

BELGIUM

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I. Policy and Legal Basis

Belgium controls air pollution (immissions) with regard to the following directives, as do the other member states of the European Union:

80/779/EEC	(SO ₂ and black smoke)
85/203/EEC	(NO ₂)
82/884/EEC	(Pb)
92/72/EEC	(O ₃).

Meetings are organized on a regular basis by the DG.XI.B in order to ensure that the limit values of the concentrations of these pollutants are not exceeded. Legal action can be taken by the European Commission if exceeded. The directives have been integrated into the federal and regional legislations. Since May 1993, most of the programmes and tasks previously undertaken at the national level by the Air Section of the Institute for Hygiene and Epidemiology have been transferred to the three Belgian regions (Brussels, Flanders and Wallonia).

II. Scope of Each Network

However, an Interregional Environment Cell (CELINE) has been installed by the regions in order to meet international requirements. CELINE also provides a reference for the calibration of the monitors used in the regional networks.

At the same time, the national database containing all immission/air quality data has been reworked, because of the renewal of the host computer. CELINE is thus the institution where information about Belgium can be obtained. Furthermore, CELINE will become the Belgian focal point for the European Environment Agency in the near future.

Belgium uses several *regional* air quality monitoring networks (divided into the three regions and ruled by them) to measure air quality:

- The *Automatic Network* contains about 70 stations (mostly located in cities) measuring, since 1976, on a real-time basis, pollution parameters: sulphur dioxide, nitrogen monoxide, nitrogen dioxide, hydrocarbons (NMHC), carbon monoxide, ozone, total suspended particulates (TSP), and the meteorological parameters: wind speed and direction, temperatures, dew point, atmospheric pressure, and precipitation;
- The *Sulphur - Smoke Network* now contains about 100 stations measuring, since 1968, sulphur dioxide (acidity) and black smoke on a daily basis;
- The *Heavy Metals Network* measures on a daily basis the concentrations of lead, cadmium, copper, zinc, calcium, nickel, mercury, arsenic, antimon, and sulphate.

- Several other small networks measure specific hydrocarbons, pollutants in the precipitation, pollutants in natural reserves.

Through decentralisation, the measuring stations are now considered as part of regional networks.

The following table gives an overview of the conditions of the *regional* air monitoring networks in Belgium.

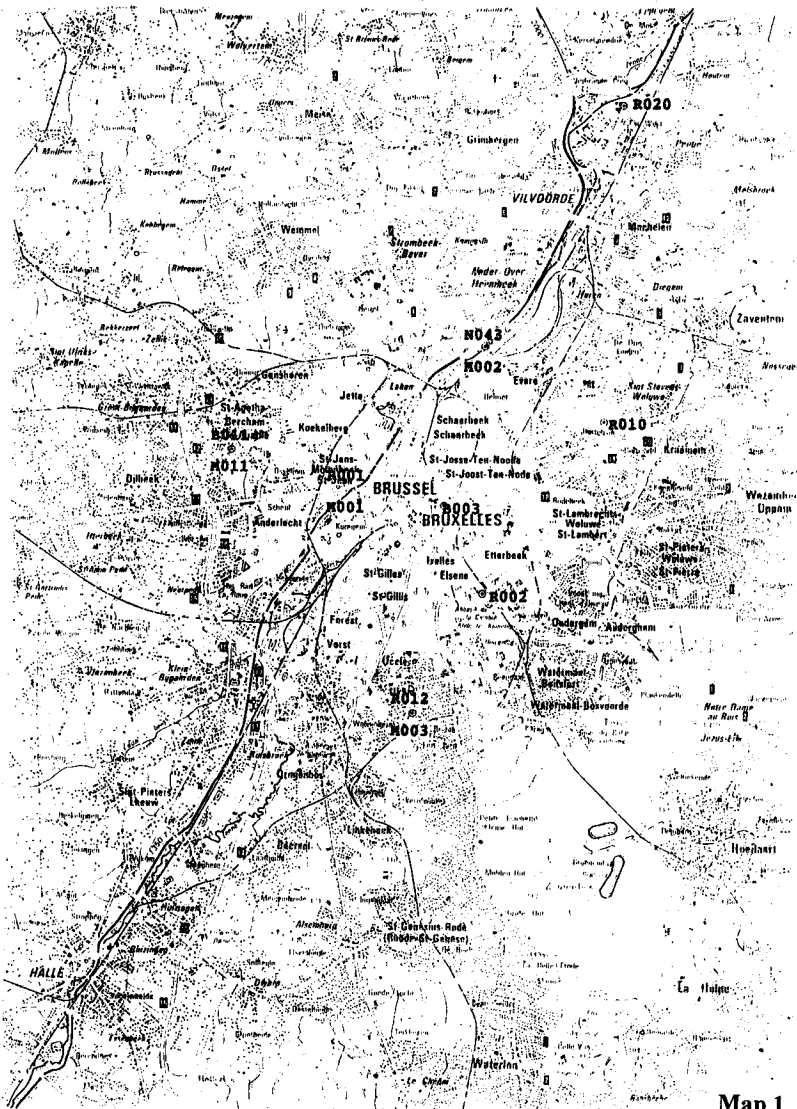
Network	AUTOMATIC	SULPHUR-SMOKE	HEAVY METALS
Scale	3 Regional	3 Regional	3 Regional
Total number of sites, points	67	89	36
Pollutant/site nos	SO ₂ /65	SO ₂ /89	As/6
	NO/23	TSP/86	Cd/35
	NO ₂ /23		Cu/33
	TSP/18		Cr/4
	O ₃ /11		Pb/36
	CO/2		Zn/32
	CO ₂ /1		Mn/1
	NMHC/15		Ni/12
			Sb/6
			(SO ₄ /27)
Measurement technique	Automatic	Sampling	Sampling
Type of sites			
Urban	21	41	9
Suburban	15	31	12
Residential/ industrial	16	7	13
Rural	15	10	2

III. Reference

Institut D'Hygiene et D'Epidemiologie, ed. (1994).
Reseau Automatique de la Pollution Atmospherique. Rapport Annuel 1992-93.
Brussels, Ministère de la Santé Publique et de D'Environnement. ISSN 0773-
7777.

