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Collective Complaint No. 30/2005 **Case Document No. 6**
Marangopoulos Foundation for Human Rights v. Greece

REPONSE FROM THE GREEK GOVERNMENT TO THE FURTHER OBSERVATIONS OF MFHR ON THE MERITS

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TABLE OF CONTENTS

I. List of Tables

II.
III.
IV. List of Figures

V. List of Annexes

Annex 1	European Environment Agency, 2005, "The European Environment – State and Outlook 2005", Copenhagen, Office for Official Publications of the European Communities (in English, electronic file)
Annex 2	DEH's Environmental Report 2004 (in English)
Annex 3	Environmental Supporting Policies, Key Actions & Measures (in English)
Annex 4	Triantafyllou, 2002, "Respirable Particulate Matter at an Urban and Nearby Industrial Location: Concentrations and Variability and Synoptic Weather Conditions during High Pollution Episodes" (in English)
Annex 5	Triantafyllou, 2003, "Levels and trend of Suspended Particles around Large Lignite Power Stations" (in English)
Annex 6	Triantafyllou et al., 2005, "Particulate matter over a seven year period in urban and rural areas within, proximal and far from mining and power station operations in Greece" (in English, hard copy)
Annex 7	Samara, 2005, "Chemical mass balance source apportionment of TSP in a lignite-burning area of Western Macedonia, Greece" (in English)
Annex 8	Petaloti et al., 2006 (in press), "Trace Elements in atmospheric particulate matter over a coal burning power production area of western Macedonia, Greece" (in English, hard copy)
Annex 9	Grivas et al., 2004, "Spatial and Temporal Variation of PM10 mass concentrations within the greater area of Athens, Greece" (in English)
Annex 10	Prof. Katsougiannopoulos et al, 2002, 1st Macedonian Environmental Conference, Thessaloniki, "Environmental Conditions and Health within the country of Kozani"
Annex 11	Rapport of the Ministry of National Education, 57772/C7-06.06.2006, "Observations on Collective Complaint No 30/2005 of MFHR against Greece" (in English-Greek, hard copy)
Annex 12	Rapport of the Ministry of Employment & Social Protection, Labour Inspectorate Body (SEPE), 21185-05.05.2006, "Comments on additional observations of the Greek non-governmental organisation "MFHR", which lodged against Greece Collective Complaint No. 30/2005 about violation of Articles 2§4, 3§1, 3§2 and 11 of the European Social Charter" (in English-Greek , hard copy)
Annex 13	Rapport of the Ministry of Employment & Social Protection, Labour Inspectorate Body (SEPE), 10131-25.05.2006, "Complaint by MFHR about violation of articles 2§4, 3§1, 3§2 and 11 of the European Social Charter-Additional observations" (in English-Greek, hard copy)
Annex 14	Rapport of the Ministry of Employment & Social Protection, Labour Inspectorate Body (SEPE), 10205-19.06.2006, "Additional Observations on the Complaint by MFHR about violation of articles 2§4, 3§1, 3§2 and 11 of the European Social Charter" (in English-Greek, hard copy)
Annex 15	Kassomenos P. et al., Conference for the Protection and Restoration of the Environment VIII, Crete 3-7.07.2006, "On the Study of transboundary pollution by Particulate Matter in the Greek Territory" (in English, hard copy)
Annex 16	89/391/EEC 12.06.89, Directive on the introduction of measures to encourage improvements in the safety and health of workers at work (in English)
Annex 17	84/360/EEC Directive, on the combating of air pollution from industrial plants (in English)
Annex 18	IPPC Directive 96/61/EC (Integrated Pollution Prevention & Control) (in English)
Annex 19	2003/87/EC Directive, Establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (in English, electronic file)
Annex 20	EC Decision 156/29.01.2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (in English, electronic file)
Annex 21	EC, European IPPC Bureau, "Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques for LCP", May 2005 (in English, electronic file)
Annex 22	Directive 2001/80/EC (LCPD) on the limitation of emissions of certain pollutants into the air from large combustion plants (in English, electronic file)
Annex 23	Directive 2000/479/EC on the implementation of a European pollutant emission register (EPER) according to 96/61/EC concerning IPPC (in English, electronic file)
Annex 24	Directive 80/779/EEC replaced by 1999/30/EC on air quality limit values and guide values for sulphur dioxide and suspended particulates (in English, electronic file)
Annex 25	Directive 1999/30/EC (relating to limit values for sulphur dioxide, nitrogen dioxide and oxides

	of nitrogen, particulate matter and lead in ambient air (in English, electronic file)
Annex 26	EC, November 2000, Guidance Document for EPER implementation (in English, electronic file)
Annex 27	EC, COM (2005) 446 final-21.9.05-Thematic Strategy on air pollution {SEC(2005) 1132-1133} (in English, electronic file)
Annex 28	EC, COM (2005) 447 final-21.9.05-Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe {SEC(2005) 1133} (in English, electronic file)
Annex 29	EC, European IPPC Bureau, Integrated Pollution Prevention and Control (IPPC) Reference Document on the application of Best Available Techniques to Industrial Cooling Systems, December 2001 (in English, electronic file)
Annex 30	EC, IP/06/612, 15-05-2006, "EU emissions trading scheme delivers first verified emissions data for installations" (in English)
Annex 31	Presidential Decree 17/1996, Measures for safety and health of workers (according to 89/391/EEC and 91/383/EEC) (in Greek, hard copy)
Annex 32	Law 3199/2003, Water protection and management according to 2000/60/EC (in Greek, hard copy)
Annex 33	Law 1739/87, Water sources management (in Greek, hard copy)
Annex 34	Presidential Decree 256/89, Water use licensing (in Greek, hard copy)
Annex 35	JMD 5813/17.05.89, Licensing for the construction of water sources projects (in Greek, hard copy)
Annex 36	-Law 1650/1986, Fundamental principles for measures and procedures institution for the environmental protection (in Greek, hard copy) -Law 3010/2002 (IPPC), Modification of Law 1650/1986 according to 97/11/EC & 96/61/EC for the water streams matters (in Greek, hard copy)
Annex 37	JMD 11014/703/Φ104, 20-03-2003, on the Procedure for the Preliminary Environmental Evaluation & for the Environmental Permits Approval according to the Laws 1650/1986 & 3010/2002 (97/11/EC & 96/61/EC) (in Greek, hard copy)
Annex 38	JMD 29457/1511/2005, 14-07-05, on the measures and conditions for the diminution of some atmosphere pollutants emissions coming from Large Combustion Plants (according to LCPD 2001/80/EC) (in Greek, hard copy)
Annex 39	Law 3017/2002, Kyoto Protocol ratification (in Greek – English, hard copy)
Annex 40	General Secretary of West Macedonia, 2562/14-6-2004, Permit for water use in Kardia and Ag. Dimitrios SES (in Greek, hard copy)
Annex 41	Hellenic Ministry for the Environment, Phys. Planning and Public Works, April 2005, National Allocation Plan for the period 2005-2007 (in English, electronic file)
Annex 42	Hellenic Ministry for the Environment, Phys. Planning and Public Works, March 2006, Report on Demonstrable Progress under the Kyoto Protocol (in English, electronic file)
Annex 43	Environmental Protection Agency (EPA), January 2005, Draft Staff Paper for Particulate Matter Fact Sheet (in English, hard copy)
Annex 44	EC, NAT/298/17.05.06, Thematic Strategy- Air Quality, Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (in English)
Annex 45	38526/19.04.2006 Decision of the General Secretary of Western Macedonia for the Permit of the Industrial Waste Management Site in Kardia mine (in Greek, hard copy)
Annex 46	1st Eurelectric Report, Environmental Statistics of the European Electricity Industry, Trends in Environmental Performance 2000-2002 (in English)
Annex 47	Risks assessment for SES Megalopolis I-III (in Greek & English summary)
Annex 48	Risks assessment for SES Megalopolis IV(in Greek & English summary)
Annex 49	Risks assessment for Megalopolis mine (in Greek & English summary)
Annex 50	Measurements for SES Ag. Dimitrios (in Greek, electronic file & English summary)
Annex 51	Measurements for SES Prolemais (in Greek, electronic file & English summary)
Annex 52	Measurements for SES Kardia (in Greek, electronic file & English summary)
Annex 53	DEH, Managing Director's Decision 36/2004, Implementation of preventive medical examination in work" (in Greek & English summary)
Annex 54	DEH, Health & Safety Department Directive No.2 (in Greek & English summary)
Annex 55	DEH, Indicative Personal Protective Equipment (in Greek & English summary)
Annex 56	DEH's General Directive (in Greek & English summary)

Annex 57	DEH's Staff Accidents Analysis 2002-2004 (in Greek & English summary)
Annex 58	Mortal Accident Index according to ESAW (European Statistics on Accidents at Work) 1991-2005 (in Greek & English summary)
Annex 59	DEH, Decision of the Board of Directors, 217/45/18.12.2003, "Collaboration between the Insurance foundation for the medical examinations and DEH" (in Greek & English summary)
Annex 60	DEH, "Contract 5507/12.11.2004 between DEH and the State's Hospital of Tripolis (Panarkadiko, Evangelistria)" (in Greek & English summary)
Annex 61	DEH's Administration Structure (in Greek)
Annex 62	DEH, "Complaints at the National Technical University of Athens & at the Technical Chamber of Greece (TEE)" (in Greek & English summary)
Annex 63	Medical School of Aristotle University of Thessaloniki, Laboratory of Hygiene, "Epidemiological study of health problems in the population of the Municipality of Kozani, 2nd and 3rd Intermediate reports", Kozani-Thessaloniki, 1996-7 (in Greek, hard copy)

FURTHER OBSERVATIONS OF THE HELLENIC REPUBLIC ON THE MERITS OF COLLECTIVE COMPLAINT No. 30/2005 AND RESPONSE TO THE 'MARANGOPOULOS FOUNDATION FOR HUMAN RIGHTS' (MFHR) OBSERVATIONS

1. This document is submitted by the Respondent Government following the decision of the European Committee of Social Rights (hereinafter 'the Committee') on the admissibility of the Collective Complaint no 30/2005 (hereinafter 'the Complaint') by Marangopoulos Foundation for Human Rights (hereinafter 'the Complainant' or 'MFHR'), adopted on October 10, 2005. It supplements earlier submissions and observations and responds to the MFHR Response, filed on 8 March, 2006 to the Hellenic Government's Observations (hereinafter "the Response").

2. The present document is divided into two (2) main Parts: Part I outlines, in an introductory manner, the position of the Government that the purported violations of Article 11, paragraphs 1, 2, and 3, Article 2, paragraph 4, Article 3, paragraphs 1, and 2 are unsubstantiated, either because all the conditions of the European Social Charter of 1961 (hereinafter 'the Charter') have been fulfilled, or because there is a steady and progressive improvement for their realisation.

   It also presents, in an indicative manner, the most blatant of the inaccuracies of the Complaint, in order to show that its allegations are ideologically biased and not scientifically sound. Part II, which is the most extensive, proceeds to the refutation, point by point, of the allegations of the Complainant.

VI. Part I: Introductory Remarks on the Complaint and the MFHR's Observations

3. The Complainant accuses the Respondent Government for contempt of the Committee, because the State's initial observations on the merits have been signed only by the Ministry of Employment and Social Protection. The Directorate of International Relations of this Ministry, however, is the competent entity for the monitoring of the application of the Charter and as such it has collected and organized the response of the remaining competent Ministries (of the Environment, Health and Social Protection, Education and Development) that contributed to the subjects of their responsibility. So, the allegations of the Complainant for "barely distinguished form of contempt for the protection of social matters …" are completely inaccurate, arbitrary and characteristic of the overall bad faith of the Complaint.

4. Even more misleading is the allegation of the Complainant that the Respondent Government delegated its opportunity to defend its policies in diverse fields – environmental and labour monitoring and enforcement as well as public-health – to the Public Power Corporation S.A. (hereinafter 'DEH'or 'the Corporation'). The truth is that the Hellenic Republic has an inalienable constitutional obligation to exert a permanent monitoring and steering control over DEH, irrespectively to any Complaint. In this capacity, the Respondent has incorporated the analytical memorandum of this Corporation, only to the extent it reflected the Government positions and policies in rem, in fields where there is not any collusion of interests between DEH and State. Both in its initial Observation and in this document, besides, there is an analytical description of the control exerted by State authorities in the cases in which this Corporation was not found in full conformity with the existing legislation. (see Annexes 12-14)

A- Environmental protection in Greece and pertinent related measures imposed on and taken by DEH: A general overview

5. MFHR asserts that Greek environmental protection is in general not effective and evokes some condemnations from European Court of Justice (ECJ). In fact a lot of countries have been sometimes accused for non compliance with the Community environmental legislation, while having at the same time an integrated and efficient environmental policy. More importantly, there is no ECJ decision regarding DEH's lignite-fired power plants or any on other issue related to the Complaint. Equally ill-founded and unproven is the vague reference that *"those who have successfully attempted to obtain remedies before domestic jurisdictions faced the determined refusal of the administration…"* since there is no court decision whatsoever to that effect.

6. The MFHR's allegations also imply a completely unjustified reproach towards the Greek Justice and, more specifically, the Council of State, which has a very important and pioneering jurisprudence related to the protection of the environment and the enforcement of its decisions. More to the point, the Greek legal system enshrines the protection of the environment both as a constitutional human right and a fundamental state principle with supra-legal force. The right to environmental protection has explicitly been guaranteed since 1975 by the article 24 of the Constitution, which stipulates that the protection of the natural and cultural environment constitutes a duty of the State and an individual right. The State is bound to adopt special preventive or repressive measures for the preservation of the environment in the context of the principle of sustainability. The protection was further enhanced by the constitutional revision of 2001 and the executive statutory legislation, which has transposed all relevant EU norms.

7. Based on the current scientific knowledge, the European Union has undertaken a huge environmental action plan and enforced strict environmental legislation, mainly based on the principle of proactive action for the prevention of pollution. All pertinent EU legislation has been incorporated by the Greek state to national law, and the Government has taken all necessary measures to comply with international standards and consequently with the Chart. More specifically, the Presidential Decree No. 17/1996, which transposes Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, covers, as the

directive requires, all sectors of activity in the private and public sectors, including all DEH's activities.

8. The MFHR generally appears, not to be well informed about the existing State's legislation in rem, or to ignore it deliberatively. For instance, contrary to its allegations (*Response*, para 85), the legal framework for the water use by industrial installations already exists (Law 3199/2003, Law 1739/87, Presidential Decree 256/89, Joint Ministerial Decision JMD 5813/17.05.89).

9. Moreover, the Respondent Government, in its capacity as regulator, has ensured that the environmental strategy, enforced by the competent authorities and applied by DEH, is determined by the continuous pursuit of environmental protection, competitiveness and security of supply, in strict compliance with EU and national environmental legislation. DEH is constantly implementing an integrated approach towards the protection and management of the environment as a whole, applying the best available techniques both to new and existing power plants in compliance, among others, with the Directive 96/61/EC (IPPC), concerning Integrated Pollution Prevention and Control and the Directive 2001/80/EC, concerning the limitation of emissions of certain pollutants into the air from large combustion plants.

10. In compliance to the Directive 2001/80/EC for the Large Combustion Plants (LCPD), the National Emission Reduction Plan (NERP) has been created by the State, and has been already submitted to the E.C. According to the LCPD, emissions from existing Large Combustion Plants must meet the NERP ceilings for SO_2, NOx and dust from January 2008 and for this purpose specific measures are included in all the existing lignite plants of DEH.

    The NERP for the lignite plants includes, inter alia:
    - Installation of pollution abatement equipment in order to reduce dust emissions.
    - Installation of flue gas desulphurization plants in order to reduce SO_2 emissions.
    - Programmes aiming at increasing energy efficiency of thermal plants

11. With the completion of these projects, included in the NERP as well as in the new Joint Ministerial Decisions JMDs for the plants environmental permits, there will be a complete and in time compliance with the European legislation requirements for the existing LCPs operation (IPPC and 2001/80/EC Directive) and further an important air quality improvement at Megalopolis and Kozani-Ptolemais regions is expected.

12. Also, an extensive programme for the reduction of carbon dioxide emissions is in progress, in compliance with the Directive 2003/87/EC and the targets of the Kyoto Protocol for the Country.

13. Furthermore, for the improvement of the existing environmental management systems of DEH's power plant, a programme for the development, application and certification of their Environmental Management Systems, according to ISO 14001, is in progress. The relevant procedure is almost completed for Aghios Dimitrios Steam Electric Station (lignite-fired) and Chania SES (oil-fired). The programme is currently extended to all the other power plants, with a priority to the thermal ones which according to schedule will be completed within next year.

14. DEH's West Macedonia and Megalopolis Lignite Centres systematically implement projects for the restoration of the land gradually released from the exhausted lignite mines, in order to render them for farming, foresting and other uses as well. The results are impressive and the redeveloping projects of DEH lignite mines have been selected as best practice examples and have been published in the 1st Eurelectric Report, "Environmental Statistics of the European Electricity Industry, Trends in Environmental Performance", for the years 2000-2002, both in the cover as a photo (Fig.1) and in the text with analytical explanation[1].

The specific environmental actions and the objectives of this policy are analytically explained in Part II, in association with the refutation of MFHR's allegations and also in summary in para C of the Part I.

[1] Annex 46, p. 29

15. As a result of these persistent and costly but yet effective practices, there is a clear improvement in all environmental areas, i.e. air, water and soil. This constant process throughout the recent years in the whole of the Greek state and in the areas of DEH's lignite activities is indicated in Part II, especially in Figures 8 - 14.

Many international reports demonstrate the aforementioned steps forward of the Country in the fields of environmental protection, allowing, the Committee to assess and recognize these trends and the effort realized. Just indicatively, the European Environment Agency mentions for Greece in its 2005 report: "*Progress has been made integrating environment into sectoral and economic policies…The relative non-degraded natural environment has* ***relatively good air quality"***[2]*,* without any reference to any air quality problems that cause adverse health effects to the population, as MFHR erroneously and misleadingly evokes.

B A preliminary assessment of the Complaint: Unfounded allegations, ideological credo and manipulation of data

16. The Complaint has attributed to the purported violations of the Charter and the environmental degradation "due to the use of fossil fuels in the transport and electricity-generation sectors of the economy" *(Response*, para 8 & *Complaint,* para 39-41). This option, per se, cannot be considered as a violation of contract obligations deriving from the Charter, as it is a sovereign decision safeguarding the security of energy supply, which is an unambiguous State obligation, related to the public interest considerations. The Complaint is based on a rather ideological platform, in tandem with the international campaign of other NGO's (Non Governmental Organizations), like the Power Switch Campaign of WWF International (Cf: its *"Coal power is dirty"*, http://powerswitch.panda.org/responsible/coal_power_dirty.cfm, last visited 8/4/06).

The Respondent Government respectfully acknowledges the action of international and national NGOs and recognizes their positive role and concerns for the protection of the environment. However, the application of the Charter cannot be dependent on ideological simplifications or campaigns of ideological character, as the aforementioned, or the ironical references of the Complaint to the insistence of the Respondent Government and DEH for the production of

[2] European Environment Agency, 2005, "The European Environment – State and Outlook 2005", Copenhagen, Office for Official Publications of the European Communities, 454 p. (Annex 1)

what they call pejoratively 'cheap energy'. The truth is that electricity is a public good, which greatly contributes to the population's welfare and should be accessible to everyone, so the preoccupation for its non expensive generation and supply is in full conformity with the Chapter, provided, of course, that environmental protection is not jeopardized.

17. In the framework of its ideological "jihad" against what it considers to be "dirty power", the Complainant not only deliberately exacerbates the effects of the use of fossil fuels to the environment, but also manipulates the existing facts and data, in order to present a distorted image of the reality, especially regarding the extent of use of the lignite in the Greek energy sector.

18. Characteristic of this manipulative attempt to misinform the Committee is its allegation (*Response*, para 23) that lignite is expected to be responsible for the 77% of the energy produced in Greece by 2020!! This is not just inaccurate, it is a deliberatively false statement aimed to impress and deceive the Committee. The by the EC approved National Allocation Plan, NAP (Directive 2003/87/EC) of the country states that **the contribution of lignite-fired units shall be reduced from 67% in the year 1995 to 47% in 2010 and to 38% in 2020, that is half of the percentage presented by MFHR.** More specifically, according to the NAP, "regarding the production of electrical energy, one should note that natural gas units would roughly cover 28% of the total net electricity production in 2010 (1,6 Mtoe), while this percentage reaches 36% (2.6 Mtoe) in 2020.

This significant penetration of natural gas in the Greek electricity system is the main reason limiting the relative contribution of lignite-fired units from 67% in the year 1995 to 47% in 2010 and to 38% in 2020 in the national power mix, not disregarding the effect of the extensive penetration of the Renewable Energy Sources for this period." Except for the above penetration of natural gas in the Greek electricity system, a vast programme for the effective abatement of the emissions from existing lignite plants is already in progress in Greece and will be presented analytically here-after. The program has already been presented in the State's Memorandum, but MFHR prefers to ignore it.

19. There is a constant distortion of data throughout the Complaint and the Observations of MFHR. For instance, the Complainant, in an effort to create confusion about the efficiency of existing emissions abatement technologies in DEH's units, which are in full conformity with the EU standards and the technologies required by the EU, often insinuates false allegations regarding the

installed equipment there. For instance, it is purportedly reported, that there are no specified FGD systems in Megalopolis B and Meliti SES (Response, para 93).

The truth is exactly the opposite: The Steam-Electric Station of Megalopoli B (unit IV, 300 MW) has had a wet flue gas desulphurisation unit (FGD) in operation since 1999. A wet FGD is also in operation at the new Meliti SES, (330 MW) in the Florina region (Northen Greece), one of the most modern lignite fired power plants in Europe. Furthermore, another FGD has already been contracted and shall be ready for operation in the 1st semester of 2008 (cost: 84.7 million €), retrofitted to Unit III of Megalopolis SES (300 MW) (Table 8).

20. In addition to misinformation regarding the existing technologies and implementation of the legislation, MFHR intentionally throws ambiguity and doubts on the monitoring and reporting methods (see comment 13 at the para12). For instance it comments in an accusatory manner the fact that in the information provided to EPER, on national emissions, Greece neatly provides rounded numbers. However, this is not a Greek particularity, as the Complainant wants to make us believe, as, according to the EC Guidance Document for EPER implementation, all **the emission data should be expressed in kg/year and rounded off to exactly 3 significant digits**. Is this a sign of mere ignorance, or a deliberative effort to create false impressions?

21. The exact effects of air pollution are issues of great international interest and controversy for policy makers, legislators, scientists and interest groups. Questions still remain unanswered and the scientific knowledge is being revised and continuously improved about the precise pathogenic role of different particles and their physical and chemical characteristics. Even measurements cannot be one hundred per cent accurate and there is no clear scientific conclusion on the monitoring methodologies.

22. More reliable are the randomized, controlled studies (experimental study), which remove all sources of variation except the exposure of interest. **Approximately all studies concerning environmental health effects are observational studies**. In this type of studies confounding is a concern, because people are not randomly assigned to pollution levels. For example if people in higher particulate matter (PM) areas are more likely to smoke, this could attribute

deaths to pollution that were actually caused by smoking. Also, higher ozone is associated with higher temperatures, so this could attribute deaths to ozone that were caused by heat stress.

23. With this type of studies scientists also try to measure potential confounders and statistically control them, leaving a residual correlation between pollution and health outcomes. The implicit assumption is that this residual correlation (if greater than zero) represents a genuine causal relationship.

24. Air pollution mortality claims are mainly based on results of observational studies. There are two types of studies. Cohort-study which follows people in different cities over time and time-series study which correlates daily deaths and PM levels.

25. The limits of observational study are as follows:
    - Only what is measured can be controlled, so there is always the risk of additional uncontrolled confounding. Recent evidence suggests this be normal rather than the exception.
    - Observational studies gave spurious results in a number of recent high profile reversals of conventional medical wisdom.

26. Recent time-series study have showed that more complete control for weather eliminates mortality association with ozone and PM10 (Keatinge and Donaldson, 2006). Heat stress increases mortality risk, so time-series studies include controls for weather. Yet at any given temperature, greater sunshine is associated with higher ozone, while lower winds are associated with higher PM10. In other words, since sunshine and wind are correlated with both pollution levels and mortality, failing control of them creates a spurious correlation between air pollution and risk of death. This effect had not been previously addressed in air pollution epidemiology studies.

27. Air pollution epidemiologists are recently stating: "Estimation of very weak associations in the presence of measurement error and strong confounding is inherently challenging. In this situation, prudent epidemiologists should recognize that residual bias can dominate their results. As the possible

mechanisms of action and their latencies are uncertain, the biologically correct models are unknown. This model selection problem is exacerbated by the common practice of screening multiple analyses and then selectively reposting only a few important results". (Lumley and Sheppard, Epidemiology, 2003).

28. In view of the above uncertainties, the Greek State cautiously proceeds to those epidemiological studies that are necessary in order to follow up public health, but it is very reserved about the outcome which is nevertheless used to design the future steps.

29. The Complainant has ignored these methodological limitations, which are accepted by all serious researchers of the field. Instead MFHR has presented a mixed variety of data incomprehensible to the layman and often distorting them, in order to impress the Committee and lead it to erroneous conclusions.
30. The Respondent Government analytically refers to similar manipulations at the Part II of these Observations. Just indicatively, the State refers to the alleged (Response, para 23) "accurate estimations for the augmentation of the SO_2 emissions next years", presented in the unique study where MFHR bases all its allegations, which are totally inaccurate, as exposed below, in Part II. The truth is that the annual SO_2 emission are expected to be drastically reduced the following years (2008) by at least 30% (Figure 19).

C- Steps taken for the improvement of environmental protection

31. Contrary to the Complainant's accusations, the Respondent Government does not imply that there is no pollution from lignite mines and power plant operation. Such a claim would obviously be unrealistic. The production of energy, in all its forms, results in adverse environmental impacts, particularly when it is based on fossil fuels. However, the Greek State has respected its contractual obligation to enforce upon DEH all necessary relevant EU or international regulations and has taken adequate measures for the prevention of the pollution and the protection of the population from its effects, according to all international standards, especially EU standards.

32. The Respondent Government aims to stress in the framework of this section that not only the legislative rules and implementing measures are not falling behind

European standards, but there is also a constant improvement through time. This is especially important for the protection of the environment because as it happens with almost all the rights of the Charter, the essential contractual obligation of the Member-States lies in their progressive realisation. This is not a "referral to the future", as the Complaint ironically asserts, insofar as there is a clear record of improvement and a definite plan of action for all further steps.

33. At all SES, extensive programmes for the systematic management, monitoring and recording of all relevant environmental parameters are implemented. Particular emphasis is given to the reduction of atmospheric pollutants and the management and disposal of waste water, solid by-products and hazardous or non-hazardous waste resulting from power generation activities.

34. In order to improve the <u>environmental performance of the existing thermal plants</u>, environmental projects include:
    - Programme for the reduction of carbon dioxide emissions.
    - Installation of pollution abatement equipment in order to reduce dust emissions.
    - Installation of flue gas desulphurization plants in order to reduce SO_2 emissions.
    - Installation of improved wastewater treatment plants.
    - Programmes aiming at increasing energy efficiency / energy - saving projects.

35. All the above projects are extensively presented in Part II. Indicatively, the programmes for the installation of pollution abatement equipment in order to reduce dust emissions, the installation of flue gas desulphurization plants and for the reduction of carbon dioxide emissions are summarized hereafter. Also, the programmes for the ground rehabilitation on exhausted lignite mines are presented, including photos from their really impressive results.

<u>Installation of pollution abatement equipment in order to reduce dust emissions</u>

36. In order to reduce dust emissions from lignite power plants, DEH has been enforced to apply a programme for the replacement and upgrading of the

existing Electrostatic Precipitators (ESPs), as well as for the adding of new state of the art high performance ESPs for many years. The implementation of the programme to DEH's plants has so far drastically reduced the dust emissions and therefore has led to an impressive improvement in the quality of the ambient air at the power plants' regions. Since 1987, within the scope of the programme in question, DEH has completed the replacement of the existing electrostatic precipitators and the adding of new ones at the lignite-fired units I-IV of Kardia SES, I-IV of Ptolemais SES; I-II of LIPTOL SES and both the fly ash and lignite ESPs at unit III of Megalopolis SES, i.e. twelve units in total completed so far.

37. In particular, for the dust emissions reduction in Ag. Dimitrios SES, the Ministry of Environment has incorporated in the National Emission Reduction Plan (NERP) the upgrading of the existing and the addition of new ESPs (electrostatic precipitators) at the units I-IV, with new ones of the state-of-the-art technology and elevated efficiency; the relevant contractual amount is 130 million euros.

38. The new ESPs construction and performance fulfil the IPPC Directive requirements for the existing LCPs for their operation according to the Best Available Techniques (BAT) from November 2007. This measure has also been included in the new JMD, which is under completion, for the SES Environmental Permit. Following the relevant communication with the Ministry of Environment, this project is already under construction. Furthermore, recently the upgraded ESPs as well as the new ones of unit II have already been put in operation.

39. The units I-II of Megalopolis SES, according to the Directive 2001/80/EC, article 4, have been placed under the status of limited operation (opt out), the complete shut-down of which is estimated by the end of 2010. Despite their complete shut-down, the new JMD for their environmental permit, which is under preparation, foresees the extensive maintenance/ upgrading of the existing ESPs for their proper operation, according to the legislation. This project has already been started by DEH.

Installation of flue gas desulphurization plants in order to reduce SO_2 emissions:

40. At Megalopolis B SES (unit IV, 300 MW) and Meliti SES (330 MW), two (2) flue gas desulphurization units are in full operation, contrary to MFHR allegations.

41. The NERP also foresees the following for the SO_2 emissions reduction for the lignite-fired plants:

- the retrofitting of Megalopolis SES, unit III (300 MW) with a flue gas desulphurization plant. This project has already been already sub-contracted by DEH and its final operation shall fulfill the IPPC Directive requirements in time for Best Available Techniques for SO_2 abatement in this Unit.

- The operational improvement of the flue gas desulphurization plant of the unit IV of Megalopolis SES, which has successfully been operating for several years, drastically reduces the SO_2 emissions from this unit.

42. These new projects, along with the reduction of SO_2 emissions from the complete shutdown of the Units I and II of SES Megalopolis (in 2010) will further reduce the SO_2 emissions from lignite power plants drastically.

43. It is also has to be noted that due to the natural desulphurization occurring in all the rest lignite power plants, low SO_2 emissions are achieved from their operation.

Reduction of carbon dioxide emissions

44. The programme for the reduction of carbon dioxide emissions regarding power generation activities includes :

- Replacement of old power plants with new ones which have higher energy efficiency and are more environmentally friendly
- Application of best available technologies in existing and future power plants
- Improvement of energy efficiency in existing power plants
- Improvement of the quality of fuel (e.g. lignite)
- Further penetration of natural gas into power generation as a new fuel
- Further penetration of large hydropower plants and other Renewable Energy Sources in energy balance

- Development of the country's hydro potential
- Energy saving and rational use. Application of the most effective lignite combustion technologies
- Close follow up of the technological developments for carbon dioxide capture and storage
- Management of the power generation portfolio (thermal and hydro power plants, imports and exports) in such a way as to minimize emissions at the lowest cost
- Full capacity building for the application of flexible mechanisms complying with the Kyoto Protocol with particular emphasis on the implementation of 2003/87/EC Directive.

