

Acid News

No.3, May 1984

A Newsletter from the Swedish and Norwegian NGO Secretariats on Acid Rain



Photo: Greenpeace

During International Acid Rain Week, Greenpeace members in Austria, Belgium, Czechoslovakia, Denmark, France, Germany, Holland, and the UK climbed power station and oil refinery chimney stacks to bring public and governmental attention to the problem of acid rain - caused by sulphur dioxide emissions. The eight banners hung by Greenpeace form the word "STOP".

FOE: Action is needed!

Wednesday 23rd May 1984, Friends of the Earth told Members of Parliament that action is needed *now* to curb acid rain. The weight of scientific evidence shows, without doubt, that acid rain is causing damage to the natural and built environment. Sulphur (the main precursor of acid rain) must be reduced as a matter of urgency to prevent further acidification of the environment and to begin the extremely slow process of restoring damaged areas.

The technology to abate acid rain exists and has been widely used in other countries, particularly Japan. In Britain, Friends of the Earth research has shown that reducing sulphur dioxide emissions from power stations to 60% of 1980 levels by 1995 will increase electricity prices by a maximum of 4% over 10 years. This is less than the annual average price rise in recent years.

Friends of the Earth will be ar-

guing that the British Government should support the draft EEC Directive which asks for a 60% reduction of SO₂ levels from large plants by 1995. The Environment Minister, William Waldegrave, will be discussing this important international pollution problem at the next European Council of Ministers Meeting on June 28th.

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Acid News

A newsletter from the Swedish and Norwegian NGO secretariats on acid rain.

ACID NEWS is a newsletter produced jointly by the Swedish and Norwegian secretariats on acid rain. The secretariats' and the newsletter's main task is to provide environmental and nature conservation organisations and others with information on the subject of acid rain and acidification of the environment.

Anyone who is interested in these problems is invited to contact the secretariats on the address below. Any questions or requests for material will be dealt with to the best of our ability.

In order to make Acid News interesting, we are dependent on information on what is happening elsewhere in the world. So if You read or find out about something which might be of general interest, please send a letter or a copy to us.

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THE SECRETARIATS

The Norwegian secretariat, "The Stop Acid Rain Campaign/Norway", is organized by six non-governmental organisations concerned with the environment:

- Nature and Youth (Natur og Ungdom)
- The Norwegian Forestry Society (Det Norske Skogselskap)
- World Wildlife Fund/Norway (Verdens Villmarksfond)
- The Norwegian Association of Anglers and Hunters (Norges Jeger- og Fiskeforbund)
- The Norwegian Society for Conservation of Nature (Norges Naturvernforbund)
- The Norwegian Mountain Touring Association (Den Norske Turistforening)

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"The Swedish NGO Secretariat and Acid Rain" is organized by four nongovernmental organisations concerned with the environment:

- The Environmental Federation (Miljöförbundet)
- The Swedish Angler's National Association (Fritidsfiskarna)
- The Swedish Society for the Conservation of Nature (Svenska Naturskyddsföreningen)
- The Swedish Youth Association for Environmental Studies and Conservation (Fältbiologerna)

Address and telephone: see above!



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The Campaign



During the spring, environment protection and nature conservation organizations in Europe and North America have clearly demonstrated, through a wide range of actions and arrangements, the important body of opinion that exists against air pollutants and the death of our forests.

Particularly during International Acid Rain Week at the beginning of April, a large number of both national and local activities took place in the majority of European countries. From Sweden, Finland, Norway, Holland and elsewhere, thousands of postcards demanding rapid steps to reduce emissions were sent, above all, to the governments of the countries producing the largest emissions.

Only the beginning

These manifestations will continue until the politicians, industrialists and other decision-makers realize the gravity of the situation, and drastically reduce emissions of acidifying air pollutants.

Some examples:

In West Germany a *demonstration* was held on 28 April, in which some 7 000 people protested against the newly constructed coal-fired power station of Buschhaus. This power station, only a few kilometres from the East German frontier, is to be fired with sulphur-rich brown coal. Since it is planned to operate the station for several years entirely without cleansing the smoke from sulphur, emissions from the 300 metres (!) high stack will

be enormous. It is estimated that emissions will amount to almost 20 tonnes SO₂ per hour, which is to say over 100 000 tonnes of sulphur dioxide per year! This is why both nature conservationists and the forestry people are demanding that the station should not be put into operation until a facility for flue gas desulphurization has been installed. The starting-up of Buschhaus without cleansing would be an international scandal, particularly in the light of the West German government's boasts that it is taking strong measures to stop forest death, among other things by new legislation to reduce emissions of sulphur.

Demonstrations against emissions of acidifying air pollutants have been arranged during May also in Switzerland and Finland, etc.

Prior to elections to the European Parliament in mid-June, the environment organizations in several common market countries, spearheaded by West Germany, will be arranging a *campaign week* from 28 May to 5 June, with "action days" 2-3 June.

Prior to the ministerial meeting in Munich 24-27 June (see Acid News No. 2/84, p. 8), there are plans for representatives of environment organizations from several countries to gather for an informal meeting, and to arrange some form of *alternative press conference*.

The fight for a living, healthy environment continues!

Christer Ågren

Acid Rain and the UK

"When acid rain burns babies, then it's news. Otherwise, don't bother us". The words of a **Daily Express** reporter reveal the attitude of at least the British popular press towards acidification, and partially explain the difference of perception of the phenomenon in the UK and on the Continent. It is true to say that the widespread concern over acid deposition has not yet found significant expression in the UK: the reason for this is complex, embracing our geographical position, the funding and organisation of our scientific research, and the complexion of the British government.

The European dimension

The British lethargy towards remedying the effects of acid pollution is not a deliberately isolationist attitude, but a continuation of a Europe-wide policy of saying that the problem doesn't exist, while hoping fervently that this turns out to be the truth. What has changed, in the last twelve months, is the European dimension: several countries decided during 1983 that acid rain was a serious threat to their environment, deserving drastic remedial measures, and started programmes to clean up their industrial emissions.

The scale of the turnaround deserves some examination. At this time last year, no European country outside Scandinavia had announced desulphurisation schemes. West Germany was the first to take action, when it discovered that the 7.7% of its forests that a 1982 tree survey had established as being damaged by air pollution was actually 34%, according to a better co-ordinated survey a year later (see *Acid News*, 1/84). Armed with the advance results of this report, the West German government announced a massive desulphurisation programme in mid-83, and started to warn its neighbours of the threat to the Central European forests. During the autumn and winter, increasing tree damage was discovered in France, Austria, Switzerland, Northern Italy and Sweden.

