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Environmental Regulations in the European Union and their Effects on the Turkish Textile Industry

Abstract

As is well known, one of the most important social obligations of industrial enterprises is to be responsive to the environment. Protection of the environment and keeping it unpolluted for the future are among the social responsibilities and duties of both states and all enterprises. Therefore, all countries, notably the European Union (EU) have established a number of laws regarding the protection of environment. During the process of integrating Turkey into the EU, the precautions our enterprises must take regarding adaptation to environmental laws are as important as improving their production processes.

Key words: environmental regulations, textile industry, social responsibilities, protection of environment.

and extensive applications regarding the whole textile sector.

The document entitled 'Environmental Policies of the European Union (EU)' is the regulation that includes most of the legal arrangements; it is equivalent to 30-50% of the legislation activities of the domestic market, and contains more than 300 regulations, directives and similar legal arrangements. This regulation causes certain difficulties for industrialists in Europe, similar to those seen in Turkey. This regulation has also led the EU to shorten the hitherto used regulation, consequently for the prevention of industrial pollution, which has been graded among the top priorities. The EU has enacted the Integrated Pollution Prevention and Control (IPPC) directive and intends to incorporate arrangements into a single frame for the compliance of various industrial sectors [5].

Environmental Regulation in the European Union

Development of environmental regulation by the European Union/ European Community (EU/EC)

There was no arrangement related to environmental protection in the agreements that founded the European Community. However, making collective decisions on behalf of 'promoting the living condition of the people, which is the most important goal of the community, has required a common interest in the environment. In addition, one of the policies of the community is 'the rationalistic management of natural resources'.

Another factor affecting the development of environmental policies of the commu-

nity is that the environmental regulation practiced by each member can adversely affect the equality of the members in free competition. Also, adopting and applying a common environmental policy by the community should be considered more beneficial than the individual struggle of each member state with limitless environmental problems.

After the Stockholm Conference in 1972, a Conference in Paris was held for the European countries within the same year. The nations that made up the Community evaluated themselves on that occasion, so an opinion about a Community-wide environmental policy towards the resolution of the problem arose, and 12 fundamental principles were determined to outline the policy. In order to put these principles in practice, the community started to plan 'environmental action programs' similar to those planned in 1973.

During the time period from 1973, when the first Environmental Action Program was put into effect, until today, the goals have been extended in parallel with economic development, and the related legal structure was broadened to reflect these alterations. The whole of the policy constituted in the content of the Environmental Action Program as practiced by the Community since 1972, when the fundamental principles related to environmental protection were determined, are identified as the 'Common Environment Policy'.

EU environmental regulations within the scope of agreements

The arrangements made according to EU environment regulations within the scope of the European Single Act, the Maastricht Agreement, the Amsterdam Agreement and the Nice Agreement will be evaluated here.

Introduction

The textile industry comprises of a number of subsectors that include the entire production cycle from raw materials (chemical fibres) to either semi-processed products (thread, woven and knitted clothes, their finishing processes) or finished products (rugs, home textiles, clothing, and textiles with industrial usage)[6].

Nine years ago the European Union (EU) started the renewing process for the environmental regulation that was applied in industrial facilities, and put forward a new directive which would influence entire industrial sectors in 1999. The Industrial Pollution Prevention and Control (IPPC) directive contains new

The European Single Deed

The items relating to environment were added to the Rome agreement throughout the alterations made according to the Single Deed, which was accepted as a strategy in 1985 and put into effect on 1 July 1987 with the aim of further deepening the constitution and integration of a European domestic market. These items added (130r, 130s and 130t) outline the legal borders of the common environment policy; determine the goals & the content of policies adopted and practiced by the Community related to environmental protection; outline the distribution of authority in this field, and identify the environmental policy, which had been questioned as to whether it was a part of the Community's achievement up to that point, as an official identity named 'Community Policy'.

The Maastricht Agreement

An aim stating the 'enhancement of the maintenance and integrity of environment' was incorporated into the aims involved in the initial part of the Maastricht Agreement. Additionally, the title of 'environmental policy' was added to the third item where the common policies of the Community are listed. Common environmental policy officially became one of the Community policies via this arrangement.

The Amsterdam Agreement

Some significant alterations within the legal framework of the common environmental policy were envisioned by the Amsterdam Agreement, which was signed on 2 October 1997 and put into effect in 1999. These are as follows:

- The environmental aspect, which was added to founder agreements by the Amsterdam Agreement, was widened through sustainable development.
- The precautions to be taken for the continuity of environmental protection and development have been integrated into all of the definitions and applications of Community policies in the content of a new item.
- In case the member states wish to take distinct national precautions aimed for environmental protection and human health apart from those envisioned in the content of the EU regulation, how the commission should be informed and how these precautions should be approved are emphasised.

