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94/0194 (SYN)

Proposal for a

COUNCIL DECISION

**establishing a reciprocal exchange of information and data from
networks and individual stations measuring ambient air pollution within
the Member States**

(presented by the Commission)

EXPLANATORY MEMORANDUM

Introduction

The purpose of this proposal is to establish an exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States.

It has been drawn up on the basis of the fifth European Community action programme on the environment (Council Resolution of 1 February 1993 on the fifth programme published in Official Journal C 138 of 17 May 1993).

The report on the state of the environment published at the same time as the programme pointed out major shortcomings concerning the quantity, quality and comparability of data on the environment. It is therefore specified in the fifth programme that "bearing in mind the relationship between good decisions and good information, it is imperative that under this programme a high level of priority be assigned to filling the current gaps in baseline data on the environment and improving their compatibility, comparability and transparency." The collection of environmental information and data, including air quality information and data, is one of the responsibilities of the European Environment Agency, whose task it is to provide the Community and the Member States with reliable information which is comparable at European Community level.

The proposal also fits in with Community policy on the control of air pollution; together with the information supplied by the Member States about the implementation and application of the air quality directives, the exchange of information will provide a very important source of information for the purpose of adapting and developing policy in this area.

The proposed measure is designed to improve and update measures already undertaken by the Commission, and its nature necessitates the taking of action at Community level.

This proposal has been drawn up in close cooperation with the Agency Task Force on the basis of the experience of the exchanges of information and data established by Decisions 75/441/EEC and 82/459/EEC. Its aim is to define the scope and operating procedures for the new exchange of information and data on ambient air quality.

Experience with the exchanges of information established by Decisions 75/441/EEC and 82/459/EEC

These exchanges of information made it possible to set up a data bank containing the results of 13.7 million measurements. It contains 24-hour data for sulphur compounds, suspended particulates and heavy metals and one-hour data for nitrogen oxides, ozone and carbon monoxide. The data transmitted concern a total of 163 towns and cities with over 1 000 inhabitants. A detailed description of the content of the bank is available.¹ It operates using a specific software system known as APIS (Air Pollution Information System), and a manual is also available. The system software and all the data have been made available to the Member States. Transfers of data have also been carried out with the CORINE programme and with the GEMS (Global Environment Monitoring System - WHO/UNEP).

Generally speaking, experience with these exchanges of information has been favourable, but many drawbacks and problems have emerged:

- the procedure developed has proved to be very cumbersome to manage and difficult to adapt in terms of design and the technical means deployed;
- the data transferred concerned only a small number of pollutants;
- the procedure related to a limited number of stations selected by the Member States; they were not necessarily representative;
- the different measurement techniques used by the Member States were not necessarily comparable;
- the processing of data by the Member States prior to transfer was not harmonized.

New exchange of information and data

Compared with the previous exchanges of information, this proposal to establish a new exchange of information seeks to extend the scope and improve the quality of the data transmitted while ensuring that the procedure to be followed is flexible. To this end, various procedures have been developed:

With regard to the stations

The proposal does not require the Member States to install new measurement stations. A distinction is made between the stations used for the purpose of implementing the air quality directives and those not used for this purpose. The stations used for the purposes of the (existing and future) air quality directives will take part in the new exchange of information.

1 In English only.

Homogeneous results will be guaranteed, to the extent that the directives in question lay down (or will lay down) station-siting criteria and the measurement techniques to be used.

In addition to those stations, the Member States are requested to select additional stations principally for pollutants not covered by the air quality directives, in order to make an estimate of local and/or regional pollution levels.

With regard to pollutants

The proposal provides for the transfer of data concerning 34 pollutants to the extent that they are measured by the Member States (seven are at present covered by air quality directives). This list contains pollutants known to present risks for human health and/or for the environment in general. Provision is made for this list to be revised or extended by a Committee for adaptation to technical and scientific progress in the light of new knowledge (toxicology, measurement techniques, etc.) or new needs.