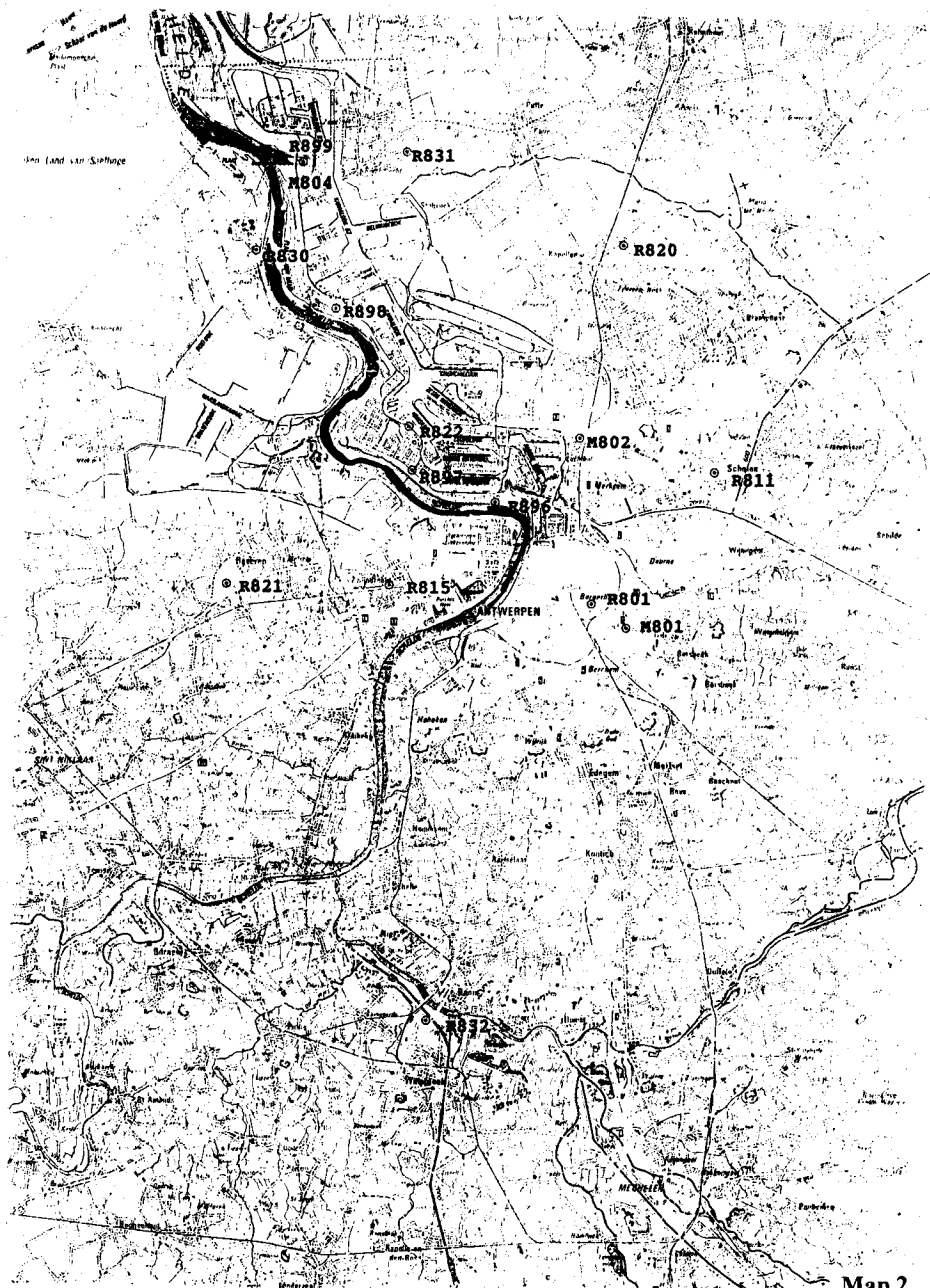
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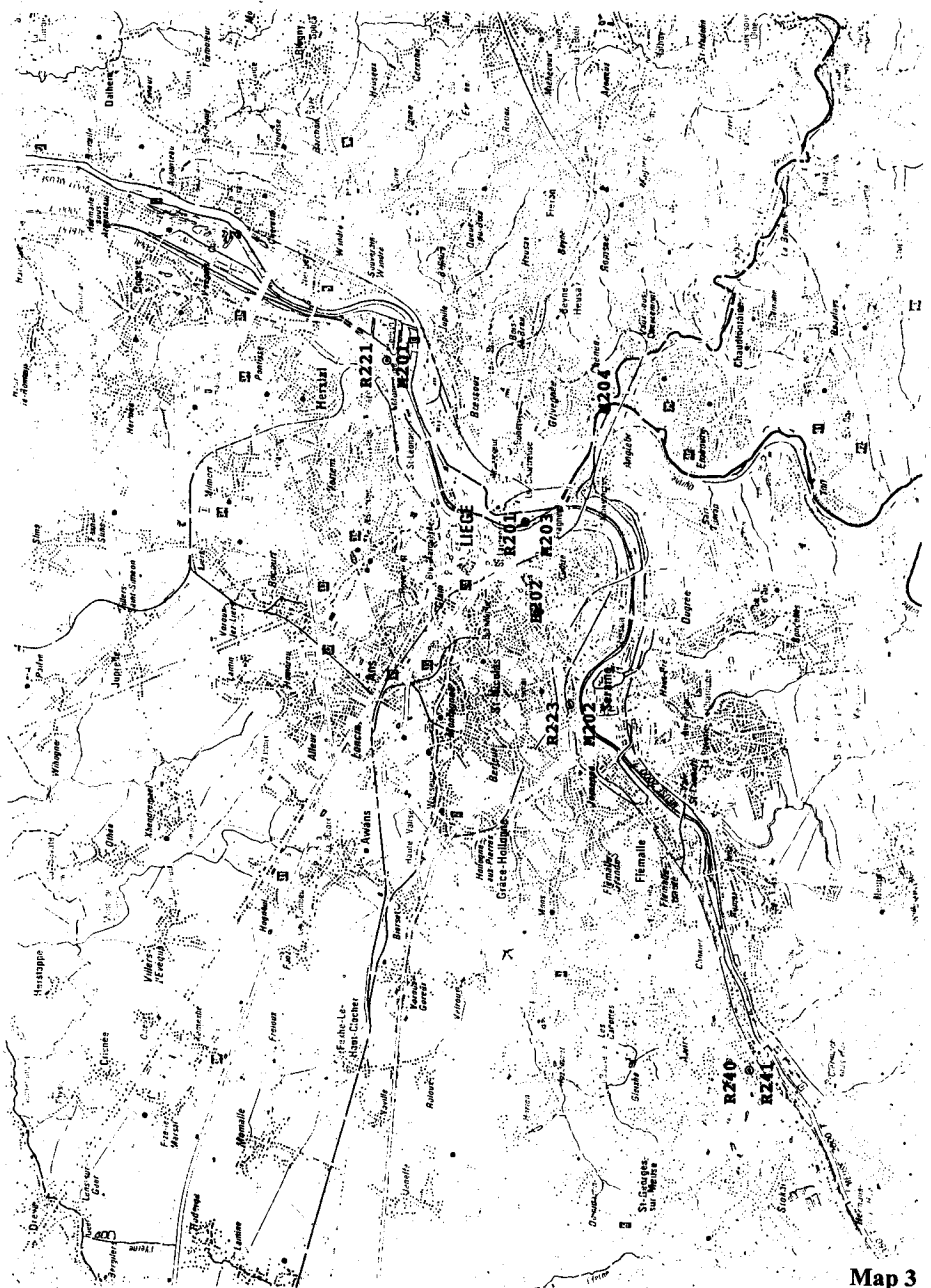


Map 1

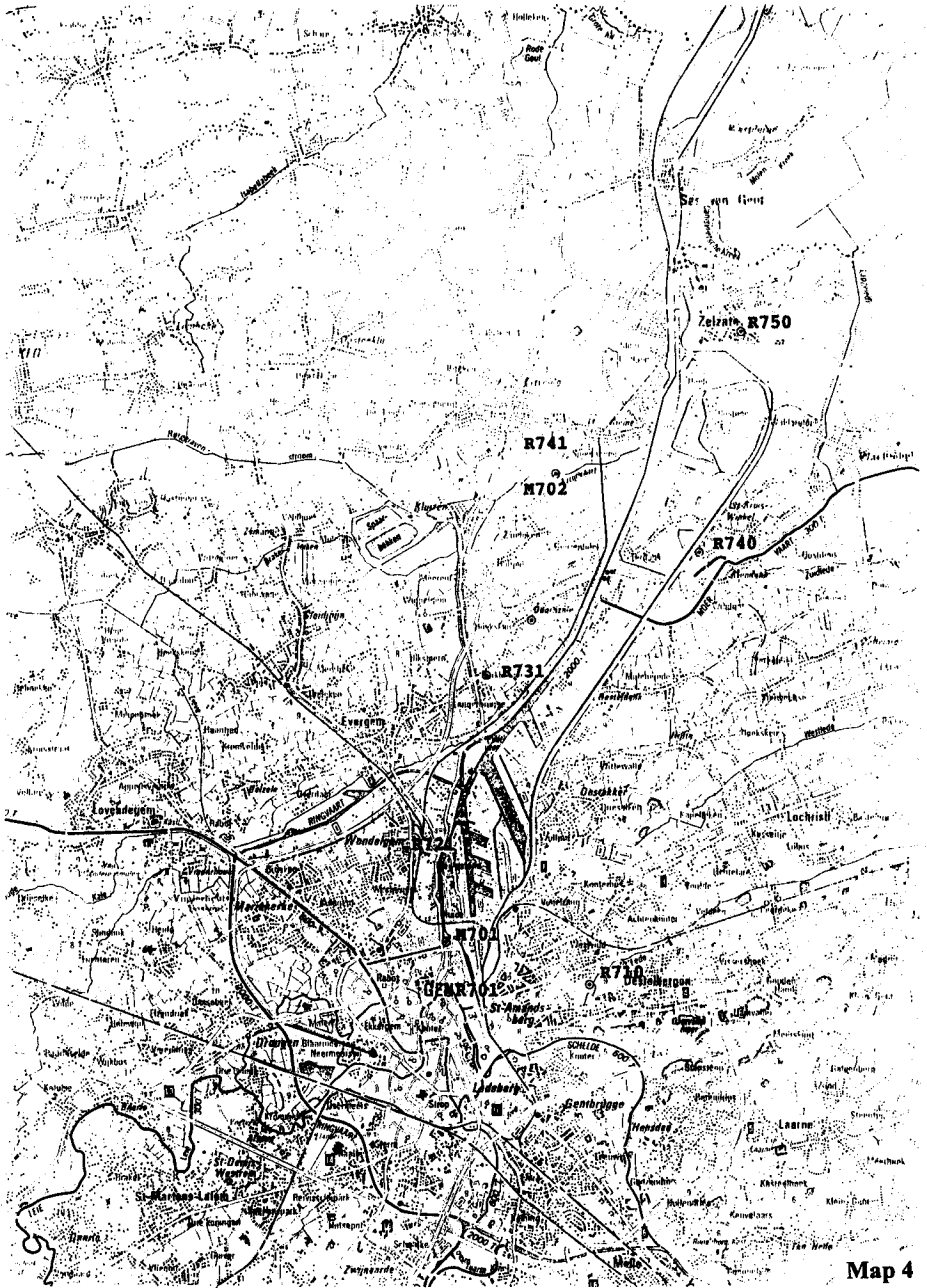
Map 1 - 6: National Automatic Air Monitoring Network in Belgium
 [Source: Institut D'Hygiene et D'Epidemiologie, 1994]