Ground rehabilitation

45. As already mentioned, in compliance with their Environmental Permits, DEH's West Macedonia and the Megalopolis Lignite Centres systematically implement projects for the restoration of the land gradually released from the lignite mines in order to render them for farming, foresting and other uses as well.

46. Out of the 23,200 ha of the total lignite mine surface area exploited (18,800 ha in West Macedonia and 4,400 in Megalopolis), 6,800 ha have already been restored. The annual cost of the ground rehabilitation and environmental protection projects is approximately 3 million € /year.

After the completion of the mining, the total area will be restored in a form equal or superior to the initial one, according to the environmental permits.

Table 1: Land redeveloped to date at PPC Mines

Redevelopment	West Macedonia Lignite Center (in thousand m^2)	Megalopolis Lignite Center (in thousand m^2)
Land formed of depositions	6,008	235
Forest Parks	21,263	5,200
Buildings	3,176	10,345
Farming Land	**!Syntax Error, .**	2,500
Lakes	827	8
Total	!Syntax Error, .	**18,288**

47. The activities, presented here-after and analytically in Part II, § A-5, prove without doubt the constant and factual preoccupation and care of the State for the protection of the environment, regarding lignite mining activities:

Tree planting

48. More than 6.5 million trees have already been planted in the West Macedonia Centre and more than 800,000 trees in the Megalopolis Centre at a rate that now exceeds 600,000 per year.

The creation of farming land

49. The creation of experimental farming land for crops started in 1986 to test the fertility of the rehabilitated land. The productivity of this new land has appeared to remain the same or even exceed the productivity of the wider area. A pilot greenhouse and a model orchard have also been set up in northern Greece for demonstrating the possibility of developing high added value activities for the farmers. Experimental cultivations on specific species of plants (e.g. potatoes, beans, tomatoes) have been effectuated in southern Greece with satisfactory results for potential cultivation while the experimental crops of grains, oats and vetch produced results similarly to those achieved in the greater area. The West Macedonian Lignite Centre has lets the restored land of total surface area of 800 ha during the last 2 years to farmers, with the minimal cost of 100 €/ha, contributing significantly to their annual income.

Special works for the rehabilitation of the land – creation of ecosystems

50. The restored areas are already hosting ecosystems gathering the flora and fauna from the ecosystems that have been affected or disturbed, while the fauna is enriched with the species released from the animal husbandry facilities. Lakes and wet-lands have been created at all the depositions and as a result a large number of both flora and fauna species gather around them, while lakes are enriched with fish.

51. Furthermore, a lot of alternative projects have been realized in Megalopolis Centre, providing the area with an Expo Centre showing visitors the Lignite Centre activities, a Recreational Park (with a grove, playground and various

playing fields), an artificial hydrobiotopes, a moto-cross track and a runway for private ultra-light aircrafts.

Figure 1: Artificial wet-land in West Macedonia Lignite Centre created in exhausted mines

D- Monitoring and controlling mechanisms

52. Not only the existing legislative framework, both for the environmetal and the public health protection, is fully adequate and in par with the EU standards, but there are also in place efficient monitoring and controlling mechanisms for its implementation. The Respondent does not deny that some of these controlling public services have relatively few personnel, but the Respondent asserts that this fact does not prevent them from taking the necessary preventive or repressive measures for the protection of the environment as well as public health. As analytically presented in the Report of the Inspectorate of Work (Annex 14), not only the controls to the mines and power stations of PPC are constant, frequent and effective, but their number is increasing year by year. Appearing also in the related table below[3], fines have been imposed, if necessary.

Table 2: Controls & Fines to DEH and DEH's contractors

Table 2.1 In the area of Megalopolis

	2002	2003	2004	2005
Controls-Check Controls to DEH	13	18	16	28
Fines to DEH	7	4	5	5
Controls-Check Controls to DEH's contractors	8	18	15	20
Fines to DEH's contractors	2	8	5	6

[3] Rapport of the Ministry of Employment & Social Protection, Labour Inspectorate Body (SEPE), 10205-19.06.2006- Annex 14

Table 2.2 In the area of Kozani (KPV)

	2002	2003	2004	2005
Controls-Check Controls to DEH	29	16	19	50
Fines to DEH	-	3	2	-
Controls-Check Controls to DEH's contractors	5	19	20	40
Fines to DEH's contractors	3	22	9	27

53. The same is also valid for the monitoring of the environmental performance of DEHs installations, the enforcement of concrete measures for environmental protection and check for their applications.

54. The Committee itself has observed (*See Conclusions, XVI-2, cf. Conclusions XIV-2, p. 338)*, under the light of ILO Yearbook of Labour Statistics (2001), that, during the last years, due to the increasing controls of the unified labour inspectorate (SEPE) and other state organs, the number of occupational injuries has steadily decreased. When compared with total employment, the figures confirm the marked decline in the incidence of accidents (0.45 per 100 workers) observed in previous reference cycle.

55. Under the light of the aforementioned preliminary remarks, the Respondent Government asserts in summary and it is going to demonstrate analytically in the following sections of Part II that, the **Complaint is ideologically biased, deliberatively misleading and scientifically unsubstantiated.**

It has failed to prove that:

- there is any environmental degradation due to acts or omissions of the State that could have been prevented
- there is a violation of concrete international environmental or health regulations or standards
- there is a direct cause-effect relationship between the alleged state violations or omissions and the purported health or environmental problems,

- the State has failed to adopt remedies, especially in the period after 1998, date of ratification by Greece of the mechanism of collective Complaints, for which the Complaint is admissible *ratione temporis*.
- there exists hazardous working conditions in DEH 's open mines and power plants
- DEH 's installations are not effectively regulated or monitored

On the contrary, the Respondent Government has demonstrated:

- that DEH's installations are properly and effectively regulated
- the prevailing atmospheric air quality conditions are good, constantly improving and the population is not exposed o any abnormal threat
- all the necessary measures are taken by the State and enforced to DEH for the safe and healthy working conditions in all DEH's installations.

VII. Part II : Analytically on the alleged violations of the charter

A-THE RIGHT TO THE PROTECTION OF HEALTH AND OF ENVIRONMENT

A-1 General remarks about air quality

56. In para 11 of its Response MFHR alleges that there is a breach of contract obligations, purportedly due to continuous employment of old, high-polluting technology, incompatible with the 'best available technology requirements' (BAT).

57. The Respondent Government has on the contrary proved that:

> The air quality in the regions of Ptolemais and Megalopolis is good and constantly improving for all the regulated air pollutants. This is based on the current limit values, as well as on the systematic air quality measurements, which has been carried out at these regions for more than two decades. The legislated limit values ensure the appropriate protection (according to the scientific data available in each period) of the human health and in general of the environment. The population's health protection has also been verified by the epidemiological studies, executed in the same areas.

58. DEH's lignite Power Plants operation is constantly improving, following the Best Available Techniques, according to the 84/360/EC Directive, as well as IPPC Directive. The concept of BAT under IPPC takes into account the likely cost and benefits of measures, as well as the aim to protect the environment (taking it as a whole) to avoid creating a new and more serious environmental problem while attempting to solve another one. IPPC's article 9 (4) requires that permit conditions shall be based on BAT, but taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental condition. Furthermore, Annex IV of the Directive contains a list of "considerations to be taken into account generally or in specific cases when determining best available techniques…bearing in mind the likely cost and benefits of a measure and the principles of precaution and prevention".

59. The Country takes all the necessary measures for its compliance with the Kyoto Protocol Targets. Especially in 2005 –the first year for the application in the Community of the 2003/87/EC Directive for the introduction of the greenhouse gases trading system- the pool of DEH 's installations has fully complied with

the targets, imposed by the approved by the E.C National Allocation Plan (NAP). In fact, the power generation sector (and consequently DEH) has undertaken the greatest reduction responsibility (a reduction of 2.8% for the power generation plants instead of 2.1% for all the rest bound plants, compared to the Business as Usual Scenario).

60. All the necessary measures are taken by the State and enforced to DEH for the safe and healthy working conditions in all DEH's installations.

61. All the above-mentioned issues will be fully analyzed and the Complainant reproaches, which are lacking scientific argumentation and proof, will be clearly answered here-after.

62. The Response allegation in para 12 that the particles emissions were not measured, is totally inaccurate and wrong. Also totally wrong and inaccurate is the allegation that total suspended particles (TSP) ground concentrations were not measured. For the air quality monitoring, DEH has installed in the beginning of the 80s a series of monitoring stations for the measurement of the TSP (total suspended particulates), SO_2 and NO_x ground concentrations in Kozani-Ptolemais Valley (KPV), as well as in Megalopolis area.

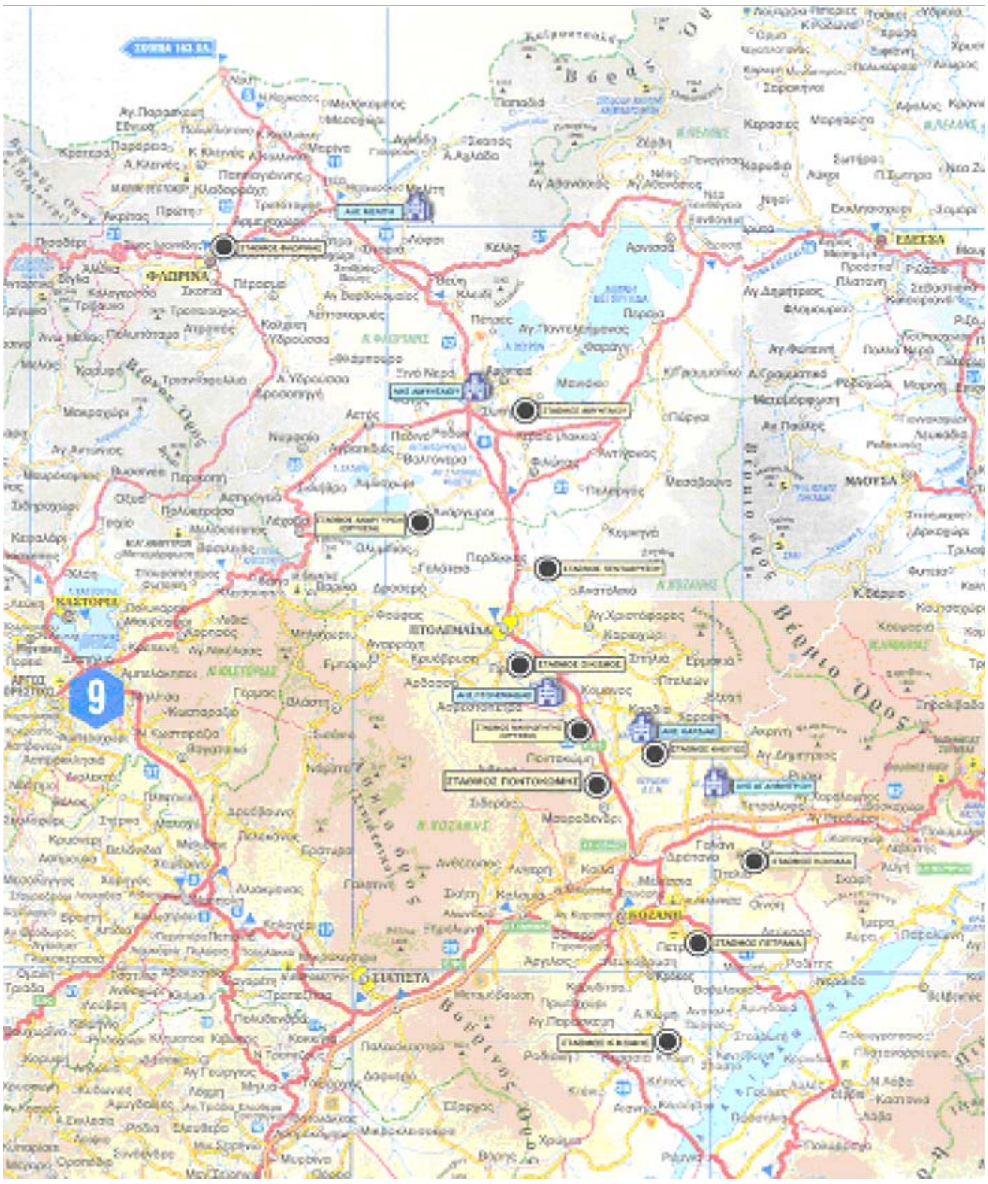

Figure 2: Map of the Northern Power Generation System

63. Since 1998, in the Kozani region, a relocation of the monitoring stations position has been enforced, following new studies (Zerefos et al, 1991, 1993) and in compliance with the issued Environmental Permits of SESs. Former measuring stations were removed and new have been added with automated instruments. Thus, since 1998, a **fully automated network of eight (8) monitoring stations** (Pontokomi, Ikismos, Pentavrysos, Amynteon, Kilada, Kato Komi, Florina, Petrana (the last one has replaced Klitos station)) have been installed and have been in operation, telecommunicating all the measured data to the Prefecture of Kozani. Another substantial characteristic of the new system is the installation

of **PM10 monitoring and telecommunication** in all the monitoring stations contrary to the Complainant allegations.

64. Relocation of the monitoring stations and their full automation were also carried out in Megalopolis region in 2003. According also to the JMD for the Environmental Permits of the Unit IV of Megalopolis SES, three automated monitoring stations were put in operation (Isari, Leontari and Elliniko) telecommunicating inter alia the PM10 data. All the measured data is telecommunicated in the Prefecture of Arcadia.

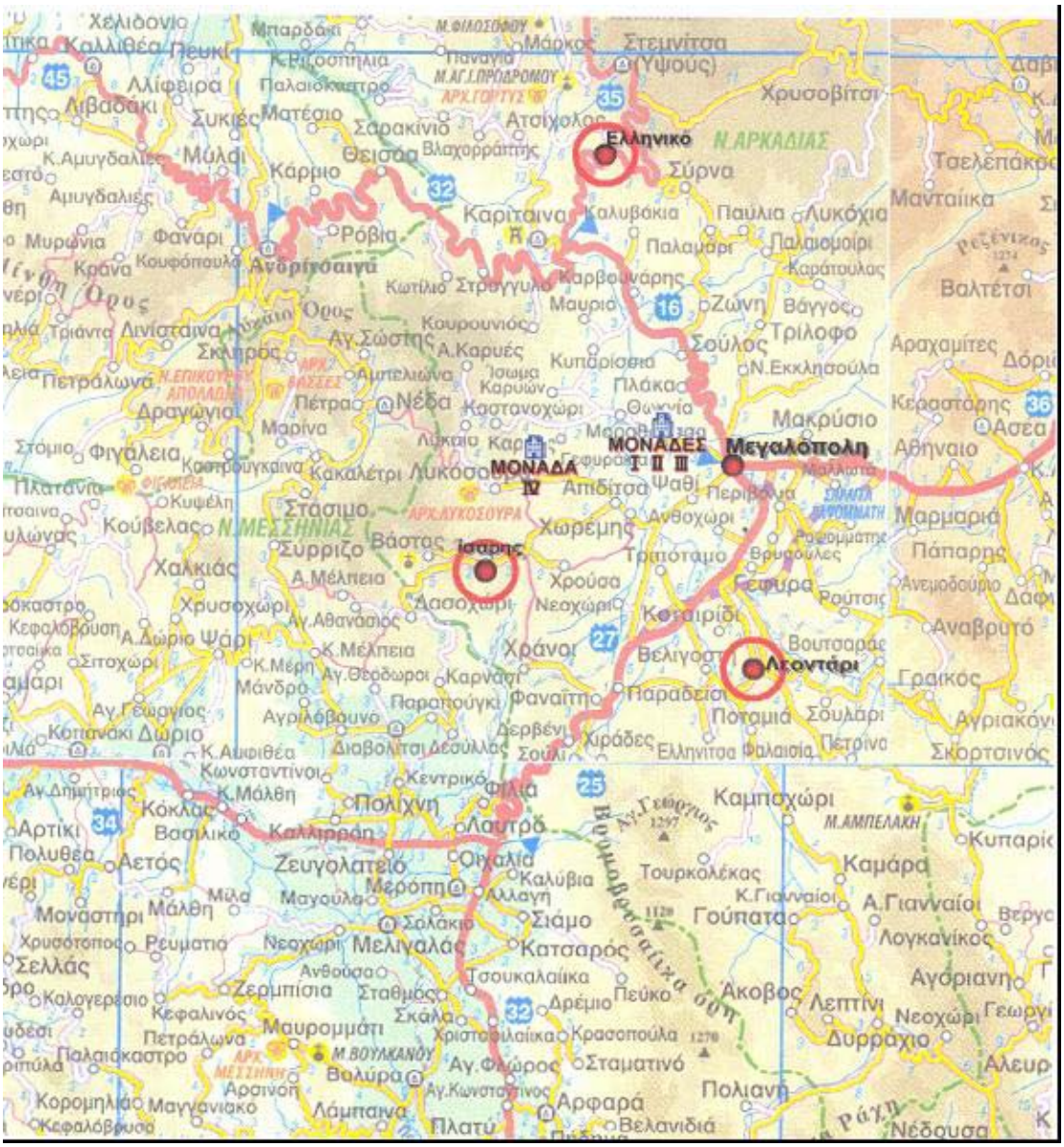

Figure 3: Map of the Southern Power Generation System

65. **Consequently, the reference at the para 12 of the Response** that "Measurements of Total Suspended Particles (TSP) were not taken before 1983, and even now most measurement stations do not measure the most dangerous particles (<10μm) precisely **those that most easily escape DEH's electrostatic precipitators" is not true.**

66. Besides that, the comment is inaccurate and not scientifically justified. Electrostatic Precipitators (ESPs) of DEH are designed and constructed, according to the state of the art technology, by the most internationally renowned engineering-manufacturing companies. According to the **BREF** for **Large Combustion Plants** "**the ESP is used extensively** in large combustion plants and is capable of operating under a wide range of temperature, pressure and dust burden conditions. **It is not particularly sensitive to particle size**, and collects dust in both wet and dry conditions" and "the **ESP is by far the most commonly used equipment in Europe in power plants using coal or lignite**." [4]

67. Cooper and Alley (2002) mention that among the advantages of the electrostatic precipitators is the high efficiency of fine particles removal. Moreover according to the EPA, electrostatic precipitators have very high collection efficiencies for particles larger than 0.5 micrometer, while the efficiency is minimal only in the range of 0.1 to 0.5μm (Figure 4).

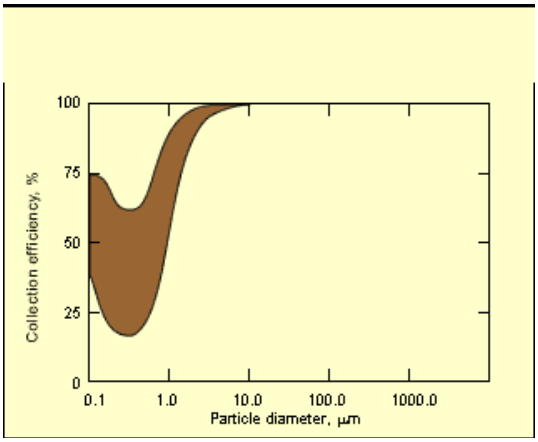

Figure 4. Particle size-efficiency curve for ESPs
(source:EPA, http://www.epa.gov/eogapti1/module6/matter/control/control.htm)

[4] EC, European IPPC Bureau, "Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques for LCP", May 2005, 55 p. & 180 p. (Annex 21)

68. In the view of the above, it is clearly proved that the allegations of MFHR about both the measurement of particulates in the ambient air, as well as the collection efficiency of the ESPs are totally wrong and misleading.

69. Concerning the EPER (European Pollutant Emission Register) data:

    The data, which are attributed to EPER, do not refer to the air quality, but to the Power Plants emissions. Monitoring the PM_{10} concentration at the stack is theoretically meaningless, and this is the reason why there is no legislation concerning the PM_{10} emission concentrations at the stack, not even in the new Directive 2001/80/EC for the Large Combustion Plants (LCPD).

70. According to the legislation (Decision 2000/479/EC) and the Guidance Document for EPER implementation (EC November 2000) (annex 23), all the emission data per facility should be accompanied by a code that indicates how they have been determined. The used codes do not pretend to refer to the accuracy of the emission data, because there is no uniform relation between the methods used (code) and the accuracy of the resulting emission figure. The code "**C**" is used when the emissions are based on calculations using activity data (fuel used, production rate, etc.) and emission factors. Furthermore, the indication "C" is used, when the emission calculation method is obtained from published references (see Chapter 8 for an overview of publications, software and web sites, VGB-EURELECTRIC).

71. According to the above mentioned and the relevant EC Guidance Document for EPER implementation, there are three possible emission determination methods for the reported emission data: by measurements, by calculation or by estimation. All three methods are equally accepted and valid.

72. Emission data submitted by DEH to EPER, have been based on the TSP **emission measurements** and the calculation of PM_{10} according to the coefficients for the particulates size distribution, described in the Technical Report "Comments on the procedure of evaluation of the EURELECTRIC/ VGB inquiry on particulate matter", Table "Percentage of PM10 and PM2.5 in relation to total PM used for calculation as agreed in ETC, Environment".

73. Consequently, the determination of PM_{10} is in accordance with the valid and accepted method of the Environmental Technical Committee and not

"determined by expert judgement not based on publicly available references", neither DEH's "guesses" as Complainant alleges.

74. It becomes obvious that MFHR intentionally throws ambiguity and doubts on the monitoring and reporting methods (see comment 13 at the para 12). One cannot explain otherwise the clear relevant provisions of the European Legislation. According to the EC Guidance Document for EPER implementation, all **the emission data should be expressed in kg/year and rounded off to exactly 3 significant digits**.

75. It should be mentioned that the European Community has accepted the fulfillment of the 1st round of the reports submission by the Member-States, with no comments for Greece.

76. **The MFHR's Response in para 13 for high concentration of radionuclide – radioactive trace elements in the fly ash in Megalopolis area, is inaccurate and in contradiction with systematic measurements conducted by the Greek Atomic Energy Commission (GAEC) in the area.** The Greek Atomic Energy Commission (GAEC) is an independent civil service, supervised by the General Secretariat of Research and Technology (GSRT) under the Ministry of Development. GAEC is responsible for nuclear power and technology issues and for the protection of the population, of workers and of environment from the ionizing and the artificially produced non ionizing radiation.

77. The following picture, from the website of the GAEC, shows that in the Megalopolis area, as well as in the Ptolemais area, the environmental radioactivity levels are normal. Also measurements and studies for the radioactivity levels in Megalopolis area are effectuated by:
    - Insitute of Nuclear Technology & Radiation Protection of Demokritos
    - Nuclear Engineering Section, Mechanical Engineering Dept., National Technical University of Athens (NTUA)

    proving that radioactivity levels in the Megalopolis area are normal, on the same level with others regions in country and, therefore, no health problem exists whatsoever for the population in the area.

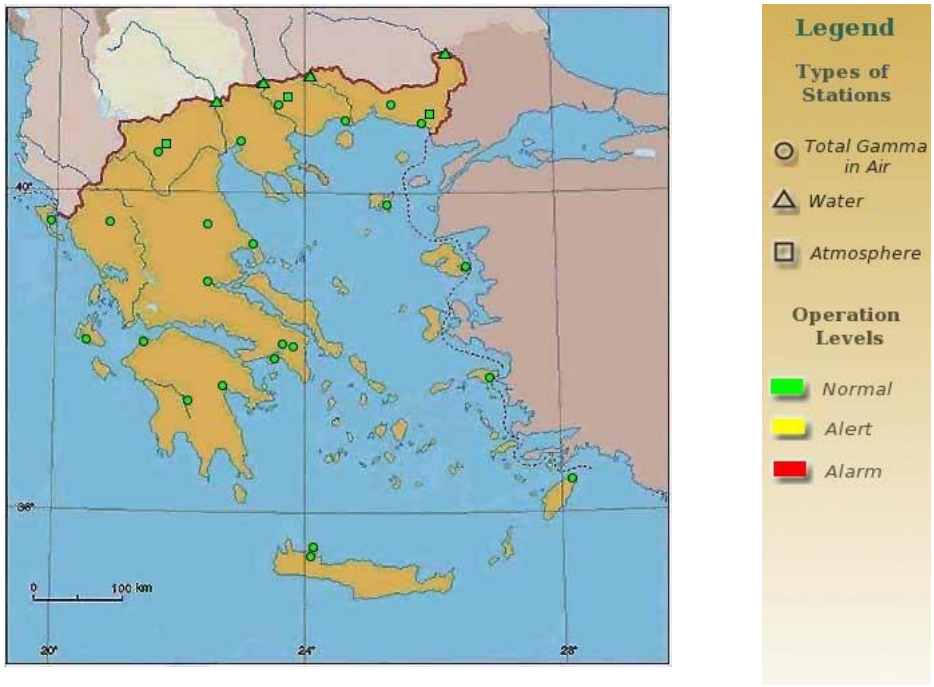

Figure 5: Radioactivity monitoring sites (GAEC)[5]

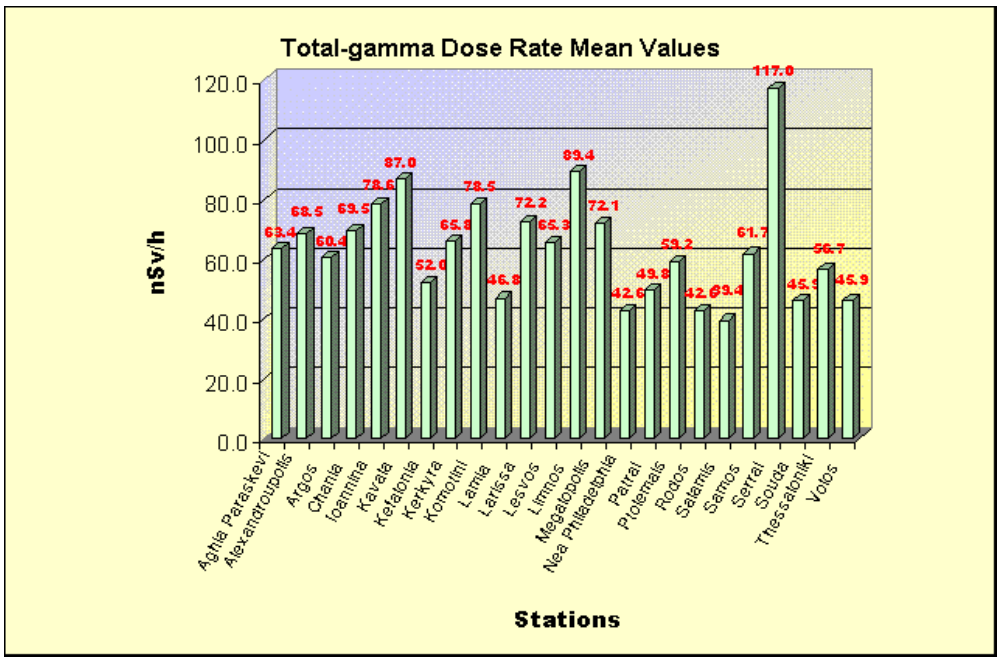

Figure 6: Radioactivity Values in Greek cities (GAEC)

Regarding "particulate matter"

(para **14-16** of the Response)

78. The effects of the particulate matter ambient air concentrations, its consequences on health and its safe limit value for the population are issues of great international interest and controversy for legislators, scientists and other

[5] www.eeae.gr

interested groups. Questions still remain unanswered and the scientific knowledge is being revised about the precise pathogenic role of different particles and their physical and chemical characteristics. Community research continues about the air pollution, including the health impacts of particles, performed under various RTD -Research and Technology Development- Framework Programs (CLEAR cluster, INTERGAIRE thematic network).[6] The Community Strategy on air pollution, currently under adoption, will also take in account economic-environmental models and tools developed using Community RTD funds. A similar approach is applicable in the USA, where the particulate research continues revising previous theories.

79. The European Economic and Social Committee in its recent opinion[7] on the proposal for a new Directive on ambient air quality and cleaner air for Europe[8] underlines that "*available data on fine particles and their effects are limited and uncertain*" and "*there is, at present, a lack of knowledge on fine particles and their effects on health in the long term*".

This entangling situation is apparent at the different and under evaluation strategies of various countries.

Indicatively the European and USA-Environmental Protection Agency-strategies are presented hereafter.

EUROPEAN STRATEGY

80. In the European Union the ambient air quality limit values for pollutants ground concentrations were firstly defined by the Directive 80/779/EEC.

Table 3 : Directive 80/779/EEC, Annex IV, Table B

Limit Values for suspended particulates, as measured by the gravimetric method (expressed in µg/m^3)	
Reference Period	**Limit Values for suspended particulates**
	150 µg/m^3 TSP

[6] COM (2005) 446 final-21.9.05-"Thematic Strategy on air pollution" (Annex 27)
[7] NAT/298/17.05.06, Annex 44

[8] COM 2005/447 final-para5.2.5-"Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe {SEC(2005) 1133} (Annex 28)

Year	(arithmetic mean of daily mean values taken throughout the year)
Year (made up of units of measuring periods of 24 hours)	300 µg/m^3 TSP (95 percentile of all daily mean values taken throughout the year)

This Directive has then been revised according to the Directive 1999/31/EC. In the latter, new limit values are included:

Table 4: Directive 1999/30/EC, Annex III[9]

Limit Values for particulate matter (PM_{10})		
Averaging period	**Limit value**	**Date by which limit value is to be met**
24 hours	50 µg/m^3 PM_{10}, not to be exceeded more than 35 times a calendar year	1.1.2005
Calendar year	40 µg/m^3 PM_{10}	1.1.2005

81. Many countries, mainly the Mediterranean one, have already expressed their reservations for their capability of always respecting the above limits, in their territories as the PM_{10} concentration could sometimes be found increased, because of natural reasons (climate, Sahara dust events, sea salt, wind blown dust).

82. The European Community is currently revising its strategy by the Clean Air For Europe (CAFÉ) program.

USA STRATEGY

83. The EPA's air quality standards for particulate matter were first established in 1971 and were not significantly revised until 1987, when EPA changed the indicator of the standards to regulate inhalable particles (PM_{10}). Two years later, EPA revised the PM standard setting separate standards for fine particles ($PM_{2.5}$). The ambient air quality standards for particle pollution are given in the next table.[10]

Table 5

EPA Ambient Air Quality Standards for Particle Pollution			
Pollutant	**Primary Stds.** [5]	**Averaging Times**	**Secondary Stds.** [6]
Particulate Matter (PM10)	50 µg/m^3	Annual[2] (Arith. Mean)	Same as Primary

[9] Annex 25
[10] Environmental Protection Agency (EPA), Annex 43

	150 µg/m^3	24-hour[1]	
Particulate Matter (PM2.5)	15 µg/m^3	Annual[3] (Arith. Mean)	Same as Primary
	65 µg/m^3	24-hour[4]	

1- Not to be exceeded more than once per year.

2 - To attain this standard, the 3-year average of the weighted annual mean PM10 concentration at each monitor within an area must not exceed 50 µg/m^3.