The map on page 00 is a simplistic representation of acid pollution in Europe: as can be seen, the affected areas are no

longer confined to the industrial zones of the Ruhr and eastern Europe, but are spreading south and west. If the reported tree damage in Sweden is representative, then the Scandinavian countries are about to experience a combined degradation of both their lakes and their forests. Other threats are also becoming apparent: research into materials damage, for example, has indicated that all of Europe's stained-glass windows are in danger of disintegrating over the next few decades as a result of atmospheric corrosion. Reports from the USA say that up to 10 per cent crop losses could be predicted as a result of air pollution. The problem has become a pressing political issue, with the only viable solution appearing to be a reduction of industrial emissions.

Diplomatic pressure

As has been pointed out on more than one occasion, the international character of acid pollution means that polluted countries can only protect their vulnerable ecosystems by a co-ordinated reduction of sulphur and nitrogen oxides throughout Europe. In diplomatic terms, this means exerting pressure on major polluters, both individually and through the relevant international bodies. Negotiations with Eastern Europe are carried out on a block basis, and there are hopes that the east-west acid rain meeting to be held in June 1984 will produce significant SO₂ reductions from East Germany, Czechoslovakia, Poland, Hungary, and Rumania: indeed, the West German forests will

continue to be at risk until such a reduction is achieved.

In West European terms, however, the UK is seen as the prime target for international pressure. The reason for this is simple: in 1982, five countries produced 75 per cent of West Europe's Sulphur Dioxide pollution (see Chadwick and High-ton's chart in *Acid News* 2/83), with the UK emitting 4.2 million tons, FRG 3.5, Italy 3.1, France 2.9, and Spain 2 million. For reasons of distance and wind currents, as the map indicates, the contributions from Italy and Spain do not threaten the vulnerable areas of Europe as much as those from France, Germany, and the UK. Of these three major polluters, the West Germans announced a 50 per cent Sulphur Dioxide reduction in mid-1983: and the French followed with a 50 per cent reduction announcement on 22 February 1984. The German programme has been costed at 2.5 to 5 billion US-dollars over the next ten years, and the French plans at 3 billion. Commitment and expenditure on this scale explains why the UK is currently looking shifty-eyed and red-faced.

The British response

The diplomatic temperature has been increasing since the beginning of the year, and the UK Department of the Environment, which according to **New Scientist** has already been encountering hostility because of the British stance on acid rain, is now acutely embarrassed as international pressure becomes more overt. On March 1, the



From the map, it can be seen that the Eastern European countries will have to be involved in an European desulphurisation programme. In western Europe, five countries provide 75 per cent of the area's SO₂-emission. In terms of diplomatic initiatives, Spain and Italy are not prime targets because of their distance from Central Europe and because of direction of wind currents. Of the three major polluters, the UK is the only one that has not yet started a desulphurisation programme.

Environmental damage

Norway: 5000 square miles devoid of fish, 13000 square miles of lakeland affected. Forest damage strongly suspected in southern parts.

Sweden: More than 18000 lakes acidified of which 4000 seriously acidified showing grave damage to their biology. Forest damages mainly in south and southwest.

UK: Acidified lakes mainly in Scotland and Wales.

F.R.G.: 34 per cent of forest damaged, 10 per cent medium or severe. Damaged area is equivalent to three-quarters of total woodland in England. 2000 square miles declared a "totally devastated area".

Switzerland: 25 per cent of fir trees and 10 per cent spruce died within last year. 8 per cent of all trees estimated damaged.

Austria: 11 per cent of forest estimated damaged. 296000 acres of forest destroyed.

Netherlands: Premature aging of Scots pine and Douglas fir found over a wide area, acute damage to pine trees found in spring 1983 and even more damage found later in year.

Yugoslavia: 1900 square miles of woodland perished since 1970.

France and Italy: Forest damage has started to appear since summer 1983.

East Germany: 12 per cent of forest affected.

Czechoslovakia: Forest damage cover an estimated 1900 square miles, nearly half of this comprises severely damaged trees.

Poland: 1900 square miles of forest damaged.

Rumania: Over 200 square miles of forest damaged.

USSR: According to Pravda, large areas of forest dying 1000 miles east of Moscow. Forests along the Volga River may soon resemble a wasteland.

Wind direction: Over UK, prevailing winds from south, south-west or west. Northern France, Belgium, Luxembourg during autumn and winter, between south and west. Iberian peninsula same period, predominantly westerly. Mediterranean regions, north to north-westerly. East Germany and Poland, winds from south to west.

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Nordic Council appealed directly to the UK to reduce its Sulphur Dioxide output - an appeal that produced a waspish and defensive press release from Environment Minister Patrick Jenkin ("since 1970, while SO₂ emissions have increased overall in Europe, in the United Kingdom they have fallen by over 30 per cent and are now at about the level at which they stood in 1940"). Not a bad defence, except for the fact that it glosses over the main reason for the drop in UK SO₂ output - the economic slump. If manufacturing output increases, so will SO₂ production, as no measures have been implemented yet for SO₂ abatement. Mr Jenkin's pride in the UK's environmental record also chimes oddly with Britain's position as still the largest SO₂ producer in western Europe - and the largest producer in Europe as a whole if the USSR is discounted.)

The "Club of Thirty"

Worse was to come. On March 22 1984 ten countries - Sweden, Norway, Denmark, Finland, Germany, Austria, Switzerland, the Netherlands, France, and Canada - met in Ottawa and formed the 'Club of Thirty', in which each member had to commit itself to a 30 per cent Sulphur Dioxide reduction over the next ten years, and take steps to reduce nitrogen oxides. Member countries also pledged themselves to getting reduction agreements from 'other countries' - most notably the UK and USA, which, as non-reducing nations, had not been invited to the Ottawa meeting. Britain's isolation was being underlined at an international level (this was, coincidentally, the same time that the EEC was being split by the UK negotiations on the EEC budget: Britain was in danger of being the most uncooperative country in the EEC). At home, the government and the Central Electricity Generating Board

(CEGB) were apprehensive about domestic pressure being produced via demonstrations in Acid Rain Week (April 2 to 8). It was a time of severe strain and pressure on the environmental front.

Misleading information

It was in this period that a strange thing happened: within ten days, three prestigious UK publications published misleading analyses about the costs of desulphurisation in Britain. On 18 March, Brian Silcock in *The Sunday Times* said: "According to the Central Electricity Generating Board, even a 50 per cent reduction in its own sulphur emissions would add 15 per cent to electricity prices". Six days later the *Economist* stated: "Britain's Central Electricity Generating Board says that even a 50 per cent cut in its own sulphur emissions could mean a 15 per cent rise in electricity prices": and two days after this, in a piece called "Acid rain theory may be wrong, scientists admit", which grossly misrepresented the views of two Scandinavian scientists and over-estimated the annual running cost of desulphurisation by 600%, the *Daily Telegraph* said that the cost of UK desulphurisation "is estimated at 1,700 million pounds a year".