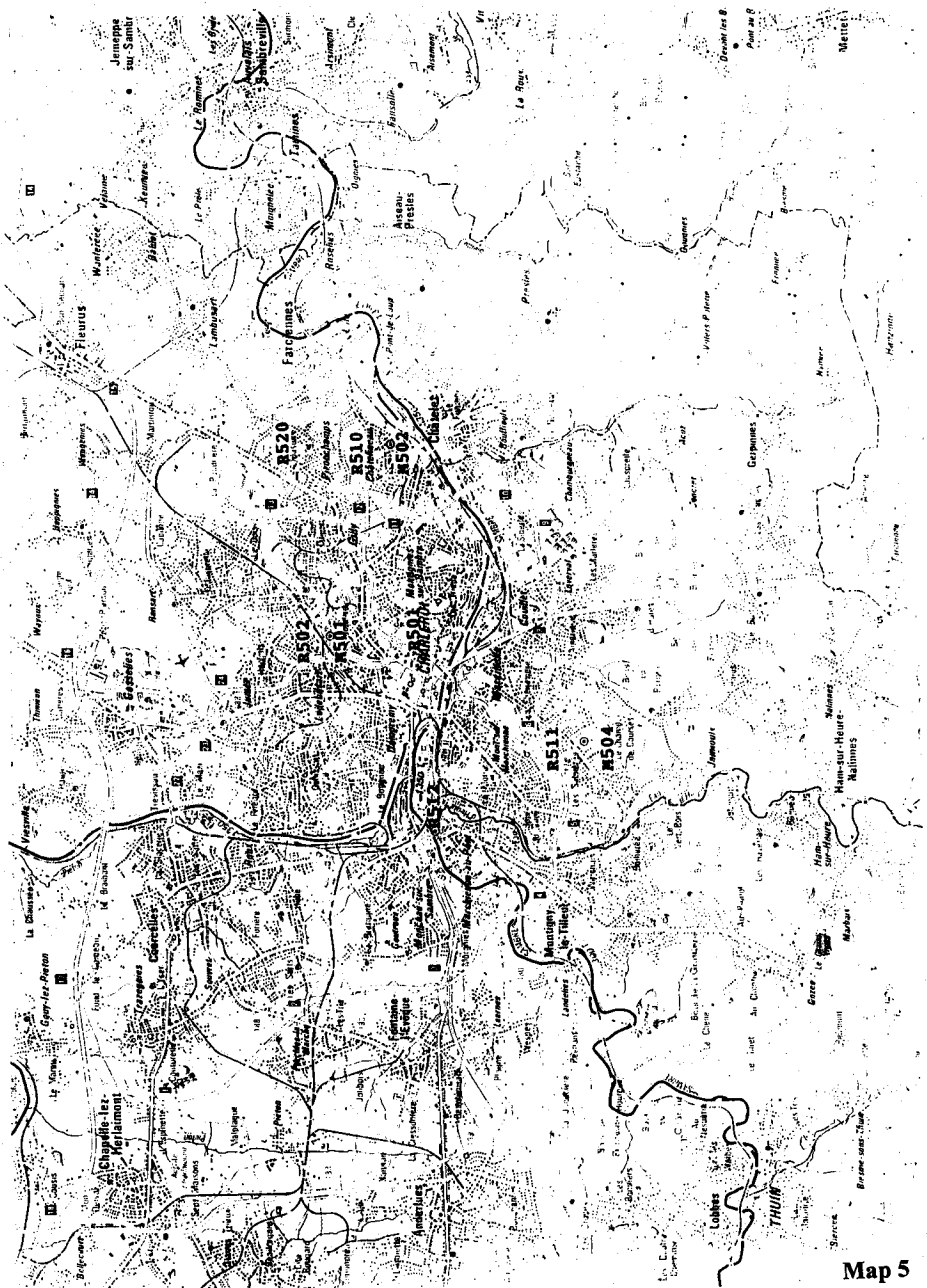
Map 2



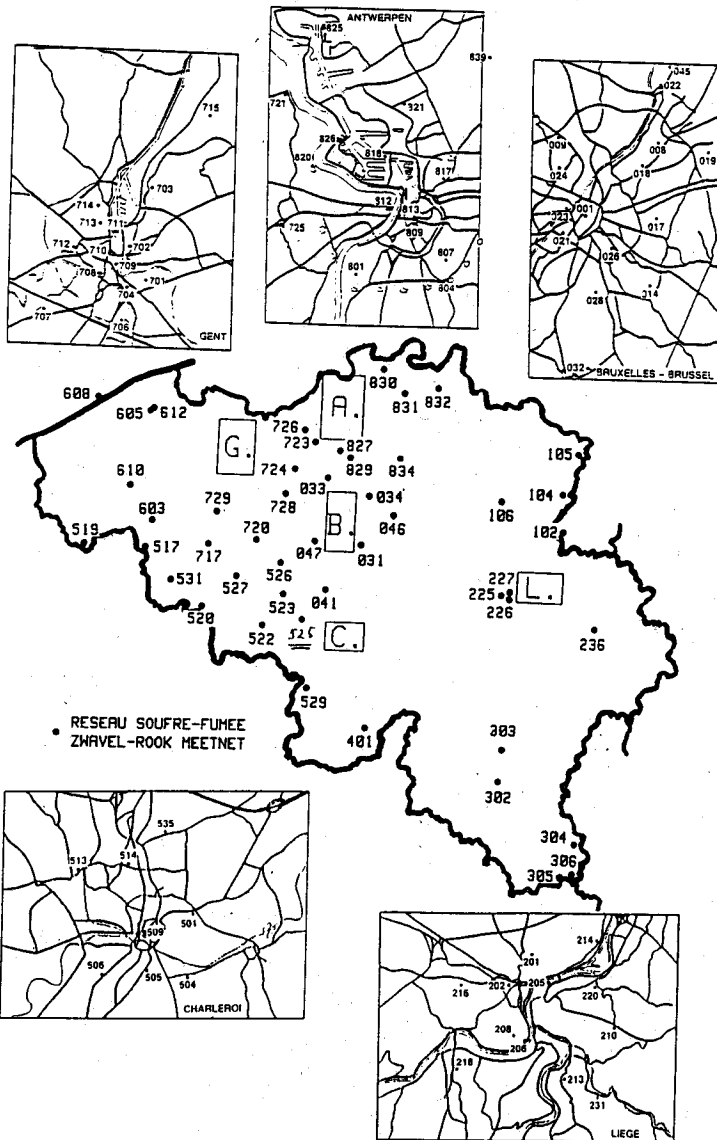
Map 3



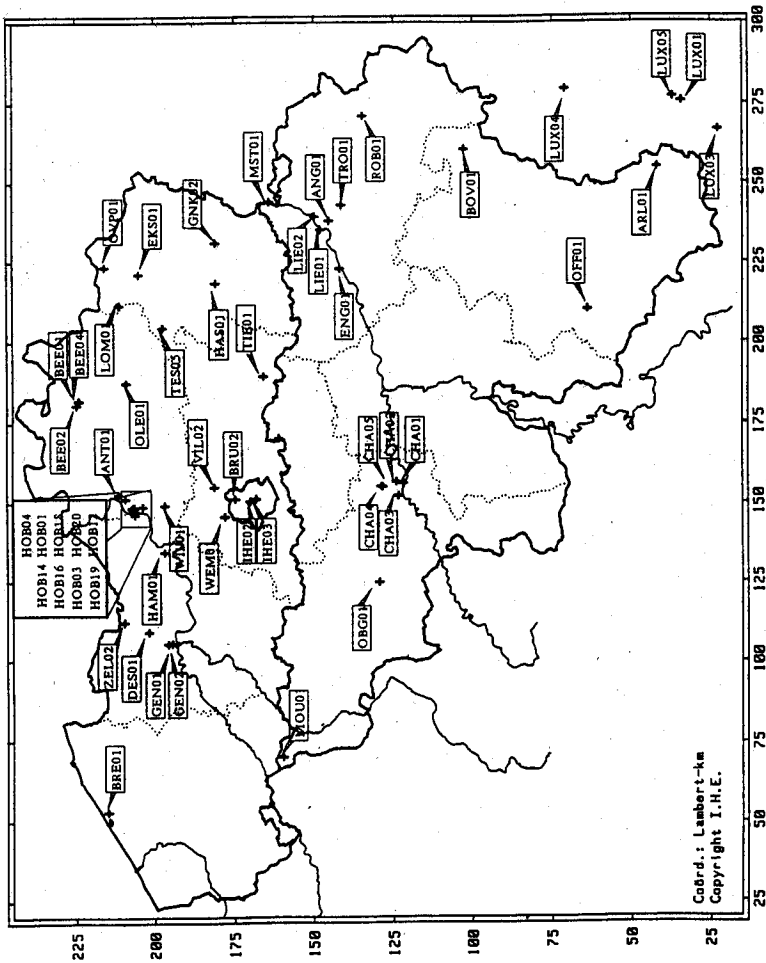
Map 4



Map 5



Map 7: Regional Sulphur-Smoke Air Monitoring Network in Belgium [Source: CELINE, 1995]



Map 8: Regional Heavy Metal Air Monitoring Network in Belgium
 [Source: CELINE, 1995]

**II. Regional Air Monitoring Network in: BELGIUM / BRUSSELS
Name of Network: AUTOMATIC (Automatic Measurement)**

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
41 B003, 41 B011, 41 N043, 41 R001, 41 R002, 41 R012, 41 W011	SO ₂	UV-Fluorescence	Environnement - AF 21	1/2 hour
42 B003, 41 B011, 41 R001, 41 R012, 41 W011	NO, NO ₂	Chemiluminescence	Environnement - AC 30M	1/2 hour
41 R002, 41 W011	CO	Infrared-Absorption	Environnement 10M	1/2 hour
41 W011	CO ₂	Infrared-Absorption	Environnement 10M	1/2 hour
41 B011, 41 R012, 41 W011	O ₃	UV-Absorption	Environnement - O ₃ 41 M	1/2 hour
41 R001, 41 N043	TSP	Nephelometry	MRI - SPM Monitor-1550B	1/2 hour
41 B011	TSP	Beta Radiation-Absorption		1/2 hour
41 R001, 41 W011	NMHC	Flame Ionisation	Meloy Total Non Methane HC 500 B	

