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Sector	Serial Number of Enterprise	Sampling Weight	Industrial Code	Geographical Code	Employment
		NACE Rev. 2	NACE Rev. 2		

**SURVEY ON POLLUTION ABATEMENT AND CONTROL (PAC)**  
**ACTIVITIES IN INDUSTRY, 2010**

Name of enterprise: .....

Address: .....

Town/Village ..... Postal code: .....

P.O Box:..... Postal Code: .....

Telephone: ..... Telefax: .....

Type of activity (describe fully): .....

.....

**General Instructions**

1. The purpose of this survey is the collection of data relating to expenditures devoted to and personnel engaged in pollution abatement and control (PAC) activities. **The data refer to the year 2010.**
2. The survey is carried out in accordance with the Statistics Law, No. 15(I) of 2000. Refusal to provide the relevant information or the provision of false, inaccurate or incomplete information renders the respondent liable to the consequences of the Law.
3. The Statistical Service is obliged, under the provisions of the Statistics Law, to treat all the information collected as confidential. Your replies will be used solely for statistical purposes. No data for any individual enterprise may be published or disclosed to either public bodies or private individuals.
4. You are required to answer all the questions with the highest degree of accuracy. If you are unable to provide precise figures, you may give the nearest possible estimate.
5. Please study carefully the instructions and the definitions of the variables provided, before proceeding to the completion of the questionnaire.

G. Chr. Georgiou  
Director  
Statistical Service

May, 2011.

## DEFINITIONS AND INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

### Actions and Activities for Environmental Protection

Environmental protection is defined as any action or activity (which involves the use of equipment, labour, manufacturing techniques and practices, information networks or products) whose **main purpose** is to collect, treat, reduce, prevent or eliminate pollutants and pollution or any other degradation of the environment resulting from the operating activity of the company.

All actions and activities where the **primary function** is environmental protection should be included, regardless of whether they are undertaken in response to environmental legislation, to meet demands of customers, to increase company image, etc. However, actions and activities that are beneficial to the environment but whose main purpose is **not** environmental protection and have been taken regardless of environmental protection considerations should be excluded.

Environmental protection expenditure is the sum of capital investments and current expenditures for the undertaking of environmental protection activities.

Examples of such expenditures are: treatment of waste and wastewater, reduction of emission and odour by fossil fuel combustion, treatment of soil and groundwater, abatement of noise and vibration, protection of natural resources and biodiversity, monitoring of the quality of the environment and control of waste production etc. (please consult the table below).

Environmental protection may include activities that generate marketable by-products, result in savings or are financed by subsidies or capital allowances. In such cases, environmental protection expenditure should be reported gross of any such cost offsets.

#### Examples of Environmental Protection Activities by Domain

Code	Action/Activity
<b>1</b>	<b>Air protection</b>
<b>11</b>	<b>Process integrated facilities</b>
111	Reduction of emission and odour caused by fossil fuel combustion (i.e. facilities for burning installation and their containment).
112	Tanks with floating roofs.
113	Special appendages (including taps and valves, welded joints instead of flanges, sealed pumps shafts).
114	Vacuum pumps instead of steam ejectors.
115	Reuse of waste gas to prevent air pollution.
116	Use of clean technologies (to restrict pollution during the production process).
117	Use of adapted products.
<b>12</b>	<b>Added facilities (end-of-pipe)</b>
121	Installations and equipment for reducing the emissions of sulphur dioxide (SO <sub>2</sub> ) and/or nitrogen oxides (NO <sub>x</sub> ) generated by fossil fuel combustion.
122	Systems for sulphur recovering from gases (i.e. facilities for desulphuration of the gases emitted from thermoelectric plants).
123	Installations and equipment for capture and reuse of the waste gases in the technological process (i.e. the capture of residual gases for reusing of their heat or chemical content – chlorine, fluorine, cyanide, etc.)
124	Furnaces and stacks for waste gases combustion and dispersion.
125	Cyclones, multicyclons, exhausters.
126	Cloth filters, electro filters, absorption filters etc.
127	Ventilators with collecting and recovering systems: all types of adsorbing, axial, centrifugal ventilators and ventilators for chemical industrial gases.