"CEGB was disingenuous"

The odd thing about these three reports is that, only three weeks earlier, the Royal Commission on Environmental Pollution had published the CEGB's true estimates of a desulphurisation scheme. On page 145 of the report, the Commission notes: "According to the CEGB, the increased generation cost (of a 50 per cent reduction scheme) would amount to a 10-15 per cent increase at each power station fitted with flue gas desulphurisation. The increase in the cost of electricity to the CEGB's customers is much more difficult to

predict, but the CEGB has very tentatively estimated a figure of about 6 per cent. ...To put the figure of 6 per cent in context, we note that during the last nine years the price of electricity had increased on average by about 4 per cent per year more than have retail prices in general." The figure of 15% mentioned in the *Sunday Times* and the *Economist* refers to generating cost, which is one of a number of variables that make up the final electricity price: the journalists concerned had been reproducing pre-prepared press releases without bothering to check their facts. When Silcock of the *Sunday Times* was questioned about the inaccuracy of his article, he admitted that he had been misled by the CEGB. "I feel", he wrote on 19 April 1984, "that the CEGB was a bit disingenuous in giving increases in generating costs. It was all too easy, as I did, to equate these with electricity prices."

It is difficult to avoid the assumption that the CEGB is bending the truth in its presentation of the pros and cons of desulphurisation: Silcock's adjective "disingenuous" means, according to the Concise Oxford Dictionary, "Insincere, having secret motives, not candid." There are three bodies who are generally held to be responsible for monitoring the effects and extent of acidification in the UK: the Department of the Environment, the CEGB, and the Forestry Commission. All three bodies can, for various reasons, be accused of being disingenuous in their public statements on acid rain. How this has come to be so, I hope to discuss in the next issue of *Acid News*.

Steve Elsworth

Steve Elsworth is a British journalist. His book, 'Acid Rain in the UK and Europe' will be published by Pluto Press, 105A Torriano Ave, London NW5 2RX, UK, in September 1984 (price 3.95 pounds).

Joint Nordic demand to the UK: Reduce your sulphur emissions!

At the meeting of the Nordic Council held in Stockholm at the end of February, the Nordic environment ministers agreed to send a joint statement to the British government, appealing to it to rethink on the question of acidification and take immediate measures to reduce British emissions of acidifying air pollutants.

The initiative for this statement was taken by Swedish Prime Minister Olof Palme, against the background of a recently submitted report (the 10th Report of the Royal Commission on Environmental Pollution) recommending the British government to postpone measures to reduce emissions for at least five years, pending the results of further research.

Olof Palme strongly criticized Britain's lack of understanding for the problems of acidification, stating that eventual approval of the report's proposals would be a severe reverse for work on the environment, and that it would therefore be deeply regrettable if the view expressed in the report won the ear of the British government, and the British Parliament.

The joint statement runs as follows:

The Statement

The Joint Statement by Nordic Ministers of Environment, addressed to the Secretary of State for the Environment (handed to the British Ambassador in Stockholm on 1 March 1984):

In their deliberations on future international efforts as regards aci-

dification issues, the Nordic Ministers of the Environment have made note of the Report recently presented to the British Government.*

Both national and international research and studies have provided us with extensive knowledge concerning the causes and effects of acidification. We now know enough to be able to establish that acidification is leading to drastic changes in our natural environment and that many of these changes may be irreversible. Therefore, forceful measures must be taken to combat acidification.

One of the assumptions of the British Report is that pending further research and development a substantial reduction of the British emissions should be postponed for some time. The adoption of the Report's proposals would involve a serious setback for international efforts to improve the environment. The Nordic Ministers would regard a decision in line with the opinions presented in the Report as a step backwards from the results achieved at the 1982 Stockholm Conference on Acidification of the Environment and the decisions taken at the first meeting of the Executive Body for the ECE Convention on Long Range Transboundary Air Pollution.

The Nordic Ministers instead urge the United Kingdom to adhere to the proposals presented by the Nordic Countries to reduce sulphur emissions by 30 per cent before 1993.

* The Tenth Report of the Royal Commission on Environmental Pollution, which was presented to the British Parliament on 22 February 1984.

Mitterand's concern to save the forests

At the beginning of May, French President Mitterand announced that France intends to propose a world conference on acidification and the risks of forest death.

In an announcement to 60 European environment protection and nature conservancy organizations that were currently attending a meeting in Montdauphin in the French alps, Mitterand stated among other things that one of the most urgent of the environment questions now faced by Europe is the protection of forests that are being damaged by air pollutants and acid rain. A plan of action, said Mitterand, was therefore necessary to save the forests. He further considered that measures were needed to protect the forests in the poor developing countries.

France has said, earlier in this year, that it intends to reduce its emissions of sulphur dioxide by 50% by 1990 (as reckoned from emissions in 1980).

New books

"ROBIN WOOD - UND VOR UNS STERBEN DIE WÄLDER"(1984)

Published by: Rowohlt Verlag GmbH, 250 pages.

Can be ordered from:

Robin Wood, Postfach 102122, D-2800 Bremen 1, F.R.G.

"RETTUNG FÜR DEN WALD - STRATEGIEN UND AKTIONEN"(1984)

Published by: Fischer Taschenbuch Verlag, 190 pages.

Can be ordered from:

ÖKO-Institut, Hindenburgstr. 20, D-7800 Freiburg, F.R.G.

Acid Rain Week - UK

Six groups actively supported International Acid Rain Week - Ecology Party, Friends of the Earth Ltd, Friends of the Earth (Scotland), Greenpeace, Socialist Environment & Resources Association, Young Liberals Ecology Group. More than 25,000 leaflets were given out, saying "Why is the CEEB killing Europe?". Actions attracted publicity from national TV, national press, local radio and regional papers.

Sunday, April 1. Greenpeace occupied a chimney stack in Cheshire, in coordination with occupations in seven other countries. All eight climbs successful, resulting in two prime-time news broadcasts on BBC TV, some press coverage.

Monday, April 2. Friends of the Earth demonstration outside St Paul's Cathedral. Demonstrators carried large black umbrellas with STOP ACID RAIN - SAVE ST PAUL'S written on them (St Paul's has suffered severe damage from acid corrosion), and displayed a giant "death-list" 1.5 metres wide and 25 metres long, detailing damage to rivers, lakes, buildings and forests in Britain and around the world. This was then handed into the CEEB headquarters.

Glasgow: FoE (Scotland) staged film show at Glasgow Film Theatre, films from Sweden and Canada, and talk by Dr Keith Puckett, head of LRTAP Liaison Office, Environment Canada.

Tuesday, April 3, Edinburgh. FoE (Scotland) film show at Edinburgh Film House.

