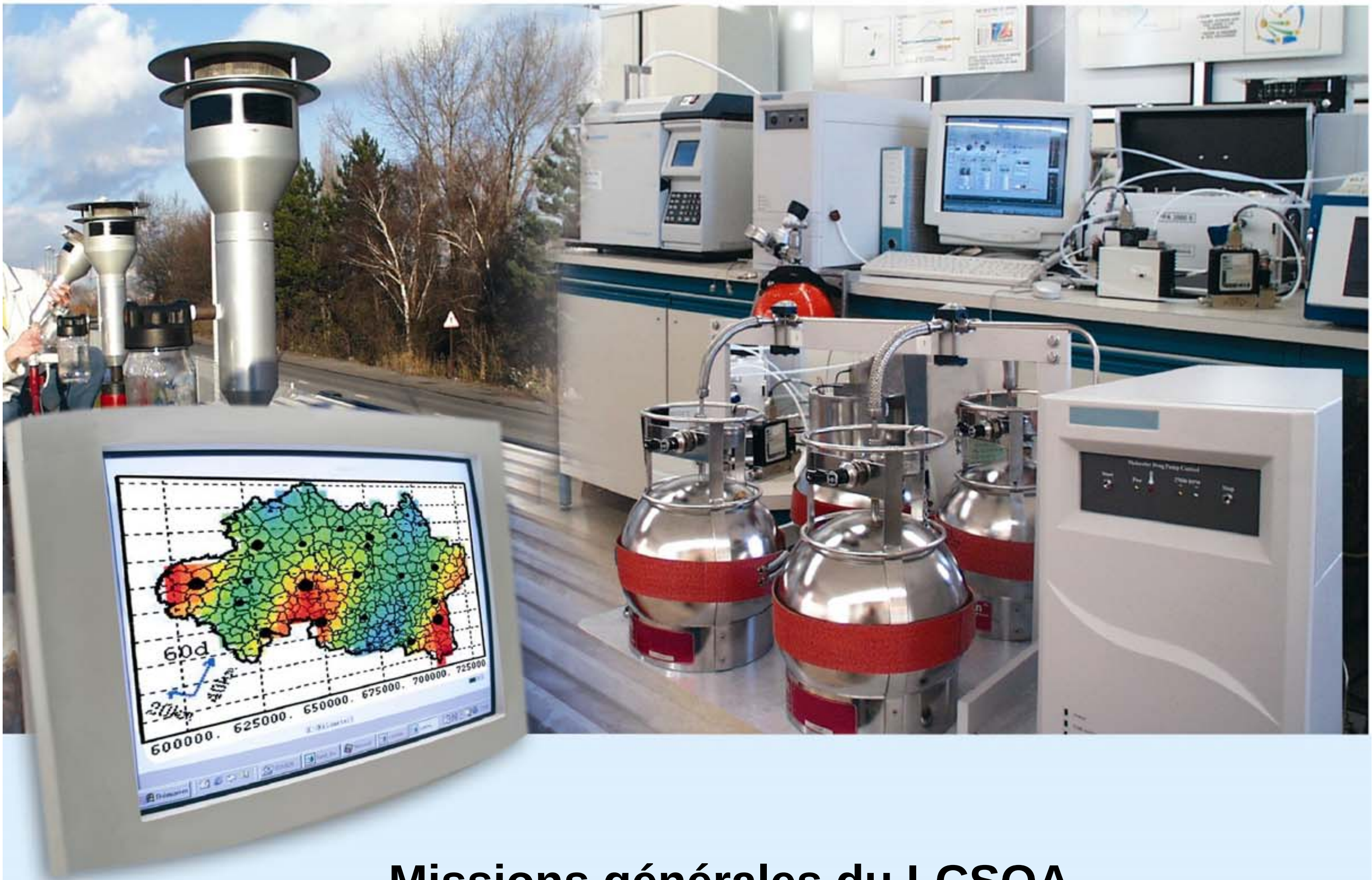
LCSQA

Laboratoire Central
de Surveillance de la Qualité de l'Air



Missions générales du LCSQA
Etude n°1 – 2012 : Réglementation & normalisation – Appui à la surveillance, à la planification et aux politiques territoriales

Programme 2012

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Ministère
de l'Écologie,
du Développement
durable
et de l'Énergie

PREAMBULE

Le Laboratoire Central de Surveillance de la Qualité de l'Air

Le Laboratoire Central de Surveillance de la Qualité de l'Air est constitué de laboratoires de l’Ecole des Mines de Douai, de l’INERIS et du LNE. Il mène depuis 1991 des études et des recherches finalisées à la demande du Ministère chargé de l’environnement, en concertation avec les Associations Agréées de Surveillance de la Qualité de l'Air (AASQA). Ces travaux en matière de pollution atmosphérique, supportés financièrement par la Direction Générale de l’Energie et du Climat (Bureau de la Qualité de l’Air) du Ministère de l’Ecologie, du Développement Durable et de l’Energie (MEDDE), sont réalisés avec le souci constant d’améliorer le dispositif de surveillance de la qualité de l’air en France en apportant un appui scientifique et technique aux AASQA.

En charge depuis le 1er janvier 2011 de la coordination technique de la surveillance de la qualité de l’air, l'objectif principal du LCSQA est de participer à l'amélioration de la qualité des mesures effectuées dans l’air ambiant, depuis le prélèvement des échantillons jusqu'au traitement des données issues des mesures. Cette action est menée dans le cadre des réglementations nationales et européennes mais aussi dans un cadre plus prospectif destiné à fournir aux AASQA de nouveaux outils permettant d’anticiper les évolutions futures.

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MINES DOUAI

DEPARTEMENT CHIMIE ET ENVIRONNEMENT

Programme financé par la
Direction Générale de l'Energie et du Climat (DGEC)

2012

Réglementation & normalisation – Appui à la surveillance, à la planification et aux politiques territoriales

François MATHE
Nadine LOCOGE
Sabine CRUNAIRE
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Convention : 2200624769 **Programme 2012**

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LCSQA – INERIS, Direction des Risques Chroniques
LCSQA – Laboratoire National de métrologie et d’Essais

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1 CONTEXTE & OBJECTIFS

L’arrêté du 29 juillet 2010 a confié la coordination technique de la surveillance de la qualité de l’air au LCSQA depuis le 1er janvier 2011. Depuis l’arrêt des travaux de l’ADEME fin mai 2011, le LCSQA apporte son aide au dispositif national de surveillance au travers de ses nouvelles missions: la coordination et l’animation technique du dispositif, l’appui stratégique et technique sur les évolutions de la surveillance, la gestion des données (production, centralisation, dissémination, valorisation), l’appui au rapportage européen, l’appui au financement des AASQA, le développement d’études de connaissances.

En tant que Laboratoire de Référence dans le domaine de la Qualité de l’Air notifié par le Ministère en charge de l’environnement, le LCSQA joue un rôle actif dans les instances normatives et réglementaires nationales et européennes, lui permettant d’assurer son action d’expertise au niveau national concernant l’application des directives. Sur le plan normatif, dans le cadre du processus de révision de normes EN existantes, de l’application de normes révisées ou lors de l’élaboration de nouvelles normes par le CEN, l’action du LCSQA s’effectue à deux niveaux :

- ➴ en Commission AFNOR X43D « Air ambiant » dont le LCSQA assure la présidence
- ➴ dans les Commissions de Suivi (CS) ou Groupes de Travail (GT) concernés tels que la CS « Particules en Suspension », la CS « Mesures automatiques » ou le GT « Caractérisation chimique des Particules »).

Une valorisation des travaux du LCSQA est effectuée au travers de la participation aux divers workshops et groupes de travail européens et nationaux en vue de l’application de la réglementation européenne sur le territoire.

L’objectif est d’assurer une présence active de la France lors de la préparation des normes, la participation d’experts français aux groupes de travail européens et internationaux est donc indispensable. Par ailleurs, l’association des laboratoires de référence AQUILA ainsi que le comité d’experts sur les modèles (FAIRMODE -Forum for AIR quality MODElling), se révèle un bon moyen de défendre la position française auprès de la DG Environnement, et le LCSQA doit y être actif. La volonté de la DG Environnement de faire converger les aspects « métrologie » et « modélisation » en vue de la révision des textes réglementaires actuels (Directives 2004/107/CE et 2008/50/CE) est un point positif pour le LCSQA qui est un des seuls Laboratoires Nationaux de Référence à disposer des 2 compétences en une seule et même structure.

Enfin, il convient de rappeler que certains experts du LCSQA participent également aux travaux de normalisation nationale et européenne portant sur les émissions industrielles. Certaines informations pourront être utiles dans le cadre du Dispositif National de Surveillance de la Qualité de l’Air (ex : avec la révision en cours de la Directive sur les Plafonds Nationaux d’Emissions). Les Commissions AFNOR associées sont :

- la Commission X43B « Emissions de sources fixes »
- la Commission X43E « Qualité de l’air – aspects généraux ».

2 TRAVAUX REALISES

2.1 Normalisation française (AFNOR)

2.1.1 Commission X43A

La commission X43A s'est réunie le 4 mai 2012 afin de faire un point d'avancement des travaux des diverses commissions et de préparer la réunion plénière annuelle du CEN TC 264 qui s'est tenue à Londres (Angleterre) les 23 & 24 mai 2012 qui fait le bilan des différents GT européens et propose de nouveaux axes de travail sur le thème de la qualité de l'air (cf. §2.2).

2.1.2 Commission X43D

Les travaux de normalisation dans le domaine de l'air ambiant sont effectués au niveau français au sein de la commission X43D « Qualité de l'Air – Atmosphères ambiantes » qui s'est réunie le 8 novembre 2012. François Mathé du LCSQA - Mines de Douai assure la présidence de cette Commission.

Cette réunion a effectué un point sur les travaux des Groupes de travail du CEN/TC 264 suivis par la Commission X 43 D. Un point a également été fait sur les différentes consultations relatives à l'examen systématique des normes françaises. Enfin une proposition d'étude nouvelle relative à l'échantillonnage en continu et analyse des pollens et spores a été examinée.

2.1.2.1 Point sur les travaux des Groupes de travail du CEN/TC 264 suivis par la Commission X43D

➢ GT 11 – Echantillonneurs par diffusion pour la détermination des gaz et des vapeurs

Dans la mesure où la réglementation en air ambiant extérieur ne prescrit pas spécifiquement l'utilisation de ce type de technique, la motivation est moindre pour les sujets actuellement traités par le GT 11. Il convient de noter l'examen systématique relatif à la norme EN 14412 « Air ambiant – Echantillonneurs par diffusion pour la détermination de la concentration des gaz et des vapeurs », à comparer à la norme EN 13528-3 « Air ambiant – Echantillonneurs par diffusion pour la détermination de la concentration des gaz et vapeurs – Exigences et méthodes d'essai – Partie 3 : Guide pour la sélection, l'utilisation et la maintenance ». Une réflexion sera vraisemblablement nécessaire au sein du Dispositif National pour lister les dispositifs commerciaux actuels pouvant être recommandés aux usagers, que ce soit pour l'air ambiant intérieur ou extérieur. Ceci pourrait être fait dans le cadre de la révision de guides nationaux tels que le Guide ADEME « Échantillonneurs passifs pour le dioxyde d'azote datant de 2002.

➢ GT 12 – Méthodes de référence pour la détermination du SO_2, NO/NO_2, O_3 et CO dans l'air ambiant

La composition de ce Groupe de travail a été revue pour entreprendre la révision de la norme EN 14662-3 « Qualité de l'air ambiant - Méthode normalisée pour le mesurage de la concentration en benzène - Partie 3 : Prélèvement par pompage automatique avec analyse chromatographique en phase gazeuse sur site ».

Ce travail a été confié au GT 12 car cette révision sera effectuée sur la base de la norme relative au CO (EN 14626). Le point de discussion important concerne les modifications sur le paragraphe portant sur l'approbation par type et les conséquences potentielles sur les appareils ayant été testés suivant la version actuelle de la norme. L'enquête CEN devrait être lancée courant juin 2013.
La traduction française de ce projet sera assurée par Mr M. Robert de la société ChromatoTec.
Concernant les normes EN 14211, 14212, 14625 & 14626, leur parution est étagée dans le temps : 2 sont d'ores et déjà au catalogue AFNOR (NF EN 14211 et 14626) et la parution des 2 autres est prévue pour fin 2012-début 2013 (NF EN 14212 et 14625). Il est rappelé que ces 4 normes sont les méthodes de référence désignées par la réglementation européenne. Leur application nécessitera un travail collaboratif au sein du Dispositif National de Surveillance de la Qualité de l'Air, dont un des acteurs spécifiques est la Commission de Suivi « Mesures automatiques » activée en octobre 2012.

- GT 15 – Méthode de mesurage de référence pour la détermination des PM_{10} et $PM_{2,5}$

La norme EN 12341 qui constitue la révision des normes EN 12341 et EN 14907 et fusion en un seul texte est actuellement soumise à l'enquête CEN. Les commentaires formulés au cours de l'enquête publique conduite en France ont servis au vote français.

En ce qui concerne la spécification technique TS 16450 « Qualité de l'air ambiant – Systèmes automatiques continus pour le mesurage de la concentration en matières particulaires (PM_{10} – $PM_{2,5}$ »), la Commission confirme sa décision de la reprendre en norme expérimentale. Il est cependant rappelé qu'une spécification technique, même citée dans la réglementation européenne, n'a pas de caractère obligatoire car ce n'est pas une norme. Des travaux de validation des prescriptions techniques mentionnées dans le texte seront entrepris en 2013. L'objectif est de disposer d'une norme EN au 2ème semestre 2017, compte tenu du processus du CEN.

- GT 21 – Méthode de mesurage pour le B[a]P

La Commission décide de publier sous forme de norme expérimentale la spécification technique en cours de préparation « Air ambiant – Mesurage du benzo [a] anthracène, benzo [b] fluoranthène, benzo [j] fluoranthène, benzo [k] fluoranthène, dibenzo[a,h] anthracène, indéno [1,2,3-cd] pyrène et benzo [g,h,i] perylène », sachant que l'enquête CEN est en cours (clôture d'envoi des commentaires fixée au 20/11 prochain).
François Mathé et Alexandre Albinet (LCSQA-INERIS) ont envoyé leurs commentaires de manière conjointe dans les délais.
Ce travail a été conduit pour répondre à la Directive 2004/107/CE qui requiert de mesurer tous ces HAP, notamment afin de pouvoir mieux appréhender le caractère cancérigène du B[a]P, seul HAP réglementé.

Il convient de noter que la révision des Directives « Qualité de l'air » (Directive 2008/50/CE du Parlement européen et du Conseil du 21 mai 2008 concernant la qualité de l'air ambiant et un air pur pour l'Europe et Directive 2004/107/CE du 15 décembre 2004 concernant l'arsenic, le cadmium, le mercure, le nickel et les hydrocarbures aromatiques polycycliques dans l'air ambiant) qui devait paraître courant 2013 sera probablement reportée en 2014 car il demeure beaucoup de questions non résolues (ex : choix de valeurs pour certaines valeurs cibles manquantes). L'objectif était de fusionner les 2 directives en un seul texte.

2.1.2.2 Point sur les différentes consultations relatives à l'examen systématique des normes françaises

Il est rappelé que des consultations sont régulièrement lancées en vue de l'examen systématique des normes françaises, l'objectif étant d'améliorer la qualité et la pertinence de la collection nationale des normes.

Les normes suivantes ont été concernées fin 2012:

- ➢ NF X 43-013 « Détermination de la concentration en masse du dioxyde de soufre dans l'air ambiant - Analyse par la méthode spectrophotométrique au thorin » de 1977.
  Cette norme de plus de 30 ans n'est plus du tout adaptée aux besoins actuels:
  - la résolution temporelle de 24h est insuffisante,
  - le prélèvement est basé sur la norme NF X 43-011 de 1975 « Détermination des composés soufrés dans l'air ambiant – appareillage et méthode d'échantillonnage » qui est obsolète (il est désormais impossible de trouver de tels dispositifs de prélèvement commercialisés)
  - la sensibilité de la méthode est insuffisante au regard des concentrations rencontrées actuellement dans l'air ambiant en France (hors zones industrielles)
  - Il y a désormais la norme NF EN 14212 « Qualité de l'air ambiant - Méthode normalisée pour le mesurage de la concentration en dioxyde de soufre par fluorescence UV » sur laquelle se basent les analyseurs automatiques exclusivement utilisés en AASQA pour la mesure du SO_2.

En conséquence, la Commission s'est prononcée pour l'annulation de cette norme.

- ➢ NF X 43-055 « Air ambiant - Métrologie appliquée au mesurage des polluants atmosphériques gazeux - Prélèvement d'air ambiant et mise en œuvre des gaz d'étalonnage » de 2007.
  Cette norme avait initialement été publiée en 1997 sous forme de norme expérimentale. Elle a été révisée en 2007 pour la transformer en norme homologuée afin de la mettre en conformité avec les normes européennes relatives au benzène, à SO_2, NO/NO_x, O_3 et CO sorties en 2005.
  La Commission décide de la réviser pour tenir compte de la révision et de la publication des normes européennes mentionnées ci-dessus. Ceci nécessitera de réactiver le Groupe de travail Ad Hoc "Etalonnage" auquel participent le LCSQA et des AASQA dont le retour d'expérience sera utile pour faire évoluer le texte actuel. Enfin, la révision du cadre réglementaire cité plus haut, prévu en 2013 peut éventuellement impacter le texte de cette norme (lien avec les normes EN précitées, micro implantation des sites)

- ➢ normes XP X 43-058:2007 « Air ambiant - Dosage des substances phytosanitaires (pesticides) dans l'air ambiant - Prélèvement actif » et XP X 43-059:2007 « Air ambiant - Dosage des substances phytosanitaires (pesticides) dans l'air ambiant – Préparation des supports de collecte – Analyse par méthodes chromatographiques ».

Le retour d'expérience des utilisateurs des ces normes expérimentales sorties en 2007 sera une première source de propositions d'évolution de la norme. De plus, les dispositifs commerciaux ont vraisemblablement évolués depuis 2007, voire de nouveaux sont peut être apparus sur le marché (tant sur le plan des préleveurs que des supports de prélèvement). Enfin, la liste des molécules couvertes par ces 2 normes a vraisemblablement évoluée (suppression et/ou ajout de substances).

La Commission se prononce pour la révision de ces deux normes expérimentales. Celle-ci devra notamment prendre en compte les retours d'expérience suite à la mise en œuvre de ces deux textes. Comme précédemment, cela nécessitera de réactiver le Groupe de travail Ad Hoc "Pesticides" auquel participent le LCSQA, des AASQA et des laboratoires d’analyses tels que Micro Polluants ou CARSO.

- Fascicules de Documentation FD X 43-070-1:2007 « Qualité de l’air - Guide pratique pour l'estimation de l'incertitude de mesure des concentrations en polluants dans l'air ambiant - Partie 1 : Généralités » et FD X 43-071-2:2007 « Qualité de l'air – Guide pratique pour l'estimation de l'incertitude de mesure des concentrations en polluants dans l'air ambiant – Partie 2 : Estimation des incertitudes sur les mesurages automatiques de SO_2, $NO/NO_x/NO_2$, O_3 et CO réalisés sur site »

La sortie récente ou prochaine des normes révisées EN 14211, 14212, 14625 et 14626 est déjà une justification de la révision du FD X43-070-1. De plus, le retour d'expérience des utilisateurs permettra une évolution du texte actuel. Enfin, la révision du cadre réglementaire (Directive 2008/50/CE) prévue en 2013 peut aussi impacter le texte de ce FD.

La Commission décide de réviser ces deux fascicules de documentation. Ceci devrait être finalisé dans le courant du 1er semestre 2013 par le biais de la structure mise en place dans le cadre du Dispositif National de Surveillance de la Qualité de l’Air, la Commission de Suivi « Mesures automatiques ».

2.2 Normalisation européenne

2.2.1 Introduction

Les thèmes relatifs à l'air ambiant abordés au CEN TC 264 et suivis par la commission X43D, concernent les projets de normes indiqués ci-après.

La liste des différents experts français participant aux travaux du CEN TC 264 est donnée en annexe 1.