3 - To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

4 - To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

5- Primary Standards: Limits to protect public health, including health of "sensitive" populations such as asthmatics, children and the elderly

6- Secondary Standards: Limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation and buildings

84. **It should be noted that the American 24h limit value for PM_{10} is 3-times above the relevant European limit value and the American 24h limit value for $PM_{2.5}$ is higher than the European PM_{10} limit value.**

85. EPA is currently (2006) proposing revisions to the air quality standards. The proposed new standards are:

Fine particles

$PM_{2.5}$ Primary (Health-Related) 24-hour standard

The proposal includes strengthening the 24-hour fine particle standard from the current level of 65 micrograms per cubic meter (µg/m^3) to 35 µg/m^3.

$PM_{2.5}$ Primary (Health-Related) Annual Standard

EPA is proposing to retain this standard at 15 µg/m^3 based on its assessment of several expanded, re-analyzed and new studies[11].

Coarse particles.

[11] An area would meet the 24-hour standard, if the 98th percentile of 24-hour $PM_{2.5}$ concentrations in a year, averaged **over three years**, is less than or equal to the level of the standard EPA sets in its final rule (35 µg/m^3 under this proposal). This is the same form as the current 24-hour standard.

86. The proposed revisions would change the definition of the standard so that it covers only particles between 10 and 2.5 micrometers in diameter ($PM_{10-2.5}$), also known as "***inhalable coarse particles***" in response to a 1999 U.S. Court of Appeals for the D.C. Circuit decision directing EPA to ensure that regulations for coarse particles did not duplicate regulation of fine particles

    The proposed new $PM_{10-2.5}$ standard would be **only a 24-hour standard** set at 70 $\mu g/m^3$. EPA is not proposing an **annual** standard for $PM_{10-2.5}$.[12] **Current scientific evidence** (originated from numerous epidemiological studies) **does not show significant public health risks associated with long-term exposure to coarse particles.**

87. EPA would further define $PM_{10-2.5}$ to include any ambient mix of $PM_{10-2.5}$ where the majority of coarse particles are resuspended dust from high-density traffic on paved roads and PM generated by industrial sources and construction.

88. The proposed standard would **exclude** any ambient mix of $PM_{10-2.5}$, where the majority of coarse particles are rural windblown dust and soils, and PM generated by agricultural and **mining sources**. Evidence to date (originated from numerous epidemiological studies) does not support a national air quality standard for these kinds of situations.

89. States would have to meet the standards **by July 2018**. In some cases, a state could receive additional time to meet the standard **(up to July 2023).**

90. From the above presented, it becomes obvious that the consequences of the suspended particulates on population health, as well as the safe limit values are still vague internationally.

91. Indicatively, it should be mentioned that all the reproaches, easily thrown by Marangopoulos Foundation (MFHR), about the lignite mines operation and its consequences on population health, completely contradict to the recent conclusions of the American epidemiological studies, since EPA proposes to exclude them from new standards.

[12] An area would meet the coarse particle standard if the 98th percentile of 24-hour $PM_{10-2.5}$ concentrations in a year, **averaged over three years**, is less than or equal to the level set in the final rule ($70\mu g/m^3$ in this proposal). This form will provide a more stable target for air pollution control programs by reducing the impact of unusual weather conditions, such as high wind events

A-2 About air quality in Kozani-Ptolemais region

92. Especially, for the MFHR references about Kozani region, the following can be mentioned.

General comment

93. In its Response, the MFHR -trying to substantiate its assertion that severe atmospheric pollution is caused in the Kozani-Ptolemais valley by the operation of mines and the lignite-fired power plants (2.1)- is mainly based on three research articles published in scientific journals, by a single author (Triantafyllou 2002, Triantafyllou 2003, and Triantafyllou et al., 2005)[13]. This is a discriminating and uncritical use of literature data by the MFHR. Statements, findings and studies are preferably used, while others, from different authors, are intentionally ignored.

94. It should be clarified that the three research articles mentioned above are exclusively dealing with the ambient mass concentrations of TSP or PM_{10}, analyzing temporal and spatial variations, trends and the influence of prevailing meteorology. **The origin of particles in these studies could only be speculated, not determined**. **In addition, the chemical composition of particles, a major factor influencing their detrimental effects to human health, was not examined.** There are two other recent scientific publications dealing with the chemical composition and the origin of particles in the area (Samara, 2005 and Petaloti et al., 2006)[14], which, were however, totally ignored by the MFHR. These publications present the results from a study conducted over a one-year period (November 2000-November 2001) at ten sites within the Kozani-Ptolemais-Florina valley located in variable distances from the power plants.

95. In addition, MFHR fails to take into consideration published data that are available for other regions in Greece, not affected by power plants operations, for which the pollution levels are comparable or higher than those referred to the Kozani-Ptolemais valley, trying to establish arguments that the only source of pollution is the operation of the mines and of the power plants in KPV.

[13] Annexes 4, 5 & 6 respectively
[14] Annexes 7 & 8 respectively

Specific comments

96. The research article of Triantafyllou (2003) is invoked in para14 of section 2.1.1.1. The article is dealing with TSP concentrations measured during the period 1983-1998 at various sites by the DEH's monitoring stations and PM_{10} concentrations monitored by the Technological Institute (TEI) stations during the period 1996-1998. The MFHR response according to which the monitoring stations in the area measured TSP and not PM_{10} or $PM_{2.5}$ is unreasonable, since the European limit for PM_{10} was established later, in 1999.

97. The second comment concerning the exceedings of EU TSP limits is not totally true, since the article indicated limit violations only for the sites located inside the Kozani-Ptolemais valley (KPV) (i.e. Ikismos, Komanos, Akrini), not for sites outside the valley (Polymylos, Petrana, Kapnochori, Amynteon). **Moreover, the article clearly indicates the observed decreasing trend of TSP concentrations at all sites, concluding that after 1996 all sites, even those located close to the power stations, meet the annual limit of 150 μg/m^3**.

98. **The clear statement of the author (p.29 of the paper) that "*since the lignite consumption increased by 20% between 1990-1999, the effectiveness of the antipolluting measures implemented by DEH in the area is higher than that implied from observations"* has intentionally been ignored by the MFHR.**

99. The declining trend of PM_{10} is also mentioned in another research article by Triantafyllou (2000). The article is dealing with PM_{10} concentrations measured during the period 1991-1994 at the station of TEI. In this article it is mentioned that "**the reduction during 1993 and especially during 1994 may be due to the installation of new electrostatic precipitators in the power plants of Ptolemais and Kardia**". However, this research article and its findings were again deliberately ignored by the MFHR.

100. The research article of Triantafyllou et al. (2005), is twice invoked in para15 of the 2.1.1.1 section to point out (i) the finding that fly ash escaping the

electrostatic filters contains a large fraction of particles <10 μm (~80%), (ii) the high frequency and level of the PM_{10} daily limit exceedings, observed in Kozani and Klitos over a 7-year survey (1997-2003). However, **nowhere in this article** is it suggested that "*the downward trend of TSP concentrations is not indicative of an effective PM_{10} abatement policy*" as it is stated in p.8 of the Response. On the contrary, the author presents the size distribution data very cautiously, accepting the very limited number of fly ash samples examined (only one from the Ag. Dimitrios power plant). Moreover, no trend downward or upward was reported in this article, neither for TSP nor for PM_{10}. **Their concentrations seemed rather constant over the 7-year survey (1997-2003), despite the increased lignite consumption for power generation during this period. This is very important remark of the author's actually suggesting that the particle emission abatement policy in the valley was indeed an effective one.**

101. In the research article of Triantafyllou et al. (2005) there are also some other important findings which are not presented by the MFHR. To mention a few:

- **TSP concentrations in urban sites outside the Kozani-Ptolemaisvalley (KPV), such as in Kozani, Florina, Kastoria and Grevena, were higher than in sites located inside the KPV and thus much closer to the power plants and mining activities (e.g. Kilada, Pontokomi, Oikismos, Pentabrysos).** Only Klitos, among the sites inside the KPV, was found to have TSP concentration exceeding the annual limit of 150 $\mu g/m^3$.

- The PM_{10} concentration levels exceeded significantly the annual limit of 40 $\mu g/m^3$ only in Klitos and Kozani, where PM_{10} values were quite similar (~60-65 $\mu g/m^3$).

- Concentrations of TSP and PM_{10} in sites inside the KPV were higher during the warm period, whereas no seasonality was found in the cities. **This is in contradiction with the suggestion that "*pollution levels remain constant closer to the power plants while seasonal atmospheric changes become significant as one moves away from the power plants*" (Triantafyllou, 2003), which is invoked by the MFHR (p.7).**

102. It should be emphasized that all the lignite power plants of the area have high stacks (about 200m), a fact that contributes to an effective pollution dispersion. Consequently, the areas near Power Plants are not affected by flue gases.

103. The research article of Triantafyllou (2002), is invoked in para15 to point out the high PM_{10} levels in Kozani city and concludes that the annual average concentrations for the period 1996-2000 exceeded the EPA limit value (please note that the EU target value for PM_{10} was established in 1999 and it was to be met in 2005). A combination of particle sources (traffic, road dust resuspension, construction activities, transport of fly ash from power plant stacks, occasional long-range transport of Saharan dust) and meteorological conditions were suggested to modulate pollution levels. **The source apportionment study of Samara (2005) indicated that traffic, particularly of diesel operated vehicles, is the major source of particles in Kozani, a finding that is in accordance to the location of the monitoring site in the center of city, near a densely trafficked road and close to a bus station.**

104. As reported in Petaloti et al. (2006), the annual mean TSP concentrations ranged between 47±33 μg/m^3 and 110±50 μg/m^3 **at nine out of ten sites** located in the Kozani-Ptolemais-Florina valley at variable distances from the power plants. Only the site closest to the power stations and the lignite conveyor belts (Klitos) exhibited annual TSP levels of 210±97 μg/m^3 exceeding the European standard (150 μg/m^3). This finding is in accordance with Triantafyllou et al. (2005).

105. The concentrations of TSP exhibited significant spatial variations; however, the elemental composition of TSP was quite similar among all sites suggesting that all sites were affected by similar source types. In comparison to the 1998 TSP levels (Triantafyllou, 2003)**, all sites exhibited a relative reduction trend, particularly Petrana (72 μg/m^3 in 1998, 47 μg/m^3 in 2001).**

106. Statistical analysis indicated insignificant seasonal variation for TSP concentrations in all ten sites, even in those located far away from the power plants. This finding is contrary to Triantafyllou (2003), but in accordance with

Triantafyllou et al. (2005) research articles. The lack of significant seasonality of ambient TSP was attributed to stronger soil resuspension during the warm months, a conclusion supported by the elevated concentrations of crusted elements during the warm period.

107. At most sites, the highest concentrations of TSP, which still remain below EU Standard, and elemental components were associated with weak- to moderate-speed winds, which favour accumulation of emissions from sources in close vicinity (traffic emissions, fugitive dust). Influences from power generation were considered likely at those sites located closest to the power plants and mining activities (i.e. Polymylos, Klitos, Pontokomi, Ikismos, Ptolemais) while long range transport of pollutants from a lignite power station operating in FYROM close to the border was suggested for Amynteon.

108. Almost all elemental components of TSP showed their maximum concentrations in Klitos. **Exceptionally, the highest concentrations of Pb and Br were observed in Kozani and Ptolemais indicating clearly the strong influence from vehicular traffic. However, the annual mean value of Pb at both these urban sites remained well below the corresponding annual limit (500 ng/m^3, 1999/30/EC)[15].**

109. The fact that the annual average value of TSP in Petrana, a sampling site located only 2 km from Kozani but with no visual local emission sources, were less than half of those found in Kozani (47±33 μg/m^3 vs 110±47 μg/m^3), reveals the strong influence of urban sources (vehicular emissions, domestic heating, etc.) on the atmospheric pollution of Kozani.

110. **The paper of Samara (2005), is the unique source apportionment study conducted in the Eordea basin.** In this work, the chemical profiles of ambient TSP from the ten sites were compared to the corresponding profiles of various sources (fly ash, lignite dust, automobile traffic emissions, domestic heating emissions, emissions from open-air burning of agricultural biomass and refuse)

[15] Annex 25

by employing a chemical mass balance (CMB) receptor model. **It should be noted that CMB is a well established receptor model and has been widely used to develop pollution control strategies.**

According to the source apportionment results, diesel oil combustion was found to be the major contributor at all ten sites accounting for 29-55% to the TSP mass in the cold period. The second more significant source was vegetative or refuses burning with mean contributions at various sites between 15-25% and 15-20%, respectively. Surprisingly high contribution (38%) was apportioned to domestic coal burning at Ptolemais. At all sites, the contribution of catalytic cars was low (0-3.1%), while no estimable contribution was found for the non-catalytic cars.

The contribution of fly ash was in general low, ranging between 2.0% in Florina and 16% in Klitos. In the warm period, diesel oil combustion prevailed in Pontokomi (27%), Polymylos (54%), Ikismos (37%), Kozani (31%), Amynteon (65%), Ptolemais (32%), and Vegoritida (58%). Vegetative burning was significant, ranging between 13% in Amynteon and Vegoritida to 28% in Klitos. The catalyst exhaust contribution in most sites was higher than in the cold period. **The contribution of fly ash was stable or slightly increased in comparison to the cold season. At all sites, it was generally lower about 15 % and only in Klitos it reached 21%.**

The participation of the DEH's activities in the total diesel emissions in the basin is expected to vary from site to site. For instance, in Kozani, bus and taxi traffic is the most likely diesel particle emission source, whereas in Klitos, emissions from trucks, travelling within the mine areas, would be probably more important than ordinary diesel traffic.

111. It must be emphasized that:

- EU legislation had not set any limit value for PM_{10} until 2005
- All the mining equipment, such as excavators and conveyors, is electrically driven and not by diesel engines, as wrongly stated by the MFHR. Also only 10% of lignite and soil is transported by vehicles.

112. As far as the resuspended particulate matter is concerned (para 16), it should be clarified that resuspension is due to wind-blown soil or road dust and it is enhanced by vehicular traffic. However, the resuspended particulate matter is completely different from diesel particulate emissions, both in their chemical composition and their size. Resuspended particles are enriched with crusted elements, whereas diesel particles mainly contain organic carbon, elemental carbon and trace elements. Furthermore, resuspended particles are coarse particles with diameters larger than 2.5 μm, whereas diesel particles are very fine, typical within the submicron size range.

113. A comparison of the TSP and elemental component concentrations found in various Greek locations is provided in Table 6. As seen, **TSP levels in the KPF valley is within the range of values found in other residential areas of Greece, without power generation activity**. The composition of TSP however may be different from site to site reflecting differences in local source types.

114. In general, particulate concentrations in urban and rural sites of Southern Europe are higher than those observed in sites of Central and Northern Europe with similar character (Rodriguez et al., 2001). This might be attributed to one or more of the following reasons: (a) the greater contribution of local resuspension of soil dust due to drier and looser soils in the semi-arid Southern Europe, (b) the lower frequency of rains which results to less effective removal of atmospheric particles by wet deposition, (c) the enhanced formation of secondary aerosols due to higher photochemical rates, (d) the occasional transport of Saharan dust under specific atmospheric conditions (Andreevska et al., 2000; Ganor and Mamane, 1982; Triantafyllou, 2002), (e) the poorer renewal of air masses in the Mediterranean region.

Table 6: Concentrations of TSP and PM_{10} in various Greek locations ($\mu g/m^3$)

Site	Time period	Particles	Mean of daily concentrations
Pontokomi [a]	2000-01	TSP	90
Polymylos [a]	2000-01	TSP	86

Ikismos [a]	2000-01	TSP	97
Kozani [a]	2000-01	TSP	110
Amynteon [a]	2000-01	TSP	55
Klitos [a]	2000-01	TSP	210
Florina [a]	2000-01	TSP	99
Ptolemais [a]	2000-01	TSP	110
Vegoritida [a]	2000-01	TSP	62
Petrana [a]	2000-01	TSP	47
Veria [b]	1996	PM_{10}/TSP	105/156 (cold)
			43/93 (warm)
Serres [b]	1996	PM_{10}/TSP	89/131 (cold)
			57/250 (warm)
Kilkis [b]	1996	PM_{10}/TSP	68/85(cold)
			29/78 (warm)
Moudania [b]	1996	PM_{10}/TSP	117/163(cold)
			64/263 (warm)
Katerini [b]	1996	PM_{10}/TSP	110/117 (cold)
			72/109
Aliveri [c]	2003	TSP	70 (cold)
			99 (warm)
Thessaloniki, center [d]	1987-88	TSP	256
Thessaloniki, west [d]	1987-88	TSP	283
Thessaloniki, center [e]	1997-98	PM_{10}	82
Thessaloniki, west [e]	1997-98	PM_{10}	78
Thessaloniki, east [e]	1997-98	PM_{10}	89
Athens, Aristotelous [f]	2001-02	PM_{10}	83
Athens, Maroussi [f]	2001-02	PM_{10}	74
Kozani [g]	1996-00	PM_{10}	71

a: Samara, 2005; Petaloti et al., 2006, b: Ministry of Macedonia-Thrace, 1997 c: Source Identification in the Area of Aliveri, Technical Report (Th. Kouimtzis, ed.), Aristotle University, Thessaloniki 2004, d: Samara et al., 1990, e: Voutsa et al., 1992, f; Grivas et al., 2004, g: Triantafyllou, 2003.

115. The following data show a general overview concerning PM_{10} situation throughout Europe. The Figure 7 is from the APHEIS study. A key figure is that cities located near the Mediterranean sea (e.g. Ljubljana, Rome, Seville and Tel Aviv) are amongst the cities with the largest annual mean concentration of PM_{10}.

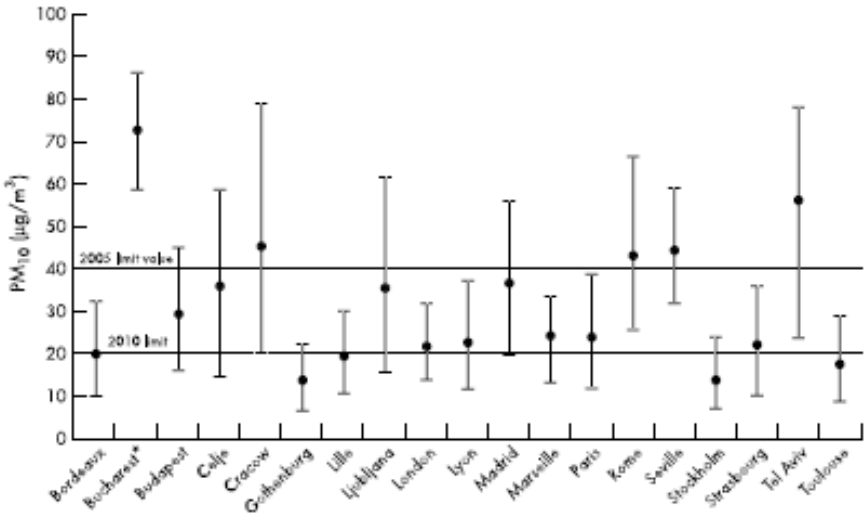

Figure 1 Annual mean concentrations and 10th and 90th centiles of the distribution of PM_{10} in 19 Apheis-2 cities. *Bucharest shows the highest PM_{10} levels, but in this city measurements were only available for four weekdays (Monday to Thursday); this may explain the high levels observed.

Figure 7: Annual mean PM_{10} concentration in 19 European cities
Adopted from S Medina, A Plasencia, F Ballester, H G Mücke and J Schwartz, Apheis: public health impact of PM_{10} in 19 European cities, *J. Epidemiol. Community Health* 2004;58;831-836, doi:10.1136/jech.2003.016386

116. Further evidence could be gathered from the European air quality database system **AirBase** (European Environmental Authority[16]) that contains multi-annual series of measurements, statistics for a representative selection of stations throughout Europe, information on the monitoring stations and the measured pollutants. A vast amount of data exist[17] also presenting exceedings (number of days of measurements, percentage of days above 50µg/m^3) from the years 2002 to 2004 from the Greek cities and those monitoring stations characterised as "Industrial".

117. The **Greek territory is seriously affected due to its geographical position**, by air transported particulate pollution under favorable meteorological conditions. In the study effectuated by Kassomenos et al, (Annex 15) two cases of air transported particulate episodes are presented. The measurements of the national air pollution monitoring network achieved hourly values of up to 750 µg/m^3 on 20-21.04.2003 and at least 1,000 µg/m^3 on 14.11.2004. A flow-pattern study based on back trajectories at various altitudes in the atmosphere revealed that the

[16] http://air-climate.eionet.europa.eu/databases/airbase/
[17] http://air-climate.eionet.europa.eu/databases/airbase/airbasexml/ AirBase_into_Excel_macros/read_statistics_macro.xls

origin of air born particles was from Kazakhstan and the Saharan desert respectively.

A-3 Environmental projects for atmospheric pollutants abatement

A-3.1 Particulate matters

118. In order to reduce dust emissions from lignite power plants, DEH implements a programme for the upgrading or the replacement *of the existing Electrostatic Precipitators* (ESPs), as well as the adding of *new state of the art high performance ESPs*, according to the principles of the 84/360/EC[18] Directive, the IPPC Directive (96/61/EC)[19] and the BAT[20]. Since 1987, within the scope of this program, DEH has proceeded to the replacement of the existing electrostatic precipitators at lignite-fired units I and II of Kardia SES; units I, II, III and IV of Ptolemais SES; units I and II of Liptol SES; units III-IV of Kardia SES and the fly ash and lignite vapour ESPs at the unit III of Megalopolis SES. Within the scope of the same programme and in order to provide continuous improvement of the environment, works pertinent to interventions to the electronic and construction features of existing ESPs have been carried out in parallel.

119. It should be noted that in general, all the environmental projects currently carried out, as the upgrading of the Cooling Towers or the upgrading or the installation of new heat exchangers for the heat recovery of the flue gases (projects extensively presented in Annex 3), significantly contribute to the reduction of the atmospheric pollution, as the Units efficiency is increased and, therefore the pollutants' specific concentration decreases.

Table 7: Programme for the reduction of Particulate emissions
Upgrading of the existing and addition of new ESPs at Ag. Dimitrios SES, units I-IV (start in September 2004, completion at the end of 2007) –Cost: 130 million €
New lignite ESPs at Megalopolis SES, unit III (completed in March 2006) – Cost: 16.4 million €
Extensive maintenance & upgrading of the lignite/ ashes ESPs at the units I and II, at Megalopolis SES (3 million €)
Combustion improvement additives & replacement of the existing oil burners with new ones (of steam atomization type) at the oil-fired plants

[18] Annex 17
[19] Annex 18
[20] Annex 21

120. All the above, combined with the introduction of **natural gas** to the national energy balance, resulted in a 81% reduction at the particulates emission specific factor from the thermal power plants during the period 1990-2004 (Figure 14).

121. Especially for the particulates reduction at the Kozani – Ptolemais and Megalopolis regions, another project of great importance is the installation and operation of urban and rural **district heating** through co-generation projects.

The combined generation of heat and power, also known as "co-generation", and the relevant technologies have been applied in Greece, particularly during the last decade, in regional district heating systems where heat through hot water is used for residential heating within the limits of a particular region.

122. DEH, in collaboration with several municipal authorities companies, has proceeded to the implementation of a series of energy generation projects in the form of hot water for district heating purposes attempting to provide a method of continuous heating of urban residences harmless to the environment. These projects are presented in Annex3.

District heating systems for the areas of Ptolemais and Kozani have already been successfully in operation for several years, while the corresponding for Megalopolis started operating in 2006. They are providing residents with high thermal power availability, which by the appropriate billing policy applied by the municipal authorities, has led to a significant improvement of the residents' quality of living, offering more economical heating power and contributing to the reduction of air pollution. This has led to an increased interest from the part of municipal authorities firms in additional thermal power by the nearest SES.

123. DEH, in response to such demand, is already in the process of studying and negotiating for the additional supply of 40-80 MWth capacity to Ptolemais municipality from the Units of Kardia SES and for the expansion of Kozani district heating system with the supply of steam from Units II – IV of Ag. Dimitrios SES.

The technical specifications of these projects fully comply with the requirements of the Best Available Techniques.

124. The implementation of the programme to DEH's plants so far, has led to an impressive improvement throughout the years in the quality of the ambient air at the power plants' regions. This improvement is figured in the following diagrammes.

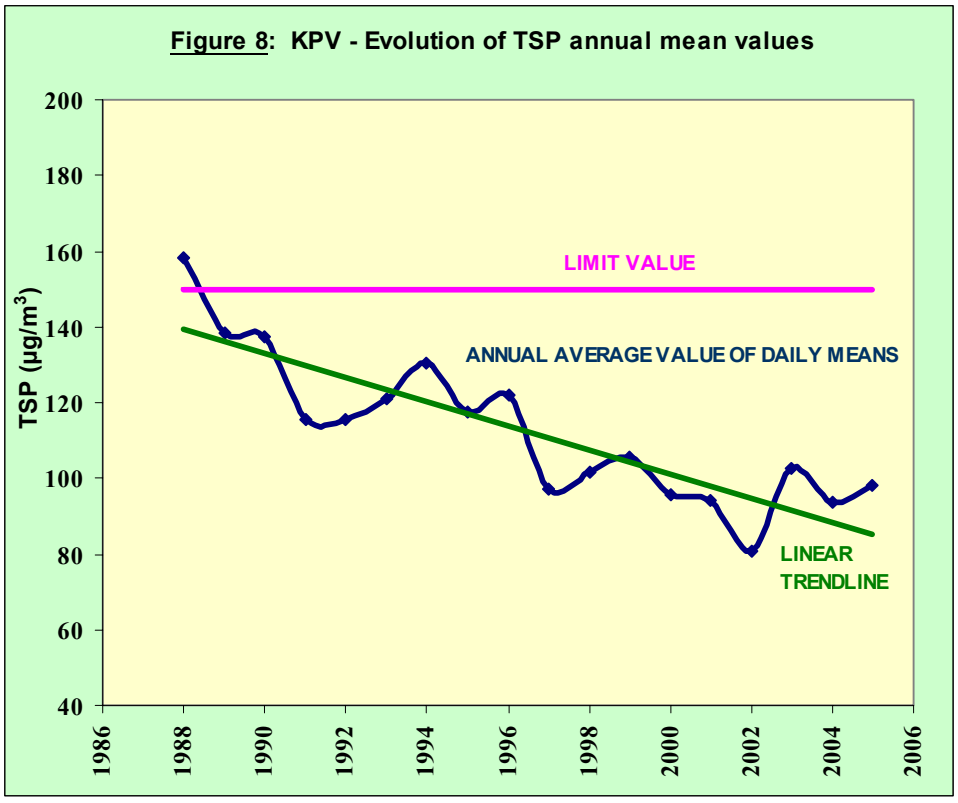
Figure 8: KPV - Evolution of TSP annual mean values
TSP (µg/m3)
200
180
160
140
120
100
80
60
40
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
LIMIT VALUE
ANNUAL AVERAGE VALUE OF DAILY MEANS
LINEAR
TRENDLINE

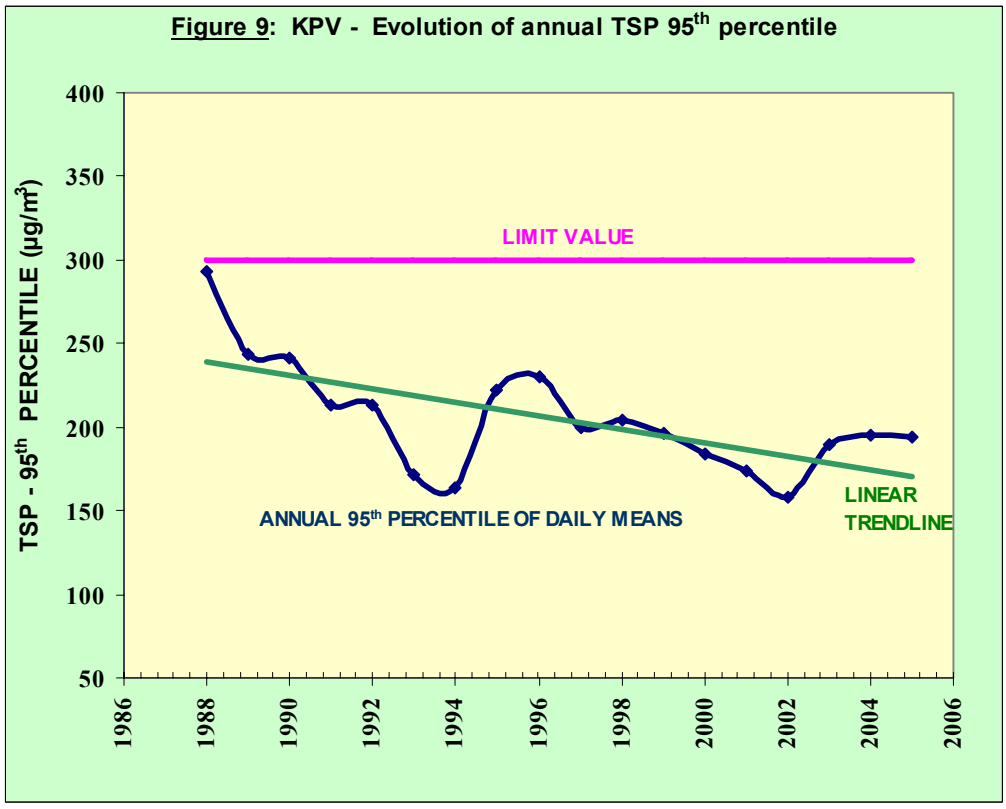
Figure 9: KPV - Evolution of annual TSP 95th percentile
TSP - 95th PERCENTILE (µg/m3)
400
350
300
250
200
150
100
50
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
LIMIT VALUE
ANNUAL 95th PERCENTILE OF DAILY MEANS
LINEAR
TRENDLINE

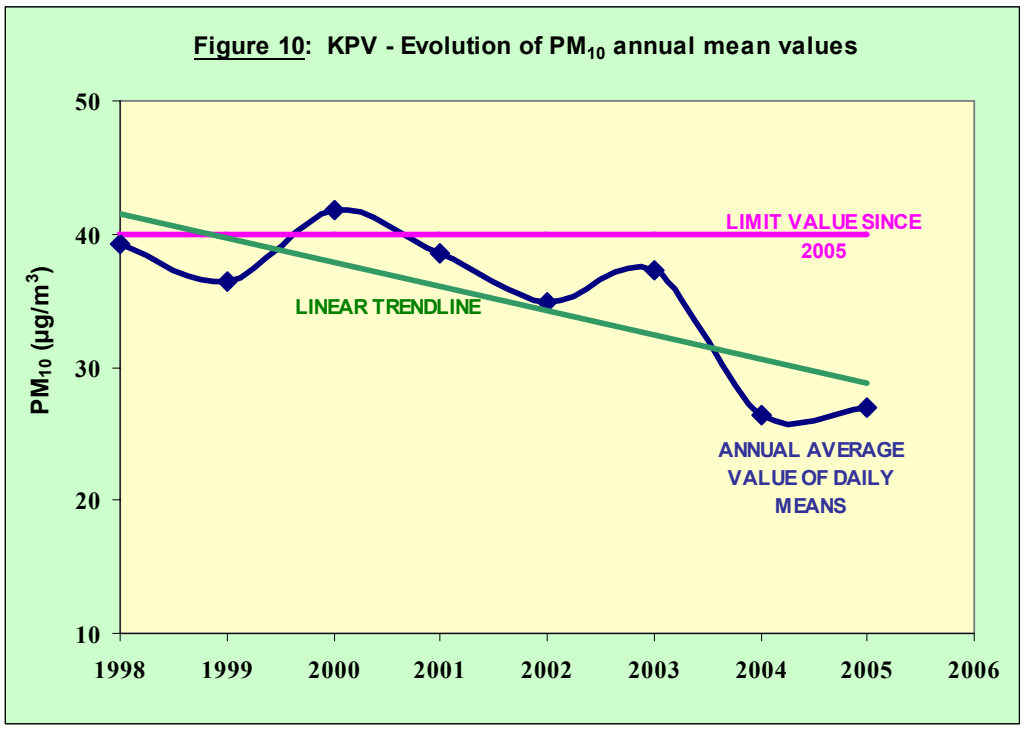
Figure 10: KPV - Evolution of PM10 annual mean values
50
40
30
20
10
PM10 (µg/m3)
1998
1999
2000
2001
2002
2003
2004
2005
2006
LIMIT VALUE SINCE 2005
LINEAR TRENDLINE
ANNUAL AVERAGE VALUE OF DAILY MEANS