Thursday, April 5, London. SERA launched their booklet, **Europe, the Elections and the Environment**, at a press conference attended by Labour Party MP George Foulkes, Parliamentary Spokesman on Europe, and European MP Ken Collins, Chair of European Parliament Environment Committee. The programme contains a five-page section on acid rain and proposes a European-wide "clean coal" campaign aimed at reducing oxide emissions from large sources by 50% over the next six years, plus a major energy conservation programme. As Ken Collins said, this is the first specifically European environmental document produced by the British Labour Party (it was printed by the Labour Movement for Europe).

Friday, April 6, Edinburgh. Demonstration outside the Scottish

office, organised by FoE (Scotland); a see-saw with Joseph Tree, aged 12, at one end, balanced at the other end by 36 kg of Sulphur (this is the amount of Sulphur produced in the UK per person per year). A petition calling for a 75 per cent reduction in Sulphur Dioxide emissions was then handed to the Scottish office.

Saturday, April 7. All over UK. FoE-organised demonstrations outside electricity board offices throughout the UK based on the idea of linking the Central Electricity Generating Board with acid rain, which said, FoE, has now affected 120 lakes and streams in Scotland, parts of the Lake District, Hampshire and Surrey, and many lakes in Wales. Demos took place in at least 29 different locations, with support on the ground from the Ecology Party and SERA members, and also from Young Liberals. Representatives from the Royal Academy of Music played "Raindrops keep falling on my head" outside 10, Downing St. The day of action got very good coverage in local newspapers up and down the country.

Steve Elsworth



Photo: Åke Malmström/Pressens Bild

In Stockholm, the Swedish Youth Association for Environmental Studies and Conservation (Fältbiologerna) carried out on 7 April a symbolic burial of the forests. A dead pine was carried in a coffin in a funeral procession through the streets of the city. A priest was present, and held a funeral oration. Similar actions were organized also in other cities.

10 Countries Sign Acid Rain Pact

OTTAWA - Canada and nine European nations reached an environmental milestone the 21 March, signing a five-point declaration promising to reduce pollution that leads to international acid rain.

The 10 countries - Canada, West Germany, France, Switzerland, Austria, The Netherlands, Denmark, Norway, Sweden and Finland - have committed themselves to reduce sulphur dioxide, which forms sulphuric acid rain, by 30 per cent by 1993. They have also promised unspecified cuts in other air pollutants, mainly nitrogen oxides, which form nitric acid.

The 30 per cent sulphur cut was described as probably not enough to save the European environment, but it will retard damage. It was also described as the highest figure considered acceptable to most nations.

"It is more important to have all countries in Europe reduce by 30 per cent than to have some do it by 50 per cent," said Finnish Environment Minister Matti Ahde.

Canadian Environment Minister Charles Caccia said he hopes the document will encourage the U.S. Government to reconsider its refusal to join Canada in a 50 per cent reduction of acid-forming sulphur dioxide emissions in the eastern half of North America.

As well, the nine European nations hope to bring pressure on their polluting neighbors, particularly Great Britain and some East Bloc nations, to reduce acidic air pollution.

Acknowledging that the 30 per cent cut may not be enough in some cases, the declaration says further sulphur emission cuts may have to be made "where environmental conditions warrant."

In addition, some countries,

such as Sweden, have already made a 50 per cent cut and are making the 30 per cent cut as well, while others are just starting their acid rain control programs.

It was the nordic countries which first suffered from acid rain damage, recording dying lakes 15 years ago, with most of the pollution blowing in from Central Europe.

The major polluting nations of Central Europe started taking action only in the past few years, when the cumulative effects of years of pollution led to a sudden decline in their forests. For example, about 34 per cent of Germany's forests are ailing or dead. In Switzerland, the pollution threat to high-altitude forests is so great there is a fear trees will die and there will be nothing to stop devastating avalanches from sweeping down of the mountains.

International pressure on polluting countries will mount later this year during meetings of more than 30 nations, including those who have not promised pollution cuts. The meeting, involving countries in the Economic Commission for Europe, will

be held in Munich in June and in Geneva in September.

"In Munich the Americans will be there," Mr Caccia said, "and if they do not go the Soviet Union will take advantage of that opportunity to be forthcoming (on pollution controls), just to appear to be on the side of the angels."

Ironically, it was former Soviet president Leonid Brezhnev who triggered Western European action on acid rain almost 10 years ago when he called on nations to cope with environmental problems.

So far, the Soviet Union has not promised air pollution cuts and officials at the Ottawa meeting said that country does not even have good acid rain studies. But Mr Caccia said a U.S. failure to provide international leadership on acid rain will create a vacuum which the Soviets may try to exploit.

Michael Keating
The Globe and Mail, Toronto,
March 22, 1984

Further information on the Ottawa-meeting can be obtained from:

Environment Canada
Ottawa K1A 0H3
Canada

Top Ten

Promised reductions in sulphur emissions:

France	50%	from 1980 to 1990
F.R.G.	50%	1980 1993
Canada	50%	1980 1994
Norway	50%	1980 1994
Denmark	40%	1980 1995
Netherlands	40%	1980 1995
Austria	30%	1980 1993
Finland	30%	1980 1993
Sweden	30%	1980 1993
Switzerland	30%	1980 1993

