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# Air Pollution Bulletin Number 1 October 2003

News from the Air Pollution Lead Co-ordination Network (APLCN).

The APLCN was established in 2000 to assist JNCC and the conservation agencies with their air pollution work. The APLCN produces technical and operational advice for conservation agency staff; provides strategic air pollution advice to a wide constituency; develops air pollution policy; and manages air pollution research projects.

## Contents

1. Introduction
2. Membership of the Network
3. News
4. Research update

### 1. Introduction

The Air Pollution Bulletin provides information on the APLCN's current activities. Produced every six months, it is intended as an update for conservation agency staff, but we hope it is also of interest to other environmental organisations, the research community and the general public. We welcome feedback on its format and content. If you have any comments, or would like more details on any of the topics covered, email us at [airpollution@jncc.gov.uk](mailto:airpollution@jncc.gov.uk).

### 2. Membership of the Air Pollution Lead Co-ordination Network

The APLCN involves specialist staff from the three country conservation agencies, JNCC and the Environment and Heritage Service, Northern Ireland:-

**Network Chair** - Simon Bareham - Countryside Council for Wales

**Network Officer** - Dr Clare Whitfield - Joint Nature Conservation Committee

**Other members** - Dr Howard Platt - Environment and Heritage Service; Mike Harley - English Nature; Dr Caroline Chapman - English Nature; Dr Noranne Ellis - Scottish Natural Heritage.



### 3. News

#### **Key issues from the National Expert Group on Transboundary Air Pollution (NEG-TAP)**

The recent report of NEG-TAP ([www.nbu.ac.uk/negtap](http://www.nbu.ac.uk/negtap)) provides a review of the current situation regarding acidification, eutrophication and ground-level ozone and projects the situation to 2010 (a date when all currently agreed air pollution reduction measures will be in place). The findings and recommendations of NEG-TAP are a major influence on the conservation agencies' air pollution research and related policy. The APLCN represented JNCC on the expert group.

Some of the key issues for nature conservation highlighted by NEG-TAP are:-

- Despite the substantial reductions in emissions of sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>), large areas of semi-natural ecosystems remain at risk from acid deposition and nutrient nitrogen deposition.
- Levels of ozone regularly exceed thresholds for effects on vegetation. While peak concentrations are predicted to fall by 2010, mean concentrations will increase.
- NO<sub>x</sub> concentrations in urban areas, or close to major roads, remain a risk to sensitive ecosystems.
- The SSSI (Sites of Special Scientific Interest) series is not adequately protected by the UK's Air Quality Strategy.
- Nitrogen compounds, and in particular reduced nitrogen, are now the most significant air pollutants in terms of risks to semi-natural ecosystems. Nitrogen compounds are the dominant component of total acid deposition, result in eutrophication and are, in the case of NO<sub>x</sub>, are a precursor to ozone formation.
- The effects of acidification on freshwaters are well documented and have had widespread impacts in sensitive catchments. There is evidence of chemical recovery, as a result of reduced inputs of sulphur, in some acid sensitive waters, but there is no corresponding biological recovery. This may take decades.
- Critical loads are a threshold for pollution effects. Exceedance of the critical load means that there is a risk of harm to the ecosystem. Critical loads for acidification are exceeded in 71% of sensitive terrestrial ecosystems.
- Critical loads for nutrient nitrogen are currently exceeded in about 55% of UK 1x1 km grid squares with heathland, and about 25% with sensitive grasslands.
- There is a eutrophication signal across terrestrial habitats. This is most strongly correlated with deposition of reduced nitrogen.

#### **Integrated Pollution Prevention & Control (IPPC) and the Habitats Regulations**

The IPPC regulatory regime is being phased in over seven years, 2000-07. It is an integrated approach to pollution regulation and permits emissions to air, water and land from industrial installations. Concurrently, the Environment Agency and Scottish Environment Protection Agency (SEPA) are required by the Habitats Regulations to undertake a 'review of existing consents/authorisations'. The country conservation agencies are statutory consultees under both the Habitats Regulations and the Pollution Prevention and Control Regulations.

Over the last few years, English Nature and CCW, with technical support from the APLCN, have been developing guidance and policy with the Environment Agency on air pollution impact assessments, under the requirements of the Habitats Regulations. This guidance is available through the Environment Agency website ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)). The APLCN and Pollution and Climate Change Group at English Nature have also jointly produced summary internal guidance (the "IPPC Information Pack") for conservation agency staff. This is available on English Nature's intranet or from English Nature and CCW's Review of Consents Project teams.

SEPA and EHS are about to commence their 'review of consents'. Further information will be made available to staff in due course.

English Nature and JNCC are currently working with Defra to produce guidance for local authorities, who regulate Part A2 installations and Part B processes in England and Wales, on the requirements of the Habitats Regulations and Countryside and Rights of Way Act. We expect that this will be completed soon.

#### **Air Pollution Information System (APIS)**

Over the last two years the APLCN have managed a project to develop a web-based APIS. This provides details of the impacts of air pollutants on habitats and species and has been jointly funded by the UK conservation agencies and pollution regulators.

APIS is now available to conservation agency staff, on a working trial basis, and will be made available, following testing, to the public in April 2004. Conservation agency staff should contact their APLCN representative for further information. Other enquirers should email [airpollution@jncc.gov.uk](mailto:airpollution@jncc.gov.uk).