2.2.2 GT11 - Echantillonnage par tubes à diffusion

Le projet de norme prEN 16339 « Ambient air – Method for the determination of the concentration of nitrogen dioxide by diffusive sampling » a été soumis à l’enquête CEN courant 2012 ; la France a voté positivement. Le document est en cours de vote formel (clôture de l’enquête le 1er décembre 2012).

Le GT11 travaille sur un rapport technique relatif aux échantillonneurs par diffusion pour le NH_3, à la fois pour les mesurages de fond et pour les mesurages aux environs des sources fixes. La technique par denuder sera la technique de référence. De même, une norme allemande (la norme VDI 3869-3) devrait être utilisée comme base du texte normatif. Une revue bibliographique a été effectuée sur différents types d'échantillonneur (Ogawa, Radiello, Passam, Alpha, Gradko et IVL).
Les 2 experts français qui suivent les travaux du CEN / GT11 sont Anne FROMAGE-MARIETTE (AIR Languedoc-Roussillon) et Sabine CRUNAIRE (LCSQA-EMD).

2.2.3 GT12 – Méthodes de référence pour la mesure de NO/NO_x, O_3, CO et SO_2

Les travaux de ce GT sont suivis par Oliver FAVEZ (LCSQA-INERIS), Nadine LOCOGE (LCSQA - Mines de Douai) et François MATHE (LCSQA - Mines de Douai).
Les normes révisées sont parues ou en cours de parution, le GT travaille actuellement sur la révision de la norme EN 14662-3 sur la mesure du benzène par analyseur automatique (cf. § 2.1.2.1)

2.2.4 GT15 - Méthode normalisée pour les matières particulaires en suspension

Les travaux de ce GT sont suivis par 3 experts français: Claire THAURY (Environnement SA), Olivier FAVEZ (LCSQA-INERIS) et François MATHE (LCSQA-Mines de Douai).

Le GT15 travaille sur la révision de la norme EN 12341 et sur l'élaboration d'une spécification technique concernant les analyseurs automatiques, destinée à devenir une norme à l'horizon 2017 (cf. § 2.1.2.1).

2.2.5 GT 18 - Mesures optiques à longue distance - FTIR - DOAS - LIDAR

Les travaux du CEN 264 / GT18 sont suivis par Eymeric FREJAFON (LCSQA-INERIS).

Le projet prEN 16253 "Air quality – Atmospheric measurements near ground with differential optical absorption spectroscopy (DOAS) – Ambient air and diffusive emission measurements" a été soumis à l'enquête CEN et conjointement à l'enquête publique en France en 2012. Aucun commentaire français n'a été formulé. Une consultation a été effectuée en vue du lancement de ce projet au vote formel. La parution du texte est prévue pour 2013. Cependant, il n'est pas destiné à être cité dans un texte réglementaire et sur le plan technique, cette méthode est de moins en moins utilisée en AASQA.

2.2.6 GT 21 – HAP

Les travaux de ce GT sont suivis par Alexandre Albinet (LCSQA-INERIS).

La norme EN 15549 « Qualité de l'air - Méthode normalisée pour le mesurage de la concentration du benzo[a]pyrene dans l'air ambiant » publiée en 2008 vient d'être soumise à l'examen systématique. Sa révision devrait être entamée en 2013. Sur le plan technique, la question des dénudeurs d'ozone (voire des oxydants présents dans l'air ambiant) reste toujours en suspens.

Un projet de spécification technique « Ambient air – Measurement of benz[a]anthracene, benzo[b]fluoranthene, benso[j]fluoranthen, benzo[k]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-cd]pyrene and benzo[ghi]perylene » est en préparation, ainsi qu'un rapport technique relatif aux oxy- et nitro-HAPs (comprenant notamment des informations sur l'origine, la toxicité, les concentrations d'air ambiant et les méthodes de mesurage). En lien avec ces 3 textes, l'utilisation des « QuEChERS » (quick, easy, cheap, effective, rugged and safe) procedure for the extraction of particle-bound PAHs) pour lesquels le LCSQA-INERIS a une bonne expérience pourrait être requise, a minima via la publication d'une spécification technique.

La norme NF EN 15980 « Qualité de l'air - Détermination du benzo[a]anthracène, benzo[b]fluoranthène, benzo[j]fluoranthène, benzo[k]fluoranthène, benzo[a]pyrène, dibenzo[a,h]anthracène et indeno[1,2,3-cd]pyrène dans les dépôts atmosphériques » sortie en 2010 sera utilisée dans le cadre des mesures en sites ruraux, en réponse aux exigences de la 4ème Directive. Les questions techniques associées sont traitées dans un Groupe de Travail spécifique auquel participent le LCSQA et les AASQA concernées.

2.2.7 GT 25 – Mesure du mercure

Les travaux sont suivis par Fabrice MARLIERE (LCSQA-INERIS), qui produira le détail des avancées dans ce domaine.

Les normes NF EN 15852 « Qualité de l'air ambiant - Méthode normalisée pour la détermination du mercure gazeux total » et NF EN 15853 « Qualité de l'air ambiant - Méthode normalisée pour la détermination des dépôts de mercure » sont parues en juillet 2010

La norme EN 15852 concerne les analyseurs automatiques de Hg. La norme EN 15853 concerne la mesure de Hg dans les dépôts. Comme pour les métaux lourds et les HAP, une réflexion est nécessaire pour donner des recommandations techniques sur la mise en œuvre, tant sur le plan du matériel (analyseurs et collecteurs à utiliser, coordonnées de fournisseurs éventuels) qu'au niveau de l'analyse (coordonnées de laboratoires).

2.2.8 GT 27 – Détermination des odeurs dans l'air ambiant en utilisant l'inspection sur le terrain

Aucune représentation n'est assurée par le LCSQA, ce thème n'entrant pas dans ses thématiques. De plus, aucune connotation réglementaire n'est relevée sur ce thème. Cependant, la thématique « nuisances olfactives – odeurs » peut générer des actions locales de la part des AASQA.

Le GT27 travaille sur la détermination des odeurs dans l'air ambiant sur la base d'une inspection sur le terrain.

La norme en cours de préparation se présente en deux parties :

- la méthode par quadrillage
- la méthode par suivi de panache.

Les projets sont finalisés et en cours de vérification finale pour mise en enquête en 2013.

2.2.9 GT 28 – Mesure de micro-organismes atmosphériques dans l'air ambiant

Aucune représentation n'est assurée par le LCSQA, ce thème n'entrant pas dans ses thématiques. De plus, aucune connotation réglementaire n'est relevée sur ce thème.

Le GT28 a préparé deux spécifications techniques :

- CEN TS 16115-1 "Ambient air quality – Measurement of bioaerosols – Part 1: Determination of moulds using filter sampling systems and culture-based analysis"

Cette spécification technique a été publiée en juillet 2011.

- CEN TS 16115-2 "Ambient air quality – Measurement of bioaerosols – Part 2: Planning of plant-related plume measurements"

Ce thème a été activé début 2011 et le projet est en cours de préparation. Il est basé sur des lignes directrices allemandes (VDI 4251-1). Cependant, il sera nécessaire de retirer du projet tout aspect réglementaire spécifique à l'Allemagne. Par ailleurs, le principe du mesurage devra être expliqué en détail. La détermination de la distribution spatiale de la concentration des bioaérosols devra être ajoutée sur la base d'essais effectués aux Pays-Bas. Le projet sera finalisé en 2013.

2.2.10 GT 29 – Mesure d'organismes génétiquement modifiés (OGM) – Mesure du pollen – prélèvement du pollen par PMF, échantillonneur Sigma-2 et colonies d'abeilles

Aucune représentation n'est assurée par le LCSQA, ce thème n'entrant pas dans ses thématiques.

Deux spécifications techniques sont en cours de préparation :

- WI00264088 "Ambient air – Monitoring of genetically modified organisms – Pollen monitoring – Technical pollen sampling using pollen mass filter and Sigma-2-sampler"
- WI 00264109 "Ambient air – Monitoring of genetically modified organisms – Pollen monitoring – Biological pollen sampling using bee colonies"

Après le refus de la Commission Européenne de financer les travaux relatifs à une recherche pré-normative et des essais de validation, le Groupe s'est attaché à finaliser la rédaction de ces deux spécifications techniques.

Ces deux documents sont basés sur les méthodes décrites dans les normes VDI 4330 – Parties 3 et 4 et ont été approuvées (procédure d'échantillonnage et analyse microscopique permettant de déterminer les teneurs en pollen (débit et déposition).

La norme VDI 2119, qui a été publiée en 2011 sert également de base plus spécifiquement pour le 1er projet

En ce qui concerne la 2ème Spécification technique, au cours de la dernière réunion une discussion s'est engagée sur la base d'un Jugement de la Cour de Justice européenne relatif au miel contenant du pollen génétiquement modifié.

Il semble que l'approche la plus logique serait de se référer au pollen de maïs génétiquement modifié par rapport à la quantité totale de pollen de maïs.

Des données doivent être fournies avant que ce problème ne soit tranché.

2.2.11 GT 32 – Détermination de la concentration en nombre et de la distribution en taille des particules

Les travaux sont suivis par Aurélien USTACHE (LCSQA-INERIS).

La spécification technique « WI 00264119 – Air quality – Determination of the particle number concentration and particle size distribution » est en phase de rédaction. Ce texte précise les caractéristiques de performance à spécifier ainsi que sur les critères minimum associés.
Le GT32 devrait également rédiger une autre spécification technique « Determination of the particle number size distribution » (WI00264130).

2.2.12 GT 34 – Méthode normalisée pour la détermination des anions & cations dans les $PM_{2.5}$ déposées sur filtre

Les travaux sont suivis par Stéphane SAUVAGE (LCQSA-EMD) et Olivier FAVEZ (LCSQA-INERIS).

Le rapport technique CEN/TR 16269 (« Ambient air quality — Guide for the measurement of anions and cations in $PM_{2,5}$ » édité sous la forme d'un Fascicule de Documentation AFNOR) est paru en octobre 2011. Les espèces concernées sont Na^+, K^+, Ca^{2+}, Mg^{2+}, Cl^-, NO_3^- et SO_4^{2-}.
Le GT34 espère un financement de la Commission Européenne pour transformer ce document en norme européenne dès lors qu'un essai interlaboratoire aura pu être réalisé afin de valider les caractéristiques de performance de la méthode.
Il y a de fortes probabilités pour que la révision des directives s'appuie sur ce rapport technique et par conséquent, il y a des enjeux, tant sur le plan de la surveillance (AASQA) que sur le plan industriel (fabricants de matériels)

2.2.13 GT35 - Détermination du Carbone Organique (OC) & Elémentaire (EC) dans les $PM_{2.5}$ déposées sur filtre

Les travaux sont suivis par Olivier FAVEZ (LCSQA-INERIS).

Le rapport technique CEN/TR 16243 « Qualité de l'air ambiant - Guide pour le mesurage du carbone élémentaire (EC) et du carbone organique (OC) déposés sur filtre » édité sous la forme d'un Fascicule de Documentation AFNOR est paru en Septembre 2011.
Ce rapport décrit quatre protocoles (NIOSH 5040, une version normalisée de « quartz », IMPROVE et EUSAAR_2) qui malheureusement donnent des résultats différents pour le Carbone élémentaire et le Carbone Organique.
Il a donc été jugé nécessaire d'effectuer des essais de validation d'une part afin de publier une norme européenne et d'autre part pour caractériser correctement cette méthode. Un mandat M/503 a été obtenu de la part de la Commission européenne. Un devis a été effectué en vue de réaliser ces essais de validation sur la base d'une spécification technique en cours de préparation « Specification for validation measurements of a method for determination of elemental and organic carbon (EC/OC) ». Un appel à candidature devrait être lancé d'ici fin juin 2013.
Il convient de noter le CEN/TC 264 souhaite désormais le Black Carbon dans le champ d'investigation du GT35 ainsi que l'automatisation de la mesure de EC et OC. Ce souhait est à relier à la révision des textes réglementaires qui pourraient mettre davantage l'accent sur ces paramètres.

2.3 Association des Laboratoires Nationaux de Référence dans le domaine de la qualité de l'air (AQUILA)

Cette instance a été créée à ERLAP en décembre 2001. Ces travaux sont suivis par François MATHE (LCSQA-Mines Douai), Tatiana MACE (LCSQA-LNE), Olivier FAVEZ et Laure MALHERBE (LCSQA-INERIS).
Deux réunions se sont tenues en 2012 (mars et novembre) à Ispra (Italie). Il est rappelé que le LCSQA a intégré le bureau exécutif d'AQUILA, permettant ainsi de suggérer des sujets à aborder en réunion. AQUILA sert de point d'expertise à la Commission Européenne et son avis est reconnu, notamment dans les Groupes de Travail européens du CEN.
L'ordre du jour est généralement composé :
- d'un point d'information (de la part du représentant de la Commission Européenne) sur la réglementation européenne en cours ou à venir
- de la présentation des travaux normatifs CEN en cours
- de la présentation des résultats des exercices d'intercomparaison européens organisés par le JRC/IES
- de la présentation des futurs exercices envisagés
- de sujets proposés par les membres d'AQUILA.

L'année 2012 a été consacrée principalement aux propositions de modifications de textes techniques en vue de la révision des Directives européennes prévue en 2013. AQUILA a donc proposé des modifications ou clarifications de texte sur les sujets suivants :
- les exercices d'intercomparaison
- l'approbation de type (ou homologation)
- les rôles et responsabilités du Laboratoire National de Référence
- les caractéristiques des données rapportées au niveau européen (type de données, marquage en terme de qualité voire révision des Objectifs de Qualité des Données)
- la clarification de termes utilisés dans les Directives (ex : saisie minimale de données, couverture temporelle, représentativité, estimation objective…)
- les liens entre les Directives et EMEP (besoin d'harmonisation)
- La classification des sites et les critères d'implantation des stations
- la mesure des précurseurs de l'ozone (liste de composés, technique de mesure de référence)
- la mesure du mercure
- la mesure de EC et OC
- l'Indicateur d'Exposition Moyenne (caractéristiques, incertitude, lien effectif avec l'exposition de la population et l'Objectif de Réduction de l'Exposition, la constance sur la période requise de 20 ans)
- la mesure dans les dépôts (retour d'expérience sur les normes récemment parues, les liens avec EMEP)
- La mesure des HAP (révision de la Valeur Limite, utilisation de scrubber ozone)

Le document rassemblant les propositions est donné en Annexe 2.

2.4 Participation au groupe de travail FAIRMODE

FAIRMODE (Forum for AIR quality MODElling) est un comité d’experts sur les modèles (concepteurs & utilisateurs) dont le but est l’aide et la promotion sur l’utilisation harmonisée des modèles pour l’évaluation de la qualité de l’air dans les Etats Membres, en cohérence avec les demandes de la Directive Européenne sur la Qualité de l’Air.

Ce comité d’experts a 2 thématiques d’actions
- l’élaboration de guides de référence sur la mise en œuvre des modèles,
- l’établissement de recommandations portant sur l’Assurance-Qualité des modèles (validation des sorties de modèle, incertitudes associées, contrôle des données d’entrée)

Les travaux sont suivis par Laurence ROUIL (LCSQA-INERIS) qui fait partie du Comité de Pilotage de ce groupe.
Similairement à AQUILA, FAIRMODE a fait propositions de modifications de textes techniques en vue de la révision des Directives européennes prévue en 2013. Le document rassemblant les propositions est donné en Annexe 3.

2.5 Suivi de l’homologation des appareils

En lien avec les exigences européennes (cf. annexe VI de la Directive 2008/50/CE), le Dispositif National de Surveillance établit depuis 2010, avec l’aide du LCSQA et des Commissions de Suivi concernées, la liste des appareils homologués sur le territoire français, sur la base des rapports d’essais selon les normes en vigueur, le retour d’expériences des utilisateurs, les travaux menés dans le cadre de la Démonstration d’Equivalence (dans le cas de la mesure automatique des particules) et, le cas échéant les informations fournies par le constructeur.

Un suivi de l’homologation des appareils est assuré, au travers d’une veille technologique portant sur la certification des constructeurs (maintien ou création), sur la démonstration d'équivalence pour les appareils de mesure de poussières (maintien, extension ou création), le retour d’expériences des autres systèmes d’homologation existants (TÜV, MCERTS) et des utilisateurs (AASQA, via notamment le suivi du parc instrumental français - ou homologues européens). Un tel suivi permet la mise à jour de la liste des appareils, consultable sur le site du LCSQA (http://www.lcsqa.org/) et utilisable notamment dans le cadre d’achat de matériel. La liste à jour des matériels homologués utilisables par les AASQA dans le cadre de leurs missions réglementaires est donnée en Annexe 4. Afin d’améliorer le fonctionnement du parc national d’instrument de surveillance, il est prévu une nouvelle procédure d’homologation des appareils de mesure, élaborée par le LCSQA, intégrant le retour d’expérience des AASQA et la participation des fournisseurs, afin notamment d’optimiser les préconisations d’achat lors des demandes d’investissements annuels.

2.6 Révision des Directives

La Commission européenne a lancé fin 2011 le processus de révision de sa politique en matière de qualité de l'air, afin de renouveler ses objectifs au-delà de l'horizon 2020. Cette révision devrait avoir lieu au mieux en 2013 (« année de l'air » en Europe), a minima à travers la fusion des 2 Directives actuelles (2004/107/CE et 2008/50/CE). Cependant, il semble qu'un report du processus en 2014 soit évoqué et que seule la Directive relative aux plafonds d'émissions nationaux pour les polluants à l'origine des phénomènes d'acidification, d'eutrophisation et de pollution photochimique (cf. directive n°2001/81/CE dite « NEC » pour SO_2, les NO_x, les COV et NH_3) fera l'objet d'une révision.

Le LCSQA, en tant que Laboratoire National de Référence, a apporté sa capacité aux pouvoirs publics dans le cadre des sollicitations et consultations par la Commission Européenne, notamment via la réponse à différents questionnaires ou sollicitations spécifiques (notamment dans le cadre du contentieux en cours sur les particules et sur la demande française de report sur le NO_2).

2.7 Vérification de la conformité du Dispositif National de Surveillance par rapport à la réglementation

Les AASQA doivent élaborer au minimum tous les 5 ans un Programme de Surveillance de la Qualité de l'Air (PSQA) devant tenir compte :
- des recommandations du MEDDE, en particulier concernant l'application de la réglementation européenne, nationale et locale en vigueur (via les arrêtés correspondants) ainsi que de la lettre annuelle de cadrage,
- des contraintes liées aux sources de pollution locale, à la configuration géographique du territoire ou aux conditions météorologiques locales.

L'analyse des PSQA par les experts du LCSQA a permis au LCSQA de disposer d'une vision d'ensemble de l'activité de surveillance de la qualité de l'air sur tout le territoire, notamment sur :
- les moyens techniques et humains déployés et programmés sur la durée du PSQA en vue d'aider au suivi technique des dispositifs et à la planification des aides budgétaires,
- les stratégies d'exploitation et de diffusion des données et de l'information sur la qualité de l'air vers les différentes cibles,
- les outils et supports informatiques et cartographiques utilisés.

Entre autres, l'analyse de ces PSQA (révisés sur la base d'un guide national de recommandations rédactionnelles) a permis:
- d'évaluer ces programmes par rapport aux règles et directives en vigueur en 2010,
- de comprendre, le cas échéant, les raisons de non-conformité(s),
- d'identifier les axes d'améliorations proposées par les AASQA et les difficultés rencontrées,
- de dégager les thématiques principales hors surveillance réglementaire sur lesquelles sont engagées les AASQA.

Les principaux enseignements sont les suivants :

- la mise en conformité du réseau de surveillance par rapport aux Directives européennes sera effective au plus tard en 2015, l'échéance de mi 2013 étant assurée pour la majeure partie des AASQA. Ceci entraînera une

« réorganisation » des stations de mesure fixe (fermeture / déplacement / création),
- pour les polluants réglementés, le dispositif de surveillance nécessite encore quelques ajustements (surdimensionnement pour SO2, O3 et CO, sous dimensionnement pour les particules en site de proximité automobile ainsi qu'en Zone Régionale,
- les polluants non réglementés les plus « abordés » en AASQA sont l'air intérieur et les pesticides,
- l'accent va être mis sur les outils de modélisation (de l'échelle locale à régionale), principalement dans les grandes agglomérations. La qualité des informations associées sera un enjeu important pour la communication (rapidité, exactitude, format, etc…)

Ces analyses, combinées avec les exigences et recommandations de la réglementation en vigueur, ont pour objectif de servir de support pour les actions de vérification sur le terrain que les experts des équipes du LCSQA effectueront en lien avec les AASQA à partir de 2013. L'analyse globale de l'ensemble des PSQA ainsi qu'un bilan individuel sont disponibles sur le site du LCSQA[1].