II. Regional Air Monitoring Network in: BELGIUM / BRUSSELS
Name of Network: HEAVY METALS (Sampling Measurement)

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
OBRU02, 01HE02, 01HE03	Cd	X Ray Spectroscopy	The own fabricate collector	1 day
OBRU02, 01HE02, 01HE03	Cu	X Ray Spectroscopy	The own fabricate collector	1 day
OBRU02, 01HE02, 01HE03	Pb	X Ray Spectroscopy	The own fabricate collector	1 day
OBRU02	Ni	X Ray Spectroscopy	The own fabricate collector	1 day
OBRU02, 01HE02, 01HE03	Zn	X Ray Spectroscopy	The own fabricate collector	1 day
OBRU02, 01HE02, 01HE03	SO ₄	X Ray Spectroscopy	The own fabricate collector	1 day

II. Regional Air Monitoring Network in: BELGIUM / FLANDERS
Name of Network: AUTOMATIC (Automatic Measurement)

Site Information			Pollutants		Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
No. Name	Type (rural, suburban, urban, etc.)	Monitoring Commenced	SO ₂ , NO ₂ , CO, O ₃ , TSP, etc.			
1	42 M802-ANTWERP	urban	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
2	42 M804-ANTWERP	industrial	Jul 1980	SO ₂	Eur. Directives	V.M.M. 2)
3	42 N015-SCHILDE	rural	Oct 1978	SO ₂ , NO, NO ₂	Eur. Directives	V.M.M. 2)
4	42 N016-DESSEL	suburban	Jul 1991	SO ₂	Eur. Directives	V.M.M. 2)
5	42 N025-TESENDE	industrial	Feb 1992	SO ₂	Eur. Directives	V.M.M. 2)
6	42 N026-TESENDE	industrial	Aug 1992	SO ₂	Eur. Directives	V.M.M. 2)
7	42 N027-BREE	urban	Feb 1978	SO ₂	Eur. Directives	V.M.M. 2)
8	42 N035-AARSCHOT	urban	Jul 1991	SO ₂	Eur. Directives	V.M.M. 2)
9	42 N045-HASSELT	urban	Jul 1991	SO ₂	Eur. Directives	V.M.M. 2)
10	42 N046-GELLIK	rural	Feb 1978	SO ₂	Eur. Directives	V.M.M. 2)
11	42 N054-WALSHOUTEM	rural	Oct 1991	SO ₂	Eur. Directives	V.M.M. 2)
12	42 R010-WOLUWE	suburban	Jul 1977	SO ₂ , NO, NO ₂ , NMHC	Eur. Directives	V.M.M. 2)
13	42 R020-VILVOORDE	industrial	Jun 1977	SO ₂ , NO, NO ₂ , TSP	Eur. Directives	V.M.M. 2)
14	42 R801-ANTWERP	urban	Oct 1978	SO ₂ , NO, NO ₂ , NMHC, TSP	Eur. Directives	V.M.M. 2)
15	42 R811-SCHOTEN	suburban	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
16	42 R815-ZWINDRECHT	industrial	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
		suburban				

17	42 R820-EKEREN	urban	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
18	42 R821-BEVEREN	suburban	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
19	42 R822-ANTWERP	industrial	Oct 1978	SO ₂ , NMHC	Eur. Directives	V.M.M. 2)
20	42 R830-DOEL	industrial suburban	Oct 1978	SO ₂	Eur. Directives	V.M.M. 2)
21	42 R831- BERENDRECHT	suburban	Nov 1984	O ₃ , NMHC	Eur. Directives	V.M.M. 2)
22	42 R832-WILBROEK	industrial	Oct 1978	SO ₂ , NO, NO ₂ , NMHC, TSP	Eur. Directives	V.M.M. 2)
23	42 R896-ANTWERP	industrial suburban	Jul 1980	SO ₂	Eur. Directives	V.M.M. 2)
24	42 R 897-ANTWERP	industrial	Jul 1980	SO ₂	Eur. Directives	V.M.M. 2)
25	42 R 898-ANTWERP	industrial	Jul 1980	SO ₂	Eur. Directives	V.M.M. 2)
26	44 N 002-ZEEBRUGGE	rural industrial	Nov 1991	SO ₂	Eur. Directives	V.M.M. 2)
27	44 N012-MOERKERKE	rural	Nov 1977	SO ₂ , NO, NO ₂ , O ₃	Eur. Directives	V.M.M. 2)
28	44 N028-HOUTEM	rural	Nov 1977	SO ₂ , NO, NO ₂	Eur. Directives	V.M.M. 2)
29	44 N036-ROESELAEERE	urban	Feb 1992	SO ₂	Eur. Directives	V.M.M. 2)
30	44 N050-ST. DENAS	suburban	Nov 1977	SO ₂ , NO, NO ₂ , O ₃	Eur. Directives	V.M.M. 2)
31	44 N051-DEGEM	rural	Nov 1991	SO ₂	Eur. Directives	V.M.M. 2)
32	44 R701-GENT	urban	Nov 1977	SO ₂ , NO, NO ₂ , NMHC, TSP	Eur. Directives	V.M.M. 2)
33	44 R710- DESTELBERGEN	suburban	Nov 1977	SO ₂	Eur. Directives	V.M.M. 2)
34	44 R721-GENT	suburban industrial	Nov 1977	SO ₂ , NMHC	Eur. Directives	V.M.M. 2)
35	44 R731-EVERGEM	industrial suburban	Nov 1977	SO ₂ , NO, NO ₂ , TSP	Eur. Directives	V.M.M. 2)
36	44 R740- ST. KR. WINKEL	suburban industrial suburban	Nov 1977	SO ₂ , NO, NO ₂ , NMHC, O ₃ , TSP	Eur. Directives	V.M.M. 2)

37	44 R741-ERTVELDE	industrial suburban	Nov 1977	SO ₂	Eur. Directives	V.M.M. 2)
38	44 R750-ZELZATE	rural industrial	Nov 1977	SO ₂ , NMHC, TSP	Eur. Directives	V.M.M. 2)

2) V.M.M., Vlaamse Milieu Maatschappij, Erembodegem

II. Regional Air Monitoring Network in: BELGIUM / FLANDERS
Name of Network: AUTOMATIC (Automatic Measurement)

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
42 N602, 42 N025, 42N026, 42 N035, 42 N054, 42 R010, 42 R020, 42 R801, 42 R811, 42 R820, 42 R821, 42 R822, 42 R830, 42 R832, 44 N002, 44 N030, 44 N051, 44 R701 44 R710, 44 R721, 44 R731, 44 R750	SO ₂	UV-Fluorescence	Environment - AF 21	1/2 hour
42 N016, 42 N027, 42 N045, 42 N046, 44 N012, 44 N029, 44 N050	SO ₂	UV-Fluorescence	Thermo Instruments - 43 A	1/2 hour
42 R815, 42 N015, 44 R741, 44 R740	SO ₂	UV-Fluorescence	Columbia Scientific IC - SA 700	1/2 hour
42 R896, 42 R897, 42 R898, 42 M804	SO ₂	Flame Photometry	Meloy	1/2 hour
42 R801, 42 R832, 42 N015, 42 R010, 42 R020, 42 R701 44 R731, 44 R740, 44 N012, 44 N029, 44 N050	NO, NO ₂	Chemiluminescence	Environment - AC 30 M	1/2 hour
42 R831, 44 R740	O ₃	UV-Absorption	Environment - O ₃ 41 M	1/2 hour
44 N012, 44 N050	O ₃	UV-Absorption	Columbia Scientific IC - 3100	1/2 hour
42 R832, 44 R701, 42 R801, 42 R020, 44 R731, 44 R740 44 R750	TSP	Nephelometry	MRI - SPM Monitor - 1550 B	1/2 hour
44 R740, 42 R010, 42 R801, 42 R822, 42 R832	NMHC	Flame Ionisation	Meloy - Total Non Methane HC, HC 500 B	1/2 hour
42 R831, 44 R721, 44 R750	NMHC	Photo Ionisation	VOC MON - HNU 201	1/2 hour

II. Regional Air Monitoring Network in: BELGIUM / FLANDERS
Name of Network: SULPHUR-SMOKE (Sampling Measurement)

Site Information		Pollutants			Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
No. Name	Type (rural, suburban, urban, etc.)	Monitoring Commenced	SO ₂ , NO ₂ , NO, CO, O ₃ , TSP, etc.			
1	19 - ZAVENTEM suburban	July 1976	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
2	22 - VILVOORDE suburban industrial	Oct 1968	SO ₂ , TSP/black smoke	Eur. Directives, GEMS	V.M.M. ²⁾	
3	31 - OVERISSE suburban	Mar 1977	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
4	32 - ST.GEN.RODE suburban	Mar 1969	SO ₂ , TSP/black smoke ₁₎	Eur. Directives	V.M.M. ²⁾	
5	33 - LONDERZEEL rural	Feb 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
6	34 - KAMPENHOUT rural	Feb 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
7	45 - VILVOORDE suburban industrial	Jan 1978	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
8	46 - LEUVEN urban	Sep 1978	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
9	47 ST.PIETERS LEEUIW suburban	Oct 1979	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
10	104 - MAASMECHELEN rural	Sep 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
11	105 - MAASEIK urban	Sep 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
12	106 - HASSELT urban	Sep 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
13	603 - KORTRIJK urban	Sep 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
14	605 - BRUGGE urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
15	608 - OSTENDE urban	Mar 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	
16	610 - ROESELAERE urban	Sep 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾	