APIS includes:-

- information on the types and scale of air pollution impacts; habitat and species sensitivities, including revised critical loads and levels, or other relevant environmental criteria;
- overviews of pollution impacts, legislation and issues;
- a simple site-based assessment tool which provides concentration and deposition data for specified grid references, which can be used to indicate the risk to sites;
- information on bio-monitoring methods.

### **Air Quality Strategy (AQS)**

The UK AQS 2000 sets air quality standards and objectives for eight key air pollutants to be achieved between 2003 and 2008. For seven of these pollutants local authorities are required to work towards achieving the objectives by specified dates. In addition, in 2003 a new objective was included for Polycyclic Aromatic Hydrocarbons (PAHs) (except Northern Ireland), and the objectives for particles, benzene and carbon monoxide were modified. Northern Ireland has commissioned an independent report on PAH levels and proposes to undertake a consultation exercise on the PAH objective for NI. If the AQS objectives are not likely to be met, the local authority must declare a formal Air Quality Management Area (AQMA) and produce an Action Plan to work towards meeting the air quality objectives. At the time of writing, 118 local authorities have declared AQMAs. The majority of these are declared for NO<sub>x</sub> and particles. See Defra's air quality archive ([www.airquality.co.uk](http://www.airquality.co.uk)) for further details.

The AQS includes national objectives for SO<sub>2</sub> and NO<sub>x</sub> for the protection of ecosystems. However, these values only apply in areas which are more than 20 km from major conurbations (>250,000 population) and 5 km from motorways, major industrial processes and urban areas (>5,000 population). As a result, any SSSIs, or other designated sites, within these areas will not have the benefit of protection from statutory air quality limit values. However, it is the conservation agencies' policy, supported by the Environment Agency, to apply the ecosystem objectives to all sensitive sites when considering the potential impact of sulphur dioxide, or oxides of nitrogen.

As a result of APLCN representations to Defra, outlining the conservation agencies' concerns that SSSIs and European sites were not adequately protected by the AQS, Defra commissioned research into the protection of SSSIs under the AQS. This was published earlier this year and Defra are considering this issue during their current review of the AQS.

### **New Critical loads for nutrient nitrogen and acidity**

These were agreed at an expert workshop held under the Convention on Long-range Transboundary Air Pollution, in Bern in November 2002. In March 2003 the UK Critical Loads Focal Centre published 'for comment' an update to the UK's critical loads. This includes the new nutrient nitrogen critical loads, revised UK acidity critical loads and revised mapping of ecosystems. Further information can be found at [www.critloads.ceh.ac.uk](http://www.critloads.ceh.ac.uk). The APIS has been updated to include the new critical loads for nutrient nitrogen and acidity.

## **Ammonia**

The findings of NEG-TAP clearly demonstrated the increasing significance of the ecological effects of ammonia. Ammonia may affect vegetation directly, or through deposition, where it acidifies soils and contributes to eutrophication.

Ammonia is a priority for JNCC and the conservation agencies due to its increasing importance and dominant role in nutrient enrichment of terrestrial sites. There is uncertainty with ammonia issues, including determining emissions, the effectiveness of abatement, the dispersion and deposition of the pollutant and the impacts. However, the risks to semi-natural ecosystems are unequivocal. Agriculture is by far the largest source of ammonia emissions in the UK (83% of the total). Since the vast majority of emissions to air from this sector are not regulated, controlling these diffuse sources will be a major challenge.

Deposition of ammonia/ammonium is both a local issue, whereby deposition loads are very high close to large emission sources such as intensive livestock units, and it is also a long-range issue. There is a high deposition of ammonia in intensive livestock farming areas, and also on upland sites where there are high inputs of wet deposition from long-range sources.

The APLCN will be working with relevant groups within the conservation agencies and regulators to consider research and policy needs. However, conservation agency area team staff have an important role to play in highlighting the potential adverse effects of intensive livestock units on local SSSIs or European sites, through their statutory advice on planning applications or IPPC.

## **4. Research update**

The APLCN currently manages two large collaborative research projects:

**Nitrogen Bio-monitoring Phase 2** - Refinement and testing of bio-monitoring methods, and development of protocols, for assessing impacts of atmospheric nitrogen deposition or concentrations on statutory nature conservation sites. Funded by CCW, English Nature, SNH, JNCC.

**Air Pollution Information System (APIS)** - Ongoing maintenance of the system and scientific update of the system. Funded by CCW, English Nature, Scottish and Northern Ireland Forum for Environmental Research (SNIFFER), SNH, JNCC.

In addition, the APLCN represents JNCC and the country conservation agencies on a number of projects led by other organisations:-

**Atmospheric nitrogen pollution impacts on biodiversity: Phase 1 - Model development and testing.** Principle funding organisation and lead: Defra. Contributions from JNCC and English Nature.

**PhD studentship to investigate the impacts of atmospheric pollution on vegetation at Epping Forest.** Principle funding organisations and lead: Corporation of London and Environment Agency. Contributions from JNCC and English Nature.

**Road transport and diffuse pollution.** Principle funding from English Nature, contribution from JNCC.

**Assessing the threat to Natura 2000 sites from sources of atmospheric ammonia.** Principle funding organisation and project lead: Environment Agency. Contribution from English Nature.

Over the last few years, the Environment Agency has funded a number of projects refining the approach to air pollution impact assessment under the requirements of the Habitats Regulations. JNCC, CCW and English Nature have supported the Environment Agency through representation on project steering groups. These include: a national risk assessment of critical load exceedance on European sites; the development of a methodology for appropriate assessment for air pollution impacts on European sites; and a freshwater screening and assessment based on critical loads.

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