L'objectif à court terme (a priori fin 2013) est d'aboutir au Plan National de Surveillance de la Qualité de l'Air (PNSQA) qui permettra de proposer aux AASQA un cadre national pour les activités d'intérêt collectif réglementées et non réglementées déployées de l'échelle régionale (ex : surveillance des pesticides, des odeurs ou de l'air intérieur) à l'échelle nationale (ex : reporting européen). Ce cadre est essentiel pour garantir la comparabilité des résultats à l'échelle nationale grâce à des méthodologies harmonisées.

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[1] http://www.lcsqa.org/system/files/psqa_synthese_nationale_fiches_thematiques_0.pdf

ANNEXES

Annexe n°1 : liste des experts français participant aux travaux du CEN/TC 264 « Air Quality »

Annexe n°2 : propositions de l'association AQUILA de modifications des textes réglementaires en vue de la révision des Directives 2004/107/CE et 2008/50/CE

Annexe n°3 : propositions du réseau FAIRMODE de modifications des textes réglementaires en vue de la révision des Directives 2004/107/CE et 2008/50/CE

Annexe n° 4 : Liste des matériels homologués utilisables par les AASQA dans le cadre de leurs missions réglementaires (au 01/03/2012)

ANNEXE n°1

Liste des experts français participant aux travaux du CEN/TC 264 « Air Quality » (au 08/11/2012)

Représentation des experts français dans les groupes de travail du CEN/TC 264 « Qualité de l'air »

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax mail	Commissions françaises
GT 1	France	**Dioxines – Emissions**	M. DIEU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 66 77 F : 03 44 55 63 02 Sebastien.dieu@ineris.fr	**X 43 B**
			M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 F :03 44 55 63 02 jean.poulleau@ineris.fr	
			M. FAROT	GIE des laboratoires 1, place de Turenne Immeuble Le Dufy 94117 SAINT MAURICE CEDEX	T : 01 49 76 52 69 F : 01 49 76 52 42 olivier.farot@veoliaeau.fr	
			M. VICARD	STRATENE Tour Crédit Lyonnais 129, rue Servient 69431 LYON CEDEX O3	T : 04 78 38 44 35 F : 04 78 38 44 36 Vicardjf@stratene.fr	
GT2	Pays-Bas	**Odeurs**	M. RIBEIRO	IRSN Site CEA Saclay BP 68 91129 GIF SUR YVETTE	T : 01.69.08.44.82 F : 01.69.08.71.18 nicolas.ribeiro@irsn.fr	**X 43 F**
GT 3	France	**HCl – Emissions – Méthode manuelle** ***Groupe ad hoc***	M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 F :03 44 55 63 02 jean.poulleau@ineris.fr	**X 43 B**
			M. TONNELIER	ENVIRONNEMENT SA 111, Bd Robespierre – BP 4513 78304 POISSY CEDEX	T : 01 36 22 38 00 F : 01 39 65 38 08 t.tonnelier@environnement-sa.com	

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 4	Royaume-Uni	**Carbone organique total**	MME RAVENTOS	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 5565 225 F :03 44 55 63 02 Cecile.raventos@ineris.fr	**X 43 B**
			Mme DEL GRATTA	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 66 77 F : 03 44 55 63 02 Florence.del-gratta@ineris.fr	
			M. FIANI	ADEME BP 90406 49004 ANGERS CEDEX 01	T : 02 41 20 41 20 F : 02 41 87 23 50 Emmanuel.fiani@ademe.fr	
GT 5	France	**Emissions de poussières à basse concentration**	Mme KNOCHE	STRATENE Tour Crédit Lyonnais 129, rue Servient Cedex 03 69431 LYON	T :04 78 38 44 35 F :04 78 38 44 36 knochem@stratene.fr	**X 43 B**
			M. PERRET	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 54 F :03 44 55 63 02 remi.perret@ineris.fr	
			Mme RAVENTOS	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 65 68 22 cecile.raventos@ineris.fr	
GT 6	Allemagne	**Matières particulaires < 10 µm**	M. HOUDRET	Ecole des Mines de Douai 941 rue Charles Bourseul BP 383 59508 DOUAI CEDEX	T :03 27 71 26 13 F :03 27 71 25 25 houdret@ensm-douai.fr	**X 43 D**
GT 7	Suède	**Air intérieur** **Doit être remplacé par le GT 26**	M. COCHET	CSTB 84 avenue Jean Jaurès BP 02 CHAMPS SUR MARNE 77421 MARNE LA VALLEE CEDEX 02	T :01 64 68 82 66 F :01 60 05 70 37	**X 43 I**
			M. MAUPETIT	CSTB 84 avenue Jean Jaurès BP 02 CHAMPS SUR MARNE 77421 MARNE LA VALLEE CEDEX 02	T :01 64 68 82 66 F :01 60 05 89 05 f.maupetit@cstb.fr	
			M MASSE	TARKETT SOMMER SA 2 avenue François Sommer BP 40333 08203 SEDAN CEDEX	T :03 21 29 83 87 03 24 29 84 82 pascal.masse@tarsom.com	
			Mme FAVAT	CTBA 10 avenue de Saint Mandé 75012 PARIS	T :01 40 19 49 19 01 44 74 65 22	

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 8	Pays-Bas	**Mesurage du mercure total**	M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 F :03 44 55 63 02 jean.poulleau@ineris.fr	**X 43 B**
GT 9	Danemark	**Assurance qualité des systèmes de mesure automatique**	M. MARTINIERE	ENVIRONNEMENT SA 111, Bd Robespierre – BP 4513 78304 POISSY CEDEX	T : 01 36 22 38 00 F : 01 39 65 38 08 f.martiniere@environnement-sa.com	**X 43 B**
			M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 03 44 55 63 02 jean.poulleau@ineris.fr	
			M. FAYOLLE	ENVIRONNEMENT SA 111, Bd Robespierre – BP 4513 78304 POISSY CEDEX	T : 01 36 22 38 00 F : 01 39 65 38 08 p.fayolle@environnement-sa.com	
			M. MARCHIONINI	ISEO 320, avenue Archimède 13290 LES MILLES	T :05 59 31 44 44 Christian.marchionini@iseo.fr	
GT 10	Allemagne	**Eléments spécifiques**	M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 F :03 44 55 63 02 jean.poulleau@ineris.fr	**X 43 B**
GT 11	Pays-Bas	**Echantillonneurs par diffusion Prescriptions et méthodes d'essais**	Mlle Sabine CRUNAIRE	Ecole des Mines de Douai 941, rue Charles Bourseul BP 838 59508 DOUAI Cédex	T :03 27 71 26 01 F :03 27 71 29 14 sabine.crunaire@mines-douai.fr	**X 43 D**
			Mme FROMAGE MARIETTE	Air Languedoc Roussillon 3 place Paul Bec Les Echelles de la Ville – Antigone 34000 MONTPELLIER	T : 04 67 15 96 60 F : 04 67 15 96 69 afromage@air-lr.org	

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 12	Pays-Bas	**Méthode de référence $SO_2/NO_x/O_3/CO/C_6H_6$**	M. FAVEZ	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 66 77 Olivier.favez@ineris.fr	**X 43 D**
			M. MATHE	Ecole des Mines de Douai 941, rue Charles Bourseul BP 838 59508 DOUAI Cédex	T : 03 27 71 26 10 F : 03 27 71 29 14 francois.mathe@mines-douai.fr	
			Mme LOCOGE	Ecole des Mines de Douai 941, rue Charles Bourseul BP 838 59508 DOUAI Cédex	T : 03 27 71 26 19 F : 03 27 71 29 14 nadine.locoge@mines-douai.fr	
			Mr ROBERT	CHROMATOTEC / airmotec ag 15 rue d'Artiguelongue 33240 St Antoine	T : 05 57 94 04 75 F : 05 57 94 06 20 michel.robert@chromatotec.com	
GT 13 (GT définitivement dissous, thème de travail repris par le GT 12**)**	Danemark	**Méthode de référence – Benzène**	Mme EUDES	LABORATOIRE CENTRAL DE LA PREFECTURE DE POLICE 39 bis, rue de Dantzig 75015 PARIS	T :01 55 76 22 69 F :01 55 76 27 18 veronique.eudes@interieur.gouv.fr	**X 43 D**
			M. GODET	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 66 77 F :03 44 55 63 02 yves.godet@ineris.fr	
			M. GONZALEZ	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 57 F :03 44 55 63 02 norbert.gonzalez-flesca@ineris.fr	
			M. MOULENE	ENVIRONNEMENT SA 111 Bd Robespierre 78300 POISSY	T :01 39 22 38 02 F :01 30 65 88 70 d.moulene@environnement-sa.com	
GT 14	Allemagne	**Méthode de référence – Pb/Cd/As/Ni**	M. THOMAS	Institut Pasteur de Lille 1, rue du Pr Albert Calmette BP 245 59019 LILLE CEDEX	T :03 20 87 72 33 F :03 20 87 73 83 patrick.thomas@pasteur-lille.fr	**X 43 D**
			Mme. COURSIMAULT ou Mme EUDES	Préfecture de Police Labo Central 39 Bis Rue de Dantzig 75015 PARIS	T :01 55 76 22 59 F :01 55 76 27 17 annie.coursimault@interieur.gouv.fr veronique.eudes@interieur.gouv.fr	
			M. ALLEMAN	Ecole des Mines de Douai 941, rue Charles Bourseul BP 838 59508 DOUAI Cédex	T : 03 27 71 26 24 F : 03 27 71 29 14 laurent.alleman@mines-douai.fr	

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 15	Pays-Bas	**PM2,5**	M. MATHE	Ecole des Mines de Douai 941 rue Charles Bourseul BP 838 59508 DOUAI Cédex	T : 03 27 71 26 10 F : 03 27 71 29 14 francois.mathe@mines-douai.fr	**X 43 D**
			M. FAVEZ	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 65 09 F : 03 44 55 62 02 Olivier.favez@ineris.fr	
GT 16	France	**$SO_2/NO_X/CO/O_2/H_2O$ à l'émission**	M. POULLEAU	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 35 F :03 44 55 63 02 jean.poulleau@ineris.fr	**X 43 B**
			Mme RAVENTOS	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 68 22 F :03 44 55 63 02 cecile.raventos@ineris.fr	
			M. MOULENE	ENVIRONNEMENT SA 111 Bd Robespierre 78300 POISSY	T :01 39 22 38 02 F :01 30 65 88 70 d.moulene@environnement-sa.com	
			M. REYNAUD	CETIAT 25 avenue des Arts Domaine scientifique de la Douai BP 2042 69603 VILLEURBANNE CEDEX	T :04 72 44 49 52 serge.reynaud@cetiat.fr	
GT 17	Belgique	**Emissions fugitives**	M. DURIF	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 54 F :03 44 55 63 02 Marc.durif@ineris.fr	**X 43 B**
			Mme BENASSY	TOTAL FINA ELF FRANCE – CRES CH DU CANAL BP 22 SOLAIZE 69360 ST SYMPHORIEN D OZON	marie-france@benassy@totalfinaelf.com	
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			M. LEYGUE	ECS RN 96 – 90 avenue des Logissons 13770 VENELLES	T :04 42 54 21 96 F :04 42 54 20 15 direction.ecs@wanadoo.fr	
			Mme COUZINIE	ALUMINIUM PECHINEY Rue Sainte Claire Deville BP 114 73303 ST JEAN MAURIENNE CEDEX	T :04 79 20 12 50 F :04 79 20 12 34 elisabeth.couzinie@pechiney.com	

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 18	Allemagne	**Mesure à long trajet optique**	M. FREJAFON	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	Emeric.frejafon@ineris.fr	**X 43 D**
			M. AFLALO	Environnement SA 111 Bd Robespierre 78300 POISSY	T : 01 36 22 38 00 F : 01 39 65 38 08 s.aflalo@environnement-sa.com	
			M. NICOLAS	Environnement SA 111 Bd Robespierre 78300 POISSY	T : 01 36 22 38 00 F : 01 39 65 38 08 Jc.nicolas@environnement-sa.com	
GT 19	Royaume Uni et Allemagne	**Stratégie de surveillance**	M. VICARD	STRATENE 129, rue Servent 69326 LYON	T :04 78 38 44 35 F :04 78 38 44 36 vicardjf@stratene.fr	**X 43 B**
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GT 20	Norvège	**Métaux lourds dans les particules sédimentables**	M. MATHE	Ecole des Mines de Douai 941 rue Charles Bourseul BP 838 59508 DOUAI Cédex	T :03 27 71 26 10 F :03 27 71 29 14 francois.mathe@mines-douai.fr	**X 43 D**
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GT 21	Italie	**Mesurage HAP**	Mr ALBINET	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 64 85 F :03 44 55 63 02 alexandre.albinet@ineris.fr	**X 43 D**
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GT 22	Royaume Uni	**Certification des instruments de surveillance**	M. POULLEAU	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 65 54 F :03 44 55 63 02 jean.poulleau@ineris.fr	**X 43 B – D - E**

Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 22 (suite)			M. TONDATO	ENVIRONNEMENT SA 111, Bd Robespierre – BP 4513 78304 POISSY CEDEX	T :01 39 22 38 00 F :01 30 65 88 70 l.tondato@environnement-sa.com	
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			M. MATHE	Ecole des Mines de Douai 941 rue Charles Bourseul BP 838 59508 DOUAI Cédex	T :03 27 71 26 10 F :03 27 71 29 14 francois.mathe@mines-douai.fr	
GT 23	Danemark	**Débit volumétrique**	M REYNAUD	CETIAT 25 avenue des Arts – BP 2042 69603 VILLEURBANNE CEDEX		**X 43 B**
			M. POULLEAU	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 65 35 F : 03 44 55 63 02 Jean.poulleau@ineris.fr	
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GT 24	Royaume-Uni	**Quantification des gaz à effet de serre**	M. VICARD	STRATENE 129, rue Servent 69326 LYON	T :04 78 38 44 35 F :04 78 38 44 36 vicardjf@stratene.fr	**X 43 B**
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GT 25	Italie	**Mercure**	M. MARLIERE	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 65 75 F : 03 44 55 63 02 fabrice.marliere@ineris.fr	**X 43 D**
GT 26	France	**Emissions des substances dangereuses dans l'air intérieur**	M. MAUPETIT	CSTB 84 av Jean Jaurès Champs sur Marne 77447 MARNE LA VALLEE CEDEX 2	T:01 64 68 82 58 F: 01 64 68 88 23 f.maupetit@cstb.fr	**X 43 I**
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Les cases bleutées signalent les groupes de travail qui ont été dissous mais pouvant être réactivés le cas échéant.

CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
GT 27	Allemagne	**Measurement of odour impact by field inspection**	M. GUILLOT	Ecole des Mines 6 avenue de Clavières 30319 ALES CEDEX	T : 04 66 78 50 00 F : 04 66 78 50 34 Jean-michel@ema.fr	**X 43 F**
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GT 28	Allemagne	**Measurement of airborne microorganisms in ambient air**	Mme LABRE	INERIS Parc Technologique Alata BP 2 60550 VERNEUIL EN HALATTE	T : 03 44 55 66 77 F : 03 44 55 63 02 juliette.larbre@ineris.fr	**X 43 D**
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GT 29	Allemagne	**Monitoring of genetically modified organisms – Pollen monitoring – Technical pollen sampling using pollen mass filter and Sigma-2 sampler**	M. FAURE	LABORATOIRE CENTRAL DE LA PREFECTURE DE POLICE 39 bis rue de Dantzig 75015 PARIS	T : 01 55 76 21 53 F : 01 55 76 27 05 eddie.faure@interieur.gouv.fr	**X 43 D**
GT 30	Allemagne	**Biomonitoring methods with flowering plants**	M. CLAVERI	BIOMONITOR 27, rue de Verdun 54800 JARNY	T : 03 82 33 81 56 biomonitor@wanadoo.fr	**T 95 AIR**
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GT 31	France	**Biomonitoring methods with mosses and lichens**	M. DENAYER	Institut lillois d'ingénierie de la santé Université Lille 2 Droit et santé 42, rue Ambroise Paré 59120 LOOS	T : 03 20 62 37 43 Franck-olivier.denayer@univ-lille2.fr	**T 95 AIR**
			Mme COMBERT	Université Michel de Montaigne Domaine universitaire 33607 PESSAC CEDEX	T : 05 57 12 10 28 Sandrine.gombert@egid.u-bordeaux.fr	
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CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
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GT 32	Allemagne	**Determination of the particle number concentration and particle size distribution**	M. USTACHE	INERIS Parc Technologique ALATA BP 2 60550 VERNEUIL EN HALATTE	T :03 44 55 66 77 F :03 44 55 62 02 aurelien.ustache@ineris.fr	**X 43 D**
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			M. DELORT	ATILH 7, place de la Défense 92974 PARIS LA DEFENSE CEDEX	T : 01 55 23 01 37 F : 01 49 67 10 46 m.delort@atilh.fr	
			M. FIANI	ADEME BP 90406 49004 ANGERS CEDEX 01	T : 02 41 20 41 20 F : 02 41 87 23 50 Emmanuel.fiani@ademe.fr	
			M. BOISSE	BN ACIER 5, rue Luigi Cherubini 93212 SAINT DENIS LA PLAINE CEDEX	T : 01 71 92 20 02 Frederic.boisse@bnacier.fr	
GT 34	Pays-Bas	NO_3^-, SO_4^{2-}, CL^-, NH_4^+, Na^+, K^+, Mg^{2+}, Ca^{2+} dans les $PM_{2.5}$	M. SAUVAGE	Ecole des Mines de Douai 941 rue Charles Bourseul BP 838 59508 DOUAI Cédex	T : 03 27 71 26 16 F : 03 27 71 29 14 stephane.sauvage@mines-douai.fr	**X 43 D**
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CEN/TC 264	Animateur	Titres	Noms	Sociétés – adresses	Téléphone Fax email	Commissions françaises
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ANNEXE n°2

propositions de l’association AQUILA de modifications des textes réglementaires en vue de la révision des Directives 2004/107/CE et 2008/50/CE

AQUILA position paper for the review of air policy – *working document June 2012*

Contents

Recommendations for the revision of the current Air Quality legislation

(Preliminary numbering due to proposed elimination of items)

Recommendations for the revision of the current Air Quality legislation

ITEM N°1:

ROLES AND RESPONSIBILITIESOF NATIONAL REFERENCE LABORATORIES

I. Summary of context

At present, roles and responsibilities of National Reference Laboratories (NRL's) are insufficiently described in the European Air Quality Directives (AQD). The term 'National Reference Laboratory' (NRL) does not exist in the Directives. For this reason a clearer and more detailed description of roles and responsibilities of NRL's is strongly recommended.

Roles and responsibilities of National Reference Laboratories (NRL's) are currently addressed in **Article 3 of EU Directive 2008/50EC**:

For which items (a) to (f) an individual NRL is responsible may differ from MS (Member State) to MS. At least item (e) is definitely a task of the NRL.

Especially in Member States with a federal structure, different institutions may be responsible.

Because of this complex background Article 3 may be generally taken as it is. Anyway, some amendments are proposed:

- An item on the validity of modelling results should be added.
- The wording about Community-wide quality assurance programmes should be modified.
- Requirements for quality assurance programmes on the national should be added.
- National Reference Laboratories are introduced and defined more explicitly.

More detailed requirements for NRL's are listed in **Section C of Annex I of Directive 2008/50/EC**.