Roof building doesn't help

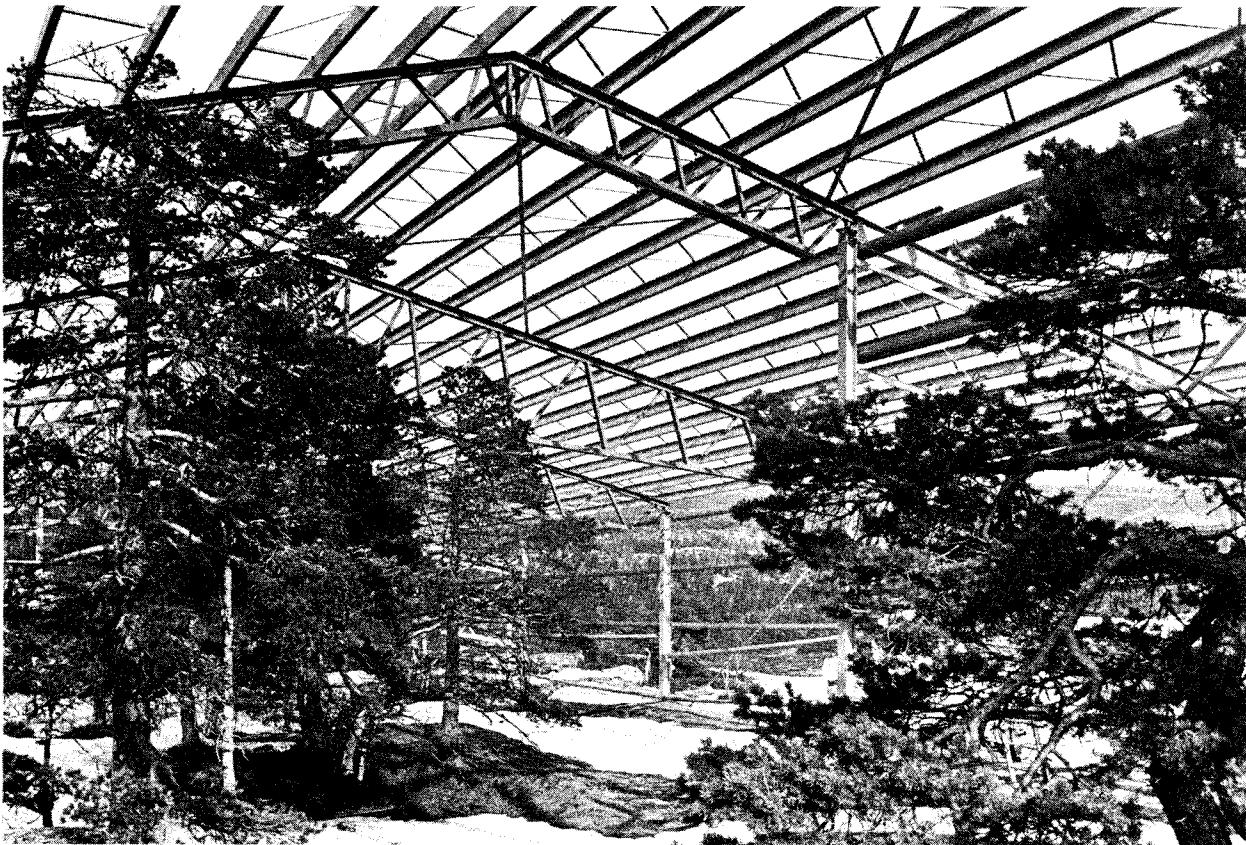


Photo: Svein Langvad

1200 feet above sea level, some 20 kilometers from the coast of southern Norway, the Norwegian Institute for Water Research (NIVA) has built two glass roofs over about 1600 square meters of spruce and pine trees, moss and rock. Risdalsheia ("heia" means mountain) is the scene of a unique research project to measure the effects a decrease of acidity present in rainfall will have on trees and soil. The project is not without symbolic value.

Risdalsheia was one of my favourite mountains when I was young; a miniature version of the much higher mountains and greater highlands to be found further in from the coast of Norway, and at higher altitudes. Risdalsheia is a "practical" wilderness, both for research and mountaineering. Neither too big nor too distant, easy to cross on foot in one day. From the top of the mountain you can see vast stretches of the coast of southern Norway, well, Aust-Agder

county to be more precise. The rain clouds that usually roll in from the south-west can be seen early enough to find cover, or dig out your rain-wear; and glimpses of the sun are not far between, even on rainier days.

I grew to love mountains and streams in this area. Lately, I've also learned to measure the pH-value of the lakes and streams, and forgo the pleasures of an out-door frying of the brown trout that were once abundant there.

Of course, roof building will not help, southern Norway is a bit too big for that, but the NIVA-project is an interesting one. One of the roofed-over areas will receive the same amount of rainfall as the outside, but "de-acidized" and without the sulphur and nitrogen of "Acid Rain". The other roof covers the reference-area, where rainfall will be collected and measured, and then drizzled over the trees again. For further reference, three bigger areas in

Sogndal, on the western coast of Norway, will receive 30% more "rainfall" than the rest of the district, "acidized" up to the level of rain at Risdalsheia.

Earlier research has supplied us with an abundance of data about the damaging effects of acid rain, and this clearly shows the advantages of reducing or stopping pollution. Pollution continues none-the-less, and the NIVA-project attempts to establish more precise information about the effects of reduced pollution and acidity.

The project is a joint venture, funded by three parts: Norwegian authorities, Canadian environmental authorities, and the National Swedish Environment Protection Board.

After 5 years, the steel structures and glass roofs will be removed, and the spruce and pines will be in their own again, hopefully no longer needing a roof for protection.

Svein Langvad

EEB:

An 80% reduction of SO₂ emissions necessary!

The EEB (European Environmental Bureau) states in its commentary to the European Commission's proposal for a Council Directive to control air pollution (see Acid News No. 1/84, p. 16) that *"the target and date proposed are too low and too late"*. Instead, the EEB proposes that during the coming ten-year period emissions of SO₂ should be reduced by 80%, and emissions of NO_x by 60%.

Comments on the Draft Directive to limit air pollution from large combustion plants

The European Environmental Bureau groups the major environmental organisations in the ten Member States of the Community. These organisations have been in the frontline in drawing attention to the dangers of air pollution to the natural eco-systems. The German associations repeatedly and convincingly have predicted the present problems of the dying forests. Dutch associations have published a number of policy papers on air pollution plus an analysis plant by plant of the major polluters. Italian and Greek associations have published extensively on the impact of air pollution on historic monuments. These examples are just picked at random but they illustrate the long-standing concern and involvement of environmental organisations in matters of air pollution and its effects on the natural environment and buildings.

Main Comment

The European Environmental Bureau takes note of the Commission's proposal for a Council Directive to control air pollution from large combustion plants.

While it welcomes the Commission proposal, the EEB questions some elements of the actual content of the proposal. In fact, the EEB fears that the proposal creates expectations which it cannot live up to, even when fully implemented.

General comments

The EEB appreciates the great and timely efforts of the Commission during the last eighteen months to draft proposals to control air pollution. The EEB refers to its comments on two of these proposals, namely the draft Directive to control air pollution from industrial plants (*1), and the draft proposal to protect forests against acid rain (*2). The EEB also takes note of the fact that as yet the Council has agreed only the proposals to combat air pollution from industrial plants.

Reduction to one quarter

The dying of forests and the acidification of soil and surface waters will continue unless the emissions of air pollution can be reduced to one quarter (1/4) of the present level and in some regions perhaps even further. This reduction of emissions has to be realised in a very short time; reduction by half in five years and reduction by another half in the following five years. Because of the technical possibilities, the reduction by fifty per cent (50%) in the next five years has to be realised mainly by large combustion plants which have to reduce their emission of air pollution to one third or one quarter of the present level.

Speed limits

Linked to the matter of sulphur emissions is the NO_x pollution. It should be noted that in this res-

pect the NO_x pollution of a car travelling at 120 km/h is sixty per cent (60%) higher than the NO_x pollution when a car is travelling at 90 km/h. The EEB invites the governments of the Member States to take these facts into consideration and to impose severe speed limits. One should note that such speed limits already exist in the United States and that the American car drivers and the American automobile industry alike have had no difficulty in adapting to these restrictions. One should also note that Switzerland is now considering imposing a speed limit on motorways of 100 km/h and on other roads a limit of 80 km/h. This is for the very reason that these speed limits would reduce the pollution from automobiles by seven per cent (7%) and emission of NO_x by nine per cent (9%) (*3).