17	701 - GENTBRUGGE	industrial	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
18	702 - ST. AMANDSBERG	rural	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
19	706 - GENT	urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
20	709 - GENT	urban	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
21	712 - GENT	urban	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
22	714 - WONDELGEM	suburban	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
23	715 - ST.KR.WINKEL	industrial suburban	Sep 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
24	717 - RONSE	urban	Oct 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
25	720 - GERAARDSBG	suburban	Dec 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
26	724 - DENDERMONDE	urban	Apr 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
27	725 - BEVEREN-W.	suburban	May 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
28	726 - ST. NIKLAAS	urban	Mar 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
29	729 - OUDENAARDE	urban	Oct 1978	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
30	804 - MORTSEL	suburban	Feb 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
31	807 - DEURNE	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
32	809 - ANTWERP	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
33	812 - ANTWERP	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
34	813 - ANTWERP	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
35	817 - MERKSEM	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
36	818 - ANTWERP	suburban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾

37	821 - HOEVENEN	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
38	825 - ZANDVLIET	industrial	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
39	826 - ANTWERP	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
40	829 - RUMST	urban	Jan 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
41	830 - WUUSTWEZEL	urban	Jun 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
42	831 - DOSTMALLE	urban	Jul 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
43	832 - TURNHOUT	urban	Jul 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
44	834 - H.OP/D.BERG	urban	Jul 1969	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾
45	839 - BRASSCHAAT	suburban	Mar 1972	SO ₂ , TSP/black smoke	Eur. Directives	V.M.M. ²⁾

²⁾ V.M.M., Vlaamse Milieu Maatschappij, Erembodegem

II. Regional Air Monitoring Network in: BELGIUM / FLANDERS
Name of Network: HEAVY METALS (Sampling Measurement)

Site Information			Pollutants		Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
No. Name	Type (rural, suburban, urban, etc.)	Monitoring Commenced	SO ₂ , NO ₂ , NO, CO, O ₃ , TSP, etc.			
1	7HOB01 - HOBOKEN industrial suburban	Mar 1978	Sb, As, Cd, Pb	Eur. Directive	V.M.M. ²⁾	
2	7HOB16 - HOBOKEN industrial suburban	Apr 1978	Sb, As, Cd, Pb	Eur. Directive	V.M.M. ²⁾	
3	7HOB18 - HOBOKEN industrial suburban	Aug 1978	Sb, As, Cd, Pb	Eur. Directive	V.M.M. ²⁾	
4	0ANT01 - ANTWERP urban	Jan 1980	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
5	0BEE01 - BEERSE industrial suburban	Aug 1979	Sb, As Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
6	0BEE02 - BEERSE industrial suburban	Aug 1979	Sb, As, Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
7	0BEE04 - BEERSE industrial suburban	May 1980	Cu, Pb, Zn	Eur. Directive	V.M.M. ²⁾	
8	0DES01 - DESTELDONK industrial suburban	Mar 1981	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
9	0EKS01 - EKSEL industrial suburban	Mar 1979	Cd, Cu, Pb, Zn	Eur. Directive	V.M.M. ²⁾	
10	0GEN02 - GENT urban	Jan 1980	Cd, Cu Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
11	0GNK02 - GENK industrial	Feb 1988	Cd, Cr, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
12	0HAS01 - HASSELT urban	Apr 1980	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
13	0LOM01 - LOMMEL suburban	Aug 1980	Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
14	0OLE01 - GEEL suburban	May 1980	Sb, As, Cd, Cu Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
15	0OVP01 - NEERPELT suburban	May 1980	Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	
16	0TIE01 - TIENEN suburban	Apr 1984	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾	

17	OWEM01 - WEMMEL	suburban	Sep 1984	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾
18	OWIL01 - WILLEBROEK	industrial suburban	Apr 1981	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾
19	TTES05 - TESSENDERLOO	industrial	Apr 1984	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	V.M.M. ²⁾

²⁾ V.M.M., Vlaamse Milieu Maatschappij, Erembodegem

**II. Regional Air Monitoring Network in: BELGIUM / FLANDERS
Name of Network: HEAVY METALS (Sampling Measurement)**

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
7 HOB01, 7HOB16, 7HOB18, 0BEEO1, 0BEEO2, 0OLEO1	Sb	X Ray Spectroscopy	The own fabricate collector	1 day
7HOB01, 7HOB16, 7HOB18, 0BEEO1, 0BEEO2, 0OLEO1	As	X Ray Spectroscopy	The own fabricate collector	1 day
7HOB01, 7HOB16, 7HOB18, 0ANTO1, 0BEEO1, 0BEEO2, 0DES01, 0EKS01, 0GENO2, 0GNK02, 0HAS01, 0LOMO1, 0OLEO1, 0OVPO1, 0TIEO1, 0WEMO1, 0WIL01, 7TES05	Cd	X Ray Spectroscopy	The own fabricate collector	1 day
ALL STATIONS	Pb	X Ray Spectroscopy	The own fabricate collector	1 day
0ANTO1, 0BEEO1, 0BEEO2, 0BEEO4	Zn	X Ray Spectroscopy	The own fabricate collector	1 day
0DES01, 0EKS01, 0GENO2, 0GNK02, 0HAS01, 0LOMO1, 0OLEO1, 0OVPO1, 0TIEO1, 0WEMO1, 0WIL01, 7TES05	Cu	X Ray Spectroscopy	The own fabricate collector	1 day
0ANTO1, 0BEEO1, 0BEEO2, 0BEEO4, 0DES01, 0EKS01, 0LOMO1, 0OLEO1, 0OVPO1, 0TIEO1, 0WEMO1, 0WIL01, 7TES05	Ni	X Ray Spectroscopy	The own fabricate collector	1 day
0ANTO1, 0BEEO1, 0BEEO2, 0DES01, 0GENO2, 0GNK02, 0HAS01, 0LOMO1, 0OLEO1, 0OVPO1, 0TIEO1, 0WEMO1, 0WIL01, 7TES05	Cr	X Ray Spectroscopy	The own fabricate collector	1 day
0ANTO1, 0BEEO1, 0BEEO2, 0DES01, 0GENO2, 0GNK02, 0HAS01, 0LOMO1, 0OLEO1, 0OVPO1, 0TIEO1, 0WEMO1, 0WIL01, 7TES05	SO ₄	X Ray Spectroscopy	The own fabricate collector	1 day
	0WIL01, 7TES05			

**II. Regional Air Monitoring Network in: BELGIUM / WALLONIA
Name of Network: AUTOMATIC (Automatic Measurement)**

Site Information			Pollutants		Additional Information	
No.	Name	Type (rural, suburban, urban, etc.)	Monitoring Commenced	SO ₂ , NO ₂ , CO, O ₃ , TSP, etc.	Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
1	43 H202 - LIEGE	urban	Sep 1991	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾
2	43 M204 - ANGLEUR	suburban	Jul 1978	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
3	43 N063 - CORROY	rural	Aug 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
4	43 N066 - EUPEN	urban	Feb 1978	SO ₂ , NO, NO ₂ , O ₃	Eur. Directives	D.G.R.N.E. ³⁾
5	43 N070 - MONS	urban	Oct 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
6	43 N073 - VEZIN	suburban	Oct 1978	SO ₂ , NO, NO ₂ , O ₃	Eur. Directives	D.G.R.N.E. ³⁾
7	43 N085 - VIELSALM	rural	Apr 1988	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
8	43 N093 - SINSIN	rural	Jul 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
9	43 N100 - DOORBES	rural	Oct 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
10	43 N113 - STE ODE	rural	Feb 1992	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
11	43 N121 - OFFAGNE	rural	Oct 1978	SO ₂ , NO, NO ₂ , O ₃	Eur. Directives	D.G.R.N.E. ³⁾
12	43 N132 - HABAY	urban	Jul 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
13	43 R201 - LIEGE	urban	Feb 1978	SO ₂ , NO, NO ₂ , NMHC,	Eur. Directives	D.G.R.N.E. ³⁾
14	43 R221 - LIEGE	urban	Mar 1978	SO ₂ , NMHC	Eur. Directives	D.G.R.N.E. ³⁾
15	43 R223 - JEMEPPE	suburban	Feb 1978	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾
16	43 R240 - ENGIS	industrial	Feb 1978	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾

17	43 R241 - ENGIS	industrial	Mar 1992	NO, NO ₂ , NMHC, O ₃ , TSP	Eur. Directives	D.G.R.N.E. ³⁾
18	45 R501 - CHARLEROI	urban	Oct 1978	SO ₂ , NO, NO ₂ , NMHC, TSP	Eur. Directives	D.G.R.N.E. ³⁾
19	45 R502 - CHARLEROI	urban	Aug 1978	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾
20	45 R510 - CHATELINEAU	suburban	Oct 1978	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾
21	45 R511 - MARCINELLE	urban	Oct 1978	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
22	45 R512 - MARCHIENNE	suburban	Oct 1978	SO ₂ , TSP	Eur. Directives	D.G.R.N.E. ³⁾