The fourth bullet point particularly describes the tasks of the NRL's without using this term. Therefore, in order to underline and strengthen the role of the NRL's some modifications of the fourth bullet point should be considered:

- It should be made clear that MS must appoint NRLs for all the regulated air pollutants.
- It should be clarified that NRL's shall be accredited according to ISO/IEC 17025:2005.
- Considering that a large number of NRL's is not accredited according to ISO/IEC 17025:2005 yet and that such an accreditation is not fully mandatory according to the current Directive an appropriate period of time after publication of the revised Directive should be specified for a MS to fully comply with this requirement.

- It should be made clear that an accreditation according to ISO/IEC 17025:2005 is only required for those scientific and technical tasks that the NRL is involved in.
- A link to the new standard ISO/IEC 17043:2010 (conformity assessment - general requirements for proficiency testing) should be established for those nrls that organise inter-laboratory comparisons on the national level.

In addition, a new (fifth) bullet point is proposed in order to establish the support of the AQUILA network by the National Reference Laboratories

II. Recommendations for revisions and amendments to the Directive

1. Recommendations for new Article 3 – Responsibilities (proposed changes in **bold**):

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

(a) assessment of ambient air quality;

(b) approval of measurement systems (methods, equipment, networks and laboratories);

(c) ensuring the accuracy of measurements;

(d) checking and assuring the validity of modelling results;

(e) *analysis of assessment methods;*

(f) coordination on their territory of Community-wide quality assurance programmes organised by the Commission;

(g) implementation of national quality assurance programmes

(h) *cooperation with the other Member States and the Commission.*

National Reference Laboratories (NRLs) designated by Member States are responsible, at least, for items (f) and (g).

Where relevant, the competent authorities and bodies shall comply with Section C of Annex I.

Recommendations for Section C of Annex 1 in Directive 2008/50/EC

Modification of bullet point four:

> ***"that National Reference Laboratories (NRLs) are appointed by the Member States. These National Reference Laboratories shall take part in Community-wide quality assurance programmes and inter-laboratory comparisons organised by the Commission covering pollutants regulated in this Directive and shall be involved in their coordination on Member States territory. These laboratories shall also coordinate, on the national level, the appropriate realisation of reference methods and the demonstration of equivalence of non-reference methods.***
>
> ***The National Reference Laboratories shall be accredited according to ISO/IEC 17025:2005 for the reference methods referred to in Annex VI – according to their tasks - by 20XX*(*)*. National Reference Laboratories organising inter-laboratory comparisons on the national level should also be accredited according to ISO/IEC 17043:2010 with regard to their tasks".***

(*) Minimum of 3 years after the publication of the revised Directive.

2. Introduction of a new bullet point five:

> ***"that the national reference laboratories support the work done by the European network AQUILA set up by the Commission. The cooperation of NRLs and AQUILA is described in an appropriate Memorandum of Understanding between the European Commission and the NRLs."***

III. Questions, possible issues, perspectives

It was proposed to establish a link to the new standard ISO/IEC 17043:2010 in Section C of Annex I of the directive 2008/50/EC. This proposal says, that National Reference Laboratories "*organising inter-laboratory comparisons on the national level should also be accredited according to ISO/IEC 17043:2010 with regard to their tasks."*

If this requirement is considered to be too strict, the following weaker wording may be discussed:

National reference laboratories organising inter-laboratory comparisons on the national level should follow the principles laid down in ISO/IEC 17043:2010 with regard to their tasks.

It was discussed to include FAIRMODE in the proposed new bullet point five in Section C of Annex I. After the discussion FAIRMODE was left out because in many cases the responsibilities for this does not fall within the responsibilities of the NRLs.

ITEM N°2:

INTERCOMPARISONS

I. Summary of context

The current Directive 2008/50/EC lays down provisions for the use of standardized measurement techniques and common performance criteria for these, in order to obtain information on the quality of ambient air that is demonstratively accurate and comparable across the European Union (EU). Article 3 of the AQD 2008/50/EC requires, for example, Member States to designate, at appropriate levels, the competent bodies responsible for the assessment of air quality, approval of measurement systems, ensured accuracy of measurements, and coordination of quality programmes on their territory. Annex I Section C gives further details and sets requirements including measurement traceability, accreditation to ISO 17025, active participation in communitywide quality assurance programmes, and it also describes the role of National Reference Laboratories in these activities.

The Joint Research Centre (JRC) of the European Commission has organized quality assurance programmes for atmospheric gaseous and particulate pollutants that are regulated in the EU, and this should continue in future. Intercomparison exercises have been organized for SO2, NO/NO2, CO, O2, BTEX, VOCs, PM2.5/PM10, As/Cd/Ni/Pb and PAHs during the past15 years. This has led to important feed back to the participating laboratories and to other interested organisations, and it has also provided information regarding sampling, measurement and calibration methods, data quality in order to facilitate improvements to these, and most importantly has provided assessments of the performance of the participating laboratories.

Up to now, participation of the National Reference Laboratories in these intercomparisons has been voluntary. Reports summarizing the results were sent to the participants after the evaluation of the results. However, due mainly to the lack of impact of these reports and their data, and of limited improvements in these results from some laboratories, AQUILA has established requirements that participants must conform to according to AQUILA document N37 http://ies.jrc.ec.europa.eu/aquila-project/role-and-tasks-of-national-reference-laboratories.html on the frequency of participation by an NRL, and in the case of any failure to achieve the required data quality objectives a requirement is specified that remediation measures must be taken to improve this and to demonstrate satisfactory results.

The AQUILA Network sees the necessity for clarifying the participation of National Air Quality Reference Laboratories in these quality assurance programmes of the Joint Research Centre, and to clarify how unsatisfactory results must be dealt with.

II. Recommendations for revisions and amendments to the Directive

It is therefore proposed that Annex I, Section C be modified as follows:

C. Quality assurance for ambient air quality assessment: data validation

1. To ensure accuracy of measurements and compliance with the data quality objectives laid down in Section A, the appropriate competent authorities and bodies designated pursuant to Article 3 shall ensure the following:

- that all measurements undertaken in relation to the assessment of ambient air quality pursuant to Articles 6 and 9 are traceable in accordance with the requirements set out in Section 5.6.2.2 of the ISO/IEC 17025:2005,

- that institutions operating networks and individual stations have an established quality assurance and quality control system which provides for regular maintenance ***to assure the continued accuracy of measuring devices and this system shall be regularly reviewed by the relevant National Reference Laboratory, where this is different,***

- that a quality assurance/quality control process is established for the process of data collection and reporting and that institutions appointed for this task actively participate, in the related Community-wide quality assurance programmes,

- that the national laboratories, when appointed by the appropriate competent authority or body designated pursuant to Article 3, that are taking part in Community-wide intercomparisons covering pollutants regulated in this Directive, are accredited according to EN/ISO 17025 ***for the relevant methods*** *referred to in Annex VI. These laboratories shall also be* ***responsible for the coordination in Member State's territory of the Community wide quality assurance programmes to be organised by the Commission's Joint Research Centre and shall also be responsible for coordinating, on the national level, the appropriate use*** *of reference methods, and the demonstration of equivalence of non-reference methods,*

- ***that the national laboratories, when appointed by the appropriate competent authority or body designated pursuant to Article 3, take part at least every three years in the Community-wide quality assurance programmes organized by the Commission's Joint Research Centre. If this participation produces unsatisfactory results then the national laboratory should demonstrate at the next possible occasion satisfactory remediation measures, and provide a report to the Joint Research Centre on these.***

III. Questions, possible issues, perspectives

The proposed frequency of participation in the Community-wide quality assurance programmes of at least once every three years is a result of the concern not to increase the burden on National Reference Laboratories unnecessarly. It should be noted that this frequency may need to be revised in function of the requirements of the ISO/IEC 17025:2005 accreditation.

It should be noted that this Item dealing with "Intercomparisons" is relevant and in full agreement with the Item on the "Role and responsibilities of National Reference Laboratories".

ITEM N°3:

TYPE-APPROVAL TESTING OF AMBIENT AIR-QUALITY METHODS USED FOR EUROPEAN UNION COMPLIANCE MONITORING PURPOSES

I. Summary of context

1.1 Requirements of Directive 2008/50/EC

Directive 2008/50/EC (known in this document as the AQD – Ref.1) specifies requirements to use a number of specified reference measurement methods for the assessment of the atmospheric concentrations of eight ambient air pollutants (Annex VI). These are prescribed in international standards (norms) developed by the European standardization organisation CEN (Ref.2). Five of these standards describe continuous measurement methods, and these standards specify comprehensive experimental type-approval test procedures in order to demonstrate whether the type (i.e. a specified manufacturer and a specific design) of measurement method tested is capable of performing measurements that conform to the data quality objectives given in the AQD Annex 1. The five standards are EN 14211:2005 (NO_x), EN14212:2005 (SO_2), EN 14625:2005 (O_3), EN 142626 (CO), and EN 14662:2005 (benzene), and these are the main issue of the AQUILA topic discussed here.

The AQD Annex VI Section B also permits other measurement methods to be used for the assessment of the atmospheric concentrations of these regulated pollutants *provided these have been demonstrated to be "equivalent"* as specified in Ref. 3.

In addition, the AQD Annex VI Section E specifies requirements for the mutual recognition by different Member States of type-approval tests:

"In carrying out the type approval to demonstrate that equipment meets the performance requirements of the reference methods listed in Section A, competent authorities and bodies designated pursuant to Article 3 (of the AQD) shall accept test reports issued in other Member States by laboratories accredited to the EN ISO 17025 standard for carrying out such tests."

It is the ***exact meaning, the intention, and the interpretation(s), of this text in the current AQD*** that should be re-considered in detail - in order to provide a clearer, more transparent, and more specific and harmonised understanding of this text throughout the EU. This is discussed below, with proposals for revision of the text.

1.2 Timing of these Requirements

The date that Member States are required to implement the AQD is relevant to this issue. This is given in Article 33 as:

"*Member States shall bring into force of laws, regulations and administrative provisions necessary to comply with this Directive before June 2010. They shall forthwith communicate to the Commission the text of these measures"*

This may be taken to mean that ***there is no need for a Member State to implement any or all of the requirements of the AQD before June 2010.*** This interpretation could include the decision that *type-approval testing in conformance with the five EN standards also need not be implemented until June 2010 into the type-testing programme of a Member State* (in any exact manner) **-** *although these standards were published in 2005, and should have replaced any existing national norms soon thereafter.*

Certain Member States appear to have adopted this view (see below). Others have planned for and adopted the requirements of these EN standards considerably earlier. It should also be noted, however, that AQD Annex VI Section D also requires that:

"All new equipment purchased for the implementation of this Directive must comply with the reference method or equivalent by 11 June 2010".

This should mean that the type-approval testing of this new equipment as specified in the relevant EN standard that constitutes the reference method must be ***completed*** by June 2010 to have demonstrated such compliance. It may also be relevant to consider that:

"All equipment used in fixed site measurements must comply with the reference method or equivalent by 11 June 2013"

This is a clear and fixed ***final*** cut-off date for all equipment to have been replaced that does not conform to the above. Therefore, this may also be seen as the cut-off date for most or all of the type approval testing to have been successfully completed - *at least for the first round of ambient air monitors to be installed after these above requirements come into force.* However, since all EU national networks have to have all their approved monitors in place by 11th June 2013, this means all type approvals should be completed much before this, in practice.

It should be considered whether the above two texts need modification in the revision of the Directive, to allow for further type approvals of new, possibly more cost effective, more advanced instrumentation to be carried out in future.

1.3 The role of National, or International, Certification Schemes

CEN Technical Committee 264 produced all the CEN standards that cover the ambient air quality monitoring requirements for reference methods discussed here. It also prepared and published two over-arching EN standards that cover procedures for certification of the type approval tests by an independent nationally appointed body. These two standards are:

- EN 15267-1, *Air quality – Certification of automated measuring systems – Part 1: General principles;*
- EN 15267-2, *Air quality – Certification of automated measuring systems – Part 2: Initial assessment of the AMS manufacturer's quality management systems and post-certification surveillance of the manufacturing process.*

The rationale for these two overarching CEN standards, which should have been adopted by all EU Member States where relevant, may be summarised as:

The five published CEN standards listed in the first paragraph of this document contain what should be considered to be complete, comprehensive, and autonomous technical requirements for the specifications of type-approved continuous analysers that are to be used as reference methods, and that are required to meet the data quality objectives, and particularly the overall measurement uncertainty requirements of EU Directive 2008/50/EC. The testing requirements in these are all required to be fulfilled so as to demonstrate comprehensively that they have the potential to serve as the EU reference methods (provided they are subsequently installed appropriately at the selected monitoring sites, and that they have the required on-going quality assurance and quality control procedures applied, as also specified in the relevant CEN standard).

These CEN standards specify rigorous laboratory and field tests to establish that all the prescribed numerical values for all the relevant individual performance characteristics that contribute to the overall measurement uncertainty of the method, and they also provide a methodology for determining this overall measurement uncertainty from these components. *However, this type-approval testing is a one-off process carried out at the beginning or early in the complete lifetime of the measurement method, and it relies on the manufacturer making no significant changes to this without providing satisfactory information about these modifications to the competent authority and/or its designated body.*

The above two further CEN standards, however, give additional requirements at a European level, which are extra to the technical specifications and the type-testing requirements of the CEN measurement methods. They provide a formal management and organisational structure under which these technical CEN standards should be operated. They are also intended to cover other continuous ambient air-quality monitoring methods used for regulatory purposes (e.g. automated mercury). The scope and objectives of these two standards may be summarised as:

1. **EN 15267-1** specifies the general principles, including the common management and organisational procedures and requirements, for the product certification and type approval of automated measuring systems for monitoring ***both ambient air quality methods and emissions from stationary industrial sources.*** This product certification consists of the following sequential stages:
    a) Type approval of the measurement method by comparisons with the specified performance requirements - in this case those given in the relevant CEN ambient air standards);
    b) b) Initial assessment of the AMS manufacturer's quality management system (usually using ISO 9001 as the basis); This is carried out by a national certification body that has the expertise to do this, and which is itself accredited to a relevant EN standard (see Ref. 4 Chapter 3)
    c) Formal certification of the product type or product pattern.

2. **EN 15267-2** specifies the requirements that the manufacturer's quality management system must follow in order to fulfil the requirements of product certification, including:
    a) The assessment of the manufacturer's production control system;
    b) The continuing surveillance of the effects on the performance of the method from subsequent design changes, in order to ensure that all such design changes do not alter the method in such a manner that it no longer conforms with its certified performance.

The implementation of these two standards at a national level should enable on-going surveillance of the manufacturing process - so that subsequently manufactured systems "of the same type" do in fact conform to the data quality requirements of the Directive. This certification procedure is operated by an independent designated certification body that is separate to the organisation designated for the type-approval testing, and this is also accredited to a different CEN standard, as discussed in more detail in Reference 4. Where the type-approval testing laboratory and the Certification Body of relevance are in another Member State then an agreement nay be reached if required between these and the relevant competent body.

It is clear that there are a number of advantages of this on-going surveillance approach over that of one-off type approval. There are, however, potential issues that have been found in practice with this approach - although these standards has been ratified by the CEN Member Bodies and thus accepted by all EU Member States. For example:

- There are overhead costs associated with the initial and on-going surveillance activities;
- It is possible at present for a certification body in one Member State to accept type-approval test reports in a different way to that in another. This can lead to an inconsistency in the acceptance of the test results, *since there is no common and stated international consensus on the exact and detailed requirements for the testing to ensure that it conforms to all the EN standard reference method requirements;*

- It is possible for a certification body to approve certification test reports retrospectively and these type-approval tests may be:
  - carried out ***before*** the CEN standard reference methods were implemented at all, or fully implemented, in a Member State;
  - the tests conform partially or in principle to the requirements of the CEN methods, which may or may not have been published, and there may have been supplementary tests carried out to bring them closer to their requirements – possibly carried out at a different time on the same "type" of method by another organisation, which could be or include the manufacturer;
  - the laboratory that carried out the tests was not accredited to ISO EN 17025 (either partially or completely) for all of the tests exactly as specified in the relevant CEN standard reference method.

In any or all of the above circumstances it has been, and is, a matter of significant debate and/or scientific judgement as to whether these tests are valid and acceptable to the competent authority or its designated body in the Member State where the tests were carried out, and/or where the certification process took place. Importantly, in addition, it is unclear what the status of such a certification should be, or would be, in another Member State that is interested in the recognition of such type-approval testing and certification procedures.

Real examples of these issues and possible solutions to the validity question are given below in Sections 2 and 3 respectively

1.4 Possible Effects of Revisions of the Published CEN Reference Method Standards

The CEN standards (published in 2005) EN 14211, EN 14212, EN 14265 and EN 14266 were developed as a family of standards with a common format, detailed test procedures performance characteristics, performance criteria etc. They also have a common methodology for determining the overall measurement uncertainty that is required by the data quality objectives of the AQD.

The current revision of the above four standards predominantly entails modifications to the on-going quality assurance procedures for the methods used in the field, with only minor editorial modifications to the type-approval testing requirements and to clarification of the type-testing procedures. There are no differences between the published and the revised versions that would significantly affect the type-approval testing programme or its results. The revision has also improved the calculation of the overall measurement uncertainty from the individual components, which may entail a re-calculation of this, but there should not be any significant consequences arising from this.

The CEN standard EN 14662-part 3 (published in 2006), was intended to have the same format as the above four standards. However, a different CEN Working Group was responsible for this and some errors and ambiguities are present in the published version that allow different interpretations of the test criteria to be applied, and in some cases this results in one type approval test laboratory failing the acceptance tests whilst another could pass these. These errors and ambiguities are being rectified in the version being revised. However, it should be noted that the performance characteristics required and the test acceptance criteria have not changed. It may therefore be valid to re-calculate the results in the format of the standard that is being revised, but there is a small probability that a reference method for benzene that was approved under the regime of the current standard would not be accepted under the requirements of the new standard when published.

It is strongly recommended by AQUILA that the new versions of all these standards should be adopted once they are published. This should be done if at all possible with the existing

AQD through a "Comitology" procedure, or if this is not possible, when this directive is revised.

1.5 Detailed Requirements for Accreditation

It may be expected that the requirement for accreditation to the EN ISO standard 17025 as stated in the AQD Annex VI section E *"shall accept test reports issued in other Member States by laboratories accredited to the EN ISO 17025 standard for carrying out such tests"* is clear and unambiguous. This may be correct in most cases, but the issue is somewhat complex as discussed at some length in the AQUILA document entitled:

"National Air Quality Reference Laboratories and the European Network – AQUILA: Roles and Requirements for Measurement Traceability, Accreditation, Quality Assurance/Quality Control, and Measurement Comparisons, at National and European Levels" (Ref.4 Chapter 3)"

The accreditation that has been granted for carrying out "such tests" should be reviewed carefully in all cases to determine the exact nature and scope of the accreditation, and this scope needs to be clear, comprehensive, and visible - if there is to be *valid mutual acceptance of type approval testing reports.*

2. Examples of Current Issues with the Mutual Acceptance of Type-Approval Tests

A number of examples have been discussed in the AQUILA Forum and elsewhere regarding the (mutual) acceptability of type-approval test reports and their exact testing procedures. Some of these are listed below, so that it can be judged whether the proposed revision given below of the text of the AQD Annex VI Section E overcomes these issues satisfactorily:

- There are problems with interpreting how exact and comprehensive the testing is required to be when compared with the exact specific and detailed CEN standard requirements. What should be done if only one or two performance characteristics are tested differently to the CEN standard? As an example of this, the National reference Laboratory of Spain on behalf of the competent authority reviewed all of the type approval test reports produced by German test laboratory since 2006 and came to the conclusion that none completely conformed to the CEN requirements. In each one or two of the tests were different and one was missing.
  The response given by the test laboratory/UBA was that "*the requirements of the EN 14211, EN14212, EN14265 and EN 14266 are not obligatory for these type approvals, This is because the type approvals took place before the AQD 2008/50/EC was confirmed (in Germany).The AQD was substituted on 11th July 2010 for directive 1996/62/EC and the daughter directives 1999/30/EC, 2000/69/EC and 2002/3/EC" (Ref. 5)*
- In these cases how should the overall measurement uncertainties be determined when the tests are not comprehensive or complete?
- Should some form of text be used on the test report/test certificate when there are differences in the tests than those specified by the CEN standards - to alert the user/competent authority/designated competent body to this? How large are these differences allowed to be?
- There have been discussions concerning the acceptance of type-approval tests by certification bodies where these are using previous tests rather than the CEN reference standards and/or non-accredited laboratories were used for the tests. There have been discussions on a number of such type-approval test reports and their acceptance by certification bodies. One example was the use of an UBA test report produced in 1996, plus the use of a USA EPA

report of 1992, that was certified by the UK in 2011, with the test laboratory having no accreditation to ISO 17025.