With regard to the data transmitted

The proposal provides for the transfer of all the raw data from at least 30% of the stations used for the purpose of implementing air quality directives and from stations which took part in the previous exchanges of information. The annual statistics for concentrations measured at all the stations should be transmitted.

To ensure that the data transmitted are of homogeneous quality, the proposal specifies minimum criteria for data quality control and aggregation and for calculating statistical parameters.

An extension of the procedure to include non-Community countries might be envisaged on the basis of the opinion of the experts meeting within the Committee provided for by the Decision.

With regard to the practical data-transfer procedures

The proposal simply lays down the time limits for the transfer of data. In order to make the procedure more flexible and adaptable, the technical aspects (transfer medium, data formatting, technical means, etc.) will be determined by the Committee set up by Directive 94/.../EEC on ambient air quality assessment and management on the basis of a Commission proposal in line with ISO standard 7168.

With regard to liaison with Commission and EEA activities concerning the emissions inventory

Apart from the tasks already mentioned (revision of the list of pollutants and technical transfer procedures), the Committee for adaptation to technical and scientific progress will also be responsible for ensuring liaison with activities concerning the emissions inventory (CORINAIR).

Value of a new exchange of information and data

The new exchange of information and data will make it possible:

- to obtain an overview of air pollution at local, regional, national and Community level (present situation and trend);
- to identify potential problems and provide a basis for preparing preventive measures;
- to estimate the impact of the Commission's environment policy with regard to air quality;
- to initiate and stimulate scientific work and research such as modelling the transport of pollutants and the formation of secondary pollutants, and the correlation between emissions and epidemiological surveys;
- to circulate information both within and outside the Community; and
- to supply international organizations which cover a wider geographical area (e.g. OECD, UNEP, WHO) with a set of homogeneous data validated for the Community, and in so doing reduce the Member States' workload.

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The Council of the The European Union;

Having regard to the Treaty establishing the European Community and in particular Article 130 s,
paragraph 1, thereof;

Having regard to the proposal from the Commission ,

In cooperation with the European Parliament

Having regard to the opinion of the Economic and Social Committee .

Whereas the fifth European Community action programme on the environment
provides for the collection of baseline data on the environment and an
improvement in their compatibility, comparability and transparency;

Whereas the objectives and tasks of the European Environment Agency are set
out in Council Regulation (EEC) No 1210/90;

Whereas it is necessary to establish a procedure for the exchange of
information on air quality in order to combat pollution and nuisance, this
being one of the Community's objectives concerning the improvement of the
quality of life and the harmonious development of economic activities
throughout the Community;

Whereas the experience built up as the result of the exchanges of
information established by Decisions 75/441/EEC and 82/459/EEC makes it
possible to establish a more complete and more representative exchange of
information by increasing the number of pollutants and stations considered;

Whereas using common criteria for validating and processing the measurement
results will increase the compatibility and comparability of the data
transmitted;

Whereas the information collected needs to be sufficiently representative to
enable pollution levels to be mapped throughout the Community;

Whereas exchanging the results of measurements of pollution levels will make
it possible to monitor long-term trends and improvements resulting from
national and Community legislation to combat air pollution;

Whereas air-quality data need to be transmitted for the purposes of certain
international programmes,

HAS ADOPTED THIS DECISION:

Article 1

A reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution, hereinafter referred to as "reciprocal exchange", is hereby established. It shall apply to:

- networks and stations, covering detailed information describing the air-pollution monitoring networks and stations operating in the Member States, and
- measurement results, covering statistics and individual results obtained from the measurement of air pollution by stations in the Member States.

The Commission will be responsible for the operation of the reciprocal exchange; it will call upon the European Environment Agency for matters falling within the latter's sphere of competence.

Article 2

The reciprocal exchange shall cover the pollutants listed in Annex 1 to the extent that they are measured in the Member States.