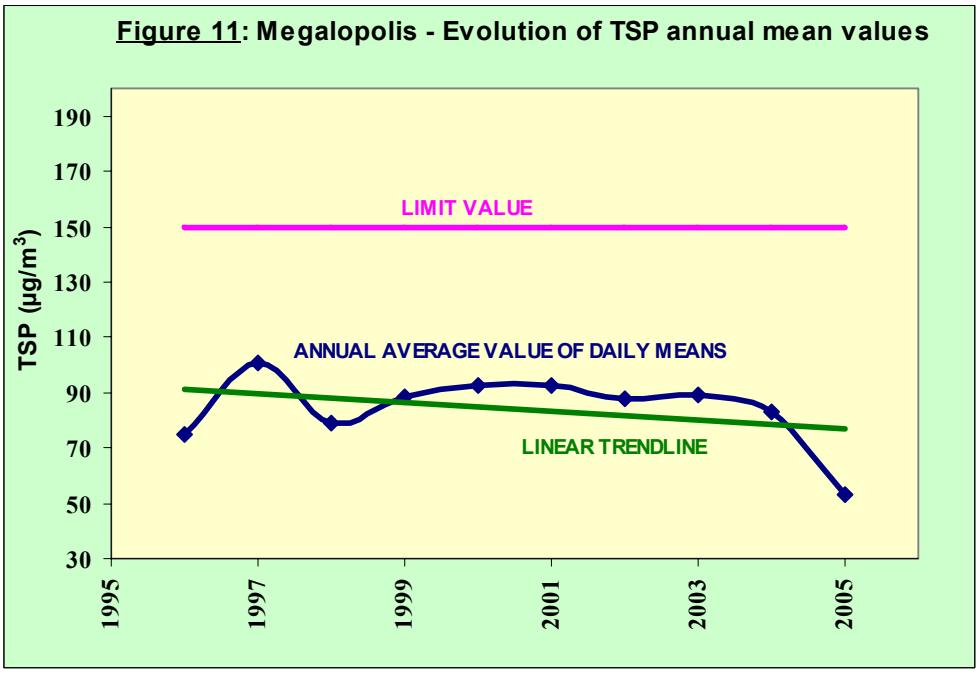
Figure 11: Megalopolis - Evolution of TSP annual mean values
190
170
150
130
110
90
70
50
30
TSP (µg/m3)
1995
1997
1999
2001
2003
2005
LIMIT VALUE
ANNUAL AVERAGE VALUE OF DAILY MEANS
LINEAR TRENDLINE

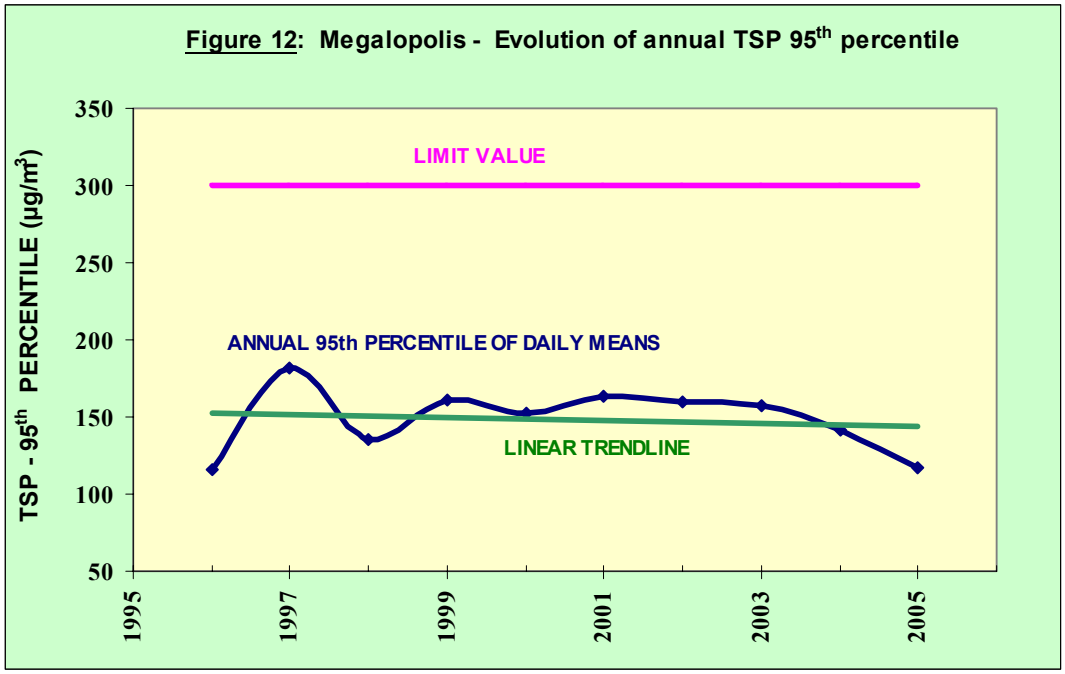
Figure 12: Megalopolis - Evolution of annual TSP 95th percentile
TSP - 95th PERCENTILE (µg/m3)
350
300
250
200
150
100
50
LIMIT VALUE
ANNUAL 95th PERCENTILE OF DAILY MEANS
LINEAR TRENDLINE
1995
1997
1999
2001
2003
2005

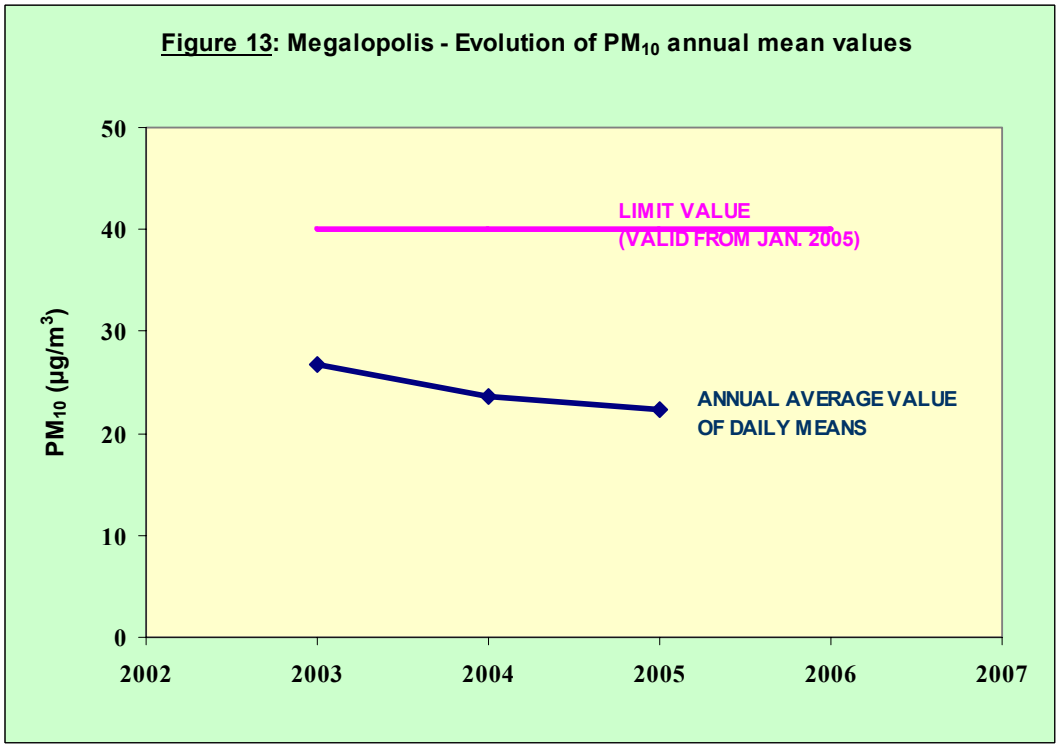
Figure 13: Megalopolis - Evolution of PM10 annual mean values
PM10 (µg/m3)
50
40
30
20
10
0
LIMIT VALUE
(VALID FROM JAN. 2005)
ANNUAL AVERAGE VALUE
OF DAILY MEANS
2002
2003
2004
2005
2006
2007

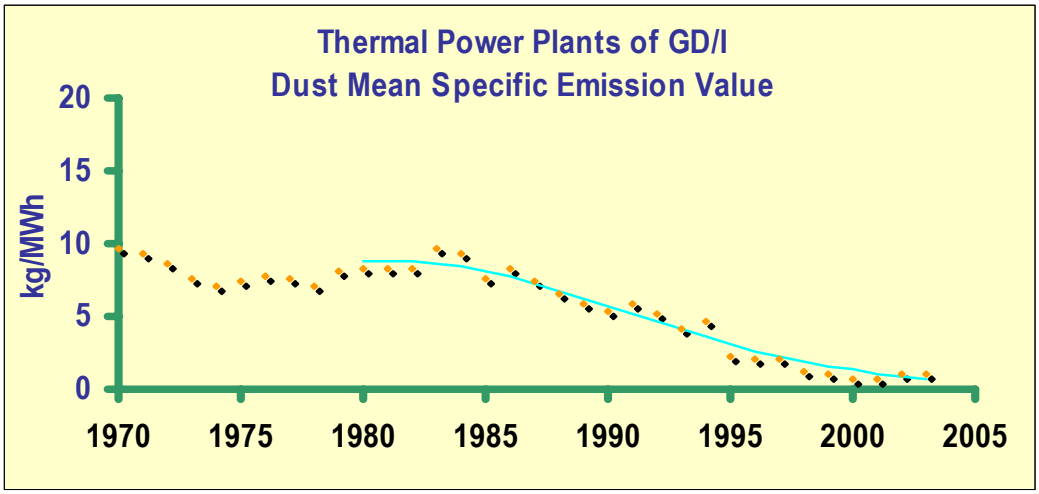

Figure 14: TSP emissions evolution throughout the years as an average of all the SES

Data manipulation by the Complainant: Some examples

125. The para **17** of MFHR's Response intentionally misquotes the conclusions of an epidemiological study of 1999 while ignoring significant points. The reference that "*average values of PM_{10} and NOx at levels such as 180-200μg/m3 are not a rare occurrence*" refers in fact only to TSP and not to PM_{10} and NOx. For NOx concentrations the conclusions of the study make clear that they are similar to the relevant values at many other geographical locations. If the MFHR had more carefully examined the NOx data, it would have clearly understood that values above 180 μg/m^3 are really rare, during all the examined period.

MFHR also ignores the study's conclusion that *"the SO_2 emissions are reduced due to the District heating of Kozani city"*

126. In para **18** and **19**, MFHR also deliberately ignores also the long existing (since 1980) operation of fully automated (since 2003) air quality monitoring network in the Megalopolis area. The network today, according to the JMD Environmental Permit of Unit IV of Megalopolis, has three monitoring stations (and not two as the MFHR alleges).

127. The Complainant references to Megalopolis A SES (units I-III) do not correspond to reality. The units I & II (125 MW each) have been already placed in the status of limited operation, according to the provisions of Article 4 of

LCPD (2001/80/EC)[21]. Due to the requirements of the Greek interconnecting network, the units shall operate in base load for network support and in 2010 these units shall terminate operational life (20000 hours from 2008) and will close down completely. Although, it has been decided and stated that Units I-II will continue operating only until the end of 2010, extensive maintenance & upgrading of the lignite vapour and flue gas ESPs are in progress in order to achieve their original efficiency (as new) and to significantly improve their performance. The project has already been completed for unit I and it is in progress for Unit II at Megalopolis SES.

128. Unit III, 300 MW, has already been equipped with new Electrostatic Precipitators (ESPs) of high efficiency and a new, state of the art, Flue Gas Desulphurization unit is under construction.

129. MFHR's reference, that Kardia SES is the fourth most polluting power plant in Europe (according to WWF table) while commenting the particulates matter, is only to create a false impression, since it intentionally concealed that WWF is only referring to the CO_2 emissions. The CO_2 emission from Kardia SES is the expected one, taking into account the size of the plant (1200MW) and the fuel.

A-3.2 Regarding nitrogen oxides and sulphur dioxide

(para **20-21** of the Response)

130. Further striking are the inaccurate, misleading and untrue MFHR allegations about the NOx emissions from DEH's lignite-fired power plants, as well as the ambient air quality of Ptolemais and Megalopolis area as far as NOx is concerned.

131. The following are repeatedly and systematically reported, in all the annual environmental reports for each power plant and for the ambient air quality, based on thousands of longtime measurements from the extensive network of the air quality monitoring stations, always in compliance with the Environmental Permits of the plants:

[21] Annex 22

132. The **NOx emissions** from PPC's lignite-fired power plants **are low**, due to the **low combustion temperatures** and the **primary NOx reduction measure**. This is the reason that in BREF LCP for lignite-fired power plants only primary measures are regarded to be the Best Available Techniques for NOx abatement. This fact is even more profound for the Greek lignite, which is poorer than other lignite around the world (lower calorific value) which results in even lower combustion temperatures, which are responsible for the NOx generation (the higher the combustion temperature, the higher the NOx generation and accordingly the NOx emission concentrations as known even to a first year university student studying engineering or environment).

133. The ambient air NOx ground concentration in both KPV and Megalopolis is very low, compared to the EU limits values, as it is shown in the following diagrammes. Actually, the emissions levels are below the limit value that the LCPD foresees for the year 2008[22]. **Also, the total annual emissions from all the Large Combustion Plants are less than 70 kt and no violation of the emission ceiling exists for all the previous years**. It is obvious that the author of the Study, MFHR refers to, has confused the annual emission limit values that LCPD foresees for existing LCP with the total emissions from all PPC's installations.

134. All reports are readily available to the public and it is quite strange and questionable why the MFHR pretends they either do not exist or they were not available to them.

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[22] According to Article 4(3) of Directive 2001/80/EC Member States can achieve the emmision reductions from existing plants by 1 January 2008 at the latest by either of the following two compliance options identified in Article 4(3):

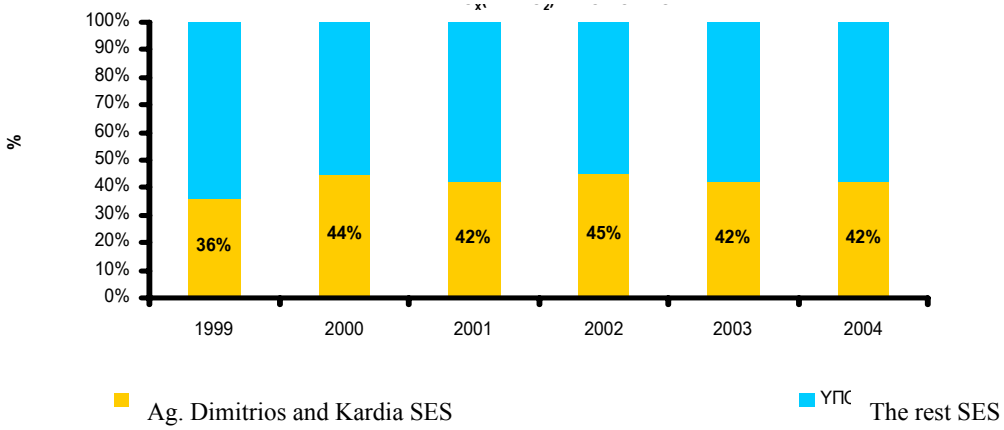
- Option 1: Compliance with the emission limit values (ELVs). Under this approach, compliance with the new directive will be achieved if the operation of all existing plants is within the emission limit values (ELVs) stated in Part A of Annexes III to VII in respect of SO2, NOx and dust, and, where appropriate, applying Articles 5, 7 and 8 of Directive 2001/80/EC.

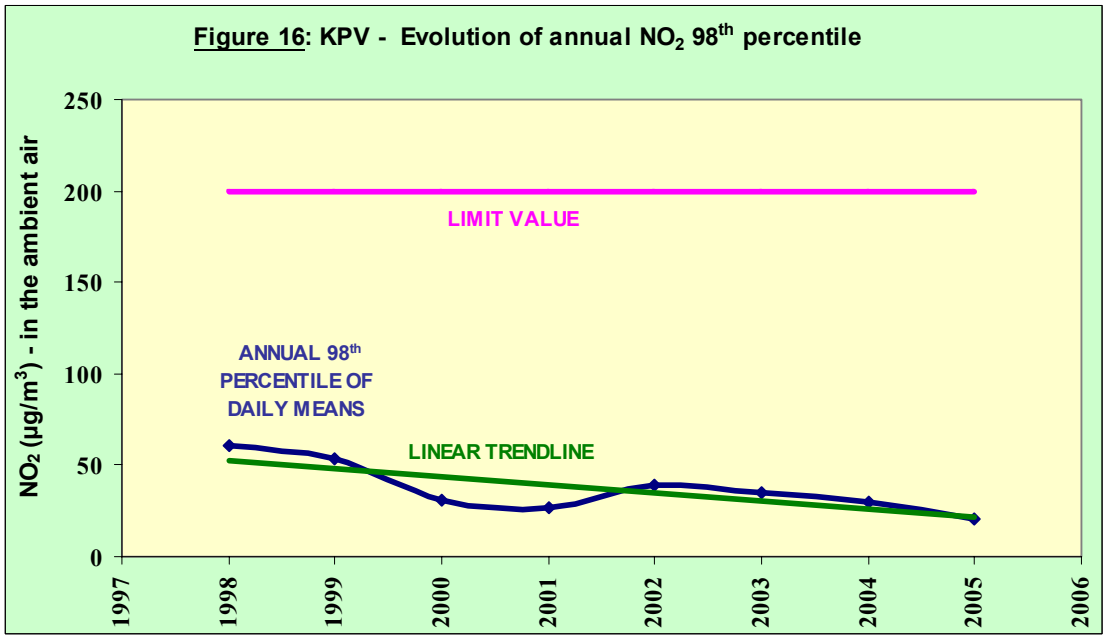
- Option 2: Implementation of a national emission reduction plan. As an alternative to the ELV approach, Member States can implement a national emission reduction plan referred to in Article 4(6).

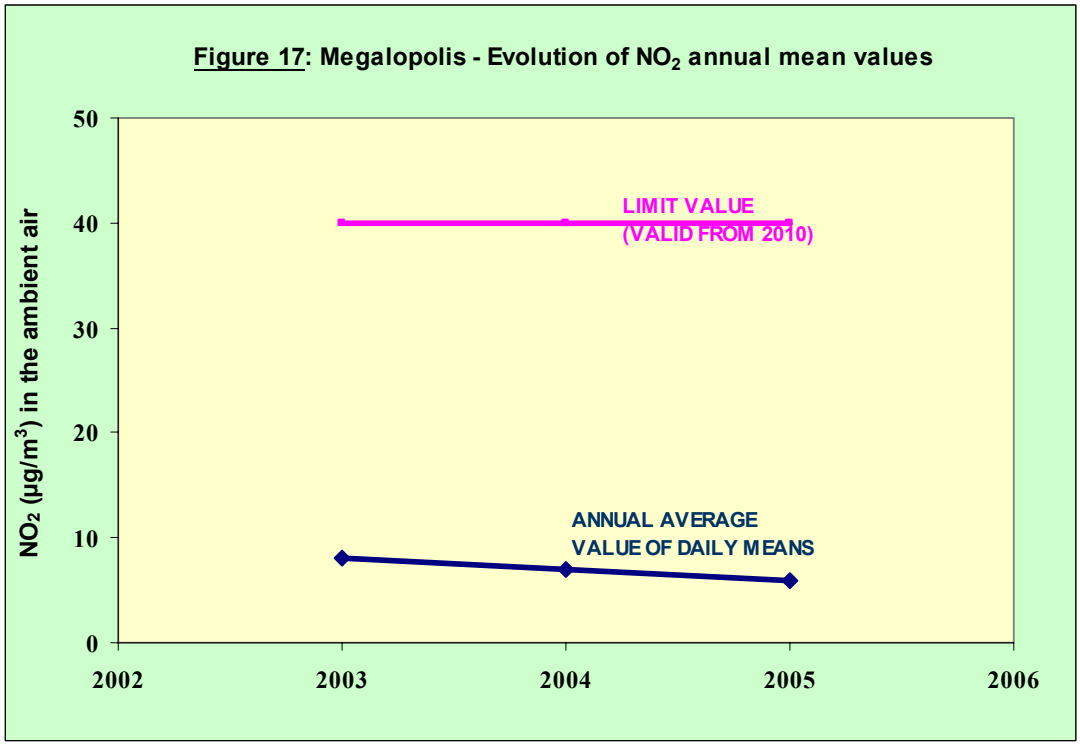
State has already sumbit to the EE the national emission reduction plan

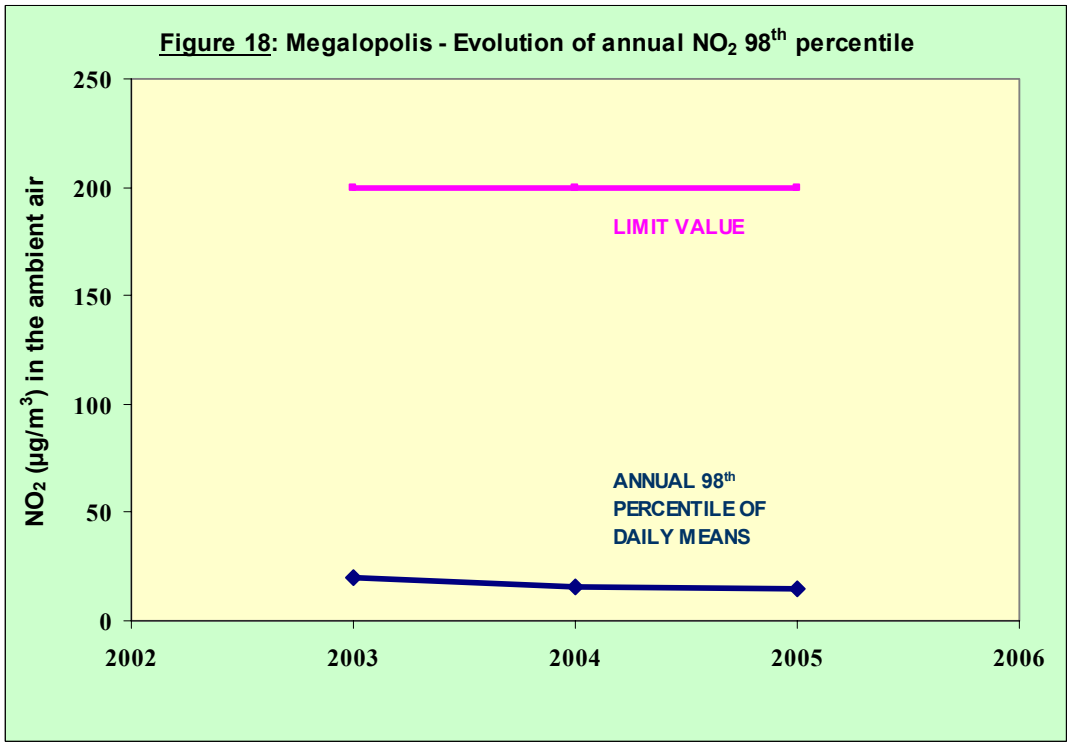
135. The MFHR references that "Kardia and Ag. Dimitrios are responsible for almost 50% of the NOx annual release" are meaningless. In fact, Ag. Dimitrios and Kardia SES, the two biggest lignite-fired power plant stations, contribute about 40% to the total electric energy production and (as it is expected) about 42% to the annual NOx emissions from Large Combustion Plants according to the following diagram

Figure 15: The contribution of Ag. Dimitrios and Kardia SES at the total SES NOx emissions









136. It is very surprising indeed that MFHR pretends to ignore all the above solid facts and all the studies, reports and measurements that provide proof.

137. Aiming to the continuous improvement of lignite-fired plants, DEH participates in European Union's integrated projects for the development and implementation of **innovative emission control technologies**.

For the further reduction of NOx emission, DEH participates in the "Cost Abatement for Effective NOx Reduction in PF Coal-fired Power Plants" (CAFENOx) project. The project was funded by the CEC under Contract No: NNE5-2001-830 and undertaken jointly by partners from EU Member States which co-worked to provide the Commission and the operators of Europe's coal and lignite-fired power plants with the best possible advice on how to further reduce nitrogen oxide (NOx) emissions laid down in EU Directives.

Partners of the CAFENOx project:

- CIRCE, University of Zaragoza
- NTUA-LSB, University of Athens
- PPC, the main power company in Greece
- IFRF-RS and then IFRF
- co-ordinated by CERCHAR, department of SNET now affiliated to ENDESA group

The project starting date was January 1st, 2003 and its duration was 30 months (until June 30th 2005).

138. The conclusion of the author of the only study that MFHR evokes in this paragraph "*that the expected annual NOx production of Greek electricity generation sector should exceed the 80kt by 2010*" is a completely arbitrary and outrageously wrong hypothesis and does not take into account the State's measures for the existing LCP emissions reduction such as the increased penetration of natural gas in the electricity production and the programme for the replacement of old HFO (Heavy Fuel Oil), lignite fired and NG fired units of 2000 MW, with new ones (out of which 1600 MW using natural gas).

139. **According to the National Emission Reduction Plan, NOx emission from existing LCP will be reduced by about 50% by the year 2016.**

140. **The above analysis clearly shows that the MFHR's allegations in para 22 that the state does not comply with NOx limit values are not true and are only based on a hypothetical and incorrect estimation for the future.**

141. The "*accurate estimations for the augmentation of the SO_2 emissions next years",* presented in the unique study that MFHR (in para **23-24** of its Response) bases all its allegations, are totally inaccurate. Also wrong is the allegation that lignite is expected to be responsible for the 77% of the energy produced in Greece by 2020!! The by the EC, approved National Allocation Plan of the country states that:

"Regarding the production of electrical energy, one should note that natural gas units would cover roughly 28% of total net electricity production in 2010 (1,6 Mtoe), while this percentage reaches 36% (2.6 Mtoe) in 2020. This significant penetration of natural gas in the Greek electricity system limits the relative contribution of lignite-fired units from 67% in the year 1995 to 47% in 2010 and to 38% in 2020"

142. Except for the above penetration of natural gas in the Greek electricity system, a programme for the effective abatement of the SO_2 emissions from existing lignite plants is already in progress. This programme has already been presented in the State's Memorandum, but MFHR prefers to ignore it. The programme for the lignite plants includes:

Table 8: Programme for the reduction of SO_2
Installation of flue gas desulphurization plant (FGD) at Unit III, 300 MW, of Megalopolis SES; Estimated to be constructed in the 1st semester of 2008; Cost: 84.7 million €
Upgrading of the wet flue gas desulphurization plant (FGD) of Unit IV, 300 MW, at Megalopolis SES (in operation since 1999); (10 million €)
Operation of wet FGD plant in Meliti SES, Unit I, 330 MW, since 2003
New program for the fuel piping, pumps and storage tanks preparation for the use of low sulphur fuel oil at the oil SES (it is noted that Atherinolakkos SES in Crete uses low sulphur fuel oil from its start-up)

143. The above measures, with the reduction of SO_2 emissions from the complete shutdown of the Units I and II of SES Megalopolis (in 2010) will reduce the SO_2 emissions from lignite power plants drastically. The expected reduction is given here-after.