The UK response was that “*the (UK) certification process has tracked and matched the requirements of the standards and therefore the Directive within its published performance standards. It is known that there are instances where old (i.e. pre-standard publication) test reports are submitted as evidence for certification and where the testing was undertaken before the standards existed, and there is a chance this did not match the requirements of the standards. In this situation, the certification committee undertakes additional analysis which is documented, and a pragmatic approach is applied. Therefore a clear audit trail is in place, albeit not one in the public domain. This pragmatic approach is suitable and necessary to avoid introducing unnecessary burdens on those who are seeking certification. However, the approach must be implemented rigorously and there must be confidence in the committee’s decisions to make it successful. Defra in the UK considers that there might be reason to review now, whether data prior to the publication of the standards (2005) should still be accepted, and is considering introducing a requirement for the gaseous analysers to have had the tests completed after the standard was produced. This should have the effect of reducing the discrepancy between the standards and the testing undertaken and therefore the level of professional judgement which needs to be applied, without introducing unnecessary burden – the standards have been in place for a long time. UK would be interested in the views of other Member States on this matter. It would be preferential to work towards obtaining consistency in approach, and achieving processes which Member States and other users of the equipment understand and can have confidence in.*”

It should also be noted in this context that European manufacturers of recent instrumentation who are undergoing type-approvals in conformance with all the requirements of the CEN standards state that:

- Instruments certified against old test reports reduce the need for innovation and funding for next generation analysers;
- There is distortion of competition when reports are accepted that are not fully compliant;
- Manufacturers will not invest in new testing and certification if the results are not evaluated rigorously.
- Instruments tested before the current CEN standards were accepted have a real risk that the measurement data are (unknowingly) non-compliant or invalid

- How should the AQD requirements be handled when the revised standards are published?

- How should past and future acceptance of type-approval tests using the current standards be handled until then?

It would also be extremely beneficial if there were a database of acceptable testing organisations, their testing scopes, and their accreditation scopes, which could possibly be held and updated regularly by the JRC in association with AQUILA.

3. Recommended Modifications to the Text of the Directive

As discussed above, the current text in the AQD Annex VI Section E may be considered as inexact and ambiguous and could allow flexibility in its interpretation - particularly by the use of the term “such tests” coupled with the other parts of the sentence. This flexibility could in principle range from one or more large deviations from the requirements of the CEN standards that could have a major impact on the test programme and therefore to the requirements to fulfil the AQD’s measurement uncertainty data quality objective, to small variations that may not. However, **in all cases** the current wording requires that the report be accepted by any competent authority. It is therefore proposed that the following modified text be adopted instead:

“In carrying out type approval to demonstrate that equipment meets the performance requirements of the reference methods listed in Section A (of this Annex), competent authorities and bodies designated pursuant to Article 3 (of the AQD) should accept test reports issued in other Member States provided that laboratories carry out all of the tests correctly as specified in the relevant CEN standard reference measurement method in a fully comprehensive and exact manner, and provided that it can be shown that the test laboratory is accredited to the EN ISO 17025 standard for carrying out these specified tests comprehensively, and the manufacturer of the methods conforms to the requirements of EN 15267 parts1 and 2. The detailed test reports and all the results of the tests shall be publicly available for acceptance by other competent authorities or their designated bodies. A formal decision by the competent authority or its relevant designated competent body is required to accept these test reports.

***Where this is not the case**:*

- *All deviations from any of the requirements of the EN reference measurement standard shall be documented clearly in the relevant type-approval test report and/or test certificate, with a clear justification of why these deviations have occurred. Otherwise the test report may be rejected. The acceptance of this form of test report is the decision of the competent authority or designated competent body in the Member State where it is intended to be applied.*
- *The test laboratory shall introduce, wherever practical, improvements to minimise all its deviations from the procedures of the CEN reference measurement standards - where it is judged that these are detrimental to the accuracy of the results of the type-approval testing - this should provide improved confidence in the results.*
- *Where deviations from the CEN reference measurement standard are identified by a third party, a complaint may be addressed to the laboratory that carried out the type-approval tests with a requirement to justify these deviations, and for the laboratory to estimate the consequences on the results on the overall measurement uncertainty achieved. The competent body or its designated competent body in the Member State that is responsible for the published type-approval report shall also be informed of these deviations. If the laboratory issuing the report does not provide a justification of these deviations, does not issue corrections, and does not provide an estimate of the consequences to the results on the overall measurement uncertainty, the report could be withdrawn. Where such documentation is provided this shall be published and provided with the original test report.*
- *The competent authority or its designated competent body providing the type-approval report is responsible for providing comprehensive and clear documentation on all aspects of the tests, including all of the results that are used to estimate the component uncertainties, and the determination of the overall measurement uncertainties. Where these are not available, and the missing or incorrect results affect these uncertainty estimates, and type approval reports are accepted, the uncertainties should be estimated using “worst case” conditions for these components (i.e. the maximum value for the missing performance criterion specified in the relevant CEN standard reference method) . These worst case estimates shall then be incorporated with all the other available data and included in the calculation of the overall measurement uncertainty of the reference method. Where this conforms to the Directive’s data quality objectives this method may be accepted by the competent authority or its designated competent body.*
- *Where previous type-approval reports are used for the evaluation of the performance of the reference method, then the test programmes and the results shall be published and shown to be in conformance with the requirements of this directive and in conformance with the test programmes in the relevant CEN standard. The test report and all of the results obtained shall be made public. The test laboratories shall have been accredited to the EN ISO 17025 standard for all these tests, and details of this accreditation shall be made available to competent authorities and other relevant bodies. The tests presented in type-approval reports shall not*

have been carried earlier than 2007. Otherwise the competent authority or designated competent body may reject the report.

- *Where revised CEN standards are published they shall be accepted as the reference methods in this directive, and type-approval testing shall be adopted to conform to these revised standards. Type-approval testing that is carried out before these are published shall remain valid.*

It should also be considered whether one or both of the two texts below in the directive need modification in the revision. It is recommended that this should be done to allow for further type approvals of new, possibly more cost effective, more advanced instrumentation to be carried out in future:

“All new equipment purchased for the implementation of this Directive must comply with the reference method or equivalent by 11 June 2010”.

“All equipment used in fixed site measurements must comply with the reference method or equivalent by 11 June 2013”

References

Reference 1: DIRECTIVE 2008/50/EC OF THE EUROPEAN COUNCIL AND PARLIAMENT of 21 May 2008 on ambient air quality and cleaner air for Europe Official Journal of the European Union L152/1, 11.6.2008.

Reference 2: European Committee for Standardization

http://www.cen.eu/cen/products/en/pages/default.aspx

Reference 3: Guide to the Demonstration of Equivalence of Ambient Air Monitoring Methods, Report by an EC Working Group, January 2010

http://ec.europa.eu/environment/air/quality/legislation/assessment.htm.

Reference 4: National Air Quality Reference Laboratories and the European Network – AQUILA: Roles and Requirements for Traceability, Accreditation, Quality Assurance/Quality Control, and Measurement Comparisons, at National and European Levels, December 2009;

http://ec.europa.eu/environment/air/quality/legislation/pdf/aquila.pdf

Reference 5: Evaluation of Type Approval Reports for Ambient Air Gas Analysers – Presentation to the AQUILA group by Instituto de Salud Carlos III, Spain, 17th March 2011 - See also AQUILA Recommendation 25 at:

http://ies.jrc.ec.europa.eu/aquila-project/aquila-meetings.html

ITEM N°5:

TERMS AND DEFINITIONS

I. Summary of context

EU Directives on ambient air quality (2008/50/EC and 2004/107/EC) devote specific sections to defining terms that are used throughout the documents. In the course of implementation of these directives it has become clear that a number of further terms is used of which the meaning may be ambiguous, or is not understood properly within the air quality monitoring and modeling community.

In this item attempts are made to provide further definitions of these terms. Some of these are new; some of these have already been proposed in other Aquila documents (e.g., on the roles of National reference Laboratories). Additionally, the Commission Decision on IPR gives some additional definitions of terms hitherto lacking from the directives.

II. Recommendations for revisions and amendments to the Directive

Proposed new definitions

National competent authority

Organisation within the Member State that is designated by its national government to have overall responsibility for enacting all provisions of this Directive.

NOTE: In the context of this Directive, this is the organisation that has national and legal responsibility for the provisions and requirements of this Directive.

Competent body

Organisation designated by the National Competent Authority in the Member State to carry out one or more technical or administrative functions at a national level that are required by this Directive, particularly those functional responsibilities that are specified in Article 3.

NOTE 1: This is generally a scientific and technical organisation, and not a government ministry.

NOTE 2: There may be more than one competent body designated by the Competent Authority to carry out all the functional responsibilities defined in Article 3.

Reference (measurement) method

European standard method developed by CEN, referred to this Directive, and specified as the reference method for the measurement of a specific ambient air pollutant.

NOTE: This is a measurement method which, by convention, gives the accepted reference value of the measurand, with a only a random uncertainty applicable to that value

Equivalent method

A measurement method other than the reference method for the measurement of a specified regulated air pollutant, capable of meeting the Data Quality Objectives given in this Directive for which equivalence has been demonstrated.

NOTE: Equivalence is granted for defined (e.g. regional, national, local, urban, rural, industrial) situations within a Member State, but may be granted for situations encompassing more than one Member State.

Time coverage

Fraction of a calendar year to be covered by measurements.

NOTE: For fixed/continuous measurements of gases and PM the implicit requirement is 100%. This requirement is never met in practice. For these cases time coverage is equivalent to data capture.

Data capture

Fraction of the time period defined by time coverage for which valid measurement results are obtained.

NOTE 1: For the calculation of data capture periods in which scheduled calibrations or preventive maintenance are performed are not taken into account.

NOTE 2: Consequently, time spent on calibrations after instrument repair is considered as measurement time.

Data coverage

The fraction of a calendar year for which valid measurement data are available.

NOTE: This is obtained by multiplying time coverage and data capture..

Preventive maintenance

Equipment maintenance based on the manufacturer's recommendations. Supplementary written recommendations based on practical experiences of e.g. NRL?

This excludes corrective maintenance as a consequence of instrument failure.

Valid measurement result

Result that is considered reliable based on:

- technical validation with respect to instrument status (calibration status; acceptable results of QC checks) and method detection limit
- considerations of plausibility with respect to
  - expected results
  - correlations with results for other pollutants
  - correlations with results from nearby stations
  - meteorology
  - seasonal trends in concentrations.

Individual measurement

Measurement covering a time period equal to the shortest reference period associated with a limit value, target value or alert threshold value (with exception of components for which the shortest reference period is one year):

- 1 h for nitrogen dioxide, sulphur dioxide, ozone
- 8 h for carbon monoxide
- 24 h for PM and constituents
- variable for benzene, depending on method used
- variable for equivalent methods.

NOTE: The term "individual measurement" is used in this Directive in association with the assessment of measurement uncertainty.

Objective estimation

Generation of information on the concentration and/or deposition level of a specific pollutant obtained through expert analysis, possibly including use of statistical tools.

ITEM N°6:

ION ANALYSIS IN PM2.5

I. Summary of context

The Directive 2008/50/EC (AQD, EU-Commission 2008) requires the determination of a number of inorganic ions in aerosol particles with a mean aerodynamic diameter less than 2.5 µm (PM2.5), with explicit reference to the synergies with the UNECE Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (EMEP), which lists these chemical constituents in the mandatory measurement programme (UNECE 2009).

Specifically, the AQD states in point (8) of the introduction that *"detailed measurements of fine particulate matter at rural background locations should be made in order to understand better the impacts of this pollutant and to develop appropriate policies. Such measurements should be made in a manner consistent with those of the Cooperative Programme for Monitoring and Evaluation of the Long range Transmission of Air Pollutants in Europe (EMEP) set up under the 1979 Convention on Long-range Transboundary Air Pollution approved by Council Decision 81/462/EEC of 11 June 1981",* and in Article 6 point 5c: *"where appropriate, monitoring shall be coordinated with the monitoring strategy and measurement programme of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)".*

In Annex IV, the AQD specifies that the analysis should be made of the PM2.5 size fraction at rural background locations, and there is no requirement for measurements of the composition of larger aerosol fractions. The AQD's request for analyses of the PM2.5 fraction is, however, discordant with the sampling requirements of EMEP, which states that these analyses are performed using open faced filter pack samplers with no specified particle size cut.

The reason for determining the inorganic ions in aerosol samples without size discrimination at "Level 1" EMEP sites stems from the specific need of EMEP to monitor the total mass flux of these constituents. To address this objective, EMEP needs information on the chemical composition of aerosols having a mean aerodynamic diameter larger than 2.5 µm too. In fact, on a regional scale, the part of the transboundary fluxes of chemical constituents represented by the coarse fraction (between 2.5 and 10 µm) is not negligible. In particular, the ions NO_3^- (mainly originating from anthropogenic NOx emissions), SO_4^{2-}, Ca^{2+} and K^+ (originating from both anthropogenic and natural sources), and Mg^{2+} and Na^+ (originating mainly from natural sources) can be significantly associated with the aerosol coarse fraction. In case of SO_4^{2-}, primary particles (from sea-salt or anthropogenic emissions) occur predominantly in the coarse fraction, while secondary sulphate originating from anthropogenic emissions of SO_2 is largely present in the PM2.5 fraction. Only NH_4^+ is insignificantly present in the coarse fraction. Although the captured size fraction of open faced filter sampling is not exactly defined, it is closer to PM10 than to PM2.5 (EMEP 2001). Furthermore, the size range above 10 µm is generally not important at EMEP sites, which are located in rural background areas to avoid significant contribution from nearby local sources.

EMEP and the AQD also diverge on their approaches regarding filter sampling artifacts, for instance the loss of semi-volatile aerosol species (e.g. NH_4NO_3) which can be significant depending on filter types and sampling temperatures. While EMEP recommends the use of denuder-filter-combinations to correct these artifacts, the AQD asks for the determination of PM chemical composition from filters sampled according to the current standard EN 14907 (CEN 2005), which does not address sampling artifacts. This issue is currently being investigated by the CEN Technical Committee 264 WG 34, but pending a European standard method, the revised AQD should allow the use of well documented alternative sampling methods for the determination of the aerosol chemical composition.

Therefore, the current divergence between the AQD and EMEP requests on the aerosol fraction to be sampled for chemical characterisation could be avoided by replacing the request for ion analysis in PM2.5 by the request for analysis according to the EMEP method (or optionally in PM10 as a proxy for this method). Advantages would be that no critical discontinuities would affect the EMEP long term series, and that information on PM including the coarse fraction at rural background locations would help understand the role of long range transport of pollutants in PM10 exceedances observed at polluted hot spots and in urban agglomerations.

II. Recommendations for revisions and amendments to the Directive

Based on the considerations outlined above, AQUILA, in consultation with the EMEP Chemical Coordinating Centre, proposes to take into consideration the following modifications to AQD 2008/50/EC Annex IV Part B on the occasion of the revision of the AQD:

B. Substances

Measurements of PM must include at least the total mass concentration and concentrations of appropriate compounds to characterize its chemical composition. At least the list of chemical species given below shall be included.

Na^+, K^+, Ca^{2+}, Mg^{2+},NH_4^+, SO_4^{2-}, NO_3^-,Cl^-, *elemental carbon and organic carbon*

In the absence of EN standard measurement methods, Member States are requested to use the methods described by the EMEP programme, by CEN Technical Reports or international standards. Member States shall inform the Commission on the sampling and analytical methods used to determine the aerosol chemical composition.

In addition in Article 6 (point 5) the expression PM2.5 in brackets should be deleted.

References

CEN (1998). Air Quality - Determination of the PM10 fraction of suspended particulate matter - Reference method and field test procedure to demonstrate reference equivalence of measurement methods. EN 12341.

CEN (2005). Ambient air quality - Standard gravimetric measurement method for the determination of the PM2,5 mass fraction of suspended particulate matter. EN 14907.

CEN (2010). Ambient air quality — Guide for the measurement of elemental carbon (EC) and organic carbon (OC) deposited on filters. FprCEN/TR 16243.

EMEP (2001). EMEP Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe; EMEP manual for sampling and chemical analysis; EMEP/CCC-Report 1/95 (Revision November 2001).

EU-Commission (2008). Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. Official Journal of the European Communities L 152/1(11/6/2008).

UNECE (2009). Draft revised EMEP monitoring strategy; ECE/EB.AIR/GE.1/2009/15.

ITEM N°9:

OZONE PRECURSORS

I. Summary of context

Annex X of the current air Quality Directive 2008/50/EC requires from Member States the measurement of ozone precursors with the main objectives of analysing trends, efficiency of remission reduction strategy, emission inventories, sources' attribution, understanding of ozone formation, precursor dispersion and photochemical modelling.

The list of recommended substances includes nitrogen oxides (NO and NO2) and a series of volatile organic compounds (VOCs): C2 to C9 Hydrocarbons, formaldehyde and total non-methane hydrocarbons (table 1). These compounds were selected according to their ozone potential formation. Nevertheless, additional VOCs were also considered as relevant by other international organisations.

Table 1 - List of VOC ozone precursors considered under Directive 2008/50/EC

1-Butene	Isoprene	Ethyl benzene	
Ethane	Trans-2-Butene	n-Hexane	m + p-Xylene
Ethylene	cis-2-Butene	i-Hexane	o-Xylene
Acetylene	1,3-Butadiene	n-Heptane	1,2,4-Trimethylebenzene
Propane	n-Pentane	n-Octane	1,2,3-Trimethylebenzene
Propene	i-Pentane	i-Octane	1,3,5-Trimethylebenzene
n-Butane	1-Pentene	Benzene	Formaldehyde
i-Butane	2-Pentene	Toluene	Total non-methane hydrocarbons

The QA questionnaire of the annual reporting data on ambient air quality (Commission Decision 2004/461/EC) nominates methods for the analysis of ozone precursors, including:

- Automatic analysis of NMHCs calculated from total HCs minus methane
- Continuous chromatographic separation of NMHCs from methane.
- Automatic on line analysis of VOCs: cryogenic pre-concentration and GC/FID (MS) detection
- Analysis of VOCs by Canister, active or diffusive solid adsorbent sampling with off line analysis by GC/FID (MS) detection
- Analysis of Formaldehyde by sampling on DNPH, bisulfite + chromtropic acid, or HMP and off line analysis by HPLC/UV detection, spectrometry or GC-NPD, respectively.

It is important to note that a reference method at EU level to measure the precursors is not defined. Nevertheless, Member States shall inform the Commission of their methods used to sample and measure the precursors listed in the Directive 2008/50/EC. Currently, only benzene has been standardised at CEN level (EN 14662 Parts 1 to 3). Other EN standards relevant as screening or equivalent methods for the analysis of VOCs are related to the use of diffusive samplers for volatile organic compounds and formaldehyde. National standard methods for analysis of VOCs can be obtained from VDI, NIOSH, ASTM or EPA. Other networks are, for instance, reviewing operative standard procedures for VOC analysis (EMEP). Secondly, primary or reference standards for calibration of formaldehyde are still under development, whilst the stability of hydrocarbon mixtures at ppb levels in gas cylinders seems to provide a gravimetric standard with uncertainties of circa ± 2%. this should be compatible with the any data quality objective for measurements required by the directive.

Measurements shall be taken in particular in urban or suburban areas in accordance with the Directive's requirements. Table 2 shows the current distribution of the VOC measurement stations reporting data to the Commission.