Article 3

The following stations shall take part in the reciprocal exchange:

- (a) all stations used for the purpose of implementing the air quality standards directives;
- (b) additional stations selected by the Member States in order to estimate local pollution levels for pollutants listed in Annex 1 but not covered by the air quality standards directives ;
- (c) additional stations selected by the Member States in order to make a representative estimate of regional pollution levels for all the pollutants listed in Annex 1;
- (d) where possible, the stations which took part in the reciprocal exchange of information established by Decision 82/459/EEC.

Article 4

Networks and stations

1. The information to be communicated to the Commission shall concern the characteristics of the measurement stations, the measurement equipment and the operational procedures followed in those stations and the structure and organization of the networks to which they belong. The information required is specified in Annex 2.
2. The Commission will make available to the Member States computer files containing the information already collected by its departments on the subject and software enabling them to be used and updated.
3. The Member States shall correct, amend and/or supplement that information. The updated computer files shall be sent to the Commission each year by 1 October at the latest; the first sending shall take place by 1 October 1994.
4. The technical procedures for the transfer of information shall be specified in a detailed technical note drawn up by the Committee referred to in Article 8.
5. The Commission shall include the information transmitted in its data base.
6. The Commission shall prepare each year a technical report on the information collected and shall make available to the Member States the updated "networks-stations" data base.

Article 5

Measurement results

1. The following results shall be transmitted to the Commission:
 - (a) raw data and statistics corresponding to the recommended averaging times indicated in Annex 1 for at least 30% of the stations referred to in Article 3(a); those stations must be distributed over the entire national territory;
 - (b) raw data and statistics corresponding to the recommended averaging times indicated in Annex 1 for all the stations referred to in Article 3(d);

- (c) at least the statistics indicated in Annex 1 for all the other stations referred to in Article 3 but not mentioned above.

The results shall be expressed in accordance with Annex 1.

2. The Member States shall be responsible for validating the raw data transmitted or used to calculate the statistical values transmitted in accordance with the general rules set out in Annex 3. Any aggregation of raw data and the calculation of statistics by a Member State shall comply with criteria at least as stringent as those indicated in Annex 4. A quality code, as set out in Annex 5, shall be assigned to each item of data.
3. The Member States shall transmit the results for the calendar year by 1 October of the following year at the latest; the first transfer shall cover the calendar year 1992.
4. The technical procedures for the transfer of results shall be laid down in a detailed technical note drawn up by the Committee referred to in Article 8.
5. The Commission shall include the data transmitted in its data base.
6. The Commission shall prepare each year a technical report on the results collected and shall make available to the Member States the updated "results" data base.
7. In agreement with the Member States, the Commission shall ensure the transfer to international bodies of selected data needed for the purposes of various international programmes.

Article 6

The information and results transmitted in the context of the reciprocal exchange shall be regarded as being accurate unless they are explicitly designated by the Member States as being temporary and/or not verified. In that event, the Member States shall endeavour to transmit the validated results as quickly as possible.

Article 7

Each Member State shall designate a central body responsible for the implementation and operation of the reciprocal exchange and shall forthwith inform the Commission thereof.

Article 8

This Decision shall be adapted to scientific and technical progress via the Committee set up by Directive 94/.../EEC on ambient air quality assessment and management, in accordance with Article 12 of that Directive. Such adaptation shall concern:

- the preparation and updating of detailed technical notes concerning the transfer of data and information;
- the use of new technical means for the transfer of data and information;
- liaison with the activities undertaken by the Commission and the European Environment Agency concerning the emissions inventory;
- amendments to the list of pollutants given in Annex 1;
- the incorporation of new concepts of measurement techniques in the reciprocal exchange procedure;
- the extension of the procedure to data and information from non-Community countries.

Article 9

This Decision shall apply with effect from 1 October 1994.

Article 10

This Decision is addressed to the Member States.