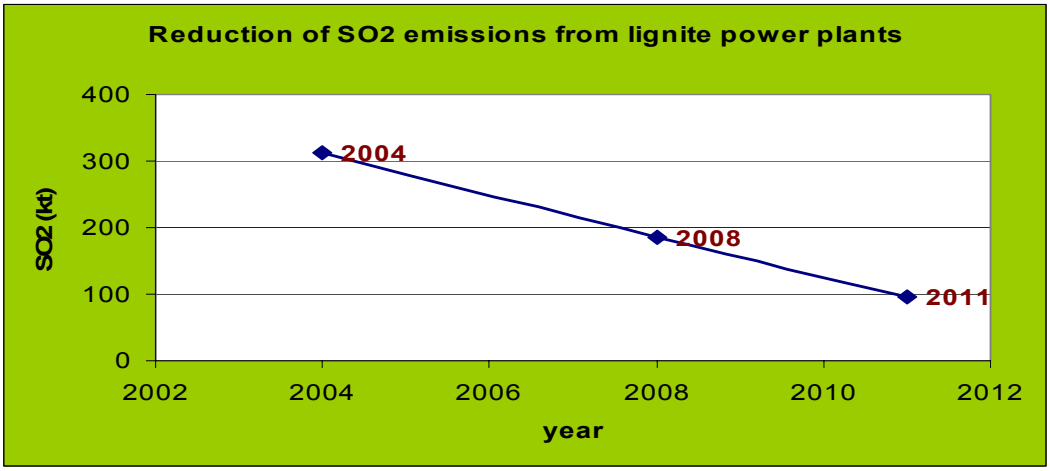
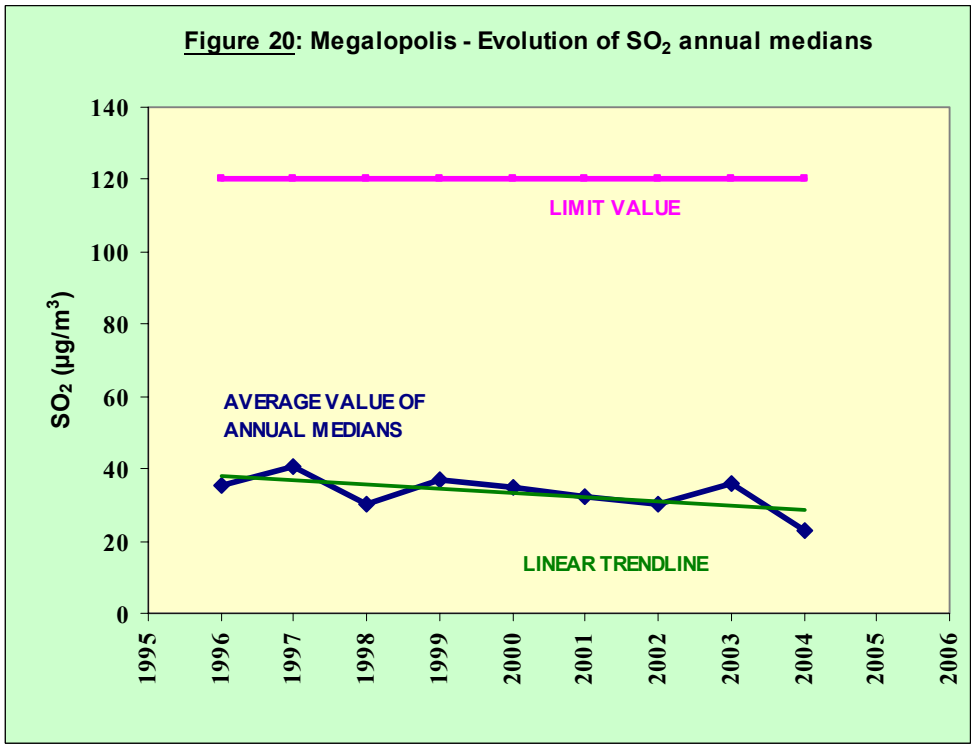
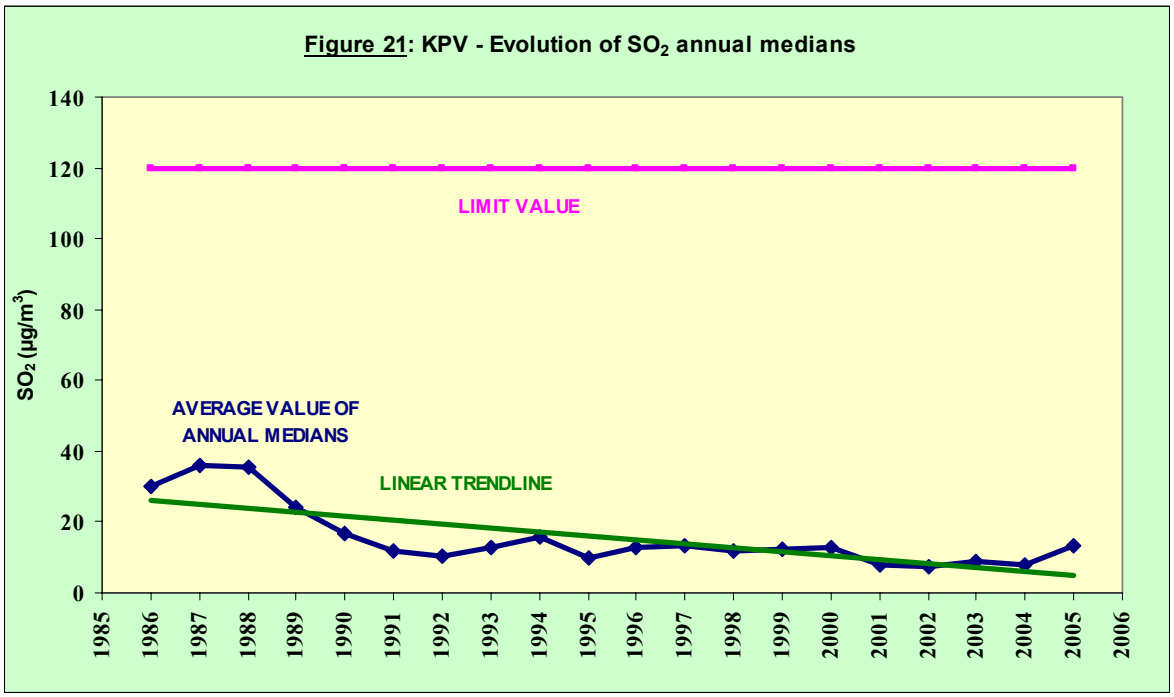


Figure 19: Reduction of SO_2 emissions from lignite power plants

144. The ambient air SO_2 ground concentrations in Megalopolis area and in KPV are generally low as it is shown in the following diagrams:





145. **As concerns the para 25-27 of the Response,** the State, in its Memorandum, clearly presented the measures for the abatement of emissions from energy sector, including the lignite power plants. MFHR, in its response, does not make any reference or comments to this programme, which is really strange since it presented comments for almost all the rest of the Memorandum. Instead, it preferred to adopt hypothetical estimations for the "future augmentation of emissions from lignite plants" attempting to serve as the State's consultant giving solutions to the problems that have already been effectively tackled.

146. Concerning the Ref. 52, §26 of the MFHR Response, the problem of the diesel combustion engines pollution and its contribution to the PM_{10} concentration into the atmosphere is not false, but a well known problem that many European cities face.

A-3.3 Compliance with Kyoto Protocol

(para **28-32** of MFHR's Response)

147. Greek action against the Climate Change begins in the early 90's. In 1995 –after the Greek signing and ratification of the Convention in Rio in 1994 (Law

2205/94)- the 1st National Programme for the Climate Change was adopted, setting as an ambitious target the restriction of the overall increase of three greenhouse gases (CO_2, N_2O and CH_4) to 15%±3% by 2000 compared to 1990 levels. This target was only partly achieved, as in 2000 the greenhouse gases emissions were rised about 21% compared to 1990.

148. Early recognizing the need for an effective instrument to provide confidence in addressing the climate change challenge led the global community to the Kyoto Protocol on Climate Change in 1977, which calls for legally binding targets for the future, as well as measures and strategies for their achievement. At the framework of this Protocol, the EU has been bound to reduce the emissions of 6 greenhouse gases (CO_2, CH_4, N_2O, HFC, PFC and SF_6) by 8% reduction in the period 2008-2012, below their 1990 level. The Burden-Sharing agreement between all Member States and the national target of each one were finalised with the 2002/358/EC Decision that takes into account socio-economic parameters of each country, as the rate of development, the gross domestic product, the energy intensity, etc. According to this agreement, Greece is committed to limit its GHG emissions increase for the period 2008 – 2012 to +25% compared to base year emissions (1990 for CO_2, CH_4 and N_2O emissions, and 1995 for the f-gases).

149. Greece ratified the Protocol in 2002 (Law 3017/2002)[23] and adopted (by the Decision of the Council of Ministers DCM5/27-2-2003) the 2nd National Programme for Climate Change (2000-2010), which foresees measures and policies for achieving the above-mentioned commitment.

150. **The Complainant alleges that Greece is about 10% off its target despite the fact that the projection includes Kyoto mechanism of emissions trading. This statement is intentionally simplified since:**

The use of Emission Trading Flexible mechanism is defined in ETS Directive. Following the provisions of this Directive, Greece has submitted its NAP to the EU, defining, inter alia, the path to reach the Kyoto target.

[23] Annex 39

151. The base year emissions for Greece were estimated to be 110.2 Mt CO_2 eq. Having assigned 2010 as the year that the emissions reduction target (25%) should be achieved, the **ceiling for annual emissions for that year should be 137.8 Mt CO_2 eq**.

152. In order to evaluate the emissions evolution until 2010, during the elaboration of the National Allocation Plan for the emissions rights for the period 2005-2007, the **Business as Usual (BaU) Scenario** was generated. The BaU Scenario comes to an estimation for the evolution of the greenhouse gas (GHG) emissions until 2020, taking into account a lot of parameters (demographic characteristics, macroeconomic sizes, climatic conditions, fuels prices/taxation, discount rates of alternative energy investments etc).

    Thus, taking the above into consideration, BaU foresees that **GHG emissions in 2010 (153.5 Mt CO_2 eq) will increase by 39.2% compared to base year emissions** (110.2 Mt CO_2 eq), instead of 25%, which is the emissions target. This BaU estimation for 2010, as well as the policies and measures development described hereinabove, have determined the degree of effort to reduce emissions and consequently the formulation of the Greek NAP for the 1st period 2005-2007 (Annex 41).

153. In the following diagram, the chosen path is shown for the target achievement.

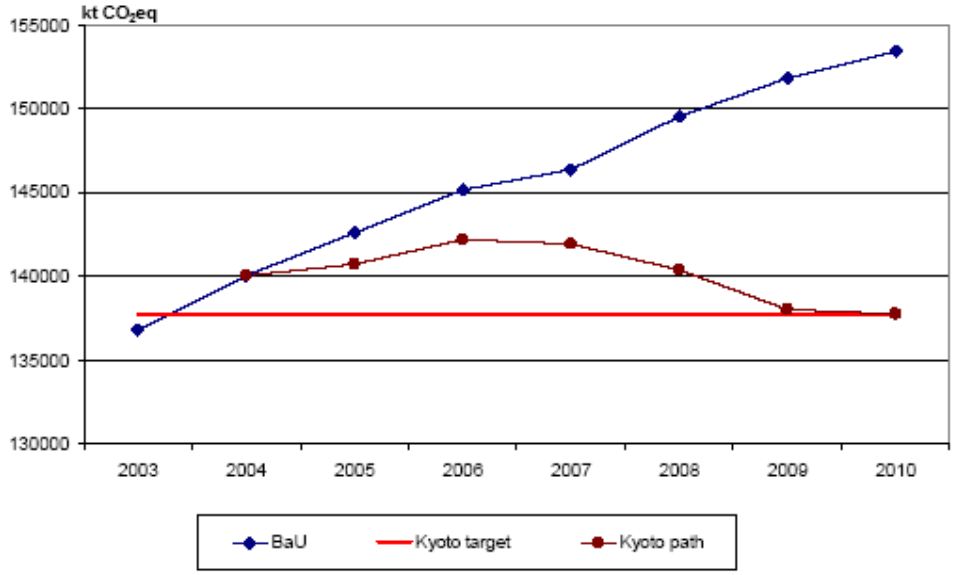
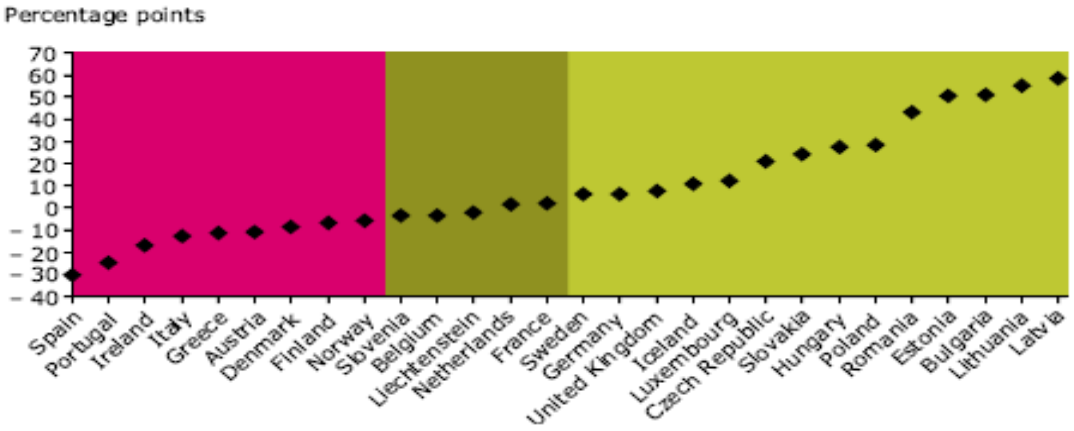


Figure 22: CO_2 emissions according to BaU Scenario, Kyoto target and Kyoto path for Greece

154. The EC requirement for the member states is, by using the emission NAPs, to find a feasible and realistic path for the target achievement, which has to be based on an integrated programme, with a current application in order to maximize the possibility of success. From the above diagramme, it is obvious that the selected path relies on the systematic analysis of the adopted policies and measures, presented hereinabove. According to this programming, the referred policies are expected to have a gradual result for the country to achieve in 2010 the target (+24.5% compared to the base year emissions). The EC, having approved the Greek NAP for the emissions rights for the period 2005-2007, has been positively placed to the country's achievement path.

155. **From the above, it is obvious that the following diagram of the MFHR Response (Fig. 3, p.16) has only an indicative meaning, as it is referred to the country's emissions deviation in 2002 from the emissions that the country would present, if it had to follow a linear evolution, in order to achieve the 2010 target.**

Figure 23 **Distance to Kyoto target, linear target path, 2002**



156. According to all the above analytically mentioned points and in replying to MFHR reproaches (at the Foundation's Response) concerning the Country's non compliance with its Kyoto Protocol commitments, the Respondent briefly refers that t**he Country is not 10% away of its target, but it is following attentively the selected path for the target achievement, accepted by the EC through the NAP approval. Furthermore, the first data for the 2005 verified CO_2 emissions over-accomplish the targets dictated by this path.**

157. The European Environment – State and Outlook 2005[24] for the Greenhouse Gas emissions clearly states for Greece that "**recent projection indicate that with a consistent implementation of its 2003 plan Greece will come close to meeting its target**".

158. Recently (15-05-2006) the EC released the 2005 carbon dioxide (CO_2) emissions data and compliance status of more than 9,400 installations covered by the EU Emissions Trading Scheme. **All DEH's lignite power plants are in compliance status**.[25]

159. The programme for the reduction of carbon dioxide emissions regarding generation activities includes:

[24] European Environment Agency, 2005, "The European Environment – State and Outlook 2005", Copenhagen, Office for Official Publications of the European Communities, 454 p. (Annex 1)

[25] EC, IP/06/612, 15-05-2006, "EU emissions trading scheme delivers first verified emissions data for installations", Annex 30

Table 9: Programme for the reduction of carbon dioxide emissions
Full capacity building for the application of flexible mechanisms complying with the Kyoto Protocol with particular emphasis on the implementation of 2003/87/EC Directive
Application of best available technologies in existing and future power plants
Replacement of old power plants with new ones which have higher energy efficiency and are more environmentally friendly
Improvement of energy efficiency in existing power plants
Improvement of the quality of fuel (e.g. lignite)
Incorporation of natural gas into power generation as a new fuel: Lavrio ESP unit V (385 MW) in function since 2006 - Programme for the replacement of old units of 2000 MW, with new ones of last technology (1600 MW using natural gas) (Law 3175/2003)
Further penetration of large hydropower plants and other Renewable Energy Sources in the country's energy balance - 8 units (total 533,6 MW) were constructed during the period 1997-2005 - 16 units (total 645,3 MW) are under construction
Energy saving and rational use. Application of the most effective lignite combustion technologies
Close follow up of the technological developments for carbon dioxide capture and storage
Management of the power generation portfolio (thermal and hydro power plants, imports and exports) in such a way as to minimize emissions at the lowest cost
Participation in various projects of Clean Development Mechanism (CDM) and international Carbon Funds related to the Kyoto protocol
Participation in various innovator researches for carbon dioxide capture and storage, like CASTOR, ENCAP, C2H and ISCC, RECOFUEL, LIGPOWER, DRY COAL (RFCS European Programme)

A-4 Epidemiological Studies Analysis

160. Concerning MFHR's allegations in para 33-54 of its Response about the epidemiological studies, the following are remarked.

A-4.1 Air pollution and Health

161. Diseases related to atmospheric pollution have been known since the previous century and epidemic exaltation of diseases of the respiratory and the cardiovascular systems have been noted in periods during which high concentrations of air pollutants were measured.

162. It is scientifically certain that the combination of climatic factors (temperature, barometric levels and humidity) with high levels of atmospheric pollution works towards the appearance of relative morbidity and mortality. [Katsouyanni K, Pantazopoulou A, Touloumi G, Tselepidaki I, Moustris K, Asimakopoulos D, Poulopoulou G, Trichopoulos D]. Evidence for interaction between air pollution

and high temperature in the causation of excess mortality. Arch Environ Health. 1993, 48(4):235-242].

163. A plethora of scientific studies have come to the undoubted conclusion that high levels of atmospheric pollution lead to health problems of the working labour, primarily in technosphere environment (in their working environment) referring to indoor pollution, as well as to non-professionally exposed citizens, mainly in near large industrial units or highly populated areas, i.e. their living environment.

164. In any case, the reduction of air pollution is of particular interest whereas referrals to the term "infection" ***are meaningless, since pollutants are not biological infectious agents*** [Maragopoulos Foundation for Human Rights, Complaint against the Greek Government (articles 2.4, 3.1-2 and 11 of the European Social Map, paragraphs 85-92, pp. 32-34].

165. The resulting health problems may be either direct and acute or chronic, with minor consequences to public health [Katsouyanni K. Long term effects of air pollution in Europe. Occup Environ Med. 2005 Jul;62(7):432-433, Samoli E, Aga E, Touloumi G, Nisiotis K, Forsberg B, Lefranc A, Pekkanen J, Wojtyniak B, Schindler C, Niciu E, Brunstein R, Dodic Fikfak M, Schwartz J, Katsouyanni K. Short-term effects of nitrogen dioxide on mortality: an analysis within the APHEA project. Eur Respir J. 2006 Jun;27(6):1129-1138, Hatzakis A, Katsouyanni K, Kalandidi A, Day N, Trichopoulos D. Short-term effects of air pollution on mortality in Athens. Int J Epidemiol. 1986, 15(1):73-81].

166. Due to the above reasons, the Greek State has put legislation into effect concerning both the private (industry or private actions) and public sectors in order to minimize air pollution. The end-target of the State is to develop a public health culture to the citizens in the framework of health promotion actions, as defined by the World Health Organization (The Ottawa and Alta-Ata declarations). This is strongly evidenced from the state-sponsored publicity of results (in part or as a whole) of scientific studies, in which regional agents (Mayors, Prefectures, Medical Associations) are participating.

Indicatively, the Common Ministerial Decision 37111/2021/26.09.03 is referred regarding the "Determination of the way of information and public participation during the procedures of environmental terms approval for works and activities etc)".

The Law 3172/2003 "Organization and updating of Services for Public Health" refers that in every Administrative region should be a Direction for the registration, analysis and assessment of the data concerning the Public health of this geographical area

167. For these reasons the Prefecture of Arcadia commissioned ELLINYAE with an epidemiological study in Megalopolis area. The first part of this study is finished and the main result is that ***there are no findings concerning cancers***.

168. There is another study which is being executed these days in Florina Prefecture in collaboration with University of Thessalonica.

A-4.2 Diseases associated with air pollution

169. According to the international literature, health problems associated with air pollution mainly concern the respiratory and cardiovascular systems, as well as cancer. It remains to be proved that results published in other countries, with different conditions and population structure, are applicable to Greece. This is the reason why various independent scientific groups have performed relevant studies using data from the area and population of Greece.

A-4.3 Methodology of the studies

170. The scientific approach of the effect that air pollution has on humans is dual; either medical or biological. In the latter case, studies on experimental animals are performed, although the transferability of toxicological results to humans is strongly questioned. In other words, it is doubtful that any conclusions can be applied to humans. From the point of view of medicine, studies are necessarily empirical. They concern human beings and they are obliged to follow medical research practice; they are either clinically oriented (including special medical examinations) or on a population basis using registry databases (from hospitals or statistical).

A-4.4 Types of epidemiological studies and their limitations due to methodological problems

171. Both types of studies require epidemiological and biostatistical methodologies, although these methodologies carry research limitations due to native problems in their conduct.

172. A common methodology is the study of mortality in workers using proportional mortality rates, calculating either relative risks or odds ratios (RR or OR). The limited size of the sample is a problem in such studies, which, however, concerns the particular set of workers in industrial units under study. Due to relative mobility of workers in Greece, such studies are not possible and would lead to weak conclusions, since it would not allow estimating the exact working history of individuals in terms of past professional exposure. Moreover, these studies are time consuming since they must be conducted as follow-up studies or prospective epidemiological studies, to assure their credibility. However, independent researchers and research institutions in Greece are conducting such studies whose results will be published soon. The only published results of this type, conducted by Greek researchers, refer to the inhabitants of the Eordea valley (exposed) in relation to those of Kilkis (not exposed). The conclusion is that the difference in cancer-related mortality between the two areas is not statistically significant, attributing the observed increase over time to the increased smoking attitude in the Greek population [Sichletidis L, Tsiotsios I, Gavriilidis A, Chloros D, Konstantinidis T, Psarrakos K, Koufogiannis D, Siountas A, Filippou D. Deaths from neoplasms and detection of radionuclides in excised human lungs in the Eordea Basin, Greece. Arch Environ Health. 2003, 58(12):789-793].

A-4.5 Clinically oriented studies

173. Clinically oriented studies have the obvious limitation that the sample is part of the entire population, therefore bias data collection cannot be avoided. The basic problem in these studies is that they cannot be conducted as experiments under controlled parameters (in analogy to biological studies in guinea-pigs), thus the researcher can follow up only available data. An indicative example of

this problem is the uncertainty over using the matching technique in inter-regional studies, in age, professional and other socioeconomic factors [Sichletidis L, Tsiotsios I, Gavriilidis A, Chloros D, Kottakis I, Daskalopoulou E, Konstantinidis T. Prevalence of chronic obstructive pulmonary disease and rhinitis in northern Greece. Respiration. 2005, 72(3):270-277, Sichletidis L, Tsiotsios I, Chloros D, Daskalopoulou E, Ziomas I, Michailidis K, Kottakis I, Konstantinidis T, Palladas P. The effect of environmental pollution on the respiratory system of lignite miners: a diachronic study. Med Lav. 2004, 95(6):452-464].

174. On the other hand, comparisons in prospective or retrospective studies are subject to limitations due to alterations of the research team, either in people or experience. In some studies, participating pneumonologists are analyzing problems that mostly concern otorinolaryngologists, using medical laboratory tests which are routinely performed by the latter [Sichletidis L, Tsiotsios I, Gavriilidis A, Chloros D, Kottakis I, Daskalopoulou E, Konstantinidis T. Prevalence of chronic obstructive pulmonary disease and rhinitis in northern Greece. Respiration. 2005, 72(3):270-277, Sichletidis L, Tsiotsios I, Chloros D, Daskalopoulou E, Ziomas I, Michailidis K, Kottakis I, Konstantinidis T, Palladas P. The effect of environmental pollution on the respiratory system of lignite miners: a diachronic study. Med Lav. 2004, 95(6):452-464, Sichletidis L, Tsiotsios I, Gavriilidis A, Chloros D, Gioulekas D, Kottakis I, Pataka A. The effects of environmental pollution on the respiratory system of children in Western Macedonia, Greece. J Investig Allergol Clin Immunol. 2005, 15(2):117-123].

175. Another endogenous problem of bias in clinically-oriented studies is that, right from the beginning, there is a tendency to register relative sickness as this is a positive result, which in turn renders the study publishable.

A-4.6 Epidemiological studies in areas near power stations

176. Epidemiological studies that use a continuous recording of health indices (mortality, morbidity) have the important advantage of being applicable to the entire observed set of biotic events. Moreover, in such studies the analysis of

age groups is feasible as well as the application of specific epidemiological techniques for the elimination of differences in the age structure of the compared populations, for example the technique of standardization, which is not used in most studies of small areas in the prefecture of Kozani. In any case, such studies, require large population samples in order to eliminate potential errors which, however, is not guaranteed when analyzing data from small areas and communities [Sichletidis LT, Tsiotsios I, Gavriilidis A, Chloros D, Konstantinidis T, Psarrakos K, Koufogiannis D, Siountas A, Filippou D. Deaths from neoplasms and detection of radionuclides in excised human lungs in the Eordea Basin, Greece. Arch Environ Health. 2003, 58(12):789-793].

177. Moreover, the changes in Greek population during the industrialization of the country have certainly led to an increase in cancer incidence which is probably mainly attributed to the aging of the population. Thus, an increase in the frequency of malignancies that is age-dependent is observed due to the increase in life expectancy of the Greek population and a consequent extension of exposure to cancer-inducing agents. Clearly, there is no scientific objection that recognizing the various carcinogenic agents and identifying the causing factor per incident (classifying incidence per causing factor) is impossible, due to the multifactorial nature of these diseases and the high smoking attitude of the Greek population. Another reason is that the whole area of Northern Greece has been exposed to significantly higher levels of radiation as a result of the Chernobyl nuclear station accident.

178. Another subject of interest is explaining time trends in data analysis of morbidity and mortality. For multifactorial biotic events like the appearance of disease (or of concomitant mortality), it is scientifically risky to adopt single-sided justifications, especially to epidemiological studies of ecological type, in which time trend of health estimators is studied in parallel to measurements of environmental factors or, in a more traditional way, of the establishment and function of a new production unit (power plant).

179. The epidemiological studies results have an avoidable uncertainty and their results are indicative but not probative. Generally the adoption or not of those studies results as concerns the correlation between exposition in environmental

agent and effect to health is not easy, because the following must be taken into account:

- The life style, the smoking and diet habits
- Other working or environmental expositions
- The genetic predisposition

A plethora of other factors is probable to confuse, like:

- The individual sensitivity
- The subjective reaction to an irritation, which is probable to be expressed as stress and makes the assessment between exposition and result difficult.
- The absence of special symptoms
- The number of agents and the probability for contribution among them.
- The status of health

180. Especially for Northern Greece the fact of the exposure to significantly higher levels of radiation as a result of the Chernobyl nuclear station accident

181. Conclusions based on the potential increase of morbidity using as an estimating factor the number of admitted patients in public hospitals of the prefecture of Kozani, a most doubtful epidemiological factor, is under much dispute. The development of the National Heath System in Greece brought an increase in the numbers of hospitalized patients, especially in regional hospitals.

182. Morbidity values derived from numbers of admitted patients are not corrected for readmissions, therefore the identification of the exact events that would provide a genuine and precise evaluation of disease-tendency is not possible. It is even more so when values result from all treated patients, irrespective of the cause that brought them to hospital.

183. On the other hand, in time trend studies of mortality indices of the population, one would not expect that consequences from high air pollution are directly reflected in the data, as themselves are not derived from environmental measurements. The expected effect would be the appearance of a tendency for increase with a relative time lag, a phenomenon that, interestingly, is not observed in mortality analyses from the city and prefecture of Kozani

[Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki, Epidemiological study of health problems in the population of the prefecture of Kozani, Kozani, Thessaloniki, 1999, Marangopoulos Foundation for Human Rights, Response to the Hellenic Government's Observations on the merits of collective Complaint No 30/2005, pp. 21].

184. An other point, which should be marked, is that all the researchers (University professors) recognizes that the executed studies are not completed as concerning the long term lasting and the methodology. Thus the studies shall been continued taking into account new data.

A-4.7 Epidemiological studies of morbidity

185. Epidemiological studies of morbidity mainly focus on the number of admitted patients based on specific clinical diagnosis from Hospitals in the areas of study. Such studies have been conducted on the population in the wider region of the Greek capital (Greater Athens) [Pantazopoulou A, Katsouyanni K, Kourea - Kremastinou J, Trichopoulos D. Short-term effects of air pollution on hospital emergency outpatient visits and admissions in the greater Athens, Greece area. Environ Res. 1995, 69(1):31-36], but similar studies have not been performed in areas near lignite power plants that would allow a direct comparison of results. It is quite probable that the latter epidemiological studies have not been conducted because they require close collaboration of epidemiologists and clinical doctors. Also, despite the interest of the State for the epidemiology in the area, such studies were not performed due to the lack of research grant proposals from independent researchers and research institutions, possibly because of difficulties in developing a "common language" among specialized scientists. However, it is expected that these difficulties will be surpassed and that such studies will be soon performed. Of course, even if data from such epidemiological studies were available, it would not be possible to distinguish the fraction of the disease caused by pollution deriving from vehicles and home heating from this related to power plants and other industrial activities.

186. Another issue in these studies is that basic researchers should work independently from medical doctors who report disease, since this ensures

additional scientific objectivity and credibility [Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki. Epidemiological study of health problems in the population of the prefecture of Kozani, Kozani - Thessaloniki, 1999, Laboratory of Hygiene and Epidemiology, Medical School of Patras University. Study of environmental conditions (air pollution - water pollution) and effects on the health of inhabitants of area AHS of Megalopolis, Patras 1992. Laboratory of Hygiene and Epidemiology, Medical School of Patras University, Study of the effect of air pollution on the health of inhabitants of Komanos, Kozani prefecture, Patras 1990]. Therefore, in contrast to what the MFHR reports in its response to the comments of the Greek State, the fact that independent researchers use data from medical records which are not produced by them, ***adds further credibility to the studies***.

A-4.8 Epidemiological studies of mortality

187. Continuous records are maintained from the Greek state in death certificates as they are filled in city registry offices of the country. Given that no dramatic change in the medical personnel of the area has occurred, the quality of such records is expected to remain stable over time, despite potential mistakes. Additionally, as the epidemiologist Prof. Demetrious Trichopoulos [Trichopoulos. D. Epidemiology, Parissianou Ed., Athens 1982, p. 159] points out in his university textbook, knowledge acquired by fourth-year medical students, diagnoses related to cardiovascular diseases are most frequent since the 70's in Greece, given in some cases only in order to facilitate the process of death certification. However, this cannot be the case when malignancy is the real cause of death, since in the case of cancer the health problem is evident and is not anymore treated with superstition by the population. Thus, such leaks in cancer cases are not expected [Constantinidis T. Life expectancy for the Greek population, Thessaloniki, 1997, p. 82].

188. Furthermore, mortality studies guarantee the minimum of potential mistakes in death certificates, since, as it is repeatedly stated, these errors do not contribute to drifting away the greater set of similar death causes (cancer, cardiovascular diseases). Additionally, the fact that the records concern the entire population

and not an isolated sample which does not represent all cases, contributes to reducing relative errors. Such types of mortality studies have concluded a minor increase in mortality due to cardiovascular diseases (an older study on the population of the city and prefecture of Kozani and a recent study on the population of the municipality of Megalopolis). The same epidemiological studies point out that epidemiological indices describing all malignancies are either statistically equal, or slightly smaller to respective values from the whole Greek population [Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki. Epidemiological study of health problems in the population of the prefecture of Kozani, Kozani - Thessaloniki, 1999]. It is a standard scientific practice that such comparisons are performed on very large population samples (whole populations), whereas inter-regional comparisons are subject to greater errors as a result of smaller samples (prefecture vs. prefecture) [Sichletidis LT, Tsiotsios I, Gavriilidis A, Chloros D, Konstantinidis T, Psarrakos K, Koufogiannis D, Siountas A, Filippou D. Deaths from neoplasms and detection of radionuclides in excised human lungs in the Eordea Basin, Greece. Arch Environ Health. 2003, 58(12):789-793].

189. The analysis according to age groups which has been performed in these studies ensures that homologous age groups are compared and that differences in the structure of age pyramids are eliminated. One of these studies in its first, second and third stage, resulted in a calculation of life expectancy for the population of the municipality of Kozani, found to be equal or slightly greater than those from the entire Greek population, a result which is probably related to the standard of living of the population in the area of study [Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki. Epidemiological study of health problems in the population of the Municipality of Kozani, Intermediate reports (2^{nd} and 3^{rd}), Kozani-Thessaloniki, 1996-7, Annex 63].

190. It is also widely accepted (f.i. from the French example of the summer of 2005) that cheap energy reduces heat-related mortality by means of air conditioning.