Increasing acidification

The policy makers of Europe should realise that at the moment the acidification of soil and water is increasing and is quickly approaching a critical level. Not just the lakes in Southern Sweden are heavily polluted but also pollution in countries such as The Netherlands and Great Britain. In these countries the ground water is acidifying with all the negative consequences that this produces for fish and plants.

Not only in the Federal Republic are the forests dying, the same situation is emerging in

Belgium, the French Vosges, The Netherlands, and the alpine regions. In many regions in Europe it is only a matter of a few years before forests will die in large numbers. The process is progressing in not only the amount of surface affected but also in the intensity.

The consequences of this acidification process as regards the water supply and plants is extremely alarming. The eventual negative consequences for the health of the public are worrying. The damage to agricultural crops constitutes a real fortune. Europe's cultural and natural heritage with potential tourism industry revenue is endangered.

Polluter should pay

The draft Directive does not provide for a financial incentive to stimulate the reduction of emissions of existing installations. For these existing installations, the EEB proposes a tax be levied on acidifying emissions plus the giving of financial support of up to fifty per cent (50%) to install emissions reduction equipment (*4). This approach, a true application of the "polluters pays principle", will guarantee that the end user pays for the pollution caused.

Policy options

For the EEB, the reduction of emission from one installation cannot justify doing nothing at another installation. The EEB does however accept that a sharp reduction at one plant can justify a phased reduction of emissions at another. The draft Directive in its present form allows numerous opportunities for not taking measures to reduce pollution, which are quite possible, on the grounds that at

other plants measures have been taken. The EEB rejects this approach.

For the EEB, nuclear energy is no adequate answer to air pollution by power plants. The EEB supports and promotes an energy policy based on a much greater role for the renewable sources of energy and for energy conservation (*5). Moreover, because of the long construction period of a power plant, nuclear energy can give no answer to the pressing acidification problems. Also, the cost of nuclear energy defeats its use: for the cost of one nuclear plant, desulphurisation installations can be built for an energy capacity fifteen (15) to twenty (20) times that of one nuclear power plant.

In 1984 measures still have to be taken to reduce air pollution; the Commission's proposal for starting to tackle the emissions problem only in 1986 comes too late. Measures to be envisaged in 1984 include energy conservation incentives, low sulphur fossil fuels and a crash programme for the construction of desulphurisation installations.

Specific comments

The emissions as proposed by the Directive are linked to the gaseous discharges mg/m³ and not to the heat output (gram/Gigajoule). Therefore pollution by brown coal installations is not under control sufficiently.

As an example: 400 mg/m³ signifies ± 200 g/Gj for brown coal, ± 135 g/Gj for pit coal and 125 g/Gj for oil.

The EEB proposed the modification of the draft Directive and to link the emission limit values to the heat produced.

The state of the art allows for more stringent measures for new plants.

The EEB has a number of comments as to the Commission's proposals for existing plants.

Firstly an existing plant should be defined as one of which the construction has not started and not (as defined by the present article 2.12) as one of which the building was authorised on that date.

Secondly, the target and date proposed (article 3) are too low and too late. Within five years the SO₂ emissions must be reduced to forty per cent (40%) of the present level (thus a reduction of sixty per cent) and the NO_x emission to seventy five per cent (75%) of the present level (thus a reduction of twenty five per cent). In ten years from now, the SO₂ emissions must be reduced to twenty per cent (20%) of the present level and the NO_x to forty per cent (40%) of the present level.

Thirdly, for existing plants larger than 300 MW and with a remaining useful life of more than six years or more than 30.000 hours of production, desulphurisation equipment as well as equipment to reduce NO_x emissions must be installed.

If you would like to have the complete EEB-comment, you can order it from: EEB, Rue Vatieur 29, B-1040 Brussels, Belgium (phone: 02-647 01 99).

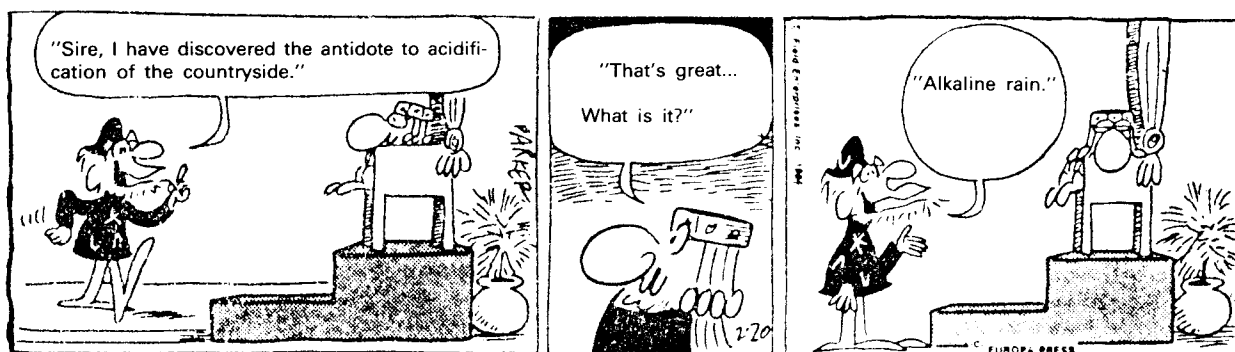
(*1) Comments on the draft Directive on Air Pollution from Industrial Plants, C 183/83, 31 August 1983.

(*2) Comments on the draft Directive to Protect Forests against Acid Rain, C 192/83, 1 September 1983.

(*3) See: "International Environment Reporter", March 14, 1984.

(*4) For a more detailed description see the EEB submission to the Hearing of the European Parliament on Acid Rain, May 1983.

(*5) For a more detailed proposal see the EEB's "Milano Declaration on Economy and Environment", C 87/81.



Acid Rain in the Council of Europe

The Council of Europe met in Strasbourg in the period Jan 30 - Feb 3. One of the issues on the agenda for the Parliamentary Assembly was "Air Pollution and Acid Rain".

European Convention

Of important issues in a report presented by the Committee on Regional Planning and Local Authorities, we would like to mention that the Parliamentary Assembly recommended the following to the Minister Committee in the Council of Europe:

— To prepare a **proposal for an European convention**. The proposal may also be signed by countries not being members of the Council of Europe. The convention is to determine limits for air polluting emission. In this preparation one shall consider the principles included in the EEC's directives for air pollution control. At the same time, the convention shall have as a purpose to complete and strengthen the ECE-convention, which deals with long range air pollution.

— To take the necessary steps in order to drastically **reduce the emission of sulphur dioxide and nitrogen oxides**. Nitrogen oxides produced by motorized vehicles should be reduced by 90%, and sulphur dioxide produced by power plants should be reduced by at least 50%.

— To prepare a **program for joint European research**, especially stressing a detailed chart of damages to forests, water and agricultural areas. At the same time one shall seek to obtain better knowledge of the complicated processes causing acid rain. Furthermore, one should discuss and select the most efficient and reasonable methods for reducing air pollution.