Done at Brussels,

For the Council

The President

Annex 1

List of pollutants, recommended averaging times, statistical parameters and units of measurement

POLLUTANT		AVERAGE OVER	EXPRESSED AS
1.	SO ₂	sulphur dioxide	24h
2.	AF	strong acidity	24h
3.	SPM	suspended particulates (total)	24h
4.	PM10	suspended part. (< 10µm)	24h
5.	BS	black smoke	24h
6.	O ₃	oxone	1h
7.	NO ₂	nitrogen dioxide	1h
8.	NO _x	nitrogen oxides	1h
9.	CO	carbon monoxide	1h
10.	H ₂ S	hydrogen sulphide	24h
11.	Pb	lead	24h
12.	Hg	mercury	24h
13.	Cd	cadmium	24h
14.	Ni	nickel	24h
15.	Cr	chromium	24h
16.	Mn	manganese	24h
17.	As	arsenic	24h
18.	CS ₂	carbon disulphide	1h
19.	C ₆ H ₆	benzene	24h
20.	C ₆ H ₅ -CH ₃	toluene	24h
21.	C ₆ H ₅ .CH=CH ₂	styrene	24h
22.	CH ₂ =CH-CN	acrylonitrile	24h
23.	HCHO	formaldehyde	1h
24.	C ₂ HCl ₃	trichloroethylene	24h
25.	C ₂ Cl ₄	tetrachloroethylene	24h
26.	CH ₂ Cl ₂	dichloromethane	24h
27.	BaP	benzo(a)pyrene	24h
28.	PAH	polyaromatic hydrocarbons	24h
29.	VC	vinyl chloride	24h
30.	COV (NM)	vol. org. comp. (total non-methane)	24h
31.	COV (T)	vol. org. comp. (total)	24h
32.	PAN	peroxyacetyl nitrate	1h
33.	N-dep.	wet nitrogen deposition	1 month
34.	S-dep.	wet sulphur deposition	1 month

SO₂ equivalent

NO₂ equivalent

N equivalent

S equivalent

The statistics, calculated over the calendar year, to be transmitted to the Commission are as follows:

- for pollutants 1 to 32: the arithmetic mean, the median, the percentiles 98 (and 99.9 for pollutants for which the mean is calculated over 1 hour) and the maximum calculated from raw data corresponding to the recommended averaging times indicated in the table above; for pollutant 6 (ozone), the statistical parameters should also be calculated from mean values over 8 hours;
- for pollutants 33 and 34: the arithmetic mean, calculated from raw data corresponding to the recommended averaging times indicated in the table above.

The xth percentile should be calculated from the values actually measured. All the values should be listed in increasing order:

$$X_1 \leq X_2 \leq X_3 \leq \dots \leq X_k \leq \dots \leq X_{N-1} \leq X_N$$

The xth percentile is the value of k, calculated as follows:

$$k = (q * N)$$

where q is equal to x/100 and N is the number of values actually measured. The value of (q * N) should be rounded off to the nearest whole number.

All the results should be expressed in microg/m³ (at the following conditions of temperature and pressure: 293°K and 101.3 kPa) except for pollutants 33 and 34 for which the results should be expressed in g/m².year.

Annex 2

Information concerning networks, stations and measurement techniques

As much information as possible should be supplied about the following points:

1. Information concerning networks

- . **Name**
- . **Abbreviation**
- . **Geographical coverage (local industry, town/city, urban area/conurbation, county, region, entire country)**
- . **Body responsible for network management**
 - **name**
 - **name of person responsible**
 - **address**
 - **telephone and fax numbers**
 - **legal status (private, semi-public, public)**
- . **Technical body responsible for network maintenance**
 - **name**
 - **name of person responsible**
 - **address**
 - **telephone and fax numbers**
- . **Time reference basis (GMT, local)**
- . **General information concerning:**
 - **special protection areas and warning procedures in the geographical area where the network is located**
 - **data-validation procedure**
 - **statistical processing carried out**
 - **information circulated/broadcast (brochures, reports, radio, TV)**
 - **linkage with data bases containing information about the network**
 - **other relevant information.**

