COUNCIL OF THE EUROPEAN UNION

Brussels, 29 September 2005

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ADD 1

ENV 428
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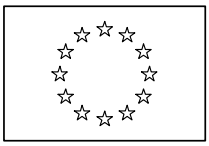
ADDENDUM to COVER NOTE

from:	Secretary-General of the European Commission, signed by Ms Patricia BUGNOT, Director
date of receipt:	26 September 2005
to:	Mr Javier SOLANA, Secretary-General/High Representative
Subject:	Commission staff working paper Annex to the Communication from the Commission to the Council and the European Parliament "Thematic Strategy on air pollution"

Delegations will find attached Commission document SEC(2005) 1132.

Encl.: SEC(2005) 1132



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 21.9.2005
SEC(2005) 1132

COMMISSION STAFF WORKING PAPER

Annex to the

COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

"Thematic Strategy on air pollution"

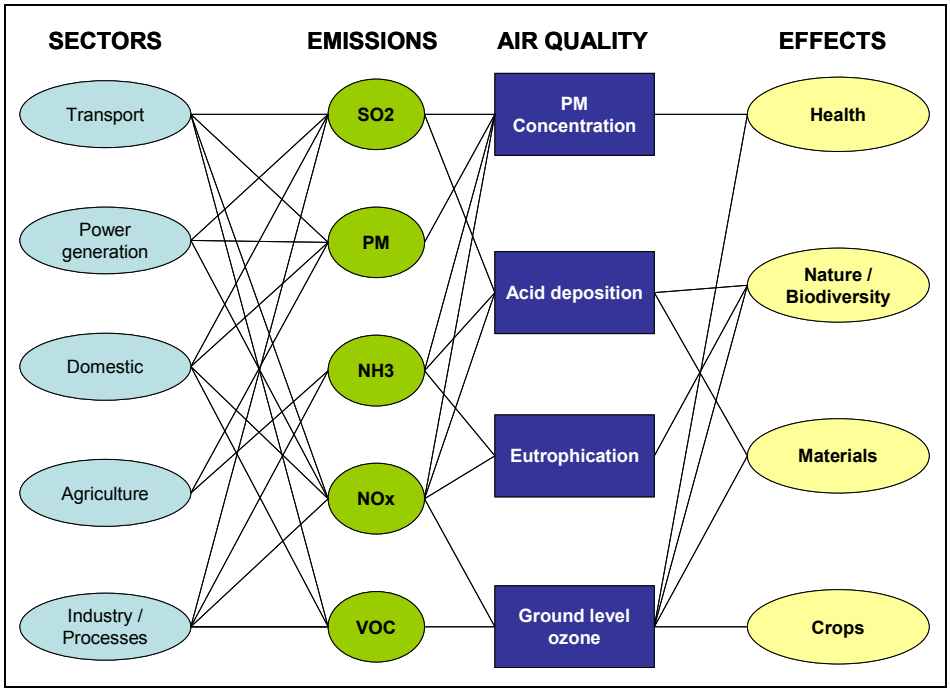
{COM(2005) 446 final}

ANNEX 1

GLOSSARY	
Acidification	Excess acidity from the deposition of ammonia, nitrogen oxides and sulphur dioxide can lead to the damage of freshwater and terrestrial ecosystems. Nitrification of ammonia in soils also contributes to acidification although it is not an acid gas.
Aerosol	A dispersion of solid particulate matter or droplets in air.
Air quality limit value	A legally binding pollutant concentration in air which may be exceeded on a prescribed number of occasions per calendar year (c.f. *target value* which is a non- legally binding air quality objective).
Ammonia (NH_3)	A gas which is emitted mainly from animal wastes and following the application of fertilisers.
CAFE baseline	The expected evolution in EU-25 pollutant emissions up to 2020 based upon forecasts of energy use (including climate policies) and macroeconomic parameters.
Critical level	A pollutant concentration level in air below which significant adverse impacts on vegetation is not expected.
Critical load	A level of deposition below which significant adverse impacts on ecosystems are not expected
Eutrophication	Excess nutrient nitrogen (mainly in the form of ammonia or nitrogen oxides) can lead to changes in the composition of ecosystem communities and a loss of biodiversity.
Ground level ozone (O_3)	Ozone formed in the lowermost part of the atmosphere from the reaction of nitrogen oxides and volatile organic compounds in the presence of sunlight. Ozone is a strongly oxidising gas.
National emission ceiling	The maximum amount of a substance expressed in kilotonnes that may be emitted by a Member State in a particular calendar year.
Nitrogen oxides (NOx)	The gases nitric oxide (NO) and nitrogen dioxide (NO_2). NO is predominantly formed in high temperature combustion processes and can subsequently be converted to NO_2 in the atmosphere.
PM_{10}, $PM_{2.5}$	Particulate matter in ambient air with a diameter less than 10 or 2.5 millionths of a metre respectively.
Secondary pollutant	Secondary pollutants are not emitted directly but are formed by subsequent chemical processes in the atmosphere. Examples include ground level ozone and nitrate and sulphate aerosols.
Sulphur dioxide (SO_2)	Gas formed from the combustion of fuels which contain sulphur.
Transboundary air pollution	Pollutants emitted in one country are transported in the atmosphere and may contribute to adverse health and environmental impacts in other countries.
Volatile Organic Compounds (VOCs)	VOCs are volatile carbon-based chemical compounds (such as solvents or components of paints and varnishes) which are emitted to the atmosphere from natural sources or as a result of human activities.