³⁾ D.G.R.N.E., Direction Générale des Ressources Naturelles et de L'Environnement, Namur

II. Regional Air Monitoring Network in: BELGIUM / WALLONIA
Name of Network: AUTOMATIC (Automatic Measurement)

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
43 H202, 43 M204, 43 N063, 43 N073, 43 N093, 43 N100, 43 N132, 43 R201, 43 R240, 45 R501, 45 R502, 45 R510, 45 R511, 45 R512	SO ₂	UV-Fluorescence	Environnement - AF 21	1/2 hour
43 N066, 43 N085, 43 N121, 43 N070	SO ₂	UV-Fluorescence	Thermo Instruments - 43 A	1/2 hour
43 R221, 43 R223, 43 N113	SO ₂	UV-Fluorescence	Columbia Scientific IC - SA 700	1/2 hour
43 N066, 43 N073, 43 N121, 43 R201, 43 R241, 45 R501	NO, NO ₂	Chemiluminescence	Environnement - AC 30M	1/2 hour
43 R241, 43 N073	O ₃	UV-Absorption	Environnement - O ₃ 41M	1/2 hour
43 N066, 43 N121	O ₃	UV-Absorption	Columbia Scientific IC - 3100	1/2 hour
43 H202, 43 R223, 43 R240, 45 R501, 45 R502, 45 R510, 45 R512	TSP	Nephelometry	MRI - SPM Monitor - 1550B	1/2 hour
43 R241	TSP	Beta Radiation-Absorption		1/2 hour
43 R221, 45 R501	NMHC	Flame Ionisation	Meloy Total Non Methane HC 500B	1/2 hour
43 R201, 43 R241	NMHC	Photo Ionisation	VOC - MON HNU 201	1/2 hour

II. Regional Air Monitoring Network in: BELGIUM / WALLONIA
Name of Network: SULPHUR-SMOKE (Sampling Measurement)

Site information			Pollutants		Additional Information	
No.	Name	Type (rural, suburban, urban, etc.)	Monitoring Commenced	SO ₂ , NO ₂ , CO, O ₃ , TSP, etc.	Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
1	41 - NIVELLES	urban	Nov 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
2	201 - LIEGE	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
3	202 - LIEGE	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
4	206 - LIEGE	urban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
5	208 - LIEGE	suburban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
6	210 - BEYNE HEUSAY	urban	Feb 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
7	213 - EMBOURG	suburban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
8	214 - HERSTAL	industrial suburban	Feb 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
9	216 - MONTEGNEE	urban	Feb 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
10	218 - SERAING	industrial suburban	Jan 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
11	220 - JUPILLE	suburban	Jun 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
12	225 - STOCKAY	suburban	Sep 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
13	226 - ENGIS	industrial urban	Jun 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
14	227 - AWIRS	industrial suburban	Jun 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
15	231 - CHAUDFONTAINE	urban	Jun 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
16	236 - SPA	rural	Jun 1970	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾

17	305 - HALANZY	rural	Nov 1973	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
18	310 - OFFAGNE	rural	Jul 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
19	311 - VIELSALM	rural	Apr 1992	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
20	401 - DOORBES	rural	Jun 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
21	412 - GEMBLoux	suburban	May 1991	SO ₂	Eur. Directives	D.G.R.N.E. ³⁾
22	501 - GILLY	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
23	504 - COUILLET	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
24	505 - MARCINELLE	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
25	506 - MSI MARCHIENNE	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
26	509 - CHARLEROI	urban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
27	513 - ROUX	urban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
28	514 - JUMET	suburban	Mar 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
29	517 - HERSEAUX	urban	Oct 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
30	519 - PLOEGSTREET	urban	Mar 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
31	520 - PERUWELZ	urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
32	533 - MONS	urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
33	523 - SOIGNIES	urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
34	525 - LA LOUVIERE	suburban	Jan 1970	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
35	528 - BEAUMONT	urban	Dec 1968	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
36	531 - TOURNAI	suburban	Mar 1969	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾

37	535 - GOSSELIES	rural	Apr 1970	SO ₂ , TSP/black smoke	Eur. Directives	D.G.R.N.E. ³⁾
³⁾ D.G.R.N.E., Direction Générale des Ressources Naturelles et de L'Environnement, Namur						

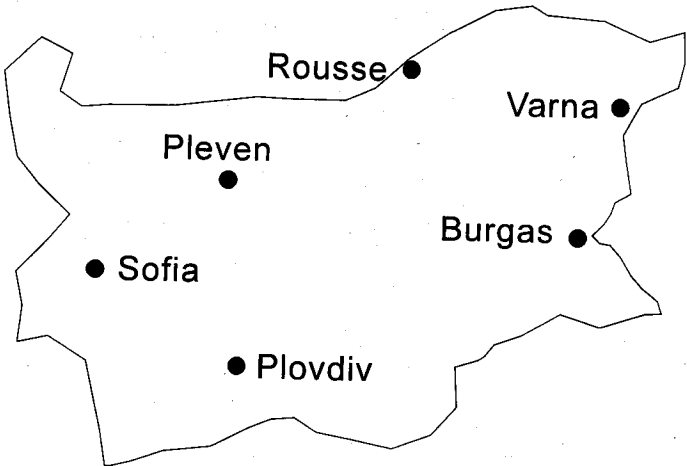
II. Regional Air Monitoring Network in: BELGIUM / WALLONIA
Name of Network: HEAVY METALS (Sampling Measurement)

No.	Site Information		Monitoring Commenced	Pollutants		Additional Information
	Name	Type (rural, suburban, urban, etc.)		SO ₂ , NO ₂ , CO, O ₃ , TSP, etc.	Other Network Programmes Concerned	
1	0ARL01 - ARLON	urban	Nov 1981	Cd, Cu, Pb, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
2	0BOV01 - GOUVY	suburban	Oct 1980	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
3	0ANG01 - ANGLEUR	suburban	May 1984	Cd, Cu, Pb, Zn	Eur. Directive	D.G.R.N.E. ³⁾
4	0CHA01 - CHARLEROI	urban	Apr 1980	Cd, Cr, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
5	0CHA02 - CHARLEROI	urban	Apr 1980	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
6	0CHA04 - GOSSELIES	industrial suburban	Apr 1985	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
7	0CHA05 - GOSSELIES	industrial suburban	Nov 1985	Cd, Cu, Pb, Zn	Eur. Directive	D.G.R.N.E. ³⁾
8	0LIE01 - LIEGE	urban	Mar 1980	Cd, Cr, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
9	0LIE02 - LIEGE	industrial suburban	Mar 1980	Cd, Cr, Cu, Pb, Mn, Ni, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
10	0OBG01 - OBOURG	suburban	Apr 1986	Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
11	0OFF01 - OFFAGNE	rural	Jan 1980	Cd, Cu, Pb, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
12	0ROB01 - ROBERTVILLE	rural	Nov 1984	Cd, Cu, Pb, Ni, Zn, SO ₄	Eur. Directive	D.G.R.N.E. ³⁾
13	0TRO01 - TROOZ	suburban	Jul 1984	Cd, Cu, Pb, Zn	Eur. Directive	D.G.R.N.E. ³⁾
14	0TENG01 - ENGIS	industrial	Dez 1978	Cd, Cu, Pb, Zn	Eur. Directive	D.G.R.N.E. ³⁾

³⁾ D.G.R.N.E., Direction Générale des Ressources Naturelles et de L'Environnement, Namur

II. Regional Air Monitoring Network: BELGIUM / WALLONIA
Name of Network: HEAVY METALS (Sampling Measurement)

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
0ARL01, 0BOV01, 0ANG01, 0CHA01, 0CHA02, 0CHA04, 0CHA05, 0LIE01, 0LIE02, 0ORG01, 0OFF01, 0ROB01, 0TRO01, 7ENG01	Cd	X Ray Spectroscopy	The own fabricate collector	1 day
see Cd	Cu	X Ray Spectroscopy	The own fabricate collector	1 day
see Cd	Pb	X Ray Spectroscopy	The own fabricate collector	1 day
0BOV01, 0ANG01, 0CHA01, 0CHA02, 0CHA04, 0CHA05, 0LIE01, 0LIE02, 0OBG01, 0OFF01, 0ROB01, 0TRO01, 7EWG01	Zn	X Ray Spectroscopy	The own fabricate collector	1 day
0CHA01, 0LIE01, 0LIE02, 0OBG01, 0ROB01	Ni	X Ray Spectroscopy	The own fabricate collector	1 day
0CHA01, 0LIE01, 0LIE02	Cr	X Ray Spectroscopy	The own fabricate collector	1 day
0LIE02	Mn	X Ray Spectroscopy	The own fabricate collector	1 day
0ARL01, 0BOV01, 0CHA01, 0CHA02, 0CHA04, 0LIE01, 0LIE02, 0OBG01, 0OFF01, 0ROB01	SO ₄	X Ray Spectroscopy	The own fabricate collector	1 day



BULGARIA

BULGARIA

I. Policy and Legal Basis

The activities of the subsystem for observation and assessment of the atmospheric pollution are coordinated by the Ministry of Environment; monitoring thereof is conducted jointly by the Ministry of Health, the National Centre for Hydrology and Meteorology and the Ministry of Environment. When conducting the monitoring, the institutions and their subdivisions follow the guidance coordinated among the three institutions.