128	Venturi separators.
129	Other dry systems for dust and suspended matter removal from gases.
1210	Wet dedusting systems (hydro-cyclones, gas washers, hydraulic dedusting equipment, foam filters, scrubbers, including acid and alkaline gas washers).
1211	Equipment for measurement, control, laboratory analysis.
<b>2</b>	<b>Water protection</b>
<b>21</b>	<b>Process integrated facilities</b>
211	Reduction in water use, reuse of water.
212	Special appendages (including cut-off and valves, welded joints instead of flanges, sealed pumps shafts).
213	Extra maintenance (i.e. cleaning) of cooling water systems if chlorination of cooling water is not permitted for environmental reasons.
214	Extra pumping capacity in existing installations to reduce discharge temperature (if intended to reduce thermal pollution).
215	Use of clean technologies.
216	Use of adapted products.
<b>22</b>	<b>Added facilities (end-of-pipe)</b>
221	Channels, collectors for wastewater transportation.
222	Buffer tanks and other storage facilities for wastewater.
223	Mechanical facilities for wastewater pre-treatment or treatment.
224	Chemical facilities for wastewater pre-treatment or treatment.
225	Mixed mechanical-chemical facilities for wastewater pre-treatment or treatment.
226	Mechanical-biological facilities for wastewater treatment.
227	Mechanical-chemical-biological facilities for wastewater treatment.
228	Other systems or facilities for wastewater clearance, neutralisation and for pollution prevention.
229	Other facilities for water protection (reuse of wastewater, incinerator for wastewater etc.).
2210	Cooling towers, closed cycles for cooling water, facilities for improving the discharged water dispersion.
2211	Equipment for measurement, control, laboratory analysis.
<b>3</b>	<b>Waste management</b>
<b>31</b>	<b>Process integrated facilities</b>
311	Reuse of waste in the production process.
312	Reduction in the use of raw materials and by-products to diminish the amount of waste.
313	Use of environment-friendly raw and auxiliary materials.
314	Application of more expensive processes/production processes to reduce the generation of waste.
<b>32</b>	<b>Added facilities (end-of-pipe)</b>
321	Special vehicles for waste storage and transport (compactors, trucks, cisterns, etc.).
322	Containers for waste collection and transport.
323	Stations for waste transhipment.
324	Facilities for waste sorting, compacting, neutralising, and detoxification.
325	Facilities for waste incineration.
326	Waste storage areas.
327	Facilities for waste disposal.
328	Fix equipment for waste collecting and handling bulky waste.
329	Pneumatic/hydraulic transport of the waste.
3210	Waste storage facilities.
3211	Equipment for measurement, control, laboratory analysis.
<b>4</b>	<b>Soil and ground water protection</b>
<b>41</b>	<b>Process integrated facilities</b>
411	Double-walled tanks (installed for protection of soil or groundwater).
412	Increased security systems for the transport of hazardous materials.
<b>42</b>	<b>Added facilities (end-of-pipe)</b>
421	Ditches, walls, drain systems.
422	Recovering losses and leakage devices.
423	Extra safe systems for underground stockpiles and for transport.
424	Equipment for measurement, control, laboratory analysis.

**5 Noise and vibration abatement**

**51 Process integrated facilities**

- 511 Flexible joints and appendages.
- 512 Foundations designed to damp vibration.
- 513 Regrouping of buildings and/or installations to reduce noise pollution.
- 514 Special facilities in the construction or reconstruction of buildings (including noise insulation material in buildings).
- 515 Equipment and machines specially or constructed for a low noise or vibration level.
- 516 Low-noise burners for flares.

**52 Added facilities (end-of-pipe)**

- 521 Facilities for noise abatement around the noise sources (encapsulating and phonic isolation of devices and pipes).
- 522 Silencers.
- 523 Screens and phonic barriers.
- 524 Equipment for measurement, control, laboratory analysis.