— To form a **multi-national working committee** consisting of research-, financial- and admini-

strative experts in order to ensure a current exchange of information and improve the existing procedures for reducing the damages caused by acid rain.

The Parliamentary Debate

Even though much of the debate concentrated on general statements, some of the conflict areas were exposed. At the same time we received an up to date view on the acid rain problem presented by the European politicians. From what we could conclude from this debate, the situation looks like this:

— There is generally agreed that acid rain is one of our time's largest environmental problems.

— Most people agree to the description of the situation. When the debate is turned to the question of what measures are necessary to solve the problem, however, the arguments seem to lessen in strength. Especially many British parliamentarians feel that the present knowledge is too limited to introduce costly purifying measures, and that more research is needed.

— The strongest recommendations for concrete emission restrictions within specific time limits come from the Scandinavian countries and West Germany. This is no novelty in itself. However, it is worth noticing how fast West Germany has taken over as one of the leading nations in the battle against acid rain.

— The emissions in East Europe represent a problem. The Council of Europe can only appeal to these countries that they take this problem seriously, and invite them to co-sign agreements.

— Great Britain is the country that most likely will postpone as long as possible all requests for purification. They obtain 84% of all their electric power from coal power plants. Central Electricity

Generating Board has calculated that a reduction by $\frac{2}{3}$ of polluting emission from these power plants will amount to 4000 million pounds, and increase electricity bills by 15%. A 50% reduction means an 8% increase in their electricity prices. Such demands *"could be the death knell for the smelting and steel industry"*, the British parliamentarian Sir John Osborn said. This is the British problem in a nutshell. An industry already stricken by crisis can not take such a load, it will lead to close downs and unemployment, it's being said. Contrary to this statement we have e.g. Mr. Gunther Muller's argument: *"Look to Japan"*, he says. *"They have much higher energy costs than us Europeans, but still have a very competitive industry. There's, however, a will to solve the problem."*

Which measures?

Among the efforts to restrict the emission discussed in this debate, we mention:

— Introduction of lead free petrol and the installation of catalysts in automobile engines.

— Increased use of public transportation.

— Constructing purifying installations in coal fired heat power plants.

— Improved combustion installations, among other things use of the so called fluidized bed combustion.

— Conserving energy.

One should also note that the report suggests easing up of the "polluters pay" principle. Society should also cover its part of the expenses by means of subsidies, tax reductions etc. to those making use of approved purifying technology.

The next step

Our conclusion of the debate in the Council of Europe is much

similar to what the British parliamentarian, Mr. Freeson said, namely: "In Europe, America and the Eastern bloc countries there exists the political will to organize massive resources to get to other planets and for overkill defence systems. However, the political will does not yet exist to save this planet from the disasters with which our economic excesses have threatened it. I have been concerned, listening to the debate yesterday and today, because most of us

seem to believe that the political will exists. There is a will at the rhetorical level and a will to take certain steps in conserving and saving our planet, but I am not persuaded either by today's debate, or by other studies and debates that take place elsewhere, that there is the political will to take all the necessary measures — not just on acid rain but generally on pollution and the destruction of the environment — to save that environment."

Now we shall have to wait for the proposed convention, to see what it may bring forth. "Judging from previous experience, it will take several years before such a convention will be realized", the Norwegian parliamentarian Hans B. Strand tells us. In the meantime each individual nation should acknowledge its responsibilities.

Aasmund Hagen
The Norwegian Forestry Society

USA:

More research instead of reduced emissions

Despite the fact that, during 1983, two scientific reports were presented by the American Academy of Science, and one by President Reagan's scientific advisers, all of them recommending radical measures to reduce the USA's sulphur emissions, it is becoming increasingly clear that President Reagan is unprepared to take such measures. Instead, further major grants are being allocated to research on acidification; the intention, above all, is to study the scale of damage, and the pace at which it is spreading!

This has become increasingly clear during the spring, partly from the President's pronouncement on the occasion of a new annual session of Congress in January, partly from EPA director Ruckelshaus' address at the Senate hearing in February.

Dissatisfaction

Naturally enough, these pronouncements have greatly upset both environment organizations in the States, and authorities and organizations in Canada. At the end of February, Canada handed over a diplomatic note to President Reagan, expressing its deep dissatisfaction with the USA's position and asking for clarification as to how the USA intended to meet its commitments vis-à-vis Canada regarding cross-frontier air pollution; the note referred, among other things, to the fact that President Reagan, when visiting Canada in 1981, had assured them that the USA's commitments under the "memorandum of intent" previously concluded under President Carter would be fulfilled.

"This little problem"

In connection with the Ottawa meeting, where ten nations met which had agreed to reduce their sulphur emissions by 30% in ten years, and at which the USA was consequently present only as an observer, Mr. Fitzhugh Green (an associate administrator of the U.S. Environmental Protection Agency) had the following to say of acidification:

"This little problem that some people think needs to be cured by spending 10-12 billion dollars a year of taxpayers' funds every year for the next ten years and we can't tell what the result of that programme would be"...

"We are not interested in political pressure", Mr. Green continued, "we are interested in learning more about this problem and how others are dealing with it."

(Interview from "The Globe and Mail", Toronto, 20 March, 1984.)

Germund Tyler, expert on metals:

"While we investigate, the forests are dying"

Acidification impoverishes the forestland. Large quantities of magnesium and aluminium vanish. Some of it ends up in the subsoil water and lakes. But in some areas, other metals such as manganese and zinc are also leached out. In the long term, this impairs the conditions of life of the vegetation, including the forests. Professor Germund Tyler employed by the National Swedish Environment Protection Board at the Institute of Plant Ecology in Lund, is in charge of several research projects into what is happening with metals in the ground.

All the metals concerned, which include apart from aluminium also iron, zinc, cadmium, copper and others, exist in greater or lesser quantities in the ground. Many of them are necessary to growth, but in high contents they can also be injurious.

"The present development", says Germund Tyler, "can very well lead to a disbalance in different nutritional depots. Incorrect proportions between these metals may be one cause of the damage to forests."

They vanish forever

Usually these metals stop at different levels in the ground, but some of them reach the subsoil water of streams, and end up in due course in the lakes. They have then been lost to the ecosystem for ever, and irreparable damage may have been caused. The only alternative is to provide these metals again, unless decomposition can keep even pace with the leaching out.

It is perfectly clear that the mobility of aluminium is much greater than normal in south-western Sweden, the area primarily under study. Much more aluminium disappears, than is provided to the forests. This is definitely a recent phenomenon. The rate of leaching out has increased in recent decades.

Prof. Germund Tyler



Photo: Gert Svensson

"When the metals are dissolved in water, they also become biologically accessible. These metals can for example be biologically active when they come into contact with the roots of plants."

Forest damages

It is difficult not to introduce the subject of the current "forest death" when speaking of metals.