Table 2 - Distribution of VOC monitoring stations.

type of area	type of station			
	Background	Industrial	Traffic	Total
Rural	53	15	1	69
Suburban	75	59	16	150
Urban	123	34	178	335
Total	251	108	195	554

The number of stations where VOCs are measured differs widely, per Member State and per individual VOCs. All MS report on one or more of the recommended VOCs; Spain is the only country where the full list of recommended VOCs is measured. The aromatic C6-C8 hydrocarbons (benzene, toluene, xylenes, ethyl benzene) are measured in nearly all Member States; in a number of MS monitoring is limited to these aromatic VOCs. Of the 31 recommended VOCs, benzene is the only pollutant for which monitoring is mandatory in order to assess the air quality in relation to the limit value set in the AQ Directive. The other VOCs, in particular the C2-C3 VOCs, are measured at a substantially lower number of stations. Formaldehyde is only measured in two Member States.

II. Recommendations for revisions and amendments to the Directive

- Monitoring of the present list of individual VOCs should remain part of the requirements of the Directive.
- TNMHC appears to be a no relevant measurement and it should be removed from the list of ozone precursors to be measured.
- There may be a need for the development of EN standard(s) for the analysis of these compounds in ambient air.
- There is a need for a definition of DQOs for VOC ozone precursors in terms of their data capture and a target measurement uncertainty only, in line with current legislation.
- When appropriate, Low cost sampling and analysis methods should be used; i.e., when the final uncertainty of the data agrees with the data quality objectives for the representative sampling time – this is already allowed provided the method is demonstrated as equivalent

III. Questions, possible issues, perspectives

Member States should continue to exploit synergies with WMO/GAW activities. Nevertheless, collaboration with other international programmes as GAW would require the adoption of the same DQOs, reference methods and protocols for analysis. Otherwise, the quality of the data exchanged would be under question.

In a possible collaboration with other monitoring programmes, the possibility of concentrating more measurements in the suburban areas, which is more in line with the GAW strategy, although this may compromise the current objective of the EU measurements, which are related to source apportionment at a national level.

The possibility of using different monitoring strategies (pollutant, sampling time and coverage, more simple techniques) different analytical techniques and the combination with modelling should be considered in the definition of a more efficient evaluation strategy to fulfil the objectives of this directive.

ITEM N°10:

MERCURY AND OTHER HEAVY METALS

I. Summary of context

The Fourth Air Quality Daughter Directive requires monitoring for Ni, As and Cd in PM_{10} is required at fixed monitoring points within zones and agglomerations within Member States at a spatial density which his dependent on the population present within that zone or agglomeration and the maximum concentrations measured. Irrespective of concentration levels, one background sampling point is required every 100,000 km^2. Pb in PM_{10} is subject to similar requirements under Directive 2008/50/EC. The Fourth Air Quality Daughter Directive also requires the measurement of total gaseous mercury at each background station. Measurement of particulate and gaseous divalent mercury is also recommended but not mandated. The Fourth Air Quality Daughter Directive also sets out data quality objectives (covering for instance: time coverage, data capture, maximum allowable uncertainty, etc) for some, but not all, of these regulated pollutants. Requirements to measure the deposition of mercury and metals are covered in Item No 14.

II. Recommendations for revisions and amendments to the Directive

General

1) Reference methods published since original publication of the Directive should to included explicitly in the revised Directive (e.g. as in Annex V of the 4th DD). In particular:
   - EN 15852:2010 Ambient air quality - Standard method for the determination of total gaseous mercury
   - EN 15853:2010 Ambient air quality - Standard method for the determination of mercury deposition
   - EN 14902:2005/AC:2006 Ambient air quality - Standard method for the measurement of Pb, Cd, As and Ni in the PM10 fraction of suspended particulate matter
   - EN 15841:2009 Ambient air quality - Standard method for determination of arsenic, cadmium, lead and nickel in atmospheric deposition

Total gaseous mercury

2) Total gaseous mercury (TGM) measurements should be mandated in urban and industrial areas where the population is exposed, similarly to PM-bound metals (e.g. a change to Article 4.9 of the 4th DD). *NOTE: Several AQUILA experts share the opinion to abandon TGM and PM10 bound Hg measurements, but to invest efforts into Hg deposition.*

3) An air quality standard is desired for elaboration of uncertainty of measurements (an additional to Annex I of the 4th DD).

Other heavy metals

4) It should be specified explicitly that metals, including mercury, in PM samples, taken at different times, may be combined for digestion and analysed as a composite sample (as is explicitly stated in the directive for PAH samples) – a clarification of Annex IV.I is required.

5) Sub-sampling of PM filters for mercury and other metals for subsequent analyses should be explicitly allowed, providing there is evidence that the sub-sample is representative of the whole, and provided that the detection sensitivity is not compromised when compared with the relevant data quality objectives of the directive – a clarification of Annex IV.I is required.

6) Alternatively to daily sampling, weekly sampling for metals in PM can be allowed provided that the collection characteristics are not compromised – a clarification of Annex IV.I is required.

7) Target/limit values where applicable:
   - Limit/target values should be quoted to the number of significant figures commensurate with the allowable uncertainty in their determination. In most cases this will mean two significant figures, (e.g. target value of 5.0 ng m-3 for Cd). The same is also true for lower and upper assessment thresholds (Annex I and II)
   - It would be helpful if it is be explicitly stated whether a value equal to the target or limit value at the number of significant figures stated is considered in excess of the target or limit value, or not (Annex I and II).

III. Questions, possible issues, perspectives

1) Revision of Method Detection Limits (MDLs) is required (currently defined as 10% of Limit/Target value in EN 14902). Much lower MDLs for metals analysis may be achieved now by most laboratories. This change is necessary since concentrations lower than the MDL are often measured but often cannot be used by Members States who simply report these values as less than the detection limit.

2) Measurement uncertainty at the target value? It should be explicitly stated whether the uncertainty data quality objectives (DQOs) apply at the limit/target value (if specified for mercury), or whether the DQO for uncertainty applies at values other than the limit/target value, where specified, and if so how its magnitude propagates cross the concentration range (Annex IV.I).

3) Measurement uncertainty of individual measurements? Clarification is required as to whether the data quality objective for uncertainty applies to individual measurements or just to the annual average (when using ISO 11222 where relevant), or both (Annex IV.I).

4) Time coverage for fixed TGM measurements: For completeness the required time coverage for fixed measurements of TGM monitoring and deposition should be included even if this is simply equal to the value for indicative measurements (Annex IV.I).

5) A new standard method for the measurement of Hg in PM_{10} should be developed by CEN.

ITEM N°11:

ELEMENTAL CARBON AND ORGANIC CARBON

I. Summary of context

Present position in legislation

Elemental Carbon (EC) and Organic Carbon (OC) feature in Annex IV of Directive 2008/50/EC as two of the components of $PM_{2.5}$ that must be measured at rural background locations. There is no further clarification on the definition of EC and OC, or on measurement methods to be used.

The Directive states:

This information is essential to judge the enhanced levels in more polluted areas (such as urban background, industry related locations, traffic related locations), assess the possible contribution from long-range transport of air pollutants, support source apportionment analysis and for the understanding of specific pollutants such as particulate matter.

It is clear that, although the requirement is for rural background measurements, any recommended measurement method for EC/OC must be suitable for other types of site so that the comparative analysis can be carried out.

Reasons for monitoring EC/OC

The primary reason for monitoring EC/OC, as given above, is to provide information about components of $PM_{2.5}$ so that the sources and behaviour of $PM_{2.5}$ can be better understood and modelled. Typically the EC and OC components together account for around 40% of $PM_{2.5}$ at background sites rising to 60% at roadside sites (Particulate Matter in the UK, AQEG, 2005), with the remainder mainly inorganic compounds such as ammonium sulphate and sodium nitrate.

In principle EC is mostly primary soot-like material formed by incomplete combustion processes such as from vehicle exhausts. The soot-like material may be relevant for health effects, or as a proxy for health-relevant emissions. OC is a much more complex mixture, with secondary aerosol formation having a major role.

EC can therefore provide information about combustion sources, and in principle gives similar information to measurements of black carbon and black smoke, which are based on quite different measurement methods.

Basics of the measurement method

As currently carried out, EC/OC measurement is based on the analysis of samples of PM collected onto high-purity quartz filters. This allows direct comparison with gravimetric measurements of PM collected on filters (the reference method), but it means that some issues associated with gravimetric PM measurement, such as loss of semivolatile material (very relevant to OC) and artefacts due to different filter materials, including significant blank values (also relevant to OC), are also experienced.

Simplistically, the analysis can be considered as having two aspects. Firstly, the measurement of total carbonaceous material (TC) on the filter, by thermal desorption and oxidation followed by carbon detection (usually as methane after the conversion of carbon dioxide and other compounds in a catalytic converter). This aspect can be simply calibrated and quality controlled using simple calibration solutions on clean filters.

Secondly, the division of TC into EC and OC. This is based on the carbonaceous material that is released during heating in an inert atmosphere being designated as OC, while material that is released after the addition of oxygen to the atmosphere is designated as EC. A correction needs to be made to account for pyrolysis (charring) of organic material during the inert atmosphere phase, based on an optical measurement of the darkening of the filter throughout the process.

The relatively difficult division of TC into EC and OC means that several protocols have been developed for the heating regimes, notably NIOSH and IMPROVE from the USA, and EUSAAR 2 from Europe. These can, for example, reduce the maximum temperature in the inert phase to reduce the need for the pyrolysis correction, with the possible consequence that some material that would have been released in the inert gas phase is not released until the oxidising gas phase. The protocols can therefore give significantly different results.

The optical measurement used for the pyrolysis correction can be made using a measurement of light either transmitted through or reflected from the sample, giving different results.

Other factors such as the presence of carbonates further complicate the measurement.

The EC/OC split is therefore method dependent, and it is also harder to implement quality control for, though this could be done using in-house reference samples and the recently available Standard Reference Material NIST 8785, if EC concentration could be unambiguously defined in these standards.

Current position on standardisation

CEN TC 264 TC 35 has produced a Technical Report CEN/TR 16243: 2011 on EC/OC measurement, which sets out guidance for handling and analysing samples, and specifying four different thermal protocols (NIOSH-like (Quartz), NIOSH 5040, IMPROVE and EUSAAR 2) each of which can be used with a transmittance or reflectance optical correction (better both).

There is a clear need to standardise on a single analysis protocol for reporting purposes, but any decision is likely to be after a validation exercise has been carried out.

Most previous work has been done on rural background samples, for which the EUSAAR 2 protocol was specifically developed. The EMEP network of rural sites therefore uses this protocol for its measurements. Relatively little work has been done looking at the upper limit of the range for highly loaded filters, for example.

Member States carrying out other monitoring, for example at urban sites, generally use either EUSAAR 2 or NIOSH-like (Quartz).

Comparison exercises

Several interlaboratory comparisons across Europe have been carried out in recent years through the project EUSAAR, AQUILA and GGD Amsterdam. The EUSAAR comparisons have used samples from rural background sites, AQUILA from urban background and rural background, and GGD Amsterdam from urban background, urban street, and roadside.

Broadly speaking, TC values show reasonably good agreement (around ±10%). EUSAAR 2 protocol measurements, with a lower maximum temperature during the inert-gas heating phase, tend to record significantly higher EC values than NIOSH/Quartz, with correspondingly less OC. The use of a reflectance signal for the pyrolysis correction leads to significantly higher EC values than when a transmittance signal is used, with correspondingly less OC.

Summary

Carbonaceous material forms a large fraction of PM (and a larger fraction as smaller sizes). Reliable measurements of this material are therefore necessary for a proper understanding of the sources and control of PM. The soot-like component may also be relevant for health effects, or as a proxy for health-relevant emissions.

EC and OC as currently measured are method-dependent metrics, though their sum EC + OC = TC is better defined. Further work is needed on the definition of OC and EC (e.g. based on the development of an ad hoc reference material) before quantified EC and OC in the Directive (for example as limit values) are introduced, so that some of the problems found in regulating PM are not repeated.

Standardisation of the reference method used by Members States to report data, and associated QA/QC procedures, are important. It needs to be applicable to samples from all types of monitoring site.

Further validation work is needed to allow confidence in an EC/OC reference method that is suitable for all site types.

Future revisions to the Directive should be open to alternative methods for monitoring carbonaceous material where there are clear advantages for time resolution, cost etc.

II. Recommendations for revisions and amendments to the Directive

(1) Change the title of Annex IV to “Measurements of PM composition”.

Keep the requirement for measurements at rural background locations (which supports the work of the EMEP network). Measurements at urban background locations, for example some of those used for the AEI, and roadside locations, would be interesting but it is not proposed that they should explicitly feature in the Directive.

(2) Insert Total Carbon, as a supplementary information in addition to EC and OC, and defined as the mass concentration of carbon in PM samples in the list of components in Annex IV.

Insert text “Total Carbon shall be reported as subdivided into categories including OC and EC, using methods to be reported by Member States.”

There will be a need for a CEN Total Carbon standard method, which can be the main part of the updated CEN/TR 16243: 2011. This would include a standard EC/OC method as an Informative Annex. In the absence of a reference method, methods described by the EMEP programme or by CEN technical reports (i.e. CEN/TR 16243) or international standards shall be applied.

Member States shall inform the Commission on the sampling and analytical methods used to determine the aerosol chemical composition.

A CEN standard method for EC, OC and TC shall be based on the recent CEN/TR 16243.

III. Questions, possible issues, perspectives

Alternative metrics for EC

The use of EC/OC methods to determine a measure of soot-like carbon is clearly not ideal because of the variability of the results that can be obtained for EC. Other methods can be used to measure soot-like carbon based on its optical properties, notably those termed black carbon (BC), similar to the earlier metric black smoke. Black carbon instruments have the advantage of generating real-time data based on simple optical measurements, with high precision and time resolution.

However, measurements of BC are also problematic and method dependent. A number of biases from ideal soot measurements have been identified, like:

- dust and/or organic compounds (depending on the measurement wavelength) can contribute to the light attenuation, which is translated as BC by the instrument
- shadowing, multi-scattering, and scattering effects, whose corrections requires simultaneous measurements of scattering coefficients, and the use of a data inversion algorithm. Various correction algorithms have been developed, which lead to differences in the absorption coefficient, translated to BC by the instruments.

Further, the conversion of absorption coefficients into mass concentrations is done by means of an often manufacturer-defined absorption cross section σ (in m^2 g^{-1} units), and leads to an operationally defined equivalent concentration of BC defined as the concentration BC with the manufacturer-defined σ that would give the light attenuation measured by the optical instrument.

The absorption cross section of atmospheric aerosol has a significant variability depending on aerosol source, aging, mixing state and particle size distribution.

There is therefore a need to standardise BC measurements before they could be considered for regulatory purposes.

As neither EC nor black carbon can be said to measure a well-defined chemical component of PM, it cannot be stated a priori that black carbon data is more useful than EC data. Epidemiologists often state they would like to have simultaneous measurements of BC and PM mass concentrations at urban sites. But on-line measurements of EC (the refractory fraction of atmospheric particulate carbon) may be more relevant for addressing health questions.

ITEM N°13:

PROCEDURES FOR DETERMINING A NATIONAL AVERAGE EXPOSURE INDICATOR, A NATIONAL EXPOSURE REDUCTION TARGET, REQUIREMENTS FOR QUALITY ASSURANCE/QUALITY CONTROL, AND AN ESTIMATION OF THEIR MEASUREMENT UNCERTAINTY

I. Summary of context

A range of different measurement techniques are currently in use, or are being introduced, for monitoring the atmospheric concentrations atmospheric particulate matter (PM) across the European union (EU) - particularly for measurements of PM_{10} and $PM_{2.5}$ particulate matter that are made for regulatory purposes. These include both manual gravimetric methods defined as reference methods in Directive 2008/50/EC (known in this document as the current AQD before its revision), and also automated continuous methods that are required to be demonstrated as “equivalent methods” to these reference methods.

One important issue for monitoring of PM in the future is how to specify in detail the most appropriate rigorous, valid, and internationally acceptable method(s) for determining national Average Exposure Indicators (AEI) for $PM_{2.5}$ measurements within the different Member States – as required by the AQD Annex XIV. It is specified in that Annex that the AEI shall be based upon measurements in urban background locations in zones and agglomerations throughout the territory of a Member State, and this requirement is clarified below. This AEI is then used to determine a “national exposure reduction target” (NERT) and a “exposure concentration obligation” (ECO) in a Member State (MS).

The definition of the AEI given in the AQD is:

“Average exposure indicator” shall mean an average level determined on the basis of measurements at urban background locations throughout the territory of a Member State and which reflects population exposure. It is used to calculate the national exposure reduction target and the exposure concentration obligation;

Definitions of the NERT and the ECO are also given in the Directive.

The AEI is based on measurements in urban background agglomerations and zones (AQD Annex V), and is assessed as a several-calendar year running mean concentration (for the periods between 2008-2010, 2009-2011 or exceptionally 2009-2010), averaged over all of the sampling points (wherever valid results have been achieved).

In many Member States, this three-year average AEI will be for the years 2009-2011. A single three-year (or exceptionally two-year see Table 1) AEI will be developed for each Member State. *(NOTE: new Member States that join the EU after these dates will require different rules).*This calculated “initial” AEI will be compared to the “final” AEI for 2020 that must be calculated from measurements made between 2018-2020 (a common period for all MSs). Reduction targets are then set for the AEI over the greater than 10-year period, with the target being more challenging where the initial AEI is higher (see Table 1 below). The exposure reduction obligation for 2015 is calculated similarly.

The methodology for calculating the AEI and the other associated parameters is summarised in the IPR ISC "Commission Implementing Decision laying down rules implementing Directives 2008/50/EC and 2004/107/EC of the European Parliament and of the Council as regards the exchange of information and reporting on ambient air quality" (Annex I A (xii)). However, a complete and detailed methodology for carrying out this determination with all eventualities clarified is not covered in this document.

AQUILA therefore prepared a Guidance Document explaining in detail how to carry out this determination, taking account of the variables that occur in different Member States, whilst recognising that the first set of measurement results required to carry out this determination have already been obtained (generally for the years 2009-2011). Therefore, some of the site selection criteria that would ideally be applied would not be practical to apply because this data has already been acquired.

Nonetheless, it is considered that a Guidance Document should be provided as it should be instrumental in producing more harmonised and comparable data across the European Union. The Guidance Document addressing these requirements is given in the Annex to this short summary.

It may also be noted that it is considered important to provide a document for the determination of the measurement uncertainties of the AEI, the NERT and the ECO. In this context, AQUILA propose to provide a Guidance Document on this in the near future, separately to this Guidance. There are several published versions on this determination already, using different methodologies, and these will be taken into account where appropriate.

The complete Guidance Document (attached) therefore sets out:

(a) Recommendations for the methodology for defining the requirements that stations that are used to monitor $PM_{2.5}$ concentrations to provide data that the AEI and its associated parameters, should conform to, including proposals for:

- Selection of the monitoring stations as far as practical;
- Procedure(s) for performing the averages of each three-year dataset at the selected stations;
- Methods for averaging the datasets from the selected stations;
- Calculation of the national exposure reduction target (NERT) from all the specified stations that are producing valid data in a Member State;
- Determination of the exposure concentration obligation;
- Determination of the average exposure indicator (AEI) for a Member State from all the valid datasets at all the specified locations.

(b) The quality assurance and quality control measures that should be used throughout the duration of all the relevant measurement periods that are required to determine the NERT and the AEI, in order to achieve valid results;

(c) Recommendations for method(s) for determining the measurement uncertainties of the NERT and the AEI in a Member State. This is summarised in this Guidance, but will be provided separately in a further Guidance Document in the near future, which will entail using the valid results obtained in a Member State over the relevant time periods. This determination should also be carried out in a manner that is compatible with the international Guide to the Uncertainty if Measurements (GUM).

II. Recommendations for revisions and amendments to the Directive

1. The Table given in the AQD Annex XIV section B is shown below:

AEI in 2010 (µg/m^3)	**Exposure Reduction Target relative to the AEI in 2010**	**Reference Year (with associated time period) for AEI calculation**
≤ 8,5	0 %	**AEI for 2010** (*) 2008-2009-2010 **AEI for 2015** 2013-2014-2015 **AEI for 2020** 2018-2019-2020
8,5 < AEI < 13	10 %	
13 ≤ AEI < 18	15 %	
18 ≤ AEI < 22	20 %	
≥ 22	All appropriate measures to achieve 18 µg/m^3	

(*) where data are not available for 2008, Member States may use the mean concentration of the years 2009 and 2010 or the mean concentration of the years 2009, 2010 and 2011.