**6 Natural resources and biodiversity protection**

**62 Assimilated added facilities**

- 621 Prevention of damage to nature and landscape (i.e. detouring site-access roads, drilling at angle).
- 622 Extra costs for pylons, which fit in with the landscape.
- 623 Facilities to restrict the use of ground water.
- 624 Green buffers and land barrier around industrial sites.
- 625 Landscape reconstruction (i.e. in mining areas).
- 626 Distinct painting of high voltage pillars to prevent the collision of birds.

**7 Protection against radiation**

- 701 Buffers areas to restrict the access, installation for warning and alarm.
- 702 Equipment for measurement, control, laboratory analysis.

## 1. PERSONNEL ENGAGED IN ENVIRONMENTAL PROTECTION ACTIVITIES

### Definitions and Instructions

This section aims at measuring only the personnel engaged in PAC activities **during 2010**. We are interested not only in the number of persons who are engaged in PAC activities, but also in the amount of time that these persons are devoting to such activities. To estimate this amount of time, the concept of Full-Time Equivalence is being used.

The **Full-Time Equivalent (F.T.E.)** expresses the total time devoted to PAC activities by a person during one year. One F.T.E. may be thought of as one **person-year**, which corresponds to **one person working full-time on PAC activities during one year**. Thus, a person who normally spends 30% of his time on PAC activities and the remaining 70% on other activities should be considered as  $30/100 = 0,3$  person-years.

### Example

Two technicians work a regular 40-hour week. They both perform duties in two different areas of the enterprise's activity, as follows:

Technician 1: (a) 20 hours on equipment maintenance functions,  
(b) 20 hours on monitoring and managing the waste collection system

Technician 2: (a) 15 hours on the carriage of raw materials to the point of production and to the warehouses,  
(b) 25 hours on a machine bought to emit less fossil fuel.

We therefore have two technicians working 45 hours a week on PAC activities:

$$\Rightarrow \text{F.T.E.} = (20 + 25) / 40 = 1,1$$

As personnel engaged in PAC activities you should consider **not only** the technicians who are operating a machine, but also **all the persons contributing to** any PAC activity (managers, senior staff, persons that are engaged in research aiming at environmental protection, clerical and secretarial staff, etc.).

**Personnel Payments:** Included are gross payments of personnel engaged in PAC activities (wages and salaries, overtime payments, gifts, social security and other contributions, taxes withheld, etc.).

For a person who receives an annual salary of €30.000 and spends 30% of his time in PAC activities, you should report only €9.000 (= 30% x €30.000).

Please complete the following table for the personnel of your enterprise who have been engaged in environmental protection activities **in 2010**:

Type of personnel	Number of persons (head counts)	Number of persons (F.T.E., in person-years)	Personnel Payments (in €)
Managerial Staff			
Production Staff			
Other Staff			
TOTAL			
Additional comments: ..... ..... ..... ..... ..... .....			

## 2. INVESTMENTS ON TECHNOLOGIES FOR ENVIRONMENTAL PROTECTION

Investments on technologies (integrated or end-of-pipe – see the definitions below) which aim at the reduction, treatment and prevention of pollution and the management of emissions (air, wastewater, solid waste, noise, etc.) into the environment that are created during the production process. Also included are appendages, upkeep and improvements that increase the lifetime or the capacity of facilities and goods and services linked to the transfer of property for lands or buildings.

Has your enterprise made any investments **in 2010** on technologies and facilities, wholly or partly, for the purpose of reducing the impact on the environment?

**YES**

☐

Proceed to section 3.

**NO**

☐

Proceed to section 4.

## 3. INVESTMENTS ON TECHNOLOGIES FOR ENVIRONMENTAL PROTECTION BY TYPE OF INVESTMENT

### Definitions

#### **End-of-pipe Investments**

Identifiable and distinct equipment, and/or installations from other equipment used in the production process, that functions independently at the end of the production cycle, where the release of pollution into the environment occurs. This equipment is destined to handle pollution already generated, with the prevention, control and monitoring of the emission of pollutants freed in the environment. The investment is estimated from the purchasing price, the cost of planting the installation, etc. Included is the purchasing of land to install the equipment. Expenditures that aim at the safety or health at the work place should be excluded.