"The metals play a certain part, but we are not sure how much", says Germund Tyler.

"The reasons for the damage to forests are several, it is not just an

effect of heavy metals. So far, the researchers know fairly little about the background, the situation is highly complicated. In all probability, the forests will have time to die before we have investigated the situation in anything like a satisfactory way.

"An individual who is weakened by different forms of environmental stress will be more easily injured by any further, additional factor, but one can't put all the blame on this last, triggering factor."

Is aluminium the villain?

"Another hypothesis, which is also interesting, is that the high content of aluminium in the soil means that the tree's supporting roots at a greater depth die, and the supply of water is impaired. This could lead to trees being broken more easily by storms, or damaged during periods of drought."

Can the contents of metal reaching the subsoil water lead to its being poisoned, so that it becomes a health hazard to drink?

This is a field that Germund Tyler prefers to leave to others, for example the medical experts, to judge.

"I think pretty high contents would be needed, compared with today, to cause us any injury."

Metals in piping

"But another aspect is the solution of metals that takes place in piping as a result of acidification. There we are obviously exposing ourselves to certain risks."

Anna Bonta-Anger

From Miljöaktuellt No. 4, 1984

Nuclear power a threat to the forests?

Is nuclear power also partly responsible for the damage to forests? A German research worker, Professor Günther Reichelt, has presented results revealing that trees in the vicinity of nuclear power stations, and in the direction of the winds from these, display greater damage than those in more remote areas.

In the area of the Obrigheim nuclear power station north of Stuttgart, for example, 60% of the trees in the direction of the wind from the station are severely damaged up to a distance of 15 km.

This is apparent from an article in the German environment magazine **NATUR** No. 3/84. Reichelt does not believe that the quantities of radioactive substances normally discharged from a nuclear power station are sufficiently large in themselves to cause the damage. The main cause of the damage to forests is other air pollutants (above all sulphur dioxide, nitrogen oxides and ozone), but the injurious effects of these are reinforced by the radioactive substances from nuclear power stations. It is known that radioactive substances, such

as radioactive carbon, tritium and krypton, all of which are discharged in small amounts from nuclear power stations, can cause damage to plants. And, indeed, significantly raised contents of radioactive carbon have also been found in studies of leaves and needles from the trees around Obrigheim.

An intensified research, in which samples of soil and plants are to be analyzed in order to trace radioactive substances, is now starting in the areas around several nuclear power stations in West Germany.



Swiss investigate death of Alpine trees

Switzerland has set up a fund worth 50 million pounds to stop its Alpine trees from dying and to pay for research into the effects of pollution, such as acid rain, on the trees. But the government has balked at passing measures which, its scientists say, would cut pollution.

Some 14 per cent of Switzerland's 250 000 hectares of forests are damaged, and 4 per cent are "obviously sick or dying", according to the Forestry Office. In many parts of the country a loss of tree cover could cause floods, landslides and avalanches. The

effect of pollution on the trees can be seen on mountains close to the tree line.

The Forestry Office says that problems are made worse by poor housekeeping in the nation's forests, most of which are commercially exploited. 10 million pounds is to be spent on cutting down sick and dead trees and combating pests and parasites.

But acid rain is mainly to blame. The interior ministry revealed late last month that pine needles collected from all over the country had a high sulphur

and chloride content, a sign of acid rain. Trees around Basle, near the border with Germany, were worst hit.

There is resistance to measures to cut pollution, however. The Federal Environment Protection Office says that a reduction of maximum speeds on roads from 100 kilometres per hour to 80 would reduce pollution from nitrogen oxide, an important cause of acid rain, by 12 per cent. But the government rejected the proposal.

From New Scientist 5 April 1984

Air pollution hits the children!

It seems increasingly clear that air pollution is having a major detrimental effect on human health, above all the health of children in urban and industrial environments. This is clear, for example, from a study made by the West German environment organization **BBU** (Bundesverband Bürgerinitiativen Umweltschutz).

There appears to be a clear correlation between contents of sulphur dioxide in the air, and diseases of the respiratory channels. One of those diseases is known as "false croup", an inflammation of the trachea; its

most common symptoms are breathing difficulties and attacks of coughing, and it affects above all children of between about one and five years of age.

The parents of sick children, and children's doctors, in the Essen area, in collaboration with the BBU's air pollution experts, have investigated contents of sulphur dioxide in the air. According to these studies, a concentration of only 170 microgrammes of sulphur dioxide per cubic metre of air is sufficient to cause this disease in children. This can be compared with the fact that the biannual means for SO_2 in

built-up and industrial areas often lie around 50-100 microgr./ m^3 , and that short-term values of 300-500 microgr./ m^3 are by no means uncommon.

According to West German doctors, some 16 000 children in West Germany are at present suffering from false croup, and a further 10 000 cases are expected during the year.

Together with other environment organizations and groups of parents in West Germany, the BBU is therefore now demanding that the rules for emissions of sulphur dioxide be radically sharpened.

Acid Rain Inquiry

The Acid Rain Inquiry is a major investigation in public on the topic of acid rain. The Inquiry is organised by the **Scottish Wildlife Trust** and will be held in Edinburgh from Sept. 27th-29th. The aim of the Inquiry is to encourage, informed public discussion on this highly technical subject and, to this end, the Scottish Wildlife Trust will blend the latest techniques of presentation with rigorous scientific debate. Leading authorities at home and overseas will be coming to Edinburgh to present evidence to the Inquiry which is expected to attract an audience of 500. Ecologist Jim Campbell of the SWT, who is organising the Inquiry said: "*Major Scottish natural resources such as salmon and our forests may be at risk from acid rain. The Scottish Wildlife Trust is concerned about the problem and we are dutybound to present the evidence in public. Our aim in organising this international Inquiry is*

to create informed public discussions on the topic and arrive at decisions for future action to reduce the problem".

The Inquiry will be attended by representatives from major industries and from farming, forestry, fisheries and water supply authorities, together with nature conservation interests, government research organisations, universities and the general public. The Confederation of British Industry, the Central Electricity Generating Board and the National Coal Board have already welcomed the conference and will be sending representatives. Leading authorities from Europe and North America will present case studies on the effects of acid rain in their countries.

Acid rain results from waste industrial gases mixing with rainwater in the atmosphere. Such pollution can be carried hundreds of miles downwind

and is currently the focus for international disputes in North America and Europe. It is a particular problem in northern latitudes in areas with infertile rock formations. In badly affected areas, lakes and rivers have become acidified leading to a drastic loss of fish stocks. West German foresters have recently claimed that one third of their trees are now affected by acid rain which may stunt tree growth or even kill.

SWT is an independent body concerned with the conservation of Scottish wildlife. A booklet on acid rain and advance information about the conference are available from the Scottish Wildlife Trust office in Edinburgh.

For further information contact:

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