A-4.9 Public Presentation of Epidemiological Studies

191. The above mentioned studies were presented to the public in the prefecture of Kozani, by the independent research groups in collaboration with the prefecture of Kozani and other regional agents like medical associations. One event was organized by the Municipality of Kozani and took place in May 1998 in order to present the results from phase B of the study that was completed by the Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki. Another public presentation on atmospheric pollution, which again took place in Kozani on 28/06/1998, was organized by the Laboratory of Hygiene, Medical School of Aristotle University of Thessaloniki in collaboration with the Medical Association of Kozani. Similar events are scheduled aiming to inform the public about the epidemiological study on the population of Megalopolis, a study conducted by the Hellenic Institute of Health and Safety in collaboration with the staff of Laboratory of Hygiene and Environmental Protection, Medical School of Democritus University of Thrace.

A-4.10 State Funding of Epidemiological Studies

192. Although problems in methodologies are considerable, this does not limit the value of epidemiological studies. The Greek State has funded such studies either via the General Secretariat for Research and Development or via prefectures of areas where power plants are positioned (which obtain indirect funding from DEH via a lignite usage tax).

193. Of outmost importance is the fact that a number of epidemiological studies have been completed with strong support from the Greek state and, in some cases, resources from DEH. Assigning, these studies to independent researchers and specialized laboratories in Universities or research institutions ensured scientific objectivity and credibility.

194. However, it must be stressed out that the complexity of methodological and epistemological problems, as well as scientific arguments and discrepancies that can be the result of different methodological approaches, should not be allowed to obstruct the advancement of the general discussion over these issues.

195. Thus it is obvious that the State demonstrates a continuous preoccupation and care for the population's (employees' and citizens') health, which is systematically followed up, by using various methodologies.

196. In the Prefecture of Kozani has been established (ΚΕΠΕ) the Prefectorial Enterprise for the improvement of environmental quality. The tasks of this Enterprise are the monitoring of environmental agent, the environmental checks, studies executions, research and education programs and the public information.

197. The researches about the population' s health shall be continued taking into account the ***finding from the Medical examination of DEH's personnel*** which is running, as mentioned in page 114 of this text

198. Regarding the Response para **55,** it is evident that no such establishment of pollution, due to DEH's activities, nor demonstration of impacts on health have been proved. On the contrary, all elements presented before, rebut the hypothesis of both environmental pollution and following repercussion on public health.

A- 5 The operation of Lignite Mines

199. Concerning the Response para **57** and **58,** it should be mentioned that the conveyor belts (C.Bs) all over the world, E.U. included, operate in conformity with international best practice, each time on the basis of their particular use. This fact explains the expressions "not covered", "covered", "need not to be covered", "running at high speed" etc. that deliberately appear to be incoherent or even contradictory according to MFHR.

200. Generally the C.Bs do not cross populated areas. Nevertheless, wherever C.Bs cross populated areas, in order to comply with relevant approved Environmental Terms, they are covered. In the particular case of Ag.Dimitrios, though a distance of 2-2.5 km from the village, of Klitos works of covering a total length of 4.7 km have already started (1,700 m of the said conv.belt is already covered). Moreover, for the fly-ash deposition, there are 3 completely closed C.Bs of pipe-type (1 in Ptolemais SES and 2 in Megalopolis SES), as it has arisen by the implementation of the Best Available Techniques.

201. For the para **60** of MFHR's Response, The Respondent is obliged to repeat that C.Bs operate in accordance with international practice and no legislation there is, to our knowledge, or anything else, suggesting any differentiation from this practice.

202. Besides, there is no relation between length and characteristics of the C.B. and the issue. Upgrading of different systems is a continuous concern for the mines with continuous effort to comply with BAT. Furthermore, to the Respondent Government it is unclear what the precise information on operating lengths and characteristics would add to the issue, although these data are available for hundreds of C.Bs. The same holds for the implication in questions of the type "why now and not before".

203. In the para **61** of the Response, there is an evident misunderstanding concerning the dumping of waste material. In fact, material in not dispersed from heights of 12m, but the formation of the dump area proceeds in benches of 12m-height which is a common practice dumping technique all around the world. As to dispersion height there is a continuous effort to be kept as low as possible in order to avoid undesirable particles suspension.

204. For the para **62-64** of the Response, referring to Ag. Dimitrios uncovered conveyor belts, it should be noted that D.E.H. has forwarded the possibility of relocating the village of Klitos, which is completed today. That has allowed the Company not to take charges which soon could be proved useless. In spite of the complete re-establishment of Klitos village, nearby C.B. have already been covered, as explained in items 57 & 58 above.

205. For the para **65** of MFHR's Response, the Ministry has proved, by the fines already imposed on DEH that controls are actually effected. Moreover, effective compliance to Environmental Terms, which embody BAT, as a result of the controls of the Ministry, is leading to conclusions totally different from those expressed in the present paragraph. Care is taken, especially in windy days, to keep the dumping height as low as possible in compliance with BAT.

206. For the Response para **66** allegations, it is mentioned that, although a visit to the mines could persuade anyone on the spectacular results in mine restoration (Fig.1 and 24-28), it is among the prerequisites imposed to DEH S.A. to render to the society depleted mines, of course not with their initial landscape, but in a form frequently superior in environmental terms to the initial one. Besides, concerning the infringement of erosion and the risk of resuspension of vast areas, every measure is taken to ensure normal arrangement of water flow by proper regulation of the flow bed and characteristics, as well as the use of special emulsion to minimize the risk of resuspension (see also item below), all in accordance with the relevant environmental permits.

207. Specific strategic studies have been compiled for the rehabilitation of the mines' new ground by an interdisciplinary team set up by the National Technical University of Athens. These strategic studies have been taken into account in the formulation of the finalized proposals of the Environmental Impact Assessment Studies (EIA) submitted to the Ministry of the Environment, Planning and Public Works for approval.

208. According to the aforementioned studies, it is anticipated that after the completion of the mining of the West Macedonia Lignite Centre, 11.3 thousand ha of farming land will be created as well as 7.5 thousand ha of forest parks, lakes, etc. To date 2.12 thousand ha of forest land has been planted, mainly on inclined planes formed by depositions as well as 1.87 thousand ha of farming land situated on the final levelled surfaces (Fig.24).

209. As regards the Megalopolis Lignite Centre, the creation of 2.7 thousand ha of forestland has been anticipated, while the remaining part will mainly include farming land with recreational parks, sport centres, buildings, lakes and wet-lands. To date 520 ha of forest parks have been created on inclined planes as well as 250 ha of farming land on the levelled surfaces of the exhausted open mines.

a) Tree planting

210. To date more than 6.5 million trees have been planted in the West Macedonia Centre and more than 800,000 trees in the Megalopolis Centre at a rate that now exceeds 600,000 per year. Trees planted are mainly species native to the area of the mines such as acacias, pines trees, elm trees, Arizona cypresses and eucalyptuses along with fruit bearing trees, such as walnut trees, chestnut trees, apple trees, pear trees and pistachio trees planted at selected locations of the mines.

Tree planting is performed with three different methods:

- The classic manual way in areas where the use of machinery is inappropriate.
- The riper method with a bulldozer or a suitably shaped plough connected to a tractor, which allows the planting of 1,000 trees per hour.
- The method of transferring an entire forest root system (mainly for acacia trees).

Figure 24: DEH's restored areas: the inclined areas are planted with forest trees, while the flat ones are cultivated

b) The creation of farming land

211. The creation of experimental farming land for crops started in 1986 to test the fertility of the rehabilitated land. The crops selected are the durum and soft wheat, due to the fact that this entire area is usually planted with these crops.

212. According to the evaluation of the results so far, the productivity of the new land remains at the same levels with the productivity of the wider area and in some cases even exceeds it. At the same time, the productivity of this land can be compared to the productivity of the experimental farms created by covering the new land with fertile soil, 40-45 cm thick, extracted from the surface of the expropriated areas.

213. Beside the cultivation of crops (Fig.25), a pilot greenhouse for hydroponic cultivations (Fig. 26) with remote heating and a model orchard (Fig.27) are being run at the redeveloped areas of West Macedonia Centre in cooperation with NAGRES (the National Institute for Agricultural Research) and the Institute of Technical and Vocational Training of Florina.

214. The pilot greenhouse and the model orchard have been set up for the purpose of examining the development of all the fruit bearing trees planted in the new land and for demonstrating the possibility of developing high added value activities in the area for the farmers.

Figure 25: Cultivation of crops in the West Macedonian Lignite Centre.

Figure 26: Pilot greenhouse for hydroponic cultivations in the West Macedonian Lignite Centre.

Figure 27: A model orchard in the West Macedonian Lignite Centre.

215. In the Megalopolis Lignite Centre there have been experimental cultivations on specific species of plants (e.g. potatoes, beans, tomatoes) with satisfactory results, for their potential cultivation, while the experimental crops of grains, oats and vetch produced are similar to those achieved in the greater area.

216. The West Macedonian Lignite Centre, during the last 2 years has let to farmers of the adjacent areas, the restored land of total surface area of 800 ha, with the minimal rate of 100 € per hectare. By this way, DEH contributes significantly to the farmers' annual income.

c) Special works for the rehabilitation of the land – creation of ecosystems

217. In addition to the large-scale works pertaining to the creation of cultivable and forest land, a number of special interventions are being carried out aiming at optimizing the cultivation of the rehabilitated ground.

218. The restored areas are already hosting ecosystems gathering the flora and fauna from the ecosystems that have been affected or disturbed, while the fauna is enriched with the species released from the animal husbandry facilities. Lakes and wet-lands were created at all the depositions and as a result a large number of both flora and fauna species are gathered around them, while lakes are enriched with fish.

219. As far as the West Macedonia Centre is concerned, these interventions are focused on the Main Field old mine where mining has been completed. Indicatively we mention the construction of the Expo Centre which is visited by more than 5,000 people every year from Greece and abroad; the Artificial wet-land (Fig.1), adjacent to the Kozani-Ptolemais national road which is evolving into a major ecosystem with the cooperation of university agencies and is expected to be used as an environmental education reserve; the Small Animal Reserve covering an area of 80 ha and is being used by the Forestry Authority and the local Hunting Associations for the enrichment of the area's flora (with hares, partridges and pheasants); the Open Air Theatre which has been constructed by the people working for the Environment Section with old materials collected from the mines; the Silviculture Park (Fig.28) , in the

external deposition of the Main Field where the model forest park was created with all the different species of trees that flourish in Northern Greece; the railway park and finally the buildings of the Environment Section and the Fast Training School of the personnel of Mines Division.

Figure 28: Silviculture Park - restored area in the external deposition of the Main Field

220. Respectively, in the areas of the Megalopolis Lignite Center which have been restored, various projects have been constructed, among which:

- An Expo Centre for informing the visitors on the Lignite Centre activities
- A Recreational Park (including a grove, a playground and various playing fields) where various events are held in cooperation with the Municipality of Megalopolis
- Artificial hydrobiotopes by creating artificial lakes some of which have been enriched with fish
- A moto-cross track, which has accommodated international races on various occasions and has been qualified as a model track by major international bodies related to this sport
- A runway used by private associations to carry out flights of ultra light aircrafts

221. All the above prove without doubt the constant and factual preoccupation and care of the State for the protection of the environment.

*Waste Management (*para ***67 -68*** *of MFHR's Response)*

222. It is highly astonishing that the Complainant accuses the Minister of his positive reaction to DEH´s initiative to create the waste management site in the Kardia mine, assessing that this attitude lacks objectivity and impartiality. However, it must be underlined that the disputed waste management site is the first one operating in Greek territory. This initiative proves the State's and the Corporation's concern for appropriate and efficient management of waste, according to the Community and Greek Laws, set down for such activities. It must also be underlined that DEH is the first Corporation in the Greek territory that has taken this initiative, which is part of the general Corporation's environmental policy, according to its European and International Environmental Commitments.

223. According to the para3, 38526/19.04.2006 Decision of the General Secretary of Western Macedonia in the Waste Management Site in Kardia mine (Annex 45), only the waste from DEH's activities in the KPV (Prefectures of Kozani and Florina) will be disposed.

So, the Complaint allegations that waste from other sources in northern Greece will be disposed in the above mentioned Site are not true and the Complainant must more carefully examine the information taken from articles of local newspapers or letters of local inhabitants before using it to accuse the State.

A- 6 The operation of Lignite Fired Power Plants

The alleged operation of lignite fired power plants without regard to environmental impact (para ***69*** *of the Response)*

224. **All lignite Power plants operate in compliance with specific environmental terms, established on the basis of individual environmental impact assessment that takes into consideration each power plant characteristics and specific locations.**

225. Going further the above situation and in order to optimize the operation of DEH's activities in the region holistically, through the minimization of the environmental impact and the uninterruptible supply of electricity, a state-of-the-art **environmental management system** is examined to be established in KPV in an integrated way for the protection of the environment as a whole.

This environmental management system should contain all the necessary modules to:

- Credibly diagnose the current situation in the area of interest, using data from existing monitoring networks
- Reliably predict its evolution focusing on the excesses above legislation limits
- Apply the most appropriate environmental management techniques emphasizing the best available techniques (B.A.T.)

226. Under the *3rd Community Support Framework*, in the operational Programme "Competitiveness": Creation of Regional Innovation Poles (CRIP), DEH has initiated a collaboration with the University of West Macedonia to develop an innovative environmental management system which aspires to: (i) continuously monitor and predict air quality in the operating region of the power plants and (ii) support the decisions which are relative to the dispatching strategies of the power plants, in order to minimize exceeding of the permissible levels of atmospheric pollution.

227. The presentation of the air quality data will be introduced via a specially formed geographical information system (GIS) and the results will be available in the internet to the responsible service of the Ministry of the Environment, Physical Planning and Public Works of the local Prefectural Authority and the staff of DEH.

228. The environmental management system will utilize elements from different databases, static and dynamic information from measuring stations and prediction models. Using this information, the system will continuously monitor and record the air quality in the Ptolemais – Florina basin. In case of excesses of the permissible levels or prediction for excesses in unfavourable meteorological conditions, a series of alternative scenarios will be activated. These processes

will include data for all DEH's activities in the region (generation stations, mines etc). The effect in air quality, which corresponds to one of the examined alternative scenarios, will be evaluated, in order to propose interventions to the operation of particular power stations of the region in pre-agreement and with approval of the HTSO (Hellenic Transmition System Operator).

A- 7 Best Available Techniques (BAT)

A-7.1 The alleged non-use of Best Available Techniques (BAT)

*(para **91-101** of the Response)*

229. Directive 96/61/EC[26], concerning the Integrated Pollution Prevention and Control, lays down a framework requiring Member States to issue operating permits for certain installations. **These installations must be brought into compliance by 30 October 2007**. **This is the key deadline for the full implementation of the Directive.**

230. The IPPC Directive is based on several principles, namely (1) an integrated approach, (2) best available techniques and (3) flexibility:

231. The **integrated approach** means that the permits must take into account the whole environmental performance of the plant, covering e.g. emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration of the site upon closure. The purpose of the Directive is to ensure a high level of protection of the environment taken as a whole.

232. The permit conditions must be based on ***Best Available Techniques*** **(*BAT*)**. According to the Article 2.11 of the Directive:

- "techniques" include both the technology used and the way in which the installation is designed, built, maintained, operated, and decommissioned
- "available" means those techniques developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions

[26] Annex 18

- "best" means most effective in achieving a high general level of protection of the environment as a whole.

233. To assist the licensing authorities and companies to determine BAT, the Commission organises an exchange of information between experts from the EU Member States, industry and environmental organisations. This work is co-ordinated by the **European IPPC Bureau** of the Institute for Prospective Technology Studies at EU Joint Research Centre in Seville (Spain). This results in the adoption and publication by the Commission of the BAT Reference Documents (the so-called BREFs).

234. The final version of the Reference Document on Best Available Techniques for Large Combustion Plants was published in May 2005 (Annex 21). As it is clear, already from the preface of the Document (pages xi-xv):

- **The description of "best available techniques" is inevitably incomplete. It is is given for information only. It has no legal value and does not in any way alter or prejudice the actual provisions of the IPPC Directive.**
- **The implementation of the IPPC Directive should also take account of other Community objectives such as the competitiveness of the Community's industry thereby contributing to sustainable development.**
- **The Document does not propose emission limit values. The determination of appropriate permit conditions will involve taking account of local, site-specific factors such as the technical characteristics of the installation concerned, its geographical location and the local environmental conditions. In the case of existing installations, the economic and technical viability of upgrading them also need to be taken into account. Even the single objective of ensuring a high level of protection for the environment as a whole will often involve making trade-off judgements between different types of environmental impact, and these judgements will often be influenced by local considerations.**

235. **The Complainant pretends to be unfamiliar of the above crucial points for the implementation of the IPPC Directive and intentionally ignores them.**

236. As mentioned before, the IPPC Directive gives, inter alia, clearly importance to the economic of BAT. However, two key issues usually arise, namely:

- what technologies should be considered environmentally benign on the grounds of cross-media effects
- how to include economic aspects in the selection of BAT

Within the framework of Article 16.2 of the IPPC Directive, a horizontal BREF on "Economics and Cross-media Effects" has been developed in order to assist in the determination of BAT for the industrial sectors involved in IPPC jurisdiction.

A-7.2 Best Available Techniques in lignite-fired plants of DEH

237. DEH is obliged to submit to the competent authority, during the IPPC permitting procedure, technical reports on Best Available Techniques used or to be used in its installations.

238. The Complainant presents in form of tables the so-called "EU-Requirements". As clarified above, there are no "EU-Requirements" but European-level proposals to assist in the determination of BAT-based permit conditions. Furthermore, the Complainant has listed all alternative BAT proposals as "EU-Requirements", although, as it is obvious, e.g. "seawater scrubbing" could not even be discussed as an alternative for the lignite-fired plants of PPC S.A located far away from the sea.

239. The Best Avalaible Techniques (tables 10-12) for the reduction of the atmospheric pollutants at the lignite-fired plants are presented here-after.

Table 10: BAT applications for Particulate Emissions Control (para **94-96** of the Response)	
Agios Dimitrios SES	High performance ESPs are already in use in Units II (since May 2006) and V (since 1999), along with the corresponding additional exchangers for the recovery of heat content of flue gas in order to reduce the temperature of flue gas and increase the efficiency of ESPs. The project of upgrading the existing ESPs and adding new state of the Art ones in Units I, III and IV along with the corresponding additional exchangers for the recovery of heat content of flue gas in order to reduce the temperature of flue gas and increase the efficiency of ESPs is under construction and will be completed in early 2008.
Amynteon SES	High performance ESPs are already in use in both Units I, II.
	High performance ESPs are already in use in all Units I, II, III and IV. ESPs in Units I, II operate since 1993 and new state of the Art ESPs in Units III, IV operate since

Kardia SES	2003 and 2004 respectively (not "allegedly upgraded since 1987" as asserted by the selectively informed Complainant).
Ptolemais SES	High performance ESPs are already in use in all Units I, II, III and IV. ESPs in Units I, II and III operate since 1987 and ESPs in Unit IV operate since 1994.
Meliti SES	Meliti is the newest plant of DEH with the state of the Art abatement technology used. High performance ESPs are in use in combination with Wet Flue Gas Desulphurisation (Wet FGD), leading to dust concentration in flue gas of less than 8 mg/Nm^3 (dry, 6% O_2). It is incomprehensible why the Complainant reports for Meliti SES "unspecified particulate abatement technology", "no reference to any specified FGD system" and "fuel desulphurisation unit". Ignorance or deliberate mistake?
Megalopolis SES	Planning of DEH foresees limited time of operation (until 2010) for Units I and II of SES Megalopolis, following the provisions of Directive 2001/80/EC. More specifically, Units I and II are allowed to operate 20.000h (both as a unit) at the most until 2015 (it is expected though that this operation time limit will have been used at the latest until 2010). Nonetheless, the project of upgrading the ESPs of Units I, II is in progress. High performance ESPs are in use in Units III - IV. Additionally, a wet FGD system is in operation since 1999 in Unit IV, while a same system is under construction in Unit III (full operation expected during the first semester of 2008). State of the Art lignite ESPs are in use in Units I, II and III.

Furthermore, in all lignite-fired power plants fabric filters are used in order to collect dust emissions during crushing of lignite and stocking of fly ash (Best available techniques according to par. 3.2.3 and 4.4.4 of the Final BREF LCP, May 2005).

Table 11: BAT applications for SO_2 Emissions Control (para **97-99** of the Response)	
Agios Dimitrios SES	The lignite that is used has low sulphur content (<1%) and high alkaline (CaO) ash content (>20%) resulting in low SO_2 emissions. The rate of abatement achieved just by the "natural desulphurisation" (high Ca/S ratio in the fuel) reaches 75-90% and is comparable with that achieved by using an FGD_{dsi} (Flue Gas Desulphurisation by dry sorbent injection). The above is considered to be Best Available Technique according to par. 4.5.8 of the Final BREF LCP, May 2005.
Amynteon SES	As above, the characteristics of the lignite used result in low SO_2 emissions. The range of abatement achieved here by the natural desulphurisation reaches 60-75% and is comparable with that achieved by using an FGD_{dsi} (Flue Gas Desulphurisation by dry sorbent injection). The above is considered to be Best Available Technique according to par. 4.5.8 of the Final BREF LCP, May 2005.
Kardia SES	As above the characteristics of the lignite used result in low SO_2 emissions. The range of abatement achieved here by the natural desulphurisation reaches 75-90% and is comparable with that achieved by using an FGD_{dsi} (Flue Gas Desulphurisation by dry sorbent injection). The above is considered to be Best Available Technique according to par. 4.5.8 of the Final BREF LCP, May 2005.

Ptolemais SES	As above the characteristics of the lignite used result in low SO_2 emissions. The range of abatement achieved here by the natural desulphurisation reaches 75-90% and is comparable with that achieved by using an FGD_{dsi} (Flue Gas Desulphurisation by dry sorbent injection). The above is considered to be Best Available Technique according to par. 4.5.8 of the Final BREF LCP, May 2005.
Meliti SES	For the reduction of SO_2 emissions a wet FGD System is installed and operating since 2003, leading to SO_2 concentration in flue gas of less than 300 mg/Nm^3 (dry, 6% O_2). Specifically, a flue gas desulphurisation system based on wet scrubber with limestone is used, reaching rate of desulphurisation of >98%.
Megalopolis SES	Unlike the lignite used in northern Greece, lignite used in Megalopolis area is characterized by high sulphur content (>1%) and relatively low alkaline (CaO) ash content (<20%) resulting in generally high SO_2 emissions. The rate of abatement by natural desulphurisation in this case is restricted to 10-20%. A wet FGD system is in operation since 1999 in Unit IV, while a same system is under construction in Unit III (full operation expected during the first semester of 2008).

Table 12 BAT applications for NOx Emissions Control (para 100 of the Response)	
Agios Dimitrios SES	Since combustion temperatures for poor quality (low calorific value) lignite are quite low and the humidity of the flue gas quite high, NOx emissions are low. For that reason, primary measures (air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.
Amynteon SES	As above, primary measures (low excess air, air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.
Kardia SES	As above, primary measures (air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.
Ptolemais SES	As above, primary measures (air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.
Meliti SES	As above, primary measures (air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.
Megalopolis SES	As above, primary measures (low excess air, air staging, flue gas recirculation) are sufficient according to par. 4.1.9.1.6 of the Final BREF LCP, May 2005.

240. The investment programme (Tables 13-14), already or currently carried out by DEH, results in all the emissions decrease as the total efficiency of each Unit is increased.

Table 13:
Upgrading programme for the increase of the energy efficiency and the energy saving combined with emissions reductions

Upgrading of the cooling towers of Units I-IV of Ag. Dimitrios SES (to be completed in the 1st semester of 2008; Cost: 5.6 million €)
Upgrading of the steam turbines and the condensate preheating system of Units III & IV of Ag. Dimitrios SES (to be completed in the 1st semester of 2008; Cost: 42.80 million €)
Upgrading of the condensate preheating system of Units I & II of Ag. Dimitrios SES (to be completed in the 1st semester of 2007; Cost: 5 million €)
Upgrading of the cooling tower of Units I & II of Kardia SES (Cost: 3 million €)
Upgrading of the cooling tower of Unit III of Megalopolis SES (to be completed in the 1st semester of 2008; Cost: 7.10 million €)
Supply and installation of on line monitoring system of unit energy efficiency at Ag. Dimitrios, Aliveri, Ag. Georgios and Lavrion SESs (Cost: 2.85 million €)
Upgrade of the system for the lignite consumption measurement (belt-weighting)
Installation of lignite automatic sampling system and identification of the Inferior Thermal Capacity

Table 14: Completed projects for the increase of the energy efficiency and the energy saving combined with emissions reductions
Upgrading of two steam turbines (units III and IV of Kardia SES)
Upgrading of five cooling towers (Ptolemais, Kardia and Amyntaion SES)
Refurbishment of the boiler of unit II of Ptolemais SES

241. **<u>Conclusively</u>, the Respondent Government rejects as totally unrealistic the allegations of the Complainant related to the implementation of the Best Available Techniques in lignite-fired plants of DEH as they are summarized in par. 101, since:**

- The installations of DEH, as any other industrial installation which fall under the scope of IPPC, are thoroughly inspected for their gradual compliance with the Best Available Techniques. During this procedure and before issuing the permit by the competent State Authorities, many aspects are to be considered (following, inter alia, the framework of the BREF on "Economics and Cross-media Effects").

- The phenomenon of natural desulphurisation appearing in plants located in northern Greece is due to special characteristics of lignite (low sulphur content and high alkaline (CaO) ash content - otherwise high Ca/S ratio), thus achieving rate of desulphurisation of 65-90%, comparable to that of an FGD system installed. In SES Megalopolis where the natural desulphurisation has a minor effect (10-20%), wet flue gas desulphurisation systems are in operation (Unit IV

since 1999) or under construction (Unit III - 2008), reaching rate of desulphurisation of >98%.

- All installations of DEH the Complainant refers to use primary measures (low excess air, air staging, flue gas recirculation) to reduce NOx emissions, which are considered to be Best Available Techniques since combustion temperatures for poor quality (low calorific value) lignite are quite low and the humidity of the flue gas quite high, thus resulting to low NOx emissions.

- All installations of DEH that the Complainant refers to, use or will (until early 2008) use high performance Electrostatic Precipitators (ESPs) for the reduction of particulate emissions.

242. As mentioned on page xiv of the preface of the Reference Document on Best Available Techniques for Large Combustion Plants (Final Version – May 2005): «Article 4(3) and 4(6) of the LCP Directive (Directive 2001/80/EC) provides for the possibility for Member States to establish a National Emission Reduction Plan (NERP) for existing installations, as an alternative to applying the emission limit values specified in the LCP Directive to existing plants. However, the plan "may under no circumstances exempt a plant from the provisions laid down in relevant Community legislation, inter alia IPPC Directive." Therefore, even if an installation is covered by a national plan, it still needs to operate in compliance with all the provisions of the IPPC Directive, including a permit containing emissions limit values or equivalent parameters and technical measures determined according to the provisions of Article 9(4) or Article 9(8) of the IPPC Directive.» Greece has already submitted the corresponding NERP to the EU. Following the above, IPPC-based permits have already been issued for Kardia SES, Ptolemais SES and Megalopolis B SES (all Units of these plants are enlisted in NERP), while for other plants (Megalopolis A SES, Amynteon SES and Aghios Dimitrios SES) procedures of issuing IPPC-based permits are underway.

243. As mentioned on page xv of the preface of the Reference Document on Best Available Techniques for Large Combustion Plants (Final Version – May 2005): «Article 4(4) of the LCP Directive provides for a possible exemption for "end of

life" installations from compliance with emission limit values or from inclusion in a national plan, "without prejudice to Directive 96/61/EC". The installation concerned still needs to operate according to an "IPPC-based permit". The provisions of Article 9(4) of the IPPC Directive and the BAT definitions enable the competent authorities to take into account the specificities of such "end of life" installations.» This is the case for Units I,II of Megalopolis A SES. Planning of DEH foresees limited time of operation (until 2010) for these Units and for that reason they were opted out of the NERP. More specifically, both Units are allowed to operate 20.000 h at the most until 2015 (it is expected though that this operation time limit will have been used at the latest until 2010). Nonetheless, the project of upgrading the ESPs of Unit I is completed, while for Unit II is in progress. The procedure of issuing an IPPC-based permit for these Units is in progress (under the procedure of issuing an IPPC-based permit for the whole Megalopolis A SES).

A-8 About Environmental Permits
(para 70-73 of the Response)

244. The Complainant mentions an Ombudsman's official letter, referring to the constitutional issues related to environmental terms, the joint temporary operational license and its extension, granted by law, and not the environmental permit extension as the complainant alleges. The Complainant stresses that this practice is totally contrary to the explicit administrative procedures in force related to the licensing of individual power plant units.

245. Contrary to these allegations, the real meaning of this temporary operational license and its role in relation to the general structure and operation of the Greek Energy Regime has as follows:

Firstly, this temporary permit and its extension till the 31st of December 2008 (Article 24 paragraph 4) aim to ensure the continuous, safe and appropriate electricity supply all over the Greek Territory. This is not only a business goal of DEH, but at the same time an obligation, explicitly assigned to the DEH by the law and the general constitutional principle of the continuity of public service. Furthermore, this permit is temporary, with a specific and limited duration. It will expire and be deprived of any validity at the very moment that the administrative process, issuing the permanent individual per plant permit of operation, is completed. It must be also underlined that this temporary permit and its extension ensure only the continuous operation of the power plants, to

the benefit of the public interest and the Greek consumers, and by no means is it substituted as an environmental permit (see below further explanation about the issue of environmental permit). In addition to this, the Respondent insists that neither DEH nor the competent administrative authorities mean, by the issuance of the temporary permit, to establish a permanent situation breaking off the conditions, set by law.

246. The temporary permit is given in order to ensure the safety and adequacy of supply in cases that the administrative process is delayed. However, when this process will be completed, the temporary permit will be revoked and replaced by the permanent individual one.

247. If DEH had not been enforced with this exceptional and temporary permit, the problems that would have occurred all over the Greek Territory would have been unpredictable. In fact, had the permit not been engranted, the Greek power plants would have theoretically ceased operating since July 2005, when the validity of the temporary permit, granted by law No 2941/2001, expired. The consequences of such a scenario would have been enormous and beyond imagination, with detrimental impact on the Greek Economy as a whole. Lack of electricity would have affected the operation of enterprises, premises, hospitals etc and would have insulted the Greek citizens' welfare and health. Furthermore, DEH would have violated the law that obliges it to provide electricity to the whole of the Greek Territory, whenever it is asked (Article 1 par. 2 and 3 Law No 1468/1950 and Article 26 par. 1 and 2 Law No 2773/1999). This obligation derives not only from the national laws, but also from the European Legal Order and the case law of the European Court of Justice, which both explicitly point out this duty, assigned to enterprises which provide goods such as the electricity.

248. The extension of the temporary permit can by no means be regarded as an environmental permit, as the Complainant alleges. The environmental permit is granted, following a totally different administrative process under special rules and procedures in order to make an electricity unit work appropriately and according to the conditions that the European and Greek Environmental Law have already set. It is obvious that the approval of the environmental terms is given in order to make sure that the unit conforms to all the conditions that the law presupposes and that the electricity generation progress is causing the minimum possible effect to the neighboring area.