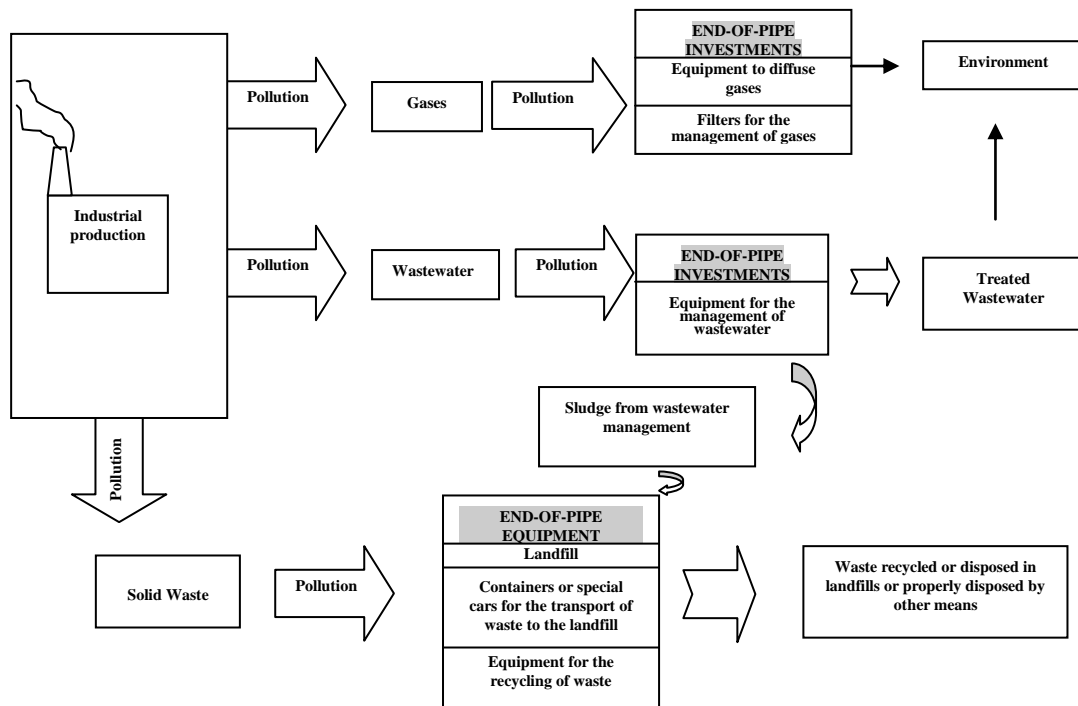
#### **Integrated Investments**

Installations (or part of them) that have been adapted in order to generate less pollution or to measure the pollution level. This equipment is integrated in the production process and cannot be identified as separate parts.

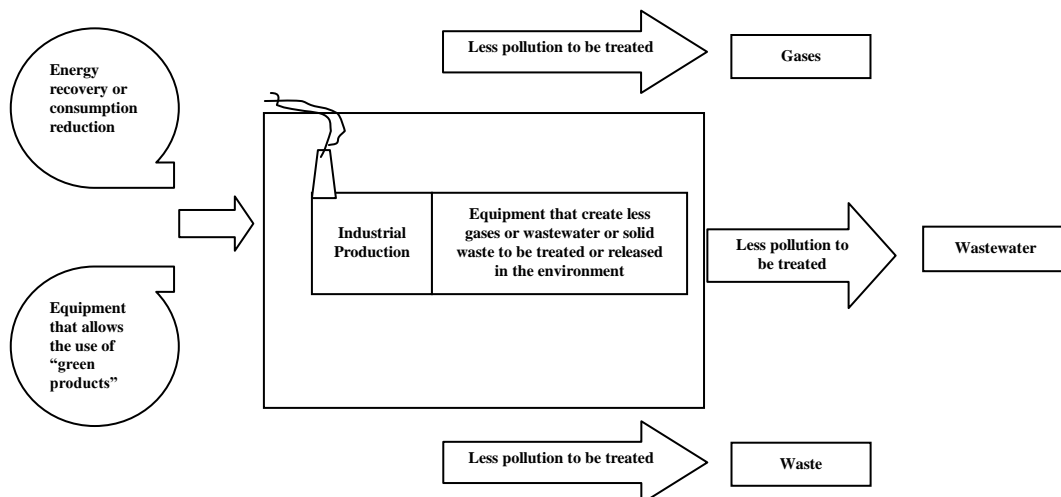
Note: If the main reason of buying equipment is not the protection of the environment but the equipment was more expensive than the normal one due to its beneficial effect on the environment, then only the extra cost should be reported.