ANNEX 2
Interaction between pollutants and impacts

The complex interaction between pollutants, impacts and pollution receptors is illustrated below. The figure shows that several pollutants contribute to the same environmental impact and that a broad range of economic sectors are responsible for the emissions of atmospheric pollutants, except for ammonia where agricultural activities are the predominant source.



Acidification: excess acidity from the deposition of NH_3, NOx and SO_2 can damage freshwater and terrestrial ecosystems and so cause loss of biodiversity. Ammonia contributes to acidification by undergoing nitrification in soils which releases acidity.

Eutrophication: excess nutrient nitrogen (mainly in the form of NH_3 or NOx) can change ecosystem balance and cause loss of biodiversity.

Ozone formation: tropospheric ozone is harmful to health and vegetation (including forests and crops) and is formed at ground level from the reaction of NOx and VOCs in the presence of sunlight (c.f. "good" stratospheric ozone in the upper atmosphere which shields us from ultraviolet radiation).

Particulate matter: Consists of primary particles emitted directly to the atmosphere and secondary particles which are formed chemically from NOx, SO_2, NH_3, and VOCs in the atmosphere. According to the World Health Organization it is not possible to differentiate between primary or secondary particles in terms of their impacts on health.

ANNEX 3
Benefits and Costs of the Strategy

The benefits, costs and health and environmental objectives of the Strategy are summarised in the tables and figure below.

Benefits and costs of the Strategy in 2020									
Ambit-ion level	**Benefits**								**Costs** per annum (€bn)
	Human health			**Natural environment**					
	Life Years Lost (million) fine parti-culate matter only	*Premature deaths* (000s) particulate matter and ozone	Range in monetised health benefits per annum (€bn)	Ecosystem area exceeded acidification (000 km^2)			Ecosystem area exceeded eutro-phication (000 km^2)	Forest area exceeded ozone (000 km^2)	
				Forests	Semi-natural	Fresh-water			
2000	3.62	370	-	243	24	31	733	827	-
Baseline 2020	2.47	293	-	119	8	22	590	764	-
Strategy	**1.91**	**230**	**42 – 135**	**63**	**3**	**19**	**416**	**699**	**7.1**
MTFR	1.72	208	56 – 181	36	1	11	193	381	39.7

Note: Ecosystem benefits have not been monetised but are expected to be significant. MTFR is the Maximum Feasible Technical Reduction and includes the application of all possible technical abatement measures irrespective of cost. Only costs and benefits of moving beyond the baseline are presented. Lower value is based on the median of the value of a life year lost (VOLY) & higher value is based on mean value of a statistical life (VSL).Costs and benefits are annual amounts. Ecosystem benefits for the Strategy scenario have been interpolated from existing analyses but these estimates will be revised shortly following further calculations and are likely to rise slightly.

Objectives of the Strategy expressed as % improvements relative to the position in 2000					
Life Years Lost (million) from particulate matter	Acute mortality from ozone	Ecosystem forest area exceeded acidification	Ecosystem freshwaters area exceeded acidification	Ecosystem area exceeded eutrophication	Forest area exceeded ozone
47%	10%	74%	39%	43%	15%

Improvement of health & environment indicators following the Strategy (improvement relative to 2000)