It may be seen, however, that this Table has ambiguous requirements at each level of the table. For example, for an AEI of 13 µg m^{-3} the (national) exposure reduction target may either be 10% (1.3 µg m^{-3}) or 15% (1.95 µg m^{-3}). This is erroneous. There are several possible amendments to this including:

a. Introduce an additional decimal place, with no overlap, into the left hand column for AEI in 2010;

b. Change the NERT from percentages to absolute numbers with ranges;

2. As noted above, the dates specified for monitoring PM$_{2.5}$ in this Annex should be different for new Member States that may not have acquired valid data during the currently specified time periods.

III. Questions, possible issues, perspectives

The national exposure reduction target is obtained by the subtraction of the two three-year-average AEI values of the $PM_{2.5}$ concentrations obtained in the “2008” monitoring period and in one of the subsequent specified periods. As such the AEI result is subject to a level of measurement uncertainty that is likely to be greater than or equal to the required national exposure reduction target noted above, and thus the results obtained may not be statistically robust. However, one position to take on this is that the NERT and AEI are similar *with respect to their measurement uncertainty assignments as those incorporated in the directive’s specifications of all the limit values and target values that must be achieved* – these all are specified together with the measurement uncertainty requirements that are given by the Directive’s DQOs, but these uncertainties are not taken into account when reporting any exceedences of these target/limit values. There is no tolerance applied that arises from this measurement uncertainty. A similar argument may be applied in the case of the AEI. Specifically the exceedences of the limit/target values arise from experimental monitoring data together with agreed and significant measurement uncertainties, and these measured values are compared with exact stated numerical values of limit/target values in the directives, which clearly have no assigned uncertainties. Thus a quoted exceedence of a limit/target value could be a few per cent, whilst the measurement uncertainty associated with the data quality objective could be much larger than this. This is nevertheless considered an exceedence. The numerical values of the AEI and the NERT are reported from the calculations with no account of the uncertainties in these.

References

Reference 1: DIRECTIVE 2008/50/EC OF THE EUROPEAN COUNCIL AND PARLIAMENT of 21 May 2008 on ambient air quality and cleaner air for Europe, Official Journal of the European Union L152/1, 11.6.2008.

Reference 2: Guide to the Demonstration of Equivalence of Ambient Air Monitoring Methods, Report by an EC Working Group on Guidance for the Demonstration of Equivalence, January 2010

http://ec.europa.eu/environment/air/quality/legislation/assessment.htm

Reference 3: Guide to the Expression of Uncertainty of Measurement (GUM): International Standardisation Organisation 1993;

Reference 4: Ambient air quality – Automated continuous systems for the measurement of the airborne concentrations of particulate matter (PM_{10} & $PM_{2.5}$), CEN/T264/WG15 N524, December 2011;

Reference 5: The state of air quality in 2009, and the European exchange of monitoring information 2010, ETC/ACM Technical Paper 2011/1, W.J. Mol, P.R. Hooydonk, and F A. De Leeuw, report of the European Topic Centre on Air and Climate Change, June 2011 (annex B)

Reference 6: EN 12341:1998, Air quality - Determination of the PM_{10} fraction of suspended particulate matter - Reference method and field test procedure to demonstrate reference equivalence of measurement methods

Reference 7: Ambient air quality – Standard gravimetric method for the measurement of the airborne concentrations of the PM_{10} & $PM_{2.5}$ fractions particulate matter CEN/T264/WG15 N523, December 2011;

Reference 8: Characterising the PM climate in the UK for Equivalence Testing,

D.C Green & G.W Fuller, King's College London, 2011 - to be published;

Reference 9: Comparison of averaging techniques for the calculation of the "European average exposure indicator" for particulate matter, R. J. C. Brown and P. T. Woods, J. Environ. Monit. 14, 165-171, 2012;

ITEM N°14:

DEPOSITION OF HEAVY METALS & PAH

I. Summary of context

Deposition is one of the main loss terms for different compounds from the atmosphere. It is also the input for ecosystems that can lead to drastic changes and effects. Deposition networks are needed to evaluate the need and the effect of policies to reduce pollutants emissions, but also for studying deposition parameters and for developing deposition models. As with ambient concentrations, deposition (especially dry deposition) varies strongly in time and space. Developing deposition monitoring networks with reasonable accuracy and representativeness is therefore not straightforward. In Europe several projects such as the European Monitoring and Evaluation of Pollutants (EMEP) programme, have addressed deposition monitoring.

The 4th Air Quality Daughter Directive requires monitoring for Heavy Metals (As, Cd, Hg, and Ni) and PAHs in deposition at specific locations within zones and agglomerations within Member States:

- where the population is likely to be exposed to the highest concentrations averaged over a calendar year

- in areas which are representative of the exposure of the general population

- where measurement represents the indirect exposure of the population through the food chain

Irrespective of concentration levels, one background sampling point is required every 100,000 km^2. Pb in deposition is subject to similar (but less detailed) requirements under Directive 2008/50/EC.

The 4th Air Quality Daughter Directive also sets out Data Quality Objectives (covering minimum time coverage, minimum data capture, maximum allowable uncertainty, etc) for the total mass of these regulated pollutants.

II. Recommendations for revisions and amendments to the Directive

General

1) Reference methods published since original publication of the Directives should to included explicitly in the revised Directive (e.g. as in Annex V of the 4th DD). In particular:
    - EN 15841 (2009) “Ambient air quality - Standard method for determination of arsenic, cadmium, lead and nickel in atmospheric deposition”
    - EN 15853 (2010) “Ambient air quality - Standard method for the determination of mercury deposition”

- EN 15980 (2011) “Air quality - Determination of the deposition of benz[a]anthracene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenz[a,h]anthracene and indeno[1,2,3-cd]pyrene”

Total deposition of heavy metals & PAHs

2) For completeness, Lead (Pb) in deposition should be considered in the same way as the other heavy metals in the 4th Directive.

3) Deposition measurements should be clearly specified as mandatory in urban and industrial areas where the population is exposed, similarly to PM-bound metals or organic compounds (e.g. a change to Article 4.9 of the 4th DD)

4) It is desired to have a target value for total deposition measurements. This will allow uncertainty calculation, as percentage to be applicable in the region of this value.

5) Minimum Time Coverage for total deposition measurements: For completeness, a requirement on time coverage for total deposition measurements of the regulated pollutants should be included even if this is simply equal to the value given for indicative measurements (Annex IV.I).

III. Questions, possible issues, perspectives

1) Measurement uncertainty at the Target Value ? It should be explicitly stated that the Data Quality Objective for uncertainty:
   - applies to the annual average

   - applies at the Target Value (if an actual Target Value for total deposition is specified in the revision) (Annex IV.I).

2) A “nominal” concentration value for total deposition should be specified at which the DQO for uncertainty applies (if an actual Target Value is not specified in the revision), e.g. 4 µg/m² per day for As, 2 µg/m² per day for Cd, 15 µg/m² per day for Ni, 100 µg/m² per day for Pb, 0,5 µg/m² per day for BaP.

3) It is suggested to set Data Quality Objectives for each different parameter (As, Cd, Hg, Ni, Pb, PAHs) in deposition).

4) In some cases (i.e. rural sites), due to very low pollutant levels, it might be helpful to mention that “demonstration of efficiency” for wet-only sampling may be quite difficult to achieve.

5) If coordination with the European Monitoring and Evaluation of Pollutants (EMEP) programme is recommended, EMEP technical guidelines and criteria for the deposition measurements in rural background areas may not be applied in a consistent manner with those of the revised Directive (i.e. different DQOs, EMEP siting criteria are very stringent).

6) It might be useful to make a list of manufacturers (with product references) available, within European networks (such as AQUILA or AirmonTech)

7) Considering EMEP new monitoring strategy, the scientific basis for EMEP monitoring of Cu, Zn and Cr and for coupling between deposition rates with climate variability/change should be examined with a view to whether the revised Directive should include these items.

8) As far as practical, common guidelines should be sought concerning choice and treatment of sampling equipment sample treatment

ITEM N°15:

EN STANDARDS AND GUIDELINES

I. Summary of context

This item describes the relevance of European Standards and other documents (ISO Standards; guidance documents) for the implementation of the (new) Air Quality Directive.

The item has been subdivided into a number of categories:

- Standards that are currently referred to in Directive 2008/50/EC as
  - Reference methods
  - Guidance documents for miscellaneous purposes

- Standards that have been published after the publication of Directive 2008/50/EC or Directive 2004/107/EC for
  - Determination of concentrations of regulated pollutants in ambient air
  - Determination of deposition of PAH, heavy metals and mercury

- Technical Reports that need validation work to become full Standards for
  - The determination of concentrations of ions and EC/OC in ambient air
  - The use of automated continuous systems for measurement of PM in ambient air.

- Standards for methods that are deemed to be equivalent to Reference Methods for measurement of benzene and nitrogen dioxide in ambient air

- Miscellaneous Standards and guidance documents.

For each category a recommendation is given on how to deal with these documents in the revised AQD:

- Their roles
- Specific sections for reference.

In addition, a text proposal is presented for the section of the Annex devoted to measurement uncertainty, explaining the (possible) uses of the different standards presented in this item.

II. Recommendations for revisions and amendments to the Directive

Text proposal for measurement uncertainty section, merging/replacing current text from 2008/50/EC and 2004/107/EC

Original texts

2004/107/EC

The uncertainty (expressed at a 95 % confidence level) of the methods used for the assessment of ambient air concentrations will be evaluated in accordance with the principles of the CEN Guide to the expression of uncertainty in measurement (ENV 13005-1999), the methodology of ISO 5725:1994, and the guidance provided in the CEN Report, 'Air quality — Approach to uncertainty estimation for ambient air reference measurement methods' (CR 14377:2002E). The percentages for uncertainty are given for individual measurements, which are averaged over typical sampling times, for a 95 % confidence interval. The uncertainty of the measurements should be interpreted as being applicable in the region of the appropriate target value. Fixed and indicative measurements must be evenly distributed over the year in order to avoid skewing of results.

2008/50/EC
The uncertainty (expressed at a 95 % confidence level) of the assessment methods will be evaluated in accordance with the principles of the CEN Guide to the Expression of Uncertainty in Measurement (ENV 13005-1999), the methodology of ISO 5725:1994 and the guidance provided in the CEN report 'Air Quality — Approach to Uncertainty Estimation for Ambient Air Reference Measurement Methods' (CR 14377:2002E). The percentages for uncertainty in the above table are given for individual measurements averaged over the period considered by the limit value (or target value in the case of ozone), for a 95 % confidence interval. The uncertainty for the fixed measurements shall be interpreted as being applicable in the region of the appropriate limit value (or target value in the case of ozone).

Proposed text

The measurement uncertainty (expressed at the 95 % confidence level) of the assessment methods must be evaluated in accordance with the principles of the Guide to the Expression of Uncertainty in Measurement (JCGM 100:2008). The uncertainties to be compared with the data quality objectives in the above table are for results of individual measurements averaged over the reference period of the limit value, target value or threshold value. The uncertainties for fixed measurements to be compared with the data quality objectives shall be calculated at the level of the limit value, target value or threshold value.

The EN Standards mentioned in Annex I provide information for the assessment of the measurement uncertainties for the measurands under consideration.

Other Standards that may be used to assess the uncertainty include:

- EN-ISO 20988: 2008 – Guidelines for estimating measurement uncertainty
- ISO 21748:2010 – Guidance for the use of repeatability, reproducibility and trueness estimates in measurement uncertainty estimation
- ISO 5725-2:1994 – Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic methods for the determination of repeatability and reproducibility
- ISO 11222:2002 – Air Quality – Determination of the uncertainty of the time average of air quality measurements.

Standards that are currently referred to in 2008/50/EC and 2004/EC/107

Reference methods for ambient air monitoring

EN 12341:1998. Air quality – Determination of the PM_{10} fraction of suspended particulate matter – reference method and field test procedure to demonstrate reference equivalence of measurement methods.

EN 14907:2005 Ambient Air Quality – Reference gravimetric measurement method for the determination of the PM2.5 mass fraction of suspended particulate matter in ambient air.

These standards are currently revised and merged into one EN 12341 rev. The CEN enquiry process has just started. The date of publication will depend on the review process, the progress in validation work and the editorial processing at VDI/DIN and CMC.

When EN 12341 rev is not published before the publication of the AQD rev, references to both old standards need to be kept; a comitology procedure may then be used to address the revision and merging.

EN 14211:2005. Ambient air quality – Measurement method for the determination of the concentration of nitrogen dioxide and nitrogen monoxide by chemiluminescence.

EN 14212:2005. Ambient air quality – Measurement method for the determination of the concentration of sulphur dioxide by UV fluorescence.

EN 14625:2005. Ambient air quality – Measurement method for the determination of the concentration of ozone by UV photometry.

EN 14626:2005. Ambient air quality – Measurement method for the determination of the concentration of carbon monoxide by non-dispersive infrared spectrometry.

These standards have been revised and will be published in 2012.

References should be made to the revised standards.

EN 14662-1:2005 Standard method for the determination of benzene in ambient air – Part 1: Method with pumped sampling, thermal desorption and capillary gas chromatography.

EN 14662-2:2005 Standard method for the determination of benzene in ambient air – Part 2: Method with pumped sampling, solvent desorption and capillary gas chromatography.

EN 14662-3:2005 Standard method for the determination of benzene in ambient air – Part 3: Method with automated gas chromatographs.

Parts 1 and 2 have been re-accepted at the 5-year CEN review.

Part 3 is currently under revision. It is expected that the CEN enquiry process will start in the beginning of 2013.

These standards should be referred to in the AQD rev.

The Annex on uncertainty data quality objectives should refer to these standards as sources for the assessment of measurement uncertainty.

Standards for miscellaneous purposes

Quality

EN-ISO 17025:2005. General requirements for the competence of testing and calibration laboratories.

This reference should be maintained in the section of requirements for NRLs, and added to the section on type approval as a requirement for test houses/laboratories.

Uncertainty assessment

ISO 5725-2:1994. Accuracy (trueness and precision) of measurement methods and results -- Part 2: Basic method for the determination of repeatability and reproducibility.

ENV 13005:1999. Guide to the expression of uncertainty in measurement (GUM).

ISO 11222:2002. Air quality - Determination of the uncertainty of the time average of air quality measurements.

The references to these should be retained. ENV 13005 has meanwhile been revised and is re-published as

JCGM 100: 2008. Evaluation of measurement data — Guide to the expression of uncertainty in measurement (GUM).

Probably the text of the section referring to measurement uncertainty should be modified entirely.

Guidelines for miscellaneous purposes

CR 14377:2002E. Air Quality — Approach to Uncertainty Estimation for Ambient Air Reference Measurement Methods.

This reference may be removed.

Standards that are new or are not referred to in 2008/50/EC or 2004/EC/107

Potential reference methods for ambient air monitoring

EN 14902:2004. Ambient air quality – Standard method for the measurement of Pb, Cd, As and Ni in the PM10 fraction of suspended particulate matter.

EN 15549:2008. Ambient Air Quality – Standard method for the measurement of the concentration of benzo[a]pyrene in ambient air.

EN 15852:2010. Ambient air quality – Standard method for the determination of total gaseous mercury.

These standards should be introduced into AQD rev as reference methods subject to approval by the Commission.

TR 16243:2011. Ambient air quality - Guide for the measurement of elemental carbon (EC) and organic carbon (OC) deposited on filters

TR 16269: 2011. Ambient air quality - Guide for the measurement of anions and cations in PM2,5.

These technical reports describe methods that are not fully validated. Once validated, they may be promoted to EN Standards following the regular CEN procedure. A way should be identified to refer to these documents. The Commission will attempt to identify mechanisms.

When the standards are published references to both standards need to be made; a comitology procedure may then be used to address the new situation.

Potential reference methods for deposition monitoring

EN 15841:2009. Ambient air quality – Standard method for determination of arsenic, cadmium, lead and nickel in atmospheric deposition.

EN 15853:2010. Ambient air quality – Standard method for the determination of mercury deposition.

EN 15980:2011. Air quality – Determination of the deposition of benz[a]anthracene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenz[a,h]anthracene and indeno[1,2,3-cd]pyrene.

These standards should be introduced into AQD rev as reference methods subject to approval by the Commission.

Potential alternative, equivalent methods for ambient air monitoring

EN 14662-4:2005. Standard method for the determination of benzene in ambient air – Part 4: Method with difussive sampling, thermal desorption and capillary gas chromatography.

EN 14662-5:2005. Standard method for the determination of benzene in ambient air – Part 5: Method with diffusive sampling, solvent desorption and capillary gas chromatography.

EN 16339:2012. Ambient air quality – Method the determination of concentration of nitrogen dioxide by diffusive sampling.

A way should be identified to refer to these standards as methods (potentially) equivalent to the reference methods. Commission will attempt to identify mechanisms.

TR xxxxx: 20yy. Ambient air quality – Automated continuous systems for the measurement of the concentration of particulate matter (PM10; PM2.5).

The CEN enquiry process has just started. The date of publication of the TR will depend on the review process, and the editorial processing at VDI/DIN and CMC.

The technical report describes methods that are not fully validated. Once validated, the TR may be promoted to EN Standard following the regular CEN procedure. A way should be identified to refer to this document. The Commission will attempt to identify mechanisms.

When the standard is published a reference needs to be made; a comitology procedure may then be used to address the new situation.

This should include a remark to the extent that the new standard replaces the GDE:2010 for methods for the measurement of particulate matter.

Standards for miscellaneous purposes

ISO 17043:2010. Conformity assessment – General requirements for proficiency testing.

A reference should be made to this standard in the section of requirements for NRLs, with reference to the organization of interlaboratory comparisons.

EN-ISO 20988:2008 - Guidelines for estimating measurement uncertainty.

ISO 21748:2010 – Guidance for the use of repeatability, reproducibility and trueness estimates in measurement uncertainty estimation.

A reference should be made to this standard in the section about data quality objectives (measurement uncertainty).

Guidelines for miscellaneous purposes

GDE:2010. Guidance on the Demonstration of Equivalence of Ambient Air Monitoring Methods.

A reference to this document should be added to the section on the possibility to use equivalent methods.

ITEM N°17:

POLYCYCLIC AROMATIC HYDROCARBONS

I. Summary of context

The Fourth Air Quality Daughter Directive requires monitoring for benzo[a]pyrene (BaP) in PM_{10} at fixed monitoring points within zones and agglomerations within Member States at a spatial density which his dependent on the population present within that zone or agglomeration and the maximum concentrations measured. Irrespective of concentration levels, one background sampling point is required every 100,000 km^2. To assess the contribution of BaP to the polycyclic aromatic hydrocarbon (PAH) load in air the Directive requires the additional measurement of benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene, at a limited number of monitoring stations. Monitoring sites for these polycyclic aromatic hydrocarbons shall be co-located with sampling sites for benzo(a)pyrene and shall be selected in such a way that geographical variation and long-term trends can be identified. The Fourth Air Quality Daughter Directive also sets out data quality objectives (covering for instance: time coverage, data capture, maximum allowable uncertainty, etc) for BaP and the suite of other PAHs. Requirements to measure the deposition of PAHs are covered in Item No 10.

II. Recommendations for revisions and amendments to the Directive

1) Reference methods published since original publication of the Directive should to included explicitly in the revised Directive (e.g. as in Annex V of the 4th DD). In particular:
   - EN 15549:2008 Air quality - Standard method for the measurement of the concentration of benzo[a]pyrene in ambient air
   - EN 15980:2011 Air quality - Determination of the deposition of benz[a]anthracene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, dibenz[a,h]anthracene and indeno[1,2,3-cd]pyrene
   - The TS describing the measurement of the 6 other PAHs in air is likely to be available by the end of 2012, and should then be referred to

2) Sub-sampling of PM filters for PAHs for subsequent analyses should be explicitly allowed, providing there is evidence that the sub-sample is representative of the whole, and provided that the detection sensitivity is not compromised when compared with the relevant data quality objectives of the directive (Annex IV.I).

3) Time coverage for fixed PAH measurements: For the avoidance of doubt, the required time coverage for fixed measurements of the other PAHs should be included even if this is simply equal to the value given for indicative measurements (Annex IV.I).