*Consult the diagram on the next page for a better understanding of the distinction between end-of-pipe and integrated technologies.*

## End-of-pipe Technology



## Integrated Technology





Please complete the following table for the different types of investment **in 2010**:  
(consult the list of examples of environmental protection facilities on pages 2-4 of the questionnaire)

Type of Investment (please describe briefly)						Total Amount Invested (in €)
	Air	Waste-waters	Waste	Noise	Other domains	

End-of-pipe investments							
<b>TOTAL</b>	<b>11</b>						

Integrated investments							
<b>TOTAL</b>	<b>12</b>						

Additional comments:

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#### 4. CURRENT EXPENDITURES FOR ENVIRONMENTAL PROTECTION

**Current Expenditures are distinguished in two types:**

**(a) Internal current expenditures:** All current expenditures on environmental protection except purchases of environmental protection services from external organisations. It includes the consumption of energy and materials in the execution of environmental protection activities, the purchase of environmentally friendly goods, the use of the enterprise's own staff for environmental protection purposes (e.g. research and development), the operation of environmental protection equipment (e.g. labour costs, payment of rents, insurance of the equipment), general administration (e.g. setting up and maintaining environmental information systems), etc.

**(b) Expenditures for bought services:** All fees, charges and similar payments to external bodies (outside the reporting unit) in exchange for environmental protection services related to the environmental impacts of the operating activity of the enterprise. It includes payments for the collection and treatment of solid waste and wastewater, payments to environmental consultants (e.g. related to education of staff, operation and maintenance of environmental equipment and facilities), etc.

Has your enterprise had any current expenditures for environmental protection in **2010**?

**YES** ☐ Proceed to section 5.

**NO** ☐ Proceed to section 6.

#### 5. CURRENT EXPENDITURES ON ENVIRONMENTAL PROTECTION BY TYPE OF EXPENDITURE

Includes:

1. Personnel costs (see part 1)
2. Expenditures for environmental education of human resources: Expenses undertaken for the education and training of staff in operating equipment and executing environmental protection measures.
3. Expenditures for research and development: Creative work undertaken on a systematic basis, aiming at the development of new methods and technologies in environmental protection. It may include the financing of external bodies (e.g. consultants) for the undertaking of research on behalf of the enterprise.
4. Expenditures for operation and maintenance of equipment used for environment protection.
5. Other expenditures: Costs that are not elsewhere mentioned, including the additional costs resulting from a switch to new production inputs or practices, eg., solvent free paints, low-sulphur fuels or renewable resources. It may also include the commissioning of an environmental study to an external body. Also included is the fee paid to the local authority for the collection of waste.

Note: Environmental taxes paid and depreciation allowances are **NOT** included.