249. As it can be seen from the above mentioned remarks the main concern of PPC is to serve the public interest and the welfare of all consumers all over the Greek Territory and at the same time to protect the environment. **Therefore, the Complainant's statement that the temporary operational permit is issued arbitrarily and with no concern to the people's health and working conditions is totally subjective and unproven. In fact, the non existence of temporary operational permits would definitely have led to damages of people's health and working conditions.**

250. The issue of new environmental terms for the installations under the IPPC Directive, is a complicated procedure, regarding a lot of parameters. This fact is depicted by figures that have recently been released by the commission's environment department, showing the delay in issuing or reconsidering of the environmental permits according to the IPPC Directive for Member States. The following table shows the relevant progress of 18 EU States, among which Greece is in a relatively good position.

Status of document:
March 2006

Member States	Number of existing installations where the permits have been reconsidered but not updated	Number of existing installations where the permits have been reconsidered and updated	Number of new permits granted for existing installations	Expected total number of existing installations	Progress	Date state of play of information submitted
Spain (ES)			596	4582	13%	May 2005
United Kingdom (UK)	45		1113	4335	27%	Early June
Poland (PL)			138	1953	7%	Mid July 2005
Belgium (BE)	63	22	1014	1294	85%	June 2005
Hungary (HU)			273	1040	26%	May 2005
Finland (FI)		115	163	702	40%	June 2005
Portugal (PT)			90	628	14%	November
Slovak Republic (SK)			107	500	21%	June 2005
Greece (EL)	108	12	20	358	39%	November
Slovenia (SI)				194	0%	June 2005
Lithuania (LT)		116		158	73%	December
Cyprus (CY)			15	108	14%	June 2005
Estonia (EE)			19	94	20%	October 2005
Latvia (LV)		6	37	83	52%	Mid July 2005
Germany (DE)	3662	1394	1660	8068	83%	June 2005
France (FR)	179	625	1424	6203	36%	June 2005
Ireland (IE)	154	144	13	526	59%	June 2005
Luxembourg (LU)	4	12	8	25	96%	June 2005
Czech Republic (CZ)	No infomation received by 15 March 2006					
Italy (IT)	Information to be submitted during 2006					
Denmark (DK)	Information to be submitted during 2006					
Malta (MT)	No infomation received by 15 March 2006					
Sweden (SE)	Information to be submitted during 2006					
Netherlands (NL)	Information to be submitted during 2006					
Austria (AT)	Austria indicated it will not send information outside of its reporting obligations under Art. 16(3)					

Figure 29: Progress in the Environmental Permits issuing according to the IPPC Directive (http://ec.europa.eu/environment/ippc/ippc_indic_permits.htm)

251. In para **79-82** of the Response, MHFR alleges that since 1997, excesses of the national limit value for TSP have occurred.

In fact, the TSP emissions level of Units I-IV of Ag. Dimitrios was significantly lower (120 μg/m^3) than the limit set by the legislation (150 μg/m^3) for more than a decade and up to 1997. After 1997, some occasional exceedings have been observed. An elaborated study, carried out by competent Chemical and Electrical Engineers of DEH, determined that these excesses were caused because of abrupt changes in the physiochemical properties of the ash, produced by the lignite combustion. Said changes were observed on the content of free CaO, which when increased, according to the international literature, leads to ESPs (electrostatic precipitators) efficiency deterioration, because it reduces the electrical conductivity of ash in the flue gases. These conclusions of the study led to a change in the way the lignite was extracted. This resulted to significant reduction of the TSP emission excesses and their final elimination in 2000 and 2001.

252. Furthermore, despite the fact that the ESPs of Ag. Dimitrios SES were operating within the emissions limit values:

- DEH planned and conducted a lot of projects for the ESPs efficiency improvement
- DEH early introduced in its business plan the environmental project "Upgrading of the old and installation of new ESPs at the units I-IV of Ag. Dimitrios SES", in order to satisfy the stricter environmental requirements, by the upcoming European legislation, that DEH always follows up closely and attentively. The estimation for its validity was the end of 2007-2008, and DEH, according to its programming, would be ready to satisfy them.

253. Despite the changes of the way lignite was extracted, the problem of the particulates emissions from the units I-IV of Ag. Dimitrios reappeared in 2002, because of low lignite quality affecting the proper ESPs operation.

254. The lignite properties deterioration led the mines to conduct further studies to determine the cause of the deterioration. The studies concluded that with the quality of the lignite expected to be extracted in the future years, the DEH's existing ESPs could not become even more efficient, as they have been already working at the designed efficiency and new ones were required to complement their ash collection capability downstream the flue gas stream.

255. Additionally, the possibility of reducing the flue gases temperature has thoroughly been examined , before passing them from the new ESPs, evaluating the recent experience of the German lignite-fired plants, according to which reduced flue gas temperature enhanced the dust collecting capability of the ESPs. So, the project technical specifications for the new ESPs have, inter alia, included the necessary equipment for eliminating the unfavourable effect of the flue gases elevated temperature on the ESPs.

256. All these measures that have been taken following the pressure and the constant inspections of the authorities in charge, as well as the imposed fines, have already resulted in the reduction of the particulates emission excesses, as it happened with the project for the new ESPs in Aghios Dimitrios Unit II that was successfully completed in May 2006.

257. Furthermore, **the allegations that** "The problems is aggravated by DEH 's difficulty to comply in the short term with EU legislation both on emission limit values and BAT" ignore that European legislation does not set any limit value for TSP, emitted from existing LCP. The LCPD directive foresees for existing LCP specific limit values for dust (or alternative Emission Reduction Plan) from the January of 2008. Also IPPC Directive set as deadline for operation according to BAT the November of 2007.

258. **Upgrading of the existing and addition of new ESPs at Ag. Dimitrios SES, units I-IV, is in progress**. As noted above the new ESPs of Unit II have already operated **successfully** and according to the contractual timetable. New ESPs for Unit I will be concluded in the fall of 2006 and works shall continue under the 130 M€ contract for the new ESPs in Units III-IV in the years 2007-2008.

259. So, the alleges of the Complaint that the "long term solution of replacing or improving the filters that DEH espouses, even were it to be carried out competently and in time, a hardly likely prospect given the company's history, is patently inadequate and insufficient" or that "the project will be postponed" are not true.

*Alleged Modification of Environmental Permit (para **83** of the Response)*

260. As far as it concerns the allegation that *the environmental terms* were *repeatedly modified by subsequent Ministerial Decisions,* it must be indicated that modifications to the E.P. are drawn up when it is necessary, and particularly when these terms expire. Thus, the Complainant falls into contradictions, as on the one hand he accuses the State of permitting DEH to operate its units without or with expired E.P, and on the other hand accuses the State of accepting DEH's application to the competent authorities requesting the issuance of a new permit. In the latter case, the owner of the plant, the environmental terms of which have expired, must submit new EIA studies requesting new terms.

A- 9 The alleged Incapacity of the Administration to Cooperate

(para **84** of the Response)

261. It is totally untrue that there is a continuous transfer of responsibility between the State and DEH. Each one has specific obligations and duties to fulfill, explicitly assigned to them. Cooperation must always be promoted by both sides aiming to fulfill the same goal, i.e. provision of environmentally friendly electricity at low cost.

262. Furthermore, the accusation that the Prefecture has been forced by the competent Ministry to issue the industrial solid waste management permits, in a way that could benefit the Corporation, is totally unfounded and unproved. In fact, the environmental permits of the solid waste disposal at the exhausted mine include all the necessary measures for the protection of the environment, as well as the necessary monitoring system.

263. As already mentioned, the MFHR, appears not to be well informed about existing State's legislation (para **85** of the Response), or to ignore it on purpose. In fact, the legal framework for the water use by industrial installations already exists (Law 3199/2003, Law 1739/87, Presidential Decree 256/89, JMD 5813/17.05.89)[27]. According to this legislation, the permit for water use in Kardia and Ag. Dimitrios SES has been issued.[28] The appropriate administrative

[27] Annexes 32, 33, 34 & 35 respectively

[28] General Secretary of West Macedonia, 2562/14.06.2004, "Permit for water use in Kardia and Ag. Dimitrios SES"- Annex 40

arrangements including the identification of the appropriate competent authority for the application of the rules of the Directive 2000/60/EC (Water Framework Directive) has been set with the Joint Ministerial Decision 49139/2005.

264. It must be also mentioned here, that:

- Ag. Dimitrios and Kardia power plants use water for their cooling systems from DEH's dam in Polifiton, while Ptolemais SES uses water from DEH's artificial lake of Soulou, recycling the treated waste water from Ag. Dimitrios and Kardia, as well as water extracted from the local lignite mines.
- The operation of power plant cooling systems is in accordance with BREF for Cooling Systems[29]

So, all the Complainant assertions "*that DEH S.A. uses as much water as it wants without regards to local needs*" are unfounded and wrong.

265. As far as it concerns Response para **86,** it should be mentioned that in all lignite fired plants, effective waste water treatment plants operate, in accordance with the provisions of BREF for Large Combustion Plants (Annex 21). Environmental Permits describe the WWTP, as well as the waste water limit values. So, the state takes all the necessary measures for the protection of the environment.

Alleged incomplete transposition of EC Law (para **87** of the Response**)**

266. The allegation that the EC law is not sufficiently incorporated in the national law is wrong and unproven. As the Complainant admits, IPPC Directive 96/61/EC (Annex 18) was incorporated in the Greek Legislation by Law 3010/2002 (Annex 36). This Law does not transpose all the provisions set by the abovementioned Directive, but contains specific provisions that authorize the Competent Minister to adopt the appropriate legal instruments in order for these provisions to be transposed. The EC Law is not binding and restrictive as to the legal measures that the national legislator can choose in order for the national law to be brought in conformity with the EC law, i.e. the national legislator can choose to transpose EC Law by law, Ministerial Decision or Presidential Act, taking in consideration the scope of the Directive's provisions and the necessity for these provisions to be enacted.

[29] Annex 29

267. According to the above mentioned, and even if Law 3010/2002 has not transposed all the provisions of the Directive, nonetheless, specific provisions of this Law have been the legal basis for the issuance of other rules, that incorporate in the national legislation the provisions of the IPPC Directive.

268. More specifically, the provision of Article 10 of the Directive is incorporated to our legislation with the Article 12 par. 3 point b of the JMD 11014/703/Φ104 (Annex 37). Article 11 of the same Directive, is also transposed to the national law with the JMD 29457/1511 (Annex 38). This JMD clearly foresees in article 4 that all the IPPC installations must operate according to the Best Available Techniques. So the allegation that "*it contains no relevant provision imposing to the competent authorities to follow BAT evolution and monitor their application in practice"* ignores that the Decision that approves the environmental terms of a power plant, contains specific and particular provisions relevant to its adjustment to the Best Available Technology. Furthermore, competent administrative authorities are obliged to monitor and control the observance of the environmental terms during the production process by conducting controls, and in case they find omissions and infringements they have the authority to impose sanctions.

269. It should be noted that the JMD 29457/1511/2005 does not contain provisions for the BAT implementation, just because it transposes to the National Law the Directive 2001/80/EC, which does not contain any provision for BAT. As it has been already proved, the BAT implementation has been transposed to the National Law with the JMD 11014/703/Φ104, in the framework of the IPPC adoption.

The state control over the functioning of DEH's Power Stations
(para **90** of the Response)

270. The operation of all lignite fired Power Stations has been subjected to full, detailed **and individual** assessment of its impact on the environment. The relevant Environmental Impact Assessments Studies have been elaborated and submitted to the Ministry of the Environment.

271. **The issued Environmental Permits for the construction and operation of lignite power plants include, among others:**

- Emission limit values for atmospheric pollutants (SO_2, NOx, dust, etc.) and for wastewater pollutants
- Limit values for the quality of ambient air, noise and wastewater receptor
- Monitoring and recording requirements for the emission concentration of atmospheric pollutants, wastewater treatment and disposal quality
- Treatment and disposal of solid by-products/ hazardous or non-hazardous waste
- Transportation and storage of liquid fuel and additive materials
- Monitoring of fuel and ash quality
- Environment Quality Control in the greater power plant area, including ambient air quality monitoring networks
- Management of hazardous substances
- Log keeping
- Measures to be taken in cases of emergencies and equipment failures
- Management of the units load as a function of environmental parameters
- Regular reporting to the competent authorities and submittal of annual reports

272. At all lignite fired SES, extensive programmes for the systematic **individual** management, monitoring and recording of all relevant parameters are implemented. The results of these controls are regularly evaluated by expert scientific personnel of DEH and furthermore, by the respective scientific personnel of the competent authorities to which the aforementioned monitoring results are duly communicated in compliance with the Environmental Permits of the plants.

273. DEH, within the scope of implementing its Environmental Policy, encourages the gradual ISO 14001 certification of existing Environmental Management Systems at all of its Power Plants. The procedure for the development, application and certification of Environmental Management Systems, according to ISO 14001 **has been already successfully completed for Aghios Dimitrios**

SES (lignite) and Chania SES (oil-fired). The programme shall be extended to the remaining lignite fired power plants.

274. **So the allegations that "*both government and corporation seem to misunderstand the purpose of environmental management*" are completely inaccurate.**

A- 10 Sanctions to DEH S.A. and the alleged lenience of the State About Environmental Terms

(para 105 Response)

275. The Complainant also refers to the sanctions, imposed (or not imposed) to DEH and the inefficiency of these enforcement mechanisms to serve their goal of protecting the environment by making the pollutant to pay, according to the so-called EC law principle.

276. First of all, it must be clear that many sanctions have already been imposed to the Corporation by the competent authorities, mainly by the Prefecture who has, according to the law, such a competence. Not only the Prefecture but also the General Secretary of a District and the Minister are empowered to impose sanctions up to a maximum limit/sum, defined by law, beyond which the Decision is void.

277. According to the above mentioned, the Prefecture has several times used his competence by imposing sanctions to DEH, within the limits that the national legislator has defined. Furthermore, such a power and competence is also determined by the Constitutional *Principle of Proportionality*, which is further defined by three *sub*principles, the *stricto sensu* principle of proportionality, the principle of efficiency and the principle of necessity. The sanction must be imposed in a way that would fulfill these three definitions and, further, serve the basic goal that is to make the pollutant to pay.

278. It is obvious that the sum of the sanction is defined each time by many factors, relevant to the specific situation and taking in mind the extension of the violation or the pollution. All these factors are considered *ad hoc* by the competent public authorities, and this practice is in accordance with the principle

of State of Law, principle that generally sets limits and bounds to their (public authorities) actions.

279. Regarding the alleged violation of Articles 2§4, 3§1, 3§2 and 11 of the Charter, the main accusations of the Complainant (§160 of the "Observations") are on the one hand that the amounts of fines imposed by labour inspectors have remained unchanged for a long time, making the mechanism of the Labour Inspectorate Body ineffective, and, on the other hand, that there is no escalation of such fines according to the nature of labour law violations, making the control mechanism ineffective and control procedures intransparent. These allegations are ill-founded (see Annex 14), because:

(a) The amount of a fine that can be imposed by the competent labour inspector has been adjusted (the original provisions are Article 16§l(a) of Law 2639/1998, Government Gazette 205A7 and Article 24§1(a) of Law 2224/1994, Government Gazette 112A).
Specifically, Article 16§(a) of Law 2639/1998 was replaced by Article 11§5 of Law 3144/2003 (Government Gazette 111A), which was then amended by Article 4 of Law 3227/2004 (Government Gazette 3.1 A). It. was last amended by Article 3§3 of Law 3385/2005 (Government Gazette 210A) and now a fine may range from one thousand euro (€ 1,000) to thirty thousand euro (€ 30,000).
Article 24§l(a) of Law 2224/1994 was replaced by Article 11§(5) of Law 3144/2003 (Government Gazette 111A), as in force after being amended by Article 4 of Law 3227/2004 (Government Gazette 31 A), as the latter is in force according to Article 3§3 of law 3385/2005 (Government—Gazette 210A). With respect to the applicable minimum and maximum amount of a fine, we refer to the immediately preceding paragraph.
Therefore, the allegation that the amounts- of the fines that may be imposed by SEPE are not high enough to suppress crime is not true, because these amounts have been repeatedly adjusted.

b) The Complainant does not have a point in connecting the low – according to his estimations - fines imposed by labour inspectors with the alleged ineffectiveness of the control mechanism. Article 16§3 of Law 2639/1998, stipulates the criteria for the sanctions provided by a reasoned judgement by the labour inspector. Fines are subject to judicial review, according to Article 16§2 of Law 2639/1998.

c) Regarding the alleged ineffectiveness of the control mechanism of the Labour Inspectorate Body as a result of lack of escalation of the fines according to the nature of labour law violations, it should be mentioned that, under Article 16§3 of Law 2639/1998, a labour inspector takes into account in every inspection the seriousness of the violation, any repeated non-compliance with the recommendations of the competent organs, any similar violations for

which sanctions have been imposed in the past and the degree of responsibility. Therefore, the Complainant's allegation is not compatible with the letter and the spirit of the law. Besides, it should be noted that inspections differ according to the peculiarity of each firm (e.g. it is important to compare the total number of staff of a film with the number of employees with respect to which the employer has failed to perform his obligations under labour law) and the different degree of responsibility of employers.

d) As already mentioned, two of the criteria for the imposition of a fine by a labour inspector are (i) repeated 11011-'Compliance with the recommendations of the competent organs and (ii) any similar violations for which sanctions have been imposed in the past. Therefore, it is wrong on the part of the Complainant organisation to claim that firms' delinquency and the frequency of accidents are not taken into account in the imposition of fines and the determination of their amounts.

280. It should also be mentioned that, in the imposition of fines and other adverse administrative measures, the Labour Inspectorate Body applies the **general principle of proportionality** (Article 25§1 of the Constitution) which is an achievement of Greek legal thinking dating back to Solo's legislation and to Aristotle (see Panagiotis Kyriakopoulos, *Ancient Greek Law*, p. 478).

On the basis of this principle, recognised by the case law (see Supreme Administrative Court judgements Nos. 3682/1986, 1426/1989, 4051/1990) and legal jurisprudence as a constitutional principle emanating from the concept of the rule of law, the Administration takes into account the seriousness of the violation and the gravity of the sanction imposed, so that the adverse measure adopted is appropriate (suitable) for achieving the object sought and necessary, i.e. it should be warranted or required in order to achieve the object sought.

281. It should be noted that Community law accepts the principle of proportionality which has been recognized by the Court of European Communities as a 'general principle of Community law' and is enshrined in the article 5 (§3) of the Treaty establishing the European Community.

282. With regard to the amount of fines imposed by SEPE, the Complainant once again makes an inaccurate point, stating that "their amount" has remained the same since 1994. Obviously, the Complainant does not know that, under Law 3385/2005, the minimum amount of a fine that may be imposed was adjusted to €1,000.

283. Finally, regarding the Complainant's allegation that there is no price list for the penalties imposed, SEPE deliberately has not priced penalties, because it is not possible to price human pain caused by lack of safety measures. Ignoring the complexity of working conditions and the problems facing a technical and health inspector in performing an inspection, the Complainant rashly invokes a supposed omission (lack of a price list for penalties), as if a penalty were to be imposed on a supermarket for failing to attach a price tag on a product (Cf. also Annexes 12-14).

284. To support his allegations about insufficient control and monitoring, the Complainant claims that the data given by SEPE and the Social Security Foundation (IKA), which suggest a drop in occupational accidents from 3.81% of insured employees in 1977 to 0.82% in 2002, show that either the number of accidents fell or the number of insured employees declined. If the latter were the case, then Greece's labour force would have declined substantially. However, this is not the case. The charts here-after (Annex 13) show clearly the aforementioned drop in occupational accidents as a percentage of IKA-insured employees (Fig. 30), the drop in the number of occupational accidents reported to IKA in absolute terms (Fig. 31) and the increase in the number of IKA-insured employees (Fig. 32). It should be recalled that the source of these data is IKA, which is the largest social security fund in Greece and compiles comprehensive data. Similar statistics are compiled by SEPE, but they only cover the period since its establishment. Moreover, only serious and fatal accidents are reported to SEPE, i.e. the ones that call for investigation. Since it would be impossible to investigate all occupational accidents reported, only serious or fatal ones are reported to SEPE, inline with the practice of most European labour inspectorates.

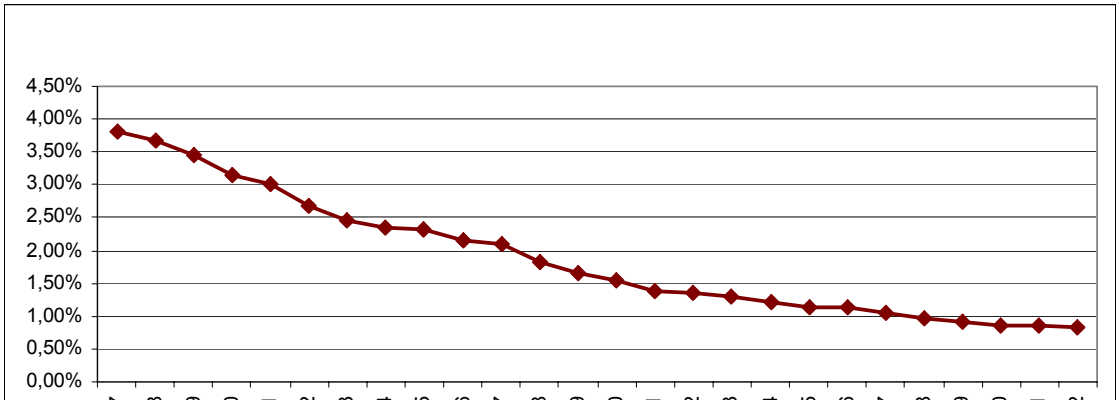


Figure 30: Evolution of the percentage of the occupational accidents as a percentage of IKA-insured employees during the years 1977-2002

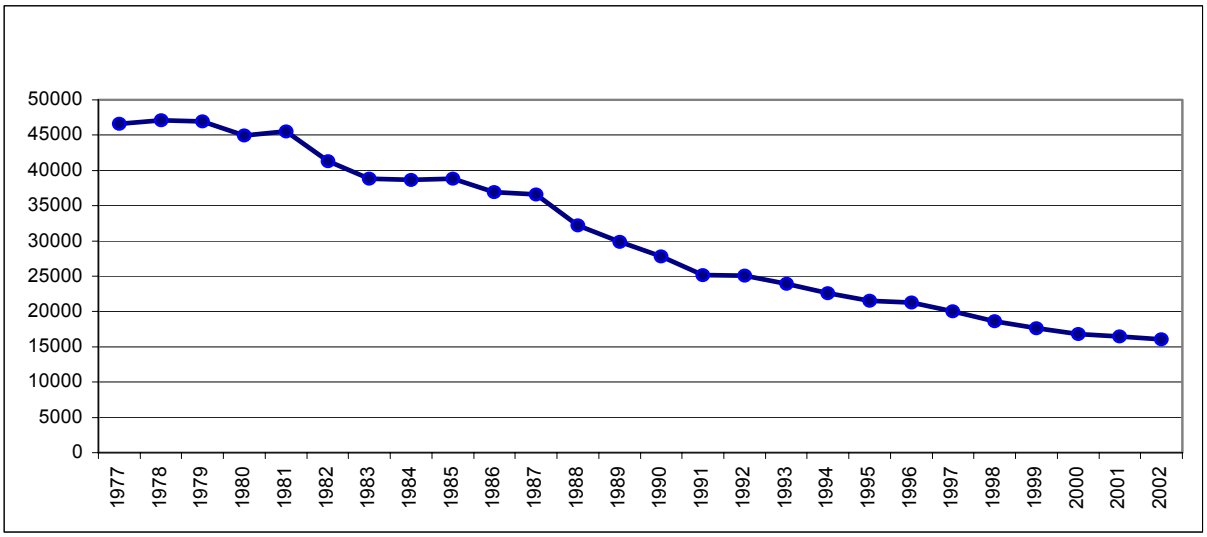


Figure 31: Number of occupational accidents reported to IKA in absolute terms (1977-2002)

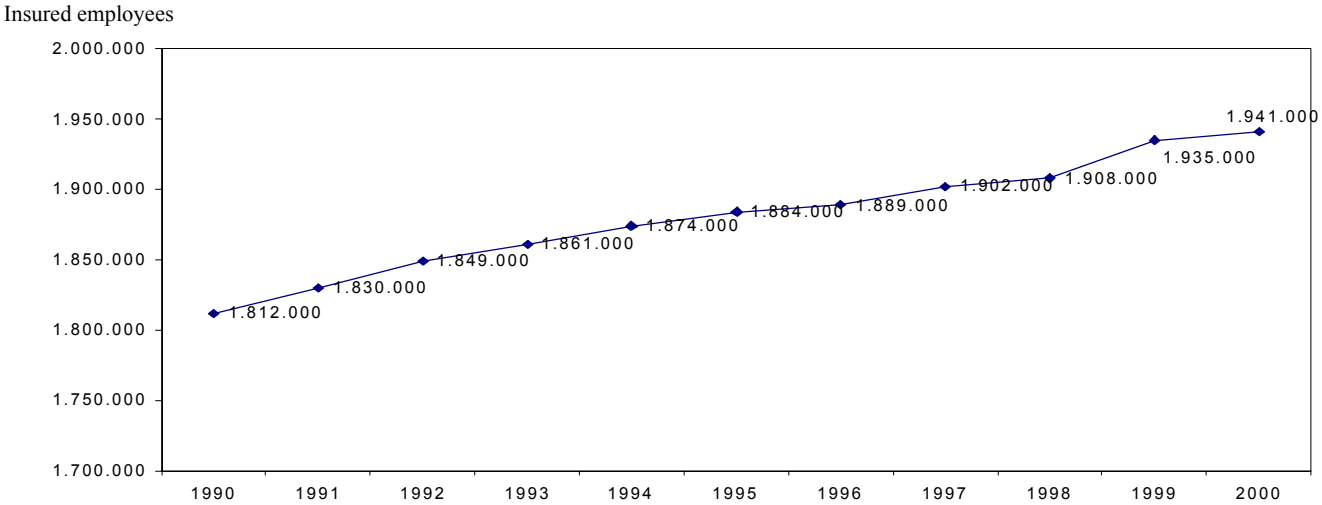


Figure 32: Evolution of the number of IKA-insur he years 1990-2000

The table below shows data on the occupational accidents reported to the Ministry of Employment and SEPE in comparison with accidents reported to IKA, with a gap for the period during which the Labour Inspectorate was hierarchically subordinated to the prefectural authorities, for which no data are available at the Ministry of Employment.

Table 15: Occupational accidents reported to I.K.A and to SEPE

YEAR	I.K.A.	Ministry of Employment & Social Protection - SEPE
1977	46,594	14,467
1978	47,115	14,779
1979	46,976	14,559
1980	44,950	14,676
1981	45,493	13,512
1982	41,327	11,673
1983	38,828	10,686
1984	38,658	10,637
1985	38,836	9,728
1986	36,913	9,279
1987	36,590	8,851
1988	32,192	7,107
1989	29,847	7,312
1990	27,846	6,258
1991	25,185	5,951
1992	25,063	5,206
1993	23,959	5,160
1994	22,608	4,852
1995	21,540	-
1996	21,255	-
1997	20,046	-
1998	18,615	-
1999	17,658	-
2000	16,822	4,032
2001	16,483	5,155
2002	16,031	6,021
2003	15,310	6,235
2004	-	6,333
2005	-	6,044

285. These data, analytically presented in Annex 13, lead to the following conclusions:

- There is a strong declining trend in occupational accidents over time in both the IKA and the Ministry of Employment data.

- There is an apparent increase in occupational accidents reported to SEPE, which does not imply that occupational accidents have actually risen. This increase is explained by SEPE's robust inspections in workplaces. It is easily understood that, following the establishment of a control mechanism (SEPE) and the intensification of inspections, firms have started to report most of the accidents that happen. Besides, if occupational accidents had actually increased, a similar rise would have been recorded in accidents reported to IKA. In addition, the table 15 shows that since 2002 the number of occupational accidents reported has been stabilized at 6,000-6,300.

286. Regarding the Complainant's allegation that *"the State's observations about the trend in fatal accidents is inconsistent"*, it should be pointed out that:

- SEPE has never claimed that fatal occupational accidents have increased. In our document No. 10282/13.7.2005 it is stated that "The sole exception was the figure for fatal occupational accidents in 2001".

- Under no circumstances is the rise in fatal accidents in 2001 attributed by SEPE exclusively to alien workers, but also to the projects for the 2004 Olympics, as well as to the fact that the 188 fatal occupational accidents include 43 road accidents. It should be noted that, according to Eurostat, road accidents are not recorded as occupational accidents.

- The Complainant treats our country as the only country where occupational accidents happen. In this effort, the Complainant disregards the fact that an important factor underlying the rise in occupational accidents was also the large inflow of inexperienced alien workers. The Complainant should be aware that other countries too have seen a rise in occupational accidents.

- Since 2001, fatal occupational accidents (Fig. 33-34) have been gradually declining (Annex 13).