II. Information concerning stations

II.1 General information

- . Name
- . Reference number or code
- . Name of technical body responsible for the station (if different from that responsible for the network)
- . Type of station (local, regional, Community air quality directives, GEMS, OECD, EMEP, other)
- . Date when first operated
- . Date when last operated
- . Period of measurement over the year
- . Geographical coordinates
- . Altitude
- . NUTS Level III
- . Pollutants measured
- . Meteorological parameters measured
- . Prevailing wind direction
- . Ratio between distance from and height of closest obstacles
- . Other relevant information

II.2 Spatial characteristics

II.2.1 Immediate surroundings (100 m radius)

- . General description: up to four of the following indicators:
 - wide street with
 - large volume of traffic (in excess of 10 000 vehicles a day)
 - moderate volume of traffic (between 2 000 and 10 000 vehicles a day)
 - low volume of traffic (less than 2 000 vehicles a day)
 - pedestrian area

- narrow street with
 - large volume of traffic (in excess of 10 000 vehicles a day)
 - moderate volume of traffic (between 2 000 and 10 000 vehicles a day)
 - low volume of traffic (less than 2 000 vehicles a day)
 - pedestrian area
- canyon street with
 - large volume of traffic (in excess of 10 000 vehicles a day)
 - moderate volume of traffic (between 2 000 and 10 000 vehicles a day)
 - low volume of traffic (less than 2 000 vehicles a day)
 - pedestrian area
- square
- footpath
- facade of building
- church tower, terrace
- courtyard, school, hospital
- trees
- vast flat area
- industrial area
- tunnel
- field, meadow/grassland

11.2.2 Local environment (5km radius)

. Landscape morphology: the area around the station is divided into four sectors. For each sector give the percentage of the following morphological characteristics:

- urban - commercial
- urban - industrial
- urban - residential
- mixture of commercial, industrial and residential
- high industrial concentration
- moderate industrial concentration
- low industrial concentration
- commercial
- residential (detached dwellings)
- port
- airport
- forest/woodland
- park, natural area
- crop-growing area
- stock-farming area
- hills/mountains, valleys
- seaside or lakeside
- greenhouses

If information by sector is not available, the area should be described as a whole, giving up to four of the abovementioned parameters.

. Total population of the area.

11.2.3 Characterization of stations in terms of traffic

- . Total number of vehicles per day
- . Distance of monitor from centre-line of road
- . Average speed of traffic
- . Characteristics of traffic
 - regular congestion affecting at least 50% of vehicles using the road
 - normal road with a speed limit of 50 km/h without regular congestion
 - road with a speed limit in excess of 50 km/h but not a motorway
 - motorway
- . Buses and heavy goods vehicles as a percentage of total traffic
- . Ratio between the distance to the centre-line of the road and the height of office/apartment blocks
- . Type of road
 - road in open country; no building or trees within 100 m (or so few that the evenness of the land is not affected);
 - road with buildings at least 3 m high on both sides; no gap wider than 25 m and at least 75 m of buildings per 100 m of road; the ratio between the height of buildings and the distance from them to the centre-line of the road is 1.5 to 3 on one side and at least 3 on the other;
 - special instance of the preceding type of road, where the ratio is less than 1.5 for both sides of the road;
 - road with buildings at least 3 m high on one side and a ratio between height of buildings and distance from the centre-line of the road less than 3; no buildings on the other side or a ratio well in excess of 3, preferably in excess of 10;
 - basic road type - any road which cannot be classified in any of the other categories.