Please complete the following table for the different types of expenditure in 2010:

Type of Expenditure	Expenditures by environmental domain (in €)					Total expenditure (in €)
	Air	Waste-water	Waste	Noise	Other Domains	

Current Internal Expenditures							
Personnel costs	21						*
Education and training of staff	22						
Research and development	23						
Fuels and electricity	24						
Operation and maintenance of equipment (excluding labour costs and fuels)	25						
Other expenditures	26						
<b>TOTAL</b>	<b>29</b>						

Current Expenditures for Bought Services							
Education and training of staff	31						
Research and development	32						
Operation and maintenance of equipment	33						
Other expenditures	34						
<b>TOTAL</b>	<b>39</b>						
<b>of which fees or payments to</b>							
<b>the public sector</b>	<b>41</b>						
<b>private bodies</b>	<b>42</b>						

Additional comments:

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\* This amount should be consistent with the total amount given in section 1.

## 6. INCOME FROM ENVIRONMENTAL PROTECTION ACTIVITIES

Includes:

**Selling of environmental services:** Income of the enterprise from selling environmental services to other enterprises or institutions (for example, treatment of industrial waste).

**Subsidies from public sector:** Financial aid received by the enterprise from the public budget for acquisition and operation of environmental facilities.

**Subsidies from non public bodies:** Financial aid from institutions not controlled by the government for acquisition and operation of environmental facilities.

**Receipts from by-products:** Income of the enterprise from the reuse of materials resulting from environmental protection activities. This income should be estimated as the saving in cost as a result of using these products. Also included is the income resulting from selling such products to other enterprises or organisations.

**Other income:** Income not included in any of the categories above and which is resulting from PAC activities.

Please complete the following table for the different types of income **in 2010**:

Source of income		Income by environmental domains(in €)					Total income (in €)
		Air	Waste-water	Waste	Noise	Other Domains	
Selling of environmental services	51						
Subsidies from public sector	52						
Subsidies from non public bodies	53						
Receipts from by-products	54						
Other income	55						
<b>TOTAL</b>	<b>59</b>						

Additional comments:

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## 7. CONSUMPTION OF WATER

Please complete the following table on the consumption of water in your enterprise, according to the source of water supply, **in 2010**:

Source of Water Supply		Amount of water consumed (in tonnes)
Water Board	91	
Municipality/Community Council	92	
Water Development Department	93	
Self supply (private boreholes)	94	
Seawater, for water cooling purposes	95	
Treated/Recycled water from waste water treatment plants	96	
From an irrigation segment	97	
Purchased from a private individual	98	
TOTAL	99	

Additional comments:

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## 8. FUELS CONSUMPTION

Please complete the following table on the consumption of fuels in your enterprise, according to the type of fuel and use, **in 2010**:

Fuel Type		Quantity of fuel consumed by use(in litres)				Total Consumption (in litres)
		Production	Vehicles	Heating	Other	
<b>Petrol</b>	<b>61</b>					
<b>Gas Oil</b>	<b>62</b>					
<b>Gas Oil (production)</b>	<b>63</b>					
<b>Light Fuel Oil</b>	<b>64</b>					
<b>Heavy Fuel Oil</b>	<b>65</b>					
<b>Kerosene</b>	<b>66</b>					
<b>Liquefied Petroleum Gas</b>	<b>67</b>					
<b>Other fuel .....</b>	<b>68</b>					
<b>TOTAL</b>	<b>69</b>					

Fuel Type		Quantity of fuel consumed by use(in tonnes)				Total Consumption (in tonnes)
		Production	Vehicles	Heating	Other	

<b>Coke</b>	<b>71</b>		X			
<b>Pet coke</b>	<b>72</b>					
<b>Fuel wood</b>	<b>73</b>					
<b>Other fuel .....</b>	<b>74</b>					
<b>TOTAL</b>	<b>79</b>					

Additional comments:

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## 9. USE OF RENEWABLE SOURCES OF ENERGY

Please complete the following table on energy quantities produced from renewable sources, **in 2010**:

Renewable Sources		Energy quantity produced	
		Electricity (in kW)	Heating (in Joules)
<b>Photovoltaic</b>	<b>81</b>		
<b>Wind generator</b>	<b>82</b>		
<b>Biomass</b>	<b>83</b>		
<b>Other</b> .....	<b>84</b>		
<b>Total</b>	<b>89</b>		

Additional comments:

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..... Date: .....