvement Plan: findings from Review documented with plan to improve inventory
- country specific (CS) methodologies are defined in SOPs (need approval by head of inspection body)
- Procedure for sub-contracting
- …

Quality Control Activities (I)

- Performed by sector experts
- Once a year after inventory work has been finished
- Checks of formal aspects as well as aspects regarding contents (check of IPCC quality objectives TACCC)
- Checklists and electronic checks
- Checklists also cover Tier 2 QC
- Data provided by external institutions incorporated in QMS by sector experts
- QC activities proved to be helpful to identify errors as well as lack in transparency before inventory data is published

Quality Control Activities (II)

Checklists cover questions like:

- ✓ Are all references clearly made?
- ✓ Are all assumptions documented?
- ✓ Are the correct values used (check for transcription errors,..)?
- ✓ Check of calculations, units,...
- ✓ Is the data set complete for the whole time series?
- ✓ Check of plausibility of results (time-series, order of magnitude,...)
- ✓ Correct transformation/transcription into CRF
- ✓ Are all recalculations clearly explained?
- ✓ Is the data applicable?
- ✓ Where possible data is checked with data from other sources, order of magnitude checks,...
- ✓ ...

(following Table 8.1 of the GPG)

Quality Assurance

- Second party audits for CS methodologies, for key sources more detailed
- Second party audits for work performed by sub-contractors
- accreditation audits (third party audits) check conformity of methodologies with requirements of IPCC GPG and EN 45004
- All audit findings including review findings are incorporated in the inventory improvement plan

Verification

- For some sectors (transport, f-gases, solvents)
- Mainly bottom-up/top-down verification
- Comparison of results from different approaches (civil aviation)

Resources for QA/QC and QMS

Development and implementation of QMS according to EN45004 until accreditation very time-consuming (plus fee for application for accreditation: 8 000 €)

Training: internal training for sector experts (two days per expert, additional time for trainer)

After implementation QA/QC procedures are integrated parts of inventory work, only little additional resources needed for audits and checklists (~5-10%)

Benefits outweigh additional efforts due to improved transparency and reproducibility

Assessment on Transparency and Completeness

Table 1: Transparency and completeness in submissions 2003 and 2004.

Sector	Submission 2003		Submission 2003		Submission 2004		Submission 2004	
	IE	NE	Transparency	Completeness	IE	NE	Transparency	Completeness
1 Energy	38	7	88%	98%	25	12	92%	96%
2 Industrial processes	13	59	97%	86%	12	43	97%	91%
3 Solvents	1	1	92%	92%	0	1	100%	95%
4 Agriculture	4	1	92%	98%	6	1	88%	98%
5 LUCF	3	19	94%	61%	3	15	94%	98%
6 Waste	2	3	93%	90%	2	3	93%	89%
Total	**61**	**90**	**93%**	**93%**	**48**	**75**	**95%**	**92%**
total number of estimates (including IE and NE)	**897**				**937**			

Transparency was calculated as: 1 - (number of IE / number of estimates)*100

Completeness was calculated as: 1 - (number of NE / number of estimates)*100

Taken from Austrian NIR 2004

NIS Austria - NISA (I)

Degree of formalization, legal character

- Legal basis for inventory preparation „Umweltkontrollgesetz"
- Designation of one single entity with the overall responsibility for inventory preparation
- Confidential data can be obtained from public authorities
- Problem: no legal basis for collection of inventory data (operators are not generally obliged to report their emission data, reporting mainly on a voluntary basis) → additional legislation considered

NIS Austria - NISA (II)

Type of institutions involved

- Statistical office (on a contract basis)
- Umweltbundesamt is seeking cooperation with University
- Cooperation with federal provinces planned (bottom-up emission data)
- No process for consideration and approval of the inventory in place

NIS Austria - NISA (III)

Further questions:

- *Data Management?*
  MS Excel spreadsheets with Visual Basic Macros
- *Inventory Improvement Plan?*
  Compiled by sector experts (basis: findings from reviews, audits, comments from stakeholders,…)
- *Additional resources?*
- *Expert Judgements?*
- *Integration of QMS into NIS?*