III. Information concerning measurement techniques

- . **Date when pollutant first measured**
- . **Date when pollutant last measured**
- . **Equipment**
 - **name**
 - **analytical principle**
 - **date when first used**
 - **date when last used**
- . **Characteristics of sampling**
 - **height of sampling point**
 - **length of sampling line**
 - **result-integrating time (for monitors with continuous output)**
 - **sampling time (for monitors where the sample is analysed in the laboratory or without continuous output)**
- . **Calibration**
 - **type: automatic, manual, automatic and manual**
 - **method**
 - **frequency**
- . **Zero adjustment**
 - **type: automatic, manual, automatic and manual**
 - **method**
 - **frequency**
- . **Maintenance**
 - **frequency of maintenance**
 - **frequency of checking of calibration system.**

Annex 3

Raw data validation procedure

The purpose of the raw data validation procedure is to filter out incorrect or doubtful data before they are transferred to the final data base or to an outside user.

The validation procedure should comprise at least the following two stages:

- the first stage consists in marking the data: they are not corrected or rejected and remain physically available. Events to be taken into consideration in this connection are, for example: disturbances due to maintenance, calibration or technical problems, off-scale measurements, and data indicating rapid variations, such as excessive falls or rises.

The data should also be revised on the basis of criteria based on a knowledge of climatic and meteorological influences specific to the site during the measurement period;

- the purpose of the second stage, to be carried out subsequently, is to detect erroneous measurements by techniques such as comparison with preceding months and with other pollutants and standard deviation analysis.

The validation list drawn up during the first stage should also be examined and verified.

After the two stages, erroneous data can be physically rejected and need not be transmitted. Nevertheless, the reason for rejecting them should be indicated at the time of transfer by means of one of the quality codes indicated in Annex 5.

Annex 4

**Criteria for the aggregation of raw data
and the calculation of statistical parameters**

(a) Aggregation of raw data

The criteria for the calculation of one-hour and 24-hour values from data with a smaller averaging time are:

- for one-hour values: at least 75% of data accepted (codes V, O, R defined in Annex 5)
- for 24-hour values: over 50% of one-hour data accepted (codes V, O, R defined in Annex 5) and not more than 25% of successive data values not accepted (codes C, Z, M, D, N, T defined in Annex 5)

(b) Calculation of statistical parameters

- for the mean and the median: over 50% of data accepted (codes V, O, R defined in Annex 5)
- for the percentiles 98, 99.9 and the maximum: over 75% of data accepted (codes V, O, R defined in Annex 5)

The ratio between the number of valid data (codes V, O, R defined in Annex 5) for the two seasons of the year considered cannot be greater than 2, the two seasons being winter (from January to March inclusive and from October to December inclusive) and summer (from April to September inclusive).

Annex 5

Quality codes

(a) Raw data quality codes

These codes characterize the validity and quality of the raw data:

Data accepted:

V valid data
O corrected data
R reconstructed data

Data rejected:

C data disturbed by the calibration procedure
Z data disturbed by the zero-adjustment procedure
M data disturbed by the maintenance procedures
D erroneous data due to technical deficiency
N erroneous data for unknown reason

Temporary data:

T data not subjected to adequate validation procedures

(b) Aggregated data quality codes

These codes characterize the validity and quality of the aggregated data. They are similar to those defined for raw data. The code adopted on aggregation is the code assigned to the most frequent raw data.

Data accepted:

V valid data
O corrected data
R reconstructed data

C data disturbed by the calibration procedure
Z data disturbed by the zero-adjustment procedure
M data disturbed by the maintenance procedures
D erroneous data due to technical deficiency
N erroneous data for unknown reason

Temporary data:

T data not subjected to adequate validation procedures

(c) Statistical data quality codes

These codes characterize the validity and quality of the statistical data:

Valid data:

V valid data (number and distribution of raw data V, O, R sufficient)

Data rejected:

I number of raw data V, O, R insufficient

R insufficient distribution of raw data over the period considered

Temporary data:

T data calculated on the basis of raw data not subjected to adequate validation procedures.

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