- Greece has no reason to conceal data on fatal occupational accidents. A complete picture is given in the charts below:

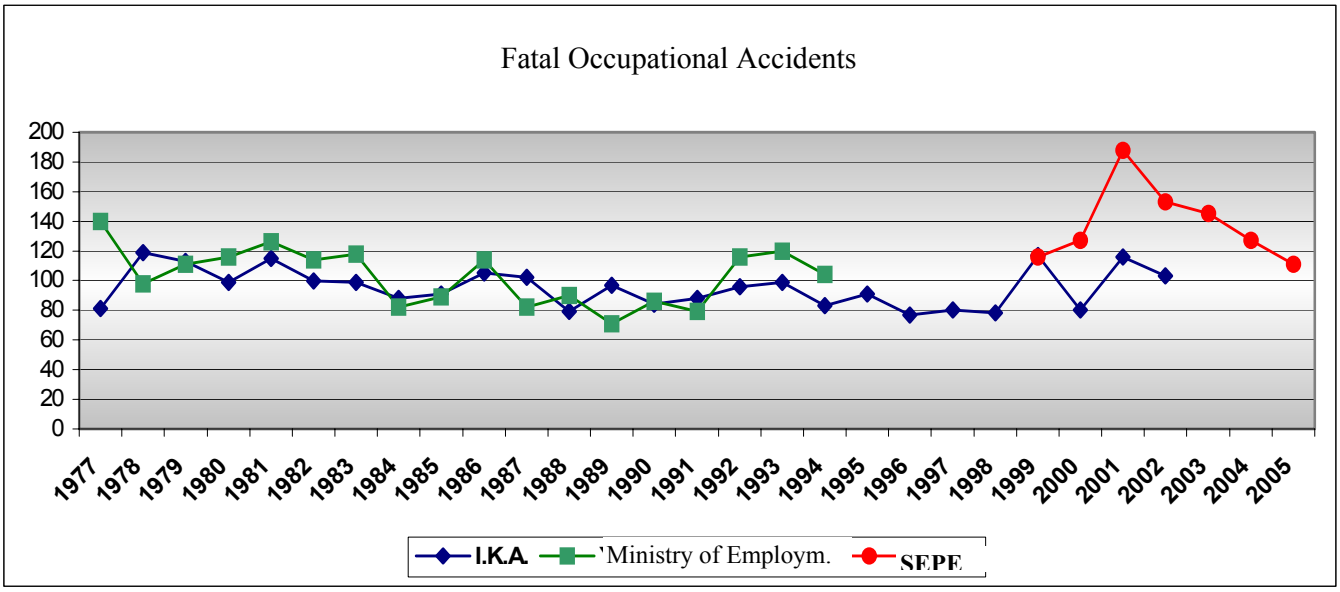


Figure 33: Fatal occupational accidents reported to IKA, to the Ministry of Employment & Social Protection & to SEPE (1977-2005)

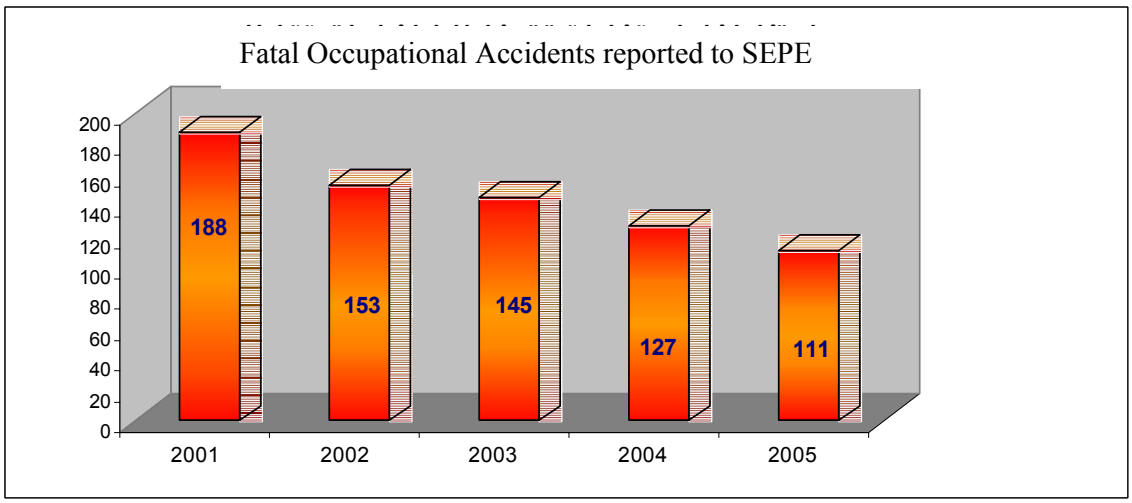


Figure 34: Fatal occupational accidents reported to SEPE (2001-2005)

287. Regarding the Complainant's allegation that a decline in penalties imposed is observed in 2004 and this is inconsistent with the fact that most projects were executed in 2004 it should be observed that 2004 saw the peak and the completion of the Olympic projects. The projects for the Olympics were completed upon the end of the first half of 2004. Moreover, the Complainant disregards the huge building activity in Greece in the run-up to the 2004 Olympics. Since in Europe the highest accident rate is recorded in construction projects, then a rise in such projects would inevitably lead to an increase in fatal occupational accidents.

288. Conclusively, the allegation that the sanctions and the way that are imposed are inappropriate and insufficient is totally groundless and unfounded, and indicates that the Complainant ignores the public authority's structure and operation and the basic principles governing it.

R*egarding the para **106** of MFHR's Response*

289. The following should be mentioned regarding the para **106** of MFHR's Response

i. In Unit III the old ESPs have been replaced and the new ones of high performance are in use. The project of upgrading the ESPs of Unit I has been completed and the same for Unit II is in progress, although these units have been set in a status of limited operation and complete shut down up to about 2010.

ii. The operation of FGD in unit IV (300 MW) has already improved significantly, while further improvement is planned. The relevant budget amounted to 10 million euros.

iii. The ash and gypsum management is effectuated according to the relevant environmental terms

iv. Referring to treatment of the Mine Industrial waste the system installed is working in completely satisfactory way. Pending regulation of a part of natural waste of the mines is in progress on the basis of common solution of both

Municipality of Megalopolis and the mines. The Installation of an Industrial Wastewater Treatment Plant for Units I-III at Megalopolis SES (Cost: 4.5 million €) is under construction.

The technical specifications of the above projects include the principles of the BAT for the Large Combustion Plants.

v. The mixture of the desulphurization products and the ash of the Power Plants are laid down in layers of 1m thick. Mine sterile material (anything but lignite) is dumped forming a uniform layer 12 m thick (high)

vi. A part of this, on the early stage of restoration (and not the reforested old dumpsite of Thoknia) has been effectively used for the deposit of mine sterile material. No slag was among this material and evidently this part will be restored. Similar practices are frequent in mining, in order to prevent malfunctioning due to uncontrollable parameters such as heavy rain, landslides, etc. Results of such events are cured by interventions on later stages of mines operation.

vii. It is not true that a 60-meter lowering of water level has been recorded. The maximum lowering ever recorded was 45m associated with low rainfalls in a long period. Today water table is at normal depths (comparable to those in 1980). No affection of water quality has ever been measured or reported.

viii. Natural sinkholes were uncovered during mining operation and were recovered without any further consequences or adverse effects in the environment.

ix. Following a decision of the Ministry of Culture, the enlarged archaeological site of Trapezounta was closed. Slopes, considered affecting the site, have been created in accordance with the results of the scientific stability analysis.

x. Municipalities and inhabitants have full access to our data, as all the data from air quality monitoring network are transmitted to the Arkadia Prefecture.

xi. As reported in xiii below, water quality and table levels are regularly measured as imposed by the Approved Environmental Terms. In addition, a lot of years before the Terms, DEH had implemented and activated relative actions through

the "Waterchem" program (xiii below), that has proved increased sensibility to environmental and local society requirements.

xii. Regarding the mixture fly–ash and desulfurization products coming from the new Unit IV of Megalopolis SES, their deposition is performed in layers and a final clay cover is applied according to the Approved Environmental Terms, practically eliminating the phenomenon of resuspension of the fly-ash.

Contracts, for desulfurization plant and consequently implementation of the same procedure in fly–ash and desulfurization products of the old Units of Megalopolis SES (I, II and III) have been recently signed, giving thus a radical solution to the partly inefficient system of spraying, used till now.

xiii. Exploitation of lignite is not considered to create pollution to water tables. More precisely in the case of our mines, Waterchem, a European scientific programme financed partly by E.U. with inter-European participation, is in progress of establishing and implementing all necessary mechanism and equipment to follow the issue in consideration.

xiv. All actions, foreseen by Approved Environmental Terms, are performed following the adopted General Plan.

xv. Mine waste dump has no effect on underground waters, according to up to date scientific knowledge.

xvi. Mine slopes are constantly followed by continuous and discontinuous measuring and recording equipment (inclinometers mirror targets, GPS) assuring the maximum safety against sudden phenomena.

A- 11 The alleged lack of political willingness to enforce judgments

(para **110-111** of the Response)

290. The allegation that there is not a political willingness to enforce judgments finding a violation of environmental requirements is totally false and unproved. The environmental permits of Mavropigi were annulled by the 998/2005 *Conseil d'Etat*, and, according to a basic principle of the Administrative Law, older EP came in force again. The inhabitants of Mavropigi lodged again an appeal against them and also interim measures, asking for their annulment. These EPs

were permanently annulled with the 519/2006 *Cosneil d´Etat,* but until the day of the hearing, new Environmental Permits were approved.

291. According to the above mentioned, it is obvious that the mine has always been operating, and still operates according to the environmental permits, and till now these permits are in force.

*About Kokkari (para **112-113** of the Response)*

292. The Complainant also refers to the Corporation's power plant at Kokkari, on the Island of Samos. Despite the fact that this reference is totally irrelevant to the main point of this Complaint, aiming at disorienting from the main issue, the real situation that exists on the Island as far as it concerns the power plant, has as follows:

First of all, there is no evidence that the judgment 4577/1998 of the *Conseil d´Etat* has not been executed. If the applicants had had such a concern, they would have applied to the Administration in order for it to execute the judgment. Greek Administrative Law provides for a specific procedure, according to which, in case of non execution of a judgment, the person having an interest therein can apply for the judgment execution before the competent Administrative Authorities.
Furthermore, the environmental permit of the power plant is valid. Inhabitants of Kokkari had applied for the annulment of the Joint Ministerial Decision that approved the permits, but Judgment 2232/1999 of the *Conseil d´Etat* has rejected their demand, confirming the validity of the terms.
Subsequently, the power plant in Kokkari operates with all the appropriate environmental permits, showing that the Complainant´s allegations are totally unproved and misleading.

A-12 Conformity with the Kyoto Protocol

293. The Complainant, by accusing Greece for non conformity with the Kyoto Protocol targets (Response para **114-116**), seems to ignore the processes adopted by the EC and directed to the member-states. In fact, it is not upon the member state to choose whether it should conform to its targets or not.

As, in detail, it has already been described (A-3.3), Greece has already adopted a National Program in order to ensure, among others, the achievement of the Kyoto target. According to this programming, the referred policies are expected to have a gradual result for the country to achieve in 2010 the target (+24.5% compared to the base year emissions). The EC, having approved the Greek NAP for the emissions rights for the period 2005-2007 (Annex 41), has positively reacted to the country's achievement path. Many policies and measures, already

implemented or under implementation (as analytically presented in Annex 3), are related to the power generation sector. The specific sector, because of its technological and economical potential for its emissions abatement, is charged with the most important reduction in its emissions allowances. More specifically, during the first period 2005-2007, emissions allowances reduced by 2.8% have been attributed to this sector in comparison to the sector's expected emissions, while this reduction will be even higher at the 2nd period 2008-2012. The power generation companies should go forward with these important reductions in their emissions and choose the optimum decision set among the available policies (new investments, fuel change, purchase of emissions allowances, emissions allowances acquisition by participating in projects for the emissions abatement in third countries). Especially for PPC, the biggest power generation company, the shortage in 2005 emissions allowances of its bound plants was restricted, by the use of a series of measures (units loading, imports-exports adjustment, etc.), to an amount less than 1% of its total allocated emissions allowances.
Therefore, the allegations of par. 114-116 of the Complaint are completely unfounded.

294. Concerning the para **117** and **120** of the Response, it should be mentioned that PPC's policy for GHG emission reduction concern a number of measures and investments (Annex 3) and is not only directed to the emission allowances purchase or to the other flexible mechanisms of the Kyoto Protocol.

    On the other hand, it should be made clear that the possibility for the companies to use the flexible mechanisms of the Kyoto Protocol, in complement to the country's policies, arises from the nature of the Climatic Change subject. The GHG emissions do not generate local weathering of the environmental quality, but a global change. Consequently, the emissions reduction in Greece has the same effect for the country with any similar reduction for any other point of the earth. Trading of the emission allowances and the participation in emissions reduction projects in developing countries or in countries with economy in transition (CDM or JI projects) constitutes an action of environmental protection equivalent to the domestic emissions reduction projects. As the GHG emissions do not provoke health problems, but universal climatic changes, by the country's participation in CDM or JI projects, Greek population's health is not affected at all.
    Therefore, the allegations of par. 117 and 120 of the Complaint are scientifically unsupported.

295. Concerning the allegations in para **118-119** of MFHR's Response, Greece is following attentively the selected path for the target achievement, accepted by the EC through the NAP approval (Annex 41). Furthermore, the first data for the 2005 emissions over-accomplish the targets dictated by this path. The country has already presented its progress based on the selected policies and measures for the GHG emissions reduction (Annex 3). The path for this target

achievement supposes the analytical study of each measure progress and the adoption of corrective steps whenever needed. It is noted that the Kyoto Protocol target will be achieved with the accomplishment of these measures. The endeavour for the target achievement does not foresee for the country the use of the rest flexible mechanisms of the Kyoto Protocol (purchase of emissions allowances using international contracts or participation in JI or CDM projects). Of course, as it is foreseen by the relevant Directives, the companies are authorized to use these mechanisms, always additionally to the application of their policies and measures for their emissions abatement.

Therefore, the allegations of par. 118 and 119 of the Complaint are totally unrealistic.

A-13 On the obligation to provide advisory and educational facilities

Alleged non involvement of populations on health assessment
(para **124** of the Response)

296. All the epidemiological studies have been assigned by the Prefectures of the most specialized Greek universities and have immediately been presented to scientific conferences and the public.

Indicatively, Prof. Katsougiannopoulos' epidemiological study has been presented even before its completion as a draft of action and research, as well as after its completion to Kozanis' citizens. Its conclusions have been also presented to a number of meetings and scientific conferences. For example, find attached hereto the presentation of Prof. Katsougiannopoulos ("Environmental Conditions and Health within the country of Kozani", Annex 10) at the 1st Macedonian Environmental Conference that took place in Thessaloniki in 2002.

Furthermore, all the data of DEH's air quality monitoring network are tele-transferred to Kozanis' and Arkadia's Prefectures and are available at the public.

Public Health Information Policies
(para **126-128** of the Response)

297. With respect to Article 11§2 of the Charter and in order to ensure the effective exercise of the right to protection of health, the Respondent Government has taken the appropriate measures, designed, inter alia to provide advisory and educational facilities for the promotion of health, by introducing health

education at school curricula and public information, notably through awareness campaigns.

More specifically, as analytically presented in the Rapport of the Ministry of Education (Annex 11) this Ministry, through the Counseling, Occupational Guidance and Educational Activities Directorate (SEPED) of the Single Administrative Sector for Studies, Further Training and Innovation Issues, formulates educational action strategies for the promotion of students' health.

Specifically, every year, through the Primary and Secondary Education Health and Environmental Education Officers Network, Greek schools carry out health and environmental education courses aimed at preventing, identifying and addressing health problems caused mainly by negative environmental effects. These courses' strength lies in the procedure of active and emotional learning, which helps students change attitude and encourages them to participate in decision-making processes for addressing environmental pollution.

Just indicatively, as regards the prefectures mentioned in the Complaint, during the academic year 2004-2005, in the context of health and environmental education activities, in Arcadia Prefecture and Kozani Prefecture 116 and 103 courses were carried out respectively by primary and secondary schools.

B- THE RIGHT OF LIGNITE MINERS TO REDUCED WORKING HOURS
(MFHR's Response para **137-142**)

298. The Committee has repeatedly stated that, while the elimination of all workplace risks is the ultimate objective, until such time as that is achieved, reduced working hours or additional holidays as required by Article 2§4 of the Charter remain an essential element in worker protection, in order to reduce exposure to the risks and provide sufficient recovery time to the workers. (Conclusions XIV-2, vol. 1 Belgium, pp. 117-118; vol. 2 Netherlands, p. 538).

299. Greek Democracy has adopted a similar, but somehow different path regarding the work under difficult conditions. There is a "list" established, out of the so called "Heavy and Unhealthy Professions". Persons working in professions included in this list benefit of some provisions, mainly of "early retirement" meaning that this personnel retires at an early age. The majority of the personnel in DEH 's mines is affected by this beneficial arrangement.

300. Regarding the right of lignite mine workers to **additional paid holidays**, due to specifically difficult conditions of work, DEH's practice, as approved by the

Greek State, is to give the workers five (5) additional days of paid holidays. These holidays are given to the workers when they work on shift posts because their job has the most difficult conditions of all the others.

301. Besides, the majority of the personnel in DEH 's mines are paid with special premium (Collective bargaining: Unhealthy Work premium 12%, Stations and Mines premium 40%).

As regards the work on Sundays and Public Holidays:

302. Workers are given holidays equal to the extra working days and at the same time extra pay of 75% of the working hourly salary for each worked hour.

If the worker does not like to take the extra pay, he takes 75% more hours of holidays.
If the worker does not like to take the corresponding holiday, he takes 175% of the hourly salary for every hour he worked on Sundays or Public Holidays.

Collective Agreements

303. It is highly surprising the Complainant's allegation (para **140** of the Response) that the State is obliged to intervene to the Collective Agreements and modify its provisions. The right of collective bargain, as it is guaranteed by the Article 6, belongs to the "hard core" of the Charter and protects the freedom of the workers to promote issues in the negotiations with the employers amongst which the demand of extra, additional paid holidays or reduced working hours. However, regarding DEH, especially, the trade unions, which represent the mine personnel, have never presented such a demand.

C-THE RIGHT TO SAFE AND HEALTHY WORKING CONDITIONS

304. Regarding the allegation in para **144**, it should be mentioned that in order to ensure that all persons benefit from the right to health and safety at work, Article 3§1 of the Charter, as interpreted in the Conclusions of the Committee, it is required that the States, in consultation with employers' and workers' organisations, to formulate, implement and periodically review a coherent national policy on occupational health and safety. Such a policy must include

strategies for making occupational risk prevention an integral aspect of the public authorities' activity at all levels.

305. DEH, as noted in its memorandum, has worked out studies about risk assessment in mines and SES. ***Those studies exist in DEH's units offices (local and central) and are accessible to inspectors.***

306. In addition DEH S.A. submits in Annexes all the risk assessment studies which have been done.

Annex 47	Risks assessment for SES Megalopolis I-III
Annex 48	Risks assessment for SES Megalopolis IV
Annex 49	Risks assessment for Megalopolis mine
Annex 50	Measurements for SES Ag. Dimitrios
Annex 51	Measurements for SES Prolemais
Annex 52	Measurements for SES Kardia

307. As concerning the workers **medical examination**, PPC ***began the procedure in 2004*** after its Managing Director's Decision (Annex 53). DEH's internal Directive from Department of Health and Safety (DEH's Health & Safety Department Directive No.2) can be found in Annex 54. This directive explains the procedure for staff medical examinations. The examinations are related to staff characteristics, as referred in DEH's memorandum. ***The results of examinations are being recorded and the files are in the local Medical Centers.*** They are accessible only to medical inspectors, due to the fact that they are personal data.

Although the examination has not been finished yet, DEH has provided the up to date results in the following table.

Table 16: Statistic data of medical examinations of personnel in West Macedonia (Examined persons 1,537)

SYSTEM	MALE	FEMALE
Respiratory (Upper & other diseases)	55	0
Bronchial Asthma	46	4
Gastrointestinal	192	2
Cardiovascular	45	0

Coronary disease	39	0
Hypertension	196	1
Skin- Annexes	27	0
Musculoskeletal	129	3
Nervous	7	0
Urinary	88	0
Endocrine	29	0
Diabetes Melitus	56	0
Malignant Neoplasm	38	0
Gynecological		3
Diseases regarding other systems/ organs	199	14

Table 17: Statistic data of medical examinations of personnel in Megalopolis

(Examined persons 1,257)

SYSTEM	MALE	FEMALE
Respiratory (Upper & other diseases)	130	25
Bronchial Asthma	1	2
Gastrointestinal	13	1
Cardiovascular	16	1
Coronary disease	80	0
Hypertension	82	0
Skin- Annexes	0	0
Musculoskeletal	207	15
Nervous	1	1
Urinary	0	0
Endocrine	5	4
Diabetes Melitus	23	1
Malignant Neoplasms	0	1

Gynecological		0
Diseases regarding other systems/ organs	5	0

308. As concerning dust concentrations, all measurements results are referred to Risk Assessment studies. ***The methodology according to which they have been executed and the proposals for the measures which must be taken, if necessary, are also referred in the above studies***.

309. DEH 's **Personal Protective Equipment** (PPE) ***offers an effective protection***, so it provides the appropriate PPE to personnel, as well as training its staff in order to use them properly. As a result of this procedure, the consumption of breathing devices is shown in the following table.

Table 18: Consumption of PPE per year

Year	Filtering face pieces P1	All types of Filtering face pieces
1995	56,643	93,453
1996	86,193	112,444
1997	121,377	153,497
1998	115,888	142,972
1999	166,383	177,205
2000	178,294	185,750
2001	133,350	143,981
2002	168,093	175,672
2003	228,867	233,047
2004	216,943	223,573
2005	180,047	193,762

Additionally the catalogue for Personal Protective Equipment which is a guide for the appropriate use is shown in Annex 55.

310. In para **143** of his Response the Complainant asserts that the employment of **occupational doctors** in DEH may be in compliance with Greek law, but is not reasonable. However, Greek legislation has been fully harmonized with the EU law on this aspect. Therefore, if the Complainant considers that Greek law is based on an unreasonable practice, this extends to EU law as well. Moreover, the Complainant's allegation that Greek law does not provide for a case where a firm's activities expand over several autonomous regions is fully unsubstantiated.

Article 4§2 of Law 1568/85 provides that: "For the purposes of the application of this chapter, annexes, branches, separate facilities or independent undertakings that are affiliated to the same firm are considered as independent entities, provided that the distance among them or between them and the said firm is such that it hampers the work of the safety officer or occupational doctor, in the opinion of the labour inspector, to whom any party may appeal in the event of a dispute'' (see more on this issue in Annex 13).

311. The Complainant also accuses the Ministry of Employment of not having provided the total number of **occupational doctors** employed in Greece. It should be noted that no request for information on this matter is contained in the original Complaint. Actually, since the Complaint concerned lignite mines of the Public Power Corporation (DEH), which are not regulated by the Labor Inspectorate Body (SEPE), it was not considered necessary by the Ministry of Employment to present this figure. Since firms employing over 50 employees are obliged to hire a doctor, the clearest picture of the employment of doctors by firms is provided by a survey conducted by SEPE in the second half of 2003 on employees' health issues, according to which the percentages of firms that had complied with the requirement to hire an occupational doctor and a safety officer were 96.3% and 100% respectively. Specifically, 602 firms with 78,016 employees were surveyed across Greece, 580 of which employed a doctor.

312. As regards the **occupational diseases** (referred in para **145** of MFHR's Response), DEH in its internal "General Directive'' (9-II, § 8) presents the procedure of occupational diseases recording. (Annex 56)

Especially in § 9 it is mentioned that an Occupational Doctor, after the completion of α medical file, can begin the recording procedure of the occupational Diseases, if he can prove that.
Moreover, in the same paragraph, either a worker or their family, in case of death, has the right to ask for the recognition of occupation disease.
In § 9-II there is the provision for constituting a committee to examine each case. The final decision shall be made by the Insurance Foundation.

Although DEH recognizes that there is a delay of the recording of occupational diseases, ***the procedure has begun*** and, after its completion, it is hoped that there shall be both ***prevention*** and recognition of Occupational diseases.
As far as the occupational accidents are concerned, they are recorded and announced to Labor and Mine Inspectorates.
Every accident is announced, even for one day absence, and a statistical analysis is being worked out (Annex 57).

313. DEH has a continuous collaboration with Eurelectric and provides it with the data of occupational accidents. ***Comparing DEH with the other electric enterprises, the former is in a medium level in terms of accident indexes***. (Annex 58)

This fact means that DEH does not hide the occupational accidents. PPC S.A has provided Mrs. E. Batra with every data concerning accidents in order to give her the possibility to execute her PhD in collaboration with the National Technical University of Athens.

314. In para **146** of the response, there must be a misunderstanding. The medical examination of DEH's staff began in 2004 (annex 56) and ***now is being carried out but is not completed yet***. So the number of 100 or 200 persons was a gross approach based on the persons examined up to then and not on the total number of the personnel in West Macedonia and Megalopolis. The statistics are mentioned to tables 15 and 16.

315. After the explanations of previous paragraphs and referring to the para **147** of MFHR's Response, it is clear that the **medical examination** is being carried out at the moment and every data are available. The medical examinations have been categorized according to the task the staff carries out, as referred to DEH's memorandum.

Data from medical examination of the personnel, executed in the 90's, exists in Insurance Foundation.

316. As regards the number of **Occupational Doctors**, in DEH's premises, referred in para **149** of MFHR's Response, the Respondent notes the following:

The Complainant, in his first document (para **124**) notes that, since there is not a legal provision, it would be possible for a big enterprise to occupy one doctor per 10,000 personnel. DEH in its memorandum notes that it is probable that ***the Complaint is not aware of the legislation because in the PD 294/88 there is the***

provision that the annual working hours for Occupational Doctors are estimated as a function of the number of personnel and the range of risk the enterprise is categorized to.

317. According to the legislation DEH occupies five Occupational Doctors in West Macedonia and two in Megalopolis. Those Occupational Doctors have the task only ***to organize*** the medical examination and to provide first aids service to the staff and not to execute these tasks themselves.

So in DEH's installations there are two Medical Centers in Megalopolis and nine in West Macedonia. ***Every Medical Center occupies 5 qualified persons*** (nurses) for sifted work so that a nurse is always present on the spot.

It is rather a mistake to compare the proportion 1 Occupational Doctor per 1,000 workers in DEH with the proportion 1 doctor per 227 inhabitants in Greece. The proportion 1:227 does not ***take under consideration the existence of more than twenty doctors specialties*** (e.g. orthopedic, pediatric, gynecologist, etc).

In the case of DEH, they are specialist Occupational Doctors, so the proportion must be regarded as sufficient.

318. It must also be taken into account that there is a **close collaboration** between **DEH** and the **Insurance Foundation** for the medical examinations. The latter after its management's decision supports PPC in medical examinations (annex 59). It must be noted that in Kozani and Ptolemais the Insurance Foundation is the owner of two well-organized medical laboratories and employs 46 doctors.

In Megalopolis, it employs 4 doctors and 4 nurses and additionally a contract has been signed between DEH and the **State's Hospital of Tripolis** (Panarkadiko, Evangelistria- Southern Greece). (Annex 60).

319. PPC notes that ***the proportion 1 nurse per 3 inhabitants in Greece may not be correct.*** According to the Trade Union of nurses the total number of nurses in Greece is less than 30,000.

320. The Complaint that is based on an interview by Dr. E. Batra, alleges that the Safety Officers of PPC do not receive extra wages for their responsibilities and this post is delegated to younger workers or ***to incompetent or unproductive*** ones.

The facts are quite different. DEH provides the Administrative Structure (annex 61).

PPC's safety officers have an operational collaboration with Internal Service for Prevention and Protection. The relevant Department is named "Occupational Health and Safety Direction'' and refers to the Human Resources and Organization Division.

In General Divisions of Mines and Production, there are sections responsible for the coordination between the Health & Safety Department and the units.

The Mine Safety Engineers receive the title of the "Head of section".

The SES Safety Engineers receive the title of the "Head of sub section".

All the officers (directors, assistant directors, heads of section and sub sections) have an extra bonus. According to the internal regulation all the posts (those of Safety Officers, including) are made known to DEH's staff and the final selection is done by the enterprise management.

Table 19: Safety Officers in DEH

NAME	*STUDIES*	*STATUS IN P.P.C.*	*YEARS OF Experience as an engineer*
Tolaki Maria	Mechanical Eng.	Head of Internal Service for Prevention and Protection, Director	27
Pephanis Menelaos	Mining Eng.	Responsible for Safety Officers, Assistant Director	26
Vasou Zoi	Chemical Eng.	Head of section in Health and Safety Department	23
Demetriou Alexis	Civil Eng	Head of Section in Health and Safety Department	15
Paschalidis Artemis	Mechanical Eng	Head of Section in Generation Division	27
Diakidis Demitris	Mechanical Eng	Head of Section in Thermal Power Plants Operation Dtm	27
Martzoukos Giannis	Mining Eng.	Safety Engineer in Megalopolis Mine. Head of Section	37
Karabakakis Giannis	Mining Eng.	Safety Engineer in West Macedonia Mines. Head of Section	25
Chryssanthopulos Thoedore	Mechanical Eng.	Head of subsection in Health and Safety Department	35
Theodosis Charalampos	Mechanical Eng.	Head of subsection in Health and Safety Department	35
Kapetanaki Sophia	Civil Eng	Head of subsection in Health and Safety Department	22
Xenoulis Demetris	Chemical Eng.	Head of subsection in Health and Safety Department	15

Mitsoglou Alexandros	Mechanical Eng.	Safety Officer in SES Ag. Dimitrios. Head of sub section	15
Nomikos Constantinos	Mechanical Eng.	SES FlorinaHead of sub section	28
Birintzis Charalampos	Mechanical Eng.	SES Ptolemais Head of sub section	20
Birintzis Charalampos	Mechanical Eng.	SES Ptolemais Head of sub section	20
Svolos George	Mechanical Eng.	SES Megalopolis Head of sub section	23

All the engineers mentioned above are supported by technical staff. Who of them does the Complainant characterize as young, incompetent or unproductive? All of them have complained to the Technical Chamber of Greece (TEE) of which the above mentioned as well as Mrs E. Barta are members. Additionally the National Technical University of Athens (NTUA) has been informed for the irresponsible behavior of its collaborator (Annex 62).

321. Concerning the para **154** of MFHR's response, it should be noted that in DEH's statistical analysis (Annex 57), the accidents are aggregated per General Division, per workers' task, per month, weekday, workers' age and experience etc. It is absolutely astonishing that a "specialist" is incompetent to understand this analysis.

322. DEH has a good collaboration on health and safety matters with Universities and specialists, eg professor N. Marmaras, of NTUA, prof. P. Siskos of University of Athens, prof. M. Dontsika of Technical University of Kriti, prof. Makropoulos, the president of ELLINYAE. Therefore all of them are able to give information about PPC's health and safety organization.

VIII. Concluding Remarks

323. It can be concluded from the foregoing that no violation of the Charter has occurred.

More specifically:

- *Regarding the alleged violation of Article 2§4: Article 2§4 requires States to eliminate risks in inherently dangerous or unhealthy occupations and is therefore closely linked to Article 3 of the Revised Charter. It stipulates that, where the sufficient elimination or reduction of risks has not yet been achieved, workers concerned should be guaranteed a right to additional paid holidays or reduced working hours. As it has been analytically presented above, there is a constant effort to improve conditions of work and to eliminate risks, whereas five (5) additional days of paid holidays are given to the mine workers when they work on shift posts, as means of reducing the length of exposure to risks, in view of the overriding health and safety aims of this provision.*

- *Regarding the alleged violation of Article 3§1: In order to ensure that all persons working benefit from the right to health and safety at work, Article 3§1 requires States, in consultation with employers' and workers' organisations, to formulate, implement and periodically review a coherent national policy on occupational health and safety. It has been proven that such a policy exists in Greece and includes strategies for making occupational risk prevention an integral aspect of the public authorities' activity at all levels and monitoring of the effectiveness of those measures. National health and safety regulations provide for preventive and protective measures against the risks specified in the international technical reference standards, i.e. the relevant ILO Conventions and the European Community directives on health and safety at work, taking into account the BAT. In addition to framework legislation which imposes general obligations on employers and workers, PPC SA has introduced specific regulations*

providing for measures to combat risks and hazards in the areas of its activation, including, inter alia, air pollution.

- *Regarding the alleged violation of article 11§2: The Respondent Government has fully ensured the right of affected populations to participation and access to information in environmental assessment and adequate health information, through the epidemiological researches and the overall functioning of the educational system.*

- *Regarding the alleged violation of article 11§3: The Respondent Government has taken all necessary measures to guarantee environmental protection, by enforcing relevant regulations and decisions of the Courts and taking all the adequate measures for the prevention and the protection of the population in all areas involved in the Complaint. As regards air local pollution, all internationally accepted air quality targets and threshold values have been respected and kept under control. As regards global warming, emission control conforms to the obligations entered into by the Rio Convention on Climate Change, followed by the Kyoto Conference.*

324. *For the reasons set out above and in its earlier Observations, the Respondent Government requests the Committee to declare and to decide that the Complainant's claims are ill-founded on the merits, since all requirements of the Charter have been satisfied.*

Athens, 31.07.2006

THE SECRETARY GENERAL
OF THE MINISTRY OF EMPLOYMENT
AND SOCIAL PROTECTION

DIMITRIOS KONTOS