

The Role of CEN TC264 and its Working Groups

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EU Directive 96/62/EC

**Framework Directive on Ambient Air Quality,
Assessment and Management**

**Specified atmospheric pollutants to be covered in
Daughter Directives, SO₂, NO_x, PM10, Pb, O₃, CO,
Benzene, PAH's, Heavy Metals (As, Cd, Ni, Hg).**

**Specifies requirements for the implementation of
the daughter directives and defines the
responsibilities of the member states.**



EU Directive 96/62/EC

Member States had to designate the competent authorities and bodies responsible for:

- **Implementation of the Directives**
- **Approval of methods and equipment to ensure measurement uncertainty**
- **QA/QC of measurements at national level**
- **Uncertainty of measurements reported to EU**



Daughter Directives

- | | |
|--------------|---|
| 1999 | SO₂, NO_x, PM10 and Lead |
| 2000 | Carbon Monoxide and Benzene |
| 2001 | Ozone |
| 2002? | Arsenic, Cadmium, Mercury,
Nickel, and PAH's |



Daughter Directives

Define limit values, alert thresholds, and upper and lower assessment thresholds

Annexes provide data quality objectives, data accuracy (uncertainty) and data capture requirements

Define how measurement uncertainty should be determined



Role of CEN

European Commission has charged the European Standardisation Body (CEN) to prepare standards which support the requirements of the Ambient Air Directives

CEN Technical Committee 264 covers this field with its Working Groups

Main interest today are with the following working groups



CEN TC264

WG11	Diffusive Sampling
WG12	SO₂, NO_x, O₃ and CO
WG13	Benzene
WG14	Heavy Metals
WG15	PM_{2.5}
WG21	PAH,s

CEN Standards once published are mandatory for Member States to implement



Limit Values

SO₂	350ug/m³ (1 hour)	125ug/m³ (24 hours)
NO_x	200ug/m³ (1 hour)	40ug/m³ (1 year)
PM10	50ug/m³ (24 hours)	40ug/m³ (1 year)
Lead	0.5ug/m³ (1 year)	
Benzene	5ug/m³ (1 year)	
CO	10mg/m³ (8 hours)	
Ozone	120ug/m³ (8 hours)	
<i>Arsenic</i>	<i>6ng/m³ (1 year)</i>	
<i>Cadmium</i>	<i>5ng/m³ (1 year)</i>	
<i>Nickel</i>	<i>20ng/m³ (1 year)</i>	
<i>B a P</i>	<i>1ng/m³ (1 year)</i>	



Assessment Thresholds

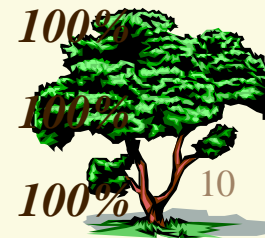
Upper Assessment Threshold ~ 60 % of limit value

Lower Assessment Threshold ~ 40% of limit value



Data Quality Objectives (Uncertainty)

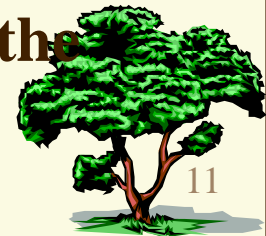
	Mandatory	Indicative	Modelling	Estimation
SO ₂	15%	25%	50%	75%
NO _x	15%	25%	50%	75%
PM10	25%	50%	50%	100%
Lead	25%	50%	50%	100%
Benzene	25%	30%	50%	100%
CO	15%	25%	50%	75%
Ozone				
<i>Arsenic</i>	40%		50%	100%
<i>Cadmium</i>	40%		50%	100%
<i>Nickel`</i>	40%		50%	100%
<i>B a P</i>	50%		50%	100%



Data Quality Objectives

The uncertainty (expressed at a level of confidence of 95%) of the assessment methods will be evaluated in accordance with the principles of the CEN Guide to the expression of Uncertainty (EN13005-1999), the methodology of ISO 5725:1994, and the guidance provided in the CEN /TC264 report N422.