4) Target values should be quoted to the number of significant figures commensurate with the allowable uncertainty in their determination. In most cases this will mean two significant

digits, (e.g. target value of 1.0 ng m^{-3} for BaP). The same is true for lower and upper assessment thresholds (Annex I and II).

III. Questions, possible issues, perspectives

1) PAH vapour phase monitoring: It should be clarified that measurements of PAHs in the vapour phase need not be included in the Directive because the compounds with the highest toxic load are all particulate bound.

2) Ozone scrubber requirements: Discussions in CEN TC264 WG21, and elsewhere, are clear that ozone scrubber technology is still not yet developed sufficiently to allow use of these devices in the field. Therefore it is recommended that requirements to use these scrubbers are not included in the revised directive as per the recommendation of CEN TC264 WG21. Instead it is recommended that Member States should be encouraged to make their own assessments of B[a]P losses due to ozone degradation and either include this in their uncertainty budgets, or make an estimated correction for this loss, for the annual average assessment. It is recommended that Member States carry out research on this issue to improve on the current position. The methodology that the Member State has applied must be reported to the EC together with the PAH data.

3) Thermal desorption GC-MS may be considered as a future additional method for PAH measurement and discussed withy CEN as a possible standard method.

4) Measurement uncertainty at target value? It should be explicitly stated that the uncertainty data quality objectives (DQOs) apply at the target value, or whether the DQO for uncertainty applies at values other than the target value, and if so how its magnitude propagates across the concentration range (Annex IV.I).

5) Measurement uncertainty of individual measurements? Clarification is required as to whether the data quality objective for uncertainty applies to individual measurements or to the annual average (when using ISO 11222 where relevant), or both (Annex IV.I).

6) It should be stated that rounding of data for comparison with target or limit values should only take place at the very final stage of the production of the data (Annex I).

7) It might be helpful to clarify whether a value equal to the target or limit value at the number of significant figures stated is considered in excess of the target or limit value, or not. i.e. When the target value is specified as 1.0 ng m^{-3} and the Member State reports a value of 1.0 ng m^{-3} (Annex I).

ANNEXE n°3

propositions du réseau FAIRMODE de modifications des textes réglementaires en vue de la révision des Directives 2004/107/CE et 2008/50/CE

6/8/2012

2nd Draft recommendations from FAIRMODE to the review of the EU Air Quality Policy

The points below are a preliminary synthesis of the ongoing activities of FAIRMODE Working Group 1 and 2. For each item the topic is introduced, the FAIRMODE recommendation is provided in brief, and a list of actions, generic and specifically addressed by the FAIRMODE activities are presented. **All points presented in this draft document are the result of discussions held within the forum over the years.** This document is the second draft of the 14/12/2011 version and it is the result of the discussion during the Plenary FAIRMODE meeting held in Utrecht (NL) on 29-30 May 2012. **While the items have been clearly identified and agreed upon, the formulations of the recommendations is still open for discussion and change, with a final version to be endorsed by the FAIRMODE community in the third quarter of 2012.**

1. ON THE USE OF MODELS FOR REGUALATORY PURPOSE

Motivation: *Models have long demonstrated to be good instruments for the investigation and assessment of the air quality status at various spatial and temporal scales. Models can be instrumental in combination with monitoring data (see point 6.) to achieve a more complete assessment of the current air quality situation and for providing assessment in areas where measured monitoring data is not available. Models are also essential for the assessment of the effectiveness of air quality plans and programmes. One of the major advantages of models is their potential to provide detailed spatial distributions of air pollutant concentrations. This means they can be applied for area-wide exposure assessments (human health and environment) because they provide concentration fields where monitoring data is missing. In situ monitoring data is by its nature only a small sample of the spatial distribution of air pollutant concentrations. An application of models allows a much broader assessment of the extent of air quality standard exceedances and can also provide information required for improved measurement network design if further monitoring would be required.*

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Recommendation: FAIRMODE strongly recommends the use of models for the following applications:

1: Assessment of air quality levels to establish the extent of exceedances and establish the population exposure (see also point 5.)
2: Forecasting air quality levels for short term mitigation and public information and warnings
3: Source allocation to determine the origin of exceedances and to provide a knowledge basis for planning strategies (see also point 6.)
4: Assessment of plans and measures to control AQ exceedances

In addition to these applications the use of models is strongly recommended for:
- determining the number of fixed monitoring sites that are required
- designing monitoring networks when models are used in combination with monitoring

Proposed action: In all articles of the Air Quality Directives (AQD) where the four above-mentioned applications are mentioned the use of models should be strongly recommended. FAIRMODE will provide a list of respective AQD and Commission Implementation Decision (CID) articles.

2. ON THE USE OF MODELS IN SUPPORT TO AQ POLICY

Motivation: *Currently the text of the AQD indicates that models may be used as 'supplementary data' in assessment and that models may be used to assess the level of exposure, but their role further to this is poorly defined. Text such as 'The results of modeling and/or indicative measurement shall be taken into account for the assessment of air quality with respect to the limit values' does not clarify what role the models will play in the assessment. Indeed, models are not named at all as the major tool for developing and assessing plans and measures to mitigate air pollution, nor are they referred to in regard to short term forecasting. Their use in source apportionment is also not indicated within the AQD.*

Recommendation: FAIRMODE recommends clarifying the AQD text on the use of models for the applications identified in Recommendation #1

Proposed action: FAIRMODE will provide list of AQD and CID articles where better definitions and clarifications are needed

3. MODEL QUALITY OBJECTIVES

Motivation: *Data quality objective for modelling (MQO) are mentioned in the 2008 Air Quality Directive, Annex I, but the wording of the text remains ambiguous and open to interpretation. The FAIRMODE report 'The application of models under the European Union's Air Quality Directive – A Technical Reference Guide' reviewed different interpretations and recommended the use of the relative directive error (RDE) indicator to provide a quantitative estimate of the model uncertainty. Despite these recommendations, the current AQD MQO retains some limitations which are inherent to their formulation. In addition the quality objectives are only valid for assessment applications, not for planning.*

Recommendation: FAIRMODE recommends a revision of the data quality objective for modelling

Proposed action:

- Fairmode is developing new data quality objectives for modelling for ambient air quality assessment, in collaboration with the Member States . This type of objectives are expected to be useful as basis to investigate MQO for the other model applications
- We propose that subsequent to the work of Fairmode the European Commission initiates a process for the preparation of a Guidance document on the revision of model quality objectives for assessment

4. FORUM OF EU AQ REGULATORY MODELLING

Motivation: *Air quality modeling in support to air quality policies in the EU context requires a constant level of communication and competence building among the various competent authorities. The organization of periodic model evaluation activities are required in order to assure harmonized practices and to guarantee comparable quality levels across Member States.*

Recommendation: FAIRMODE recommends that in parallel to what has already been established for the monitoring of air quality, competent authorities for modeling activities are nominated by the Member States(ref Article (3) and bullet d) quality assurance of modelling)

Proposed action: Fairmode will act as coordination forum for modelling and support the competent authorities in activities that are recognised as very relevant for the for model applications listed in Recommendation #1 and that are presented here with an extended list of supporting motivations. Namely:

- **Model evaluation***: model evaluation has to be a continuing activity. In the case of a community of models and model users joint model evaluation activities have demonstrated to be very important in speeding up the harmonization of the practices, identification and fixing of problems, rapid improvement, transition to operational activities, competence building and sharing. Fairmode can offer the right framework for testing the newly developed MQO and promoting joint model evaluation activities on common case studies.*
    - Coordinated action: model evaluation activities, competence building and sharing.

- **Combine use of model and monitoring data**: Methodologies and *techniques have been developed and tested to combine model results and monitoring data in order to provide improved assessment and predictions skills. that take in to account the experimental evidence and complement it with model results. Those developments have shown very promising results at various spatial and temporal scales. For the AQD application addressing assessments (Application 1) the most powerful tool for providing complete spatial coverage of the air quality situation, whilst still retaining the quality of fixed monitoring data, is the combined use of models and monitoring. The preamble text of the AQD refers to this: 'Information' from fixed measurements may be supplemented by modelling techniques and/or indicative measurements to enable point data to be interpreted in terms of geographical distribution of concentrations'.*
    - Coordinated action: inventory of ongoing activities, inter-comparison of methods, competence building, preparation of guides.

- **Source apportionment modeling**: *There is an increasing need to demonstrate whether and to what extent exceedances of limit values can be attributed to natural sources, human practices (road salting and sanding), and transboundary pollution. In the context of the preparation and implementation of air quality plans and short-term action plans, there is also a need to identify and quantify the contribution of the main pollution sources in order to efficiently design abatement measures and assess their effectiveness.*
    - Coordinated action: inventory of ongoing activities, inter-comparison and evaluation of methods, competence building, preparation of guides.

- **Monitoring station characterisation and meta data description for model applications and support to optimisation of monitoring and network design**: *The location, characterization and representativeness of a measurement station in a monitoring network is of fundamental relevance for the evaluation of model results (see point 3.) and when using network output as model input data. It is well recognized that current station classification and characterization is not harmonized across the EU with some consequences for data interpretation and use.*
    - Coordinated action: inventory of ongoing activities, competence building, preparation of guides.

5. QUALITY ASSURANCE AND CONSISTENCY OF EMISSION INVENTORIES

Motivation: *Air quality emissions inventories (EIs) have been compiled at European level for regulatory purposes and also to support air quality modelling applications for the assessment and improvement of air quality. Emission information is essential in support for AQ planning under the AQ directive because it provides the link between responsible emission sources, their relative shares and abatement potentials. Current emission inventories are constructed at different scales (regional, national, city/urban) but these EIs are often not consistent and may cause discrepancies in impact assessments at the different scales. The present compilation methods do not always allow relating emission sources with their abatement potential. More detailed emission inventory compilation methods and better systems for QA/QC of emission information need to be implemented to support AQ planning and account for the identified discrepancies in the different scales.*

Recommendation: FAIRMODE recommends to investigate and improve the compilation, consistency and quality assurance of emissions data suitable for AQ modeling under the directive

Proposed action:

- Emissions are not mentioned in the AQD and the need to work to increase the quality of emission inputs needs to be introduced in the revised text.
- Promote guidance initiatives for the compilations of emission data for AQ models under the directive
- Support competence building initiatives to secure the consistency of detailed bottom-up emission inventories with those compiled for regulatory purposes at local, national and European scale

ANNEXE n°4

Liste des matériels homologués utilisables par les AASQA dans le cadre de leurs missions réglementaires (au 01/03/2012)

Liste des appareils pouvant être utilisés en AASQA pour la surveillance réglementaire de la qualité de l'air

Polluants gazeux inorganiques

	Polluant			
	NO_x-NO_2-NO	O_3	SO_2	CO
méthode de référence	NF EN 14211	NF EN 14625	NF EN 14212	NF EN 14626
Principe de mesure	Chimiluminescence	Absorption UV	Fluorescence UV	Rayonnement IR non dispersif

	Modèle d'appareil conforme à la méthode de référence			
Constructeur	NO_x-NO_2-NO	O_3	SO_2	CO
API	200 E T 200	400 E T 400	100 E T 100	300 E T 300
Environnement SA	AC 32M (1)	O3 42M (2)	AF 22M (3)	CO 12M (4)
Horiba	APNA-370	APOA-370	APSA-370	APMA-370
Thermo Scientific (TEI)	42 i (5)	49 i	43 i	48 i
MLU (Recordum)	Airpointer (6)			

(1) Applicable aux appareils équipés de l'option « sécheur » :
- Sous condition de l'option « sécheur », les N° de série supérieurs à 500 sont conformes
- Pour les modèles antérieurs, une mise à jour est à prévoir (*à examiner au cas par cas en fonction du niveau de mise à jour qui aurait pu être fait*)

(2) Conformité pour les N° de série supérieurs à 250
- Pour les N° de série antérieurs mise à jour à prévoir (*concerne principalement le logiciel, à examiner au cas par cas en fonction du niveau de mise à jour qui aurait pu être fait*)

(3) Conformité pour les N° de série supérieurs à 500
- Pour les N° de série antérieurs, mise à jour à prévoir (*à examiner au cas par cas en fonction du niveau de mise à jour qui aurait pu être fait*)

(4) Conformité pour les N° de série supérieurs à 400
- Pour les N° de série antérieurs, mise à jour à prévoir (*à examiner au cas par cas en fonction du niveau de mise à jour qui aurait pu être fait*)

(5) Applicable aux appareils équipés de l'option « Sécheur interne à perméation circuit échantillon » :
- L'upgrade d'un Modèle 42i sans cette option nécessitera un kit de montage d'un sécheur Permapure sur le circuit échantillon de l'appareil à mettre à jour
- l'option « boucle de retard » (delay loop) peut s'avérer nécessaire lorsque des fluctuations très rapides des niveaux de NO et de NO_2 sont observées.

(6) Système de mesure multigaz compact. La configuration peut varier de 1 à 4 gaz.

Commentaires additionnels :

- L'approbation par type correspond à la réussite d'un appareil aux tests de conformité stipulés dans la norme EN correspondante. Elle est applicable à tout appareil identique à ceux présentés lors des tests. Tout appareil livré antérieurement conforme sur le plan technique avec les appareils présentés lors des tests (voire mis à jour pour être en conformité) bénéficie de l'approbation par type.

- Les appareils API, Environnement SA, Horiba et Thermo Scientific (TEI) bénéficient d'un rapport d'approbation de type du TÜV (à ce jour a priori seul labo européen à être accrédité ISO 17025 à faire ce type d'essais) selon les référentiels EN pour les analyseurs de gaz à l'air ambiant. Ces rapports sont disponibles sous format électronique au LCSQA

Benzène

1) Analyseur automatique

méthode de référence	NF EN 14662 - 3

Constructeur	Modèle d'appareil conforme à la méthode de référence
Synspec	GC 955 série 601 PID [(a)]
ChromatoTec	Airmo BTX 1000 PID [(b)]

(a) : appareil approuvé par type par l'UMEG (report n° 53-09/05 du 26-04-06)

(b) : appareil certifié « conforme à la méthode de référence » (en date du 30-07-07) par le CNR-IIA (Consiglio Nazionale delle Ricerche – Instituto sull'Inquinamento Atmosferico – Rome, Italie), sur la base de tests effectués par le TÜV. Un rapport en italien est disponible mais portant sur un modèle d'appareil différent (un problème de nom de modèle est possible)

2) Préleveur actif

méthode de référence	NF EN 14662 – 1 & 2

Constructeur	Modèle d'appareil conforme à la méthode de référence *(partie prélèvement)*
UMEG	GPS T15
TERA Environnement	SyPAC

Commentaires additionnels :

- Des travaux sont actuellement en cours au sein du Dispositif National de Surveillance de la Qualité de l'Air en vue de valider les appareils conçus en AASQA (sur la base d'un cahier des charges techniques respectant les préconisations des normes EN) et suivis sur le plan QA/QC (sur la base des recommandations émises par la Commission de Suivi « HAP – Métaux Lourds – Benzène »)

- Il est à la charge du responsable du prélèvement (en l'occurrence l'AASQA) de vérifier que l'analyse chimique effectuée par le laboratoire qu'il a choisi est conforme à la méthode analytique de référence.

Particules en suspension (concentration massique en PM_{10} et $PM_{2.5}$)

	Polluant	
	PM_{10}	$PM_{2.5}$
méthode de référence	NF EN 12341	NF EN 14907
Principe de mesure	Gravimétrie sur filtre	

	Modèle d'appareil équivalent à la méthode de référence	
Constructeur	PM_{10}	$PM_{2.5}$
Thermo Scientific (TEI)	TEOM-FDMS 8500 version b & c (a) TEOM 1405 (b) avec module FDMS TEOM 1405 F (c)	
Met One	BAM 1020 avec système « Smart Heater » (d)	
Environnement SA	MP101M avec ligne RST	

(a) Concernant l'appareil TEOM-FDMS 8500, seule la version b a subi les tests de démonstration d'équivalence. La conformité de la version c vis à vis de la méthode de référence peut cependant être admise, compte tenu des résultats de la campagne d'intercomparaison avec le JRC en mars 2008 [1], et sous réserve d'une installation initiale et d'une maintenance adéquates, d'un suivi métrologique adapté prenant en compte le retour d'expérience [2]

(b) L'acquisition du TEOM 1405 nécessite obligatoirement de disposer au préalable d'un module FDMS pour adaptation (**sous réserve de faisabilité**), afin d'obtenir des mesures équivalentes.

(c) L'évolution de l'appareil TEOM-FDMS 8500 en TEOM 1405 F est une optimisation de conception. Le principe de mesure et de traitement de l'échantillon n'étant pas modifié, il peut être considéré que les performances métrologiques du TEOM-FDMS 8500 sont conservées [3]

(d) Appareil distribué par la société Envitec SA/NV (titulaire de l'autorisation à commercialiser l'appareil sur le territoire français n° G002011, accordée par l'Autorité de Sûreté Nucléaire - ASN)

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[1] Etude LCSQA-INERIS (2008) « Accompagnement au déploiement des modules FDMS » G. AYMOZ

[2] Guide pour l'utilisation du TEOM-FDMS – LCSQA (2008) A. USTACHE, G. AYMOZ

[3] Relevé de décisions de la Commission de Suivi "Surveillance des particules en suspension" du mercredi 10 juin 2009

Particules en suspension (analyse chimique des particules PM_{10})

méthode de référence pour le prélèvement	EN 12341 (échantillonnage sur filtre)
méthode de référence pour l'analyse des métaux lourds (As, Cd, Ni, Pb)	NF EN 14902
méthode de référence pour l'analyse des Hydrocarbures Aromatiques Polycycliques (B(a)P)	NF EN 15549

Constructeur	Modèle d'appareil conforme à la méthode de référence pour le prélèvement des PM_{10} en vue de l'analyse des métaux lourds
Thermo Scientific (TEI)	Partisol 2025 / 2025 i (*Partisol Plus*) Partisol 2000 / 2000 i
DIGITEL	DA 80
Leckel	SEQ 47/50
FAI Instruments	Hydra Dual Sampler
TECORA	SkyPost PM
ZAMBELLI	Explorer Plus

Constructeur	Modèle d'appareil conforme à la méthode de référence pour le prélèvement des PM_{10} en vue de l'analyse des HAP
Thermo Scientific (TEI)	Partisol 2025 / 2025 i BaP (*Partisol Plus BaP*) (a) Partisol Speciation
DIGITEL	DA 80 (b)
Leckel	SEQ 47/50 (c)
FAI Instruments	Hydra Dual Sampler (d)
ZAMBELLI	Explorer Plus (e)

Commentaires additionnels :

- Il est à la charge du responsable du prélèvement (en l'occurrence l'AASQA) de vérifier que l'analyse chimique effectuée par le laboratoire qu'il a choisi est conforme à la méthode analytique de référence

(a): La version BaP du Partisol 2025 / 2025 i (Partisol Plus) assure un stockage des échantillons à une température inférieure à 20°C après échantillonnage grâce à un refroidissement par effet Peltier

(b): Le prélèvement des HAP peut nécessiter un module de refroidissement additionnel (optionnel) de la chambre recevant les filtres prélevés pour permettre le stockage des filtres empoussiérés à température réduite

(c)-(d)-(e): Le prélèvement des HAP peut nécessiter un module de refroidissement additionnel (optionnel) du magasin de stockage des filtres prélevés pour permettre leur conservation à température réduite

Dépôts atmosphériques (prélèvement & analyse chimique)

méthode de référence pour la détermination des dépôts de métaux lourds (As, Cd, Ni, Pb)	NF EN 15841
méthode de référence pour la détermination des dépôts de mercure	NF EN 15853
méthode de référence pour la détermination du benzo(a)anthracène, benzo(b)fluoranthène, benzo(j)fluoranthène, benzo(k)fluoranthène, benzo(a)pyrène, dibenz(a,h)anthracène et indéno(1,2,3-cd)pyrène dans les dépôts atmosphériques	NF EN 15980

Commentaire additionnel :

- Il est à la charge du responsable du prélèvement (en l'occurrence l'AASQA) de vérifier que l'analyse chimique effectuée par le laboratoire qu'il a choisi est conforme à la méthode analytique de référence