II. Scope of Each Network

Observation of the atmospheric pollutants and meteorological conditions is conducted throughout the country by the *national Ambient Air Pollution Network*. The following atmospheric pollutants are controlled:

a) Wide-spread pollutants all over the country, which derive from fuel combustion at stationary and mobile sources: dust, sulphur dioxide, total suspended particulates, nitrogen dioxide, hydrogen sulphide and lead aerosols. These pollutants are registered in all stations within the system.

b) Specific pollutants, mainly of local significance, derived from certain industrial sources: cadmium, manganese, arsenic, copper, zinc, aerosols of sulphuric acid, carbon disulphide, ammonia, hydrogen fluoride, chlorine, hydrogen chloride, phenol.

The sampling and determination of atmospheric pollutants are conducted according to BSS and methods unified by the three institutions above-mentioned. The meteorological conditions - wind velocity and wind direction, air temperature, relative humidity and atmospheric pressure are reported at the same time. The sampling is carried out four times a day, only in the daytime, excepting the holidays and days of rest.

The stations for monitoring the atmospheric pollution are situated in large towns, villages with industrial sources of pollution and in sanatorium-health resorts.

The number of stations for observation within the country is 100 in all, of which 42 are for the Ministry of Health, 52 for the Ministry of Environment and 6 for the National Center for Hydrology and Meteorology.

The observation and assessment of the quality of atmospheric air in Bulgaria are mainly manual, which creates a bigger load for the system, as regards time, staff, transport, reagents and equipment. The data from the atmospheric air pollution are received the following day in the Laboratory Information of the Ministry of Environment.

The following table gives an overview of the conditions of the *national* air monitoring network in Bulgaria.

Network	AMBIENT
Scale	National
Total number of sites, points	100
Pollutant/number of sites, points	SO ₂ /100
	NO ₂ /97
	TSP/90
	H ₂ S/80
	CO/3
	Pb/57
	NH ₃ /16
	C ₆ H ₅ OH/24
	HCl/3
	Cl ₂ /3
	As/2
	H ₂ SO ₄ /2
Measurement technique	Sampling
Type of sites	
Urban	86
Suburban	3
Residential/ industrial	7
Rural	4

The aims of monitoring at national level are as follows:

- Obtaining data on atmospheric pollution in terms of the effect on the health of the population and on environment;
- Providing data on air quality in order to study and assess the behavior and the interaction of pollutants necessary to prepare the mathematic models for the diffusion of these pollutants;
- Submitting data to establish standards for air quality;
- Control for the execution of the programmes at lower levels.

The periodic assessments of the data of the ecosystems supply reasons for defining certain characteristics of the condition of the environment within the country. On the basis of data received from the monitoring, and of investigations into health effects conducted by the Ministry of Health (Hygienic-Epidemiological Inspectorates), special governmental resolutions were accepted for some of the regions throughout the country (Rousse, Razlog, Kurdjali, Dimitrograd, Sofia, Pernik, Srednogie).

III. References

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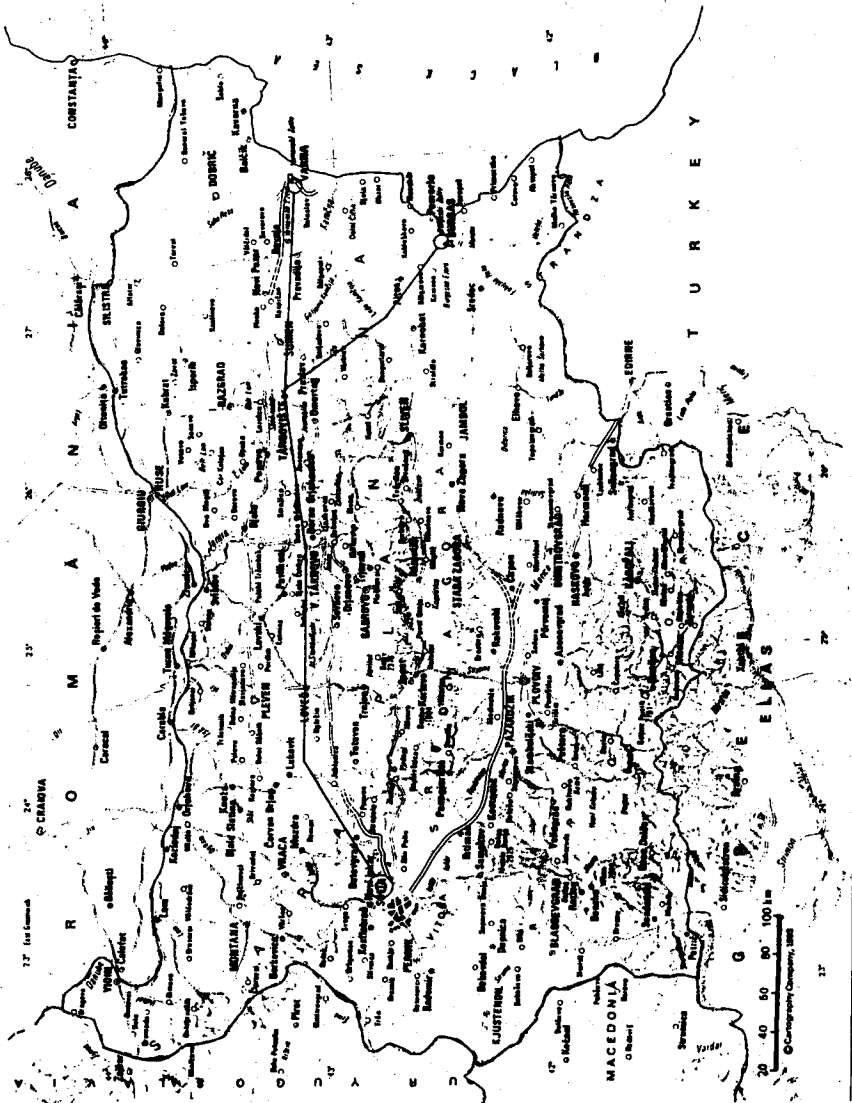
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Map 1: Map of Bulgaria
 [Source: National Centre of Hygiene, 1994]

I. National Air Monitoring Network in: BULGARIA
Name of Network: AMBIENT AIR POLLUTION (Automatic/Sampling Measurement)

Site Information		Pollutants		Additional Information	
No.	Name	Monitoring Commenced	SO ₂ , NO ₂ , NO, CO, O ₃ , TSP, etc.	Other Network Programmes Concerned	Remarks (Monitoring Agency, e.g.)
Type (rural, suburban, urban, etc.)					
SOFIA-KREMIKOVZI, industrial area					
1	BOTUNEZ	suburban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	ME ¹⁾
2	KREMIKOVZI	suburban	1971	SO ₂ , NO ₂ , C ₆ H ₅ OH, TSP, Pb	ME ¹⁾
3	IANA	suburban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	ME ¹⁾
SOFIA, town					
4	AV. STAMBOLISKI	urban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
5	BOIANA	suburban	1978	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
6	RAILWAYSTATION	urban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
7	LULIN	urban	1985	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
8	DRUJBA	urban	1992	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
9	GEO MILEV	urban	1992	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	ME ¹⁾
10	ORLANDOVZI	urban	1991	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP	ME ¹⁾
11	MLADOST	urban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH	NCHM ³⁾
12	BREGALNIZA	urban	1991	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾
13	NOVI ISKAR	suburban	1992	SO ₂ , NO ₂ , TSP, Pb	ME ¹⁾
14	NADEJDA-24P-KA	urban	1971	SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH, TSP, Pb	MH ²⁾

15	STUDENSTKA	urban	1992		SO ₂ , NO ₂ , H ₂ S, C ₃ H ₅ OH, TSP, Pb		ME ¹⁾
16	ORLOV MOST	urban	1993		SO ₂ , NO ₂ , H ₂ S, CO, TSP		ME ¹⁾
17	NADEJDA	urban	1993		SO ₂ , NO ₂ , H ₂ S, CO, TSP		ME ¹⁾
	SREDNOGORIE						
18	PIRDOP-TOWN	urban	1971		SO ₂ , NO ₂ , H ₂ S, H ₂ SO ₄ , TSP, As		MH ²⁾
19	ZLATIZY-TOWN	urban	1971		SO ₂ , NO ₂ , H ₂ S, H ₂ SO ₄ , TSP, As		MH ²⁾
20	PIRDOP-TOWN	urban	1993		SO ₂ , NO ₂		ME ¹⁾
21	ZLATIZA-TOWN	urban	1993		SO ₂ , NO ₂		ME ¹⁾
	PERNIK, town						
22	HEI-ROB	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
23	HEI-III P-KA	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
24	RIE	urban	1993		SO ₂ , NO ₂ , TSP, Pb		ME ¹⁾
25	BATANOVZI	rural industrial	1993		TSP		MH ²⁾
	STARAZAGORA - MARIZA IZTOK, industrial area						
26	GALABOVO-TOWN	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
27	MEDNIKAROVO	rural	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
28	POLSKI GRADEZ	rural	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
	STARAZAGORA, town						
29	HEI	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
30	ZORA	urban	1980		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾

