



The Norwegian Reference Laboratory for ambient air

Kjersti K. Tørnkvist

Norwegian Institute for Air Research (NILU), PO Box 100, NO-2027 Kjeller, Norway

Introduction

NILU was, in 2001, appointed by the Norwegian Pollution Control Authority (SFT) to be the Norwegian National Reference Laboratory (NRL) for ambient air quality. The main objectives of the reference laboratory are to assure high quality in all parts of the monitoring programme for measurements of the air quality in Norway.

Tasks for the Norwegian Reference Laboratory for ambient air

- Develop and maintain the quality assurance and quality control system for ambient air measurements
- Develop and maintain a system to ensure traceability
- Guide the operators in use of the quality system, where to put the station, what instruments to choose etc.
- Perform audits in the monitoring networks
- National database for reporting to the commission
- Report deviation to SFT
- Store and maintain the national gas standards

The Quality Handbook

To ensure that all operators performs the different tasks in the same manner

Part 1: Description of the Quality System

- National and EU legislation and directives
- The quality organisation
- Criteria for NRL, Calibration labs and Network Operators

Part 2: The Quality Control Manual

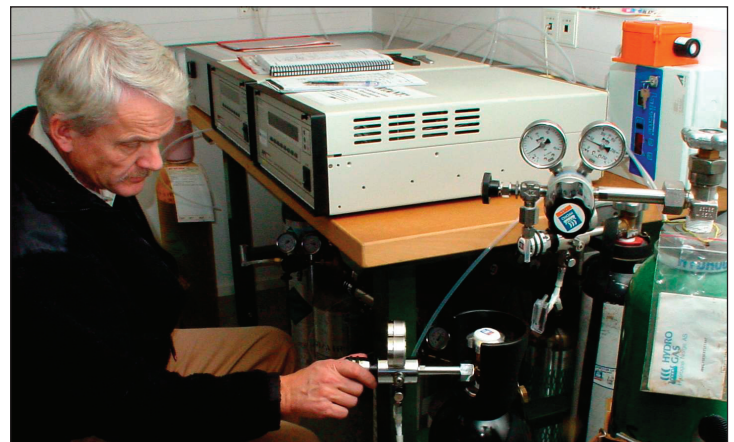
- Site specific documentation
- Standard Operations Procedures (SOPs)
- Instrument performance acceptance criteria
- Description of traceability and calibration standards

Introducing the quality system to the network operators

- Presented at a seminar for all network operators
- A two days workshop at each network operator
 - Operator compiles documentation for all sites
 - System installed at "home" and at the sites
 - System is operative and ready for use
- Review meeting with NRL and operators
 - Feedback, what can be improved etc.

Quality assessment

- Audits in the networks
 - Performed by the NRL
 - **System Audit:**
Inspection of QA/QC plan and documents
 - **Performance Audit:**
Instrument response is checked at the station using a travelling standard
- International intercomparisons
 - Instruments measure a test standard in parallel or
 - the different national reference standards are compared towards a decided common standard
- Round robin tests
 - A test standard is measured at each laboratory



The quality organisation

SFT, Department of environment

National Reference Laboratory

Other laboratories
For calibration,
yearly maintenance

Network owner
Local authorities,
Road administration

Network operator

Tasks and Responsibilities

Task	NRL	NO	CAL
Maintaining the quality system	X		
Measurement network design	X		
Selecting instruments		X	
Instrument approval	X		
Selecting monitoring sites		X	
Maintaining monitoring sites		X	
Data validation	X	X	
Calibrating instruments		X	X
Maintaining national reference std.	X		
Providing traceability	X		
Maintaining the central data base	X		
Audits, once a year	X		

NRL: National Reference Laboratory, NO: Network Operator
CAL: Calibration Laboratory

From Council Directive 96/62/EC

Implementation and responsibilities, we quote:

Member States shall designate at the appropriate levels the competent authorities and bodies responsible for:

- Implementation of this Directive,
- Assessment of ambient air quality,
- Approval of the measuring devices (methods, equipment, networks, laboratories),
- Ensuring accuracy of measurement by measuring devices and checking the maintenance of such accuracy by those devices, in particular by internal quality controls carried out in accordance, inter alia, with the requirements of European quality assurance standards,
- Analysis of assessment methods,
- Coordination on their territory of Community-wide quality assurance programmes organised by the Commission.

Conclusions

NRL has:

- developed one unified system for:
 - Daily operation of monitoring stations
 - Data quality control
 - Information to the public
 - Reporting to the EU commission
- developed and put in operation a system for national traceability
- participated in international intercomparison campaigns to obtain international traceability