The Nice Agreement

After the Nice Agreement was signed at the end of the summit meeting held there on the dates of 7-8 December 2000, the measures concerning environmental were brought to a more apparent and advanced stage.

Concordance between Turkish environmental regulation and EU environmental regulation

EU achievements (Acquis Communautaire)

It is possible to evaluate the relations between the European Union and Turkey in three stages. The first stage comprises the transition process to the Customs Union, that commenced with the Ankara Agreement signed in 1963 right after the partnership application which was submitted in 1959, and completed with the Decision of the Partnership Council signed in 1995. The second stage involves the conversion of the Turkish judicial system to the EU judicial system that was supervised by the decision of the European Council of Ministers, which granted Turkey candidate status at the Helsinki summit held in 1999. Right after the EU described the common expectations from Turkey in the Participation Partnership Document at the Nice Summit held in 2000, the third stage proceeded to carry out the National Program published in 2001. This National Program documented the obligations of Turkey and the *acquis communautaire* of EU.

The adoption of the *acquis communautaire* means the ability of a candidate nation to undertake and practice the *acquis communautaire*. This document contained 31 headings, the 22nd of which carries the title of 'Environment, and consists of the following subtitles:

- a) Horizontal arrangements (data access, evaluation of environmental effects etc.)
- b) Quality of air
- c) Management of waste products
- d) Quality of water
- e) Protection of nature
- f) Control of industrial pollution
- g) Organisms subjected to genetic modification
- h) Noise resulting from vehicles and machinery
- i) Nuclear safety and protection against radiation.

Meanwhile the EU, during its contact with Turkey, prepared a Participation Partnership Document (PPD) that set

short- and long-term targets toward the completion of the necessary criteria for Turkey to concord the Copenhagen Criteria and undertake EU regulation. This document was accepted by the EU on 8 March 2001 [1].

Studies carried out within the EU-Turkey Participation Partnership Document

The environmental policy of the Community supports the continuity of development and the protection of environment for present and future generations. This policy is based on the integration of environmental protection into other policies of the community, preventive measures, the principle of 'Who contaminates, pays for it!', the prevention of environmental damage at its sources, as well as the share of the responsibilities. The *acquis communautaire* consists of more than 200 legal issues concerning horizontal regulation, water and air pollution, the management of waste products and chemicals, biotechnology, the protection of nature, industrial pollution and risk management, noise and protection against radiation. Although concordance with the *acquis communautaire* requires a significant number of investments, it is beneficial in reducing the costly hazards that might originate from Community health and forests, building, landscape and fishery.

The latest approaches in the studies carried out for concordance are as follows:

No significant progress was noted regarding the integration of environmental issues into other policies.

The progress in the domain of horizontal procedure was observed to be limited. A new regulation related to the Evaluation of Environmental Influence, a new law concerning data access and another regulation related to its application were accepted. Turkey approved the Environmental Contract of the United Nations concerning seasonal changes.

The progress in the air quality was noted to be limited. A regulation related to the quality of petroleum and diesel fuels and the legislation about informing the consumers of both the fuel economy and CO₂ emissions of new passenger vehicles were accepted. Furthermore, a notice related to the quality of petroleum and diesel fuels was announced in June 2004. A regulation was rewritten in order to take precautions against emissions

from motors that use diesel fuels and pressurised petroleum gases.

Certain steps were taken in the management of waste products. A law was accepted in order to reduce the pollution resulting from transportation and to get rid of dangerous waste products off the boundaries in the Mediterranean Sea. Moreover, regulations arranging the package of waste products, the monitoring of batteries, accumulators and construction wastes including excavation soil and rubble, management of waste oils and other waste products at harbours were accepted.

The progress in case of water quality was very limited. A regulation about the protection of water resources against nitrate was also accepted.

Limited progress was noted in the protection of nature. The legislation related to the application of CITES Contract was rewritten.

No progress was noted in industrial pollution and risk management.

No significant work was undertaken regarding organisms subjected to genetic modification. Limited progress was noted regarding chemicals; an official declaration to check the marketing and use of insecticides and similar products was accepted, and a regulation to establish laboratories for raising and inspecting test animals for use in scientific and other multipurpose tests was accepted.

No progress concerning noise was observed.

Progress regarding nuclear safety and avoidance of radiation was limited. A regulation to utilise the waste products of radioactive testing was accepted.

Essential studies

A notable effort is still necessary in order to put horizontal regulation in practice. Turkey has not yet approved the Kyoto Protocol.

More procedures should be adapted for air quality, and steps should be taken to renew the system for monitoring the air quality.

Although the approach in waste management has proceeded to a certain degree, further effort is needed to prepare a national strategy and make plans concerning waste management.