The percentage uncertainties given in the above table apply to measurements which are averaged over the same period as that specified for the limit value.



Reference Method

Daughter Directives state.

A Member State may also use any other method which it can demonstrate gives equivalent results.



TC 264 WG 11

Diffusive samplers for gases and vapours

Part 1 General Requirements.

Part 2 Specific Requirements.

Part 3 Guide for selection maintenance and use.

Part 4 Indoor Air – Guide for selection use and maintenance.

Not mandated. Some self financed validation in progress. Hope for funding in 2002



TC 264 WG12

Reference Method for SO₂, NO₂, O₃ and CO.

Work progressing.

Standards for SO₂, NO₂ out for CEN enquiry.

Standards for O₃ CO are committee drafts ready for TC enquiry.

SO₂ Fluorescence

NO_x Chemiluminescence

CO NDIR

O₃ UV absorption



TC 264 WG13

Reference Method for Benzene. (Mandate)

Five Standards

Pumped Thermal Desorption

Pumped Solvent Desorption

Automated method

Diffusive Thermal Desorption

Diffusive Solvent desorption

Work progressing. Validation trials in progress.

Laboratory audit of proposed laboratories completed.



TC 264 WG14

Reference Method for Pb/Cd/Ni/As (Mandate)

Field trials in progress. Draft standard in preparation.
Awaiting daughter directive with limit values.

Method based on PM10 standard EN12341

Low volume sampling

Quartz membrane/ Cellulose acetate filters

Derenda samplers

Atomic adsorption or ICP MS



TC 264 WG15

Reference method for PM_{2.5} (Mandate)

Validation work in progress.

Draft Standard in preparation

Low and high volume samplers

Samplers

Derenda, Digital, Leckel

Gravimetric



TC 264 WG21

Reference method for particulate BaP (Mandate)

Validation work being planned.

Method based on PM10 standard EN12341

High volume samplers

Samplers

Digital, Andersen

Based on *GC MS or HPLC !!!!!!!!*



Terms of Reference

Terms of reference specified by EC require CEN Standards to cover:

- **Reference Measurement Methods for the Implementation of EU Air Quality Directives.**
- **Applied where mandatory measurements are required for EU Directives.**
- **Reference Method should be validated against nationally-traceable measurement standards, where possible.**
- **Measurement uncertainty (accuracy) of the methods shall be assessed both under LABORATORY and FIELD conditions.**
- **Where automated monitoring systems are used, sample manifolds/lines should be assessed during field QA/QC.**



Terms of Reference

Range of Application

- **concentration range for which standard is applicable**

Performance characteristics and performance criteria of the measuring system

Procedure for the type approval of measurement methods

Test methods to demonstrate pass/fail of these performance criteria.

- **including laboratory and field tests**

Requirements for QA/QC of measurement methods in the field



Reference Materials

Reference materials are important factor in

Standardisation of methods

Calibration

On going QA/QC

On site Checks



“Cermatair”

Preparation of Reference Materials

Sulphur Dioxide	1hr (350ug/m ³), 24hr (125ug/m ³)	
	1 year (20ug/m ³), Diffusive 0.75ug/m ³)	
Nitrogen Dioxide	1 hr (200ug/m ³), 1 year (30-40ug/m ³)	
	Diffusive (1.5- 2ug/m ³)	
Carbon Monoxide		8hr (10mg/m ³)
Benzene	1yr	
	Pumped	solvent 3.5-5ug
		thermal 50ng
	Diffusive	solvent 0.5-8ug
		thermal 100ng



Standardisation in Europe.

Has been **Fun!**

Has been **Useful!**

Is **Tantalising!**

Is just **Understandable!**

Has been **Rewarding!**

Has been **Enjoyable????**



Standardisation in Europe

is our

FUTURE