31	K. GANSHEV	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
32	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
33	KASANSKI	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
	DIMITROVGRAD, town						
34	HEI	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
35	MARIINO	urban	1975		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb		MH ²⁾
36	PROLET	urban	1993		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb		ME ¹⁾
	HASKOVO, town						
37	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		ME ¹⁾
	ROUSSE, town						
38	AV. SKOBELEV	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
39	OKZ	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb		MH ²⁾
40	RIE	urban	1988		SO ₂ , NO ₂ , H ₂ S, Cl ₂ , HCl, TSP		ME ¹⁾
41	DRUJBA	urban	1992		SO ₂ , NO ₂ , Cl ₂ , HCl, TSP		ME ¹⁾
42	HOME OF CULTURE	urban	1988		SO ₂ , NO ₂ , H ₂ S, Cl ₂ , HCl, TSP		ME ¹⁾
	SILISTRA, town						
43	HEI	urban	1990		SO ₂ , NO ₂ , H ₂ S, C ₆ H ₆ OH, TSP		MH ²⁾
44	RIE	urban	1991		SO ₂ , NO ₂ , H ₂ S, C ₆ H ₆ OH		ME ¹⁾
45	TRANSSTROI	urban	1991		SO ₂ , NO ₂ , H ₂ S, C ₆ H ₆ OH		ME ¹⁾
	KURDJALI, town						

46	VESELCHANI	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
47	HEI	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	MH ²⁾
48	KOS	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
	PLEVEN, town.					
49	NCHM	urban	1975		SO ₂ , NO ₂ , TSP	NCHM ³⁾
50	HEI	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	MH ²⁾
51	STORGOSIA	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	MH ²⁾
52	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
53	STR. STAMBOLISKI	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
	RAZLOG, town					
54	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP	ME ¹⁾
	PLOVDIV-ASSENOVGRAD, industrial area					
55	ASSENOVGRAD	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
56	DOLNI VODEN	rural	1971		SO ₂ , NO ₂ , TSP	ME ¹⁾
	PLOVDIV, town					
57	NCHM	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP	NCHM ³⁾
58	HEI	urban	1971		SO ₂ , NO ₂ , TSP, Pb	MH ²⁾
59	STARINNA	urban	1971		SO ₂ , NO ₂ , TSP, Pb	MH ²⁾
60	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾
61	GIGANT	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb	ME ¹⁾

	PAZARDJIK, town								
62	STADION	urban	1990			SO ₂ , NO ₂ , H ₂ S, TSP, Pb			MH ²⁾
63	TARGOVSKA KASHA	urban	1990			SO ₂ , NO ₂ , H ₂ S, TSP, Pb			MH ²⁾
64	RIE-LAB.	urban	1993			SO ₂ , NO ₂ , H ₂ S, TSP, Pb			ME ¹⁾
	BOURGAS, town								
65	HEI-CENTRE	urban	1971			SO ₂ , NO ₂ , NH ₃ , TSP			MH ²⁾
66	MEDEN RUDNIK	urban	1971			SO ₂ , NO ₂ , H ₂ S, NH ₃ , C ₆ H ₅ OH, TSP			MH ²⁾
67	SLAVEIKOV	urban	1971			SO ₂ , NO ₂ , H ₂ S, NH ₃ , C ₆ H ₅ OH, TSP			MH ²⁾
68	NCHM	urban	1971			SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH			NCHM ³⁾
69	KAMENO	urban	1971			SO ₂ , NO ₂ , H ₂ S, NH ₃ , C ₆ H ₅ OH, TSP			ME ¹⁾
70	TRAPEZIZA	urban	1993			SO ₂ , NO ₂ , H ₂ S, NH ₃ , C ₆ H ₅ OH, TSP			ME ¹⁾
71	RIE	urban	1993			SO ₂ , NO ₂ , H ₂ S, NH ₃ , C ₆ H ₅ OH, TSP			ME ¹⁾
72	MORAKA GRADINA	urban	1971			SO ₂ , NO ₂ , H ₂ S, C ₆ H ₅ OH			NCHM ³⁾
	VARNA, town								
73	NCHM	urban	1971			SO ₂ , NO ₂ , TSP			NCHM ³⁾
74	AVTOGARA	urban	1975			SO ₂ , NO ₂			MH ²⁾
75	STR. BATAK	urban	1971			SO ₂ , NO ₂ , NH ₃ , TSP			MH ²⁾
76	RIE	urban	1993			SO ₂ , NO ₂ , CO, TSP			ME ¹⁾
77	STRASHIMIROVO	urban	1993			SO ₂ , NO ₂			ME ¹⁾
78	DEVNYA, TOWN	urban	1993			SO ₂ , NO ₂ , NH ₃			ME ¹⁾

	NICOPOI, town								
79	CENTRE	urban	1990		SO ₂ , NO ₂ , H ₂ S, NH ₃				ME ¹⁾
80	VILA "BATERIA"	suburban	1992		SO ₂ , NO ₂ , H ₂ S, NH ₃				ME ¹⁾
	SVISHTOV, town								
81	CENTRE	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP				ME ¹⁾
	VIDIN, town								
82	HEI	urban	1987		SO ₂ , NO ₂ , H ₂ S, TSP				MH ²⁾
83	BLOK 30	urban	1989		SO ₂ , NO ₂ , H ₂ S, TSP				ME ¹⁾
	VRATSA, town								
84	BELI ISVOR	rural industrial	1971		TSP				MH ²⁾
85	HEI	urban	1971		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb				MH ²⁾
86	DABNIKA	urban	1993		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb				ME ¹⁾
87	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb				ME ¹⁾
88	CENTRE	urban	1993		SO ₂ , NO ₂ , H ₂ S, NH ₃ , TSP, Pb				ME ¹⁾
	ELISEINA, town								
89	CENTRE	urban	1971		SO ₂ , TSP, Pb				MH ²⁾
	ZVERINO, town								
90	CENTRE	rural	1971		SO ₂ , TSP, Pb				MH ²⁾
	MONTANA, town								
91	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb				ME ¹⁾

VELIKO TURNOVO, town								
92	HEI	urban	1971		SO ₂ , NO ₂ , H ₂ S, TSP			MH ²⁾
93	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP			ME ¹⁾
GABROVO, town								
94	HEI	urban	1975		SO ₂ , NO ₂ , H ₂ S, TSP			MH ²⁾
GORNIA ORYAKHOVITSA, town								
95	CENTRE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP			ME ¹⁾
SEVLIEVO, town								
96	EMKA	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP			ME ¹⁾
TURGOVISHTE, town								
97	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb			ME ¹⁾
SHOUMEN, town								
98	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP, Pb			ME ¹⁾
SMOLYAN, town								
99	RIE	urban	1993		SO ₂ , NO ₂ , TSP			ME ¹⁾
BLAGEOVGRAD, town								
100	RIE	urban	1993		SO ₂ , NO ₂ , H ₂ S, TSP			ME ¹⁾

¹⁾ ME, Ministry of Environment, Sofia

²⁾ MH, Ministry of Health, Sofia

³⁾ NCHM, National Centre for Hydrology and Meteorology, Sofia

I. National Air Monitoring Network in: BULGARIA
 Name of Network: AMBIENT AIR POLLUTION (Automatic/Sampling Measurement)

Measurement Information				
No. of the Monitoring Site	Pollutant	Principle of Measurement	Measurement Device	Integrating Interval
1 to 15, 18 to 75, 79 to 100	SO ₂	Pararosaniline - photometry	Manual - Bulgaria	
16, 17	SO ₂	Flame photometric detection	Breitfuss - Germany	1/2 hour
76, 77	SO ₂	Flame photometric detection	Siemens - Germany	1/2 hour
78	SO ₂	UV-Fluorescence	SFI - France	1/2 hour
1 to 15, 18 to 24, 26 to 55, 57 to 75, 79 to 100	NO ₂	Griess-Saltzman Reaction	Manual - Bulgaria	
16, 17, 76 to 78	NO ₂	Chemiluminescence	Breitfuss, Siemens, SFI	1/2 hour
16, 17, 75	CO	Infrared-Absorption	Breitfuss, Siemens	1/2 hour
1, 3 to 12, 14, 15, 18, 19, 22, 23, 26 to 40, 42 to 48, 50 to 55, 57, 60 to 64, 66 to 72, 79 to 82, 84 to 88, 91 to 98, 100	H ₂ S	Methylene blue colour reaction	Manual - Bulgaria	1/2 hour
16, 17	H ₂ S	Flame photometric detection	Breitfuss	1/2 hour
35, 36, 65 to 67, 69 to 71, 75, 79, 80, 85 to 88	NH ₃	Nessler reaction	Manual - Bulgaria	

78	NH ₃	Chemiluminescence	SFI	1/2 hour
1 to 12, 14, 15, 43 to 45, 66 to 72	C ₆ H ₅ OH	P-nitro-aniline	Manual - Bulgaria	
18, 19	H ₂ SO ₄	Photometry	Manual - Bulgaria	
40 to 42	Cl ₂ , HCl	Photometry	Manual - Bulgaria	
18, 19	As	Atomic absorption	Manual - Bulgaria	
1 to 9, 12 to 15, 22 to 24, 26 to 39, 46 to 48, 50 to 53, 55 to 56, 58 to 64, 84 to 91, 97, 98	Pb	Atomic absorption	Manual - Bulgaria	
1 to 10, 12 to 15, 18, 19, 22 to 43, 46 to 67, 69 to 71, 73, 75, 76, 81 to 100	TSP	Gravity	Manual - Bulgaria	
16, 17	TSP	Beta Radiation-Absorption	Breifluss	1/2 hour