An additional effort consistent with the Water Frame Directive, which contains a new frame law concerning the management of water resources, is needed to transfer and apply the rules of the *acquis communautaire* to water quality. Cross-border cooperation with neighbouring countries should be initiated for water quality.

Despite the fact that some regulations have been devised to protect nature, the legal adaptation is still insufficient. The complete concordance to the procedures related to birds and habitats is required, as the frame law concerning the nature protection is needed. Continuous loss of habitats is a source of concern. There is a need for both the practice and sanction of the procedure. Caution to interact with other policy domains that are related to nature protection should especially be taken.

There is a need for a considerable amount of additional effort to provide legal adaptation and application in industrial pollution and risk management.

More efforts to control both chemicals and organisms subjected to genetic modification are needed. Criteria must be determined for the formation of inventories.

Much more effort is needed to supervise the legal issues of adaptation and application concerning noise.

An additional effort is needed to arrange the legal adaptation of nuclear safety and protection against radiation.

In order to maintain the continuity of development, Turkey should initiate the integration of requirements in environmental protection while all other policies are determined and practiced.

The union of the Ministries of Environment and Forests under a single ministry can be seen as a favourable step that regards the administrative capacity. However, it appears that this integration is not so effective in the promotion of accomplishments.

In order to ensure the environmental *acquis communautaire*, including in the medium term, important investments should be guaranteed. In this context, it should be ensured that all new investments are consistent with the EU's environmental *acquis communautaire* [2].

The 'Industrial Pollution Prevention and Control' (IPPC) directive

The IPPC directive was accepted in 1996, was put into effect in 1999, and the period reserved for member countries for adaptation will expire in 2007. However, a mandatory adaptation has been introduced for facilities which will be founded after the date the directive was put into effect. A significant feature of the directive is the fact that it brings a 'change of understanding'. The directive aims at the prevention of pollution caused by the 'production', and not by the 'products'.

What is the content of the IPPC?

The IPPC has four main elements including integrated approach, best available techniques (BATs), shared data and access to data values in the community. Environmental permissions will be granted according to 'Best Available Techniques' (BATs) prepared within the scope of the IPPC.

Immediately after the main legal text for the IPPC was prepared, the European Commission of EU appointed working groups for each sector in order to develop private reference documents that are specific to those sectors. BREFs are reference documents of BATs, and these documents include cost/profit analyses in each sector as well as the local conditions of the production facilities [5].

The aim of IPPC regulation is to ensure that pollution due to production is both prevented and controlled, so the environment is consequently protected as a whole.

Item 2(11) below continues to describe this definition in detail:

'Techniques' include both the technology and the methods used to design, construct, maintain, utilise and decommission the facility.

'Appropriate' techniques are designed in such a manner that their usage in the related sector of industry is granted under valid economical and technical conditions, provided that they are easily obtained by the appliers. Meanwhile, their costs, advantages and whether they are being used or manufactured in candidate countries should be taken into account.

'The best' indicates the most effective with regard to complete environmental protection.

Supplement 4 to the regulation involves a list of 'statements that should be appreciated either generally or exclusively while the most appropriate techniques are evaluated by considering the potential costs, profits, protective and preventive principles of the precautions'. These statements contain the data published by the Commission in accordance with item number 16(2).

The officials who are authorised to grant permission should take the general principles of item number 3 into account when the provisions of the permission are determined. These provisions should include emission limit values which are either supported or modified by the equivalent parameters and technical precautions when appropriate. According to item number 9(4) of the regulation, these limit values, equivalent parameters and technical precautions should be based on the most appropriate techniques. Meanwhile, the use of any technical or specific technology should not be necessary, and no concordance with environmental quality standards should be obliged, although the technical characteristics, geographic location and local environmental conditions of the facility should be considered. These rules should under all circumstances include conditions related to the reduction of long-distance and extra-national contamination to a minimum, as they should provide much more environmental protection.

Member countries, in accordance with item 16(2) of regulation, are obliged to ensure that the authorised officials both follow up the development in the most appropriate techniques and investigate the latest progress.

Item 16(2) requests the commission to organise and publish the results of "sharing data with the member countries, including information about the industries that have the most appropriate techniques."

The aim of sharing data is explained in the 25th item of the regulation, which states that "The development and share of the data related to the most appropriate techniques at the community level would help the correction of the technological imbalance in the community, the worldwide spread of limit values and techniques used in the community and the effective practice of this regulation by the member countries."

The commission (Environment DG) has established a Data Share Form (IEF) in

order to help studies within the scope of Item 16(2). This form comprised a series of technical working groups under the IEF spectrum. Representatives from both the member countries and industry exist in both the IEFs and the technical working groups as indicated by item number 16(2).

The goals of this series of documents are both to reflect the shared data completely (which was accomplished as dictated in Item 16(2)) and to provide reference information that would be considered by the authorities while the provisions of permission are determined. These documents aid the management of environmental performance significantly by providing the necessary data about the most appropriate techniques [6].

How would the Turkish textile sector be affected by the environment guidelines from the European Union?

The basic environmental problems, consumption & emission levels in the textile industry

The basic environmental problems in the textile industry are related to its chemical load and the amount of waste water. Other important problems are energy consumption, air emissions, solid waste products and odours that might cause serious discomfort in certain operations.

Air emissions are usually collected where they generated. As air emissions have been controlled for a long time, good historical data about air emissions can be obtained from certain operations. However, this does not apply to emissions that affect the water. Various currents coming from different processes are blended so that waste water is produced. Waste water is a complex combination of particular factors such as processed fibres, material forms, methods used, chemical substances and supplementary materials.

Since very limited data is available about waste water from particular processes, it would be more rational to define textile factories in narrower categories, and to compare currents carefully between factories of the same category. This approach allows a rough pre-assumption to be made by comparing the emission levels and specific consumptions of the factories. The macro-distinctions are defined between different processes in the pre-assumption report so that the verification of the data obtained is possible [6].

The scope of the IPPC within the textile sector

These directives are arrangements which must be put into effect according to European legal legislation, although the method by which they should be practiced is determined by the member states individually. Therefore, a free zone is made up for the states concerned in the application of directives. The facilities that have become topics in the IPPC were determined according to their capacities. In other words, facilities with capacities above a certain level fall within the scope of the IPPC. Supplement 1, Section 6.2 of the directive states that "factories where preliminary processes of fibres and textile materials [such as washing, bleaching and mercerisation] together with dyeing are carried out, and factories with process capacities greater than 10 tons/day are included in the scope of the directive." Despite this statement, various member states tend to interpret this definition according to their understanding. Holland and the Scandinavian countries (Finland, Denmark and Sweden) have refused the limitation of 10 tons/day, and include all facilities within the scope of the IPPC regardless of capacity. Despite this fact, France applies the directive in the textile facilities with capacities above the 10 tons/day limit. Italy has followed a distinct route from other countries and determined the utilised capacity by taking a mean value of 3 years. Thus, the textile processes are grouped according to the utilised capacity [5].

Although EU companies are planning to put the IPPC laws into practice by 2007, the UK both applies a tariff inconsistent with this directive and also acts to keep barriers at a higher level for British textile companies. Jimmy Holland, the Finance Director of Dunlop Textiles, stated that "Dunlop Textile's opponent companies are mainly located in Europe. Some of the countries where these companies are located have just started planning, apart from executing IPPC laws and CCL equivalent arrangements."

Smaller British textile manufacturers are trying to compete with qualified products, less operation and fast return by cheaper imports. These manufacturers have superior value when evaluated for both environmental factors and sales.

The effect of the CCL was neutralised with a reduction in the employees' National Insurance so that capital payment

was facilitated. Small firms with only a few employees may not benefit as much as larger organisations might [4].

Facilities included in the IPPC's permission process are being mentioned in other items of the directive:

- all new facilities (Item 4);
- existing facilities, provided that they are not older than 8 years after the directive was put into effect (Item 5), and
- facilities that have altered their operations, and as such are obliged to inform authorised officials (Item 12).

It is possible to classify European priorities in environmental policy under a few topics. Those include protection of the air quality, waste management, protection of the water quality, control of industrial pollution and risk management. These are the topics that concern organisations that work over the capacity determined for the textile industry. It is possible to obtain the necessary data about the amount of waste water produced by the textile sector, energy consumption, air emissions, solid waste products and odours that might cause serious discomfort in certain operations. The 'Best Techniques Reference Document' provides the mentioned data.

The textile chain starts with the production or the harvest of raw fibres. Operations called 'finishing processes' (such as preliminary finishing, dyeing, pressing, finishing processes and coatings including washing and drying) comprise the processes and techniques considered in the BAT. When the content of the Textile Sector Reference Document is reviewed, the following issues are considered: good management practices; storage, use, dosage and distribution of chemicals; precautions for promoting the quality and volume of chemicals used; selection and alteration of the chemicals used; optimisation of the textile water consumption; quality management of fibres brought to the factory; wool washing; preliminary finishing; mercerisation; and water & energy management. The BAT covers the auxiliary textile materials, dye and pigments, textile machinery, and contains a set of supplements that provide complementary information related to typical prescriptions. The reason for the preparation of this document is to encourage the authorised officials to give permission. It was stated in the IPPC directive that

the characteristics, geographic conditions and local environmental features of the facility should be considered when permission is being granted. Although BREFs include no legal obligations, they specify the criteria that should be met during the production process. This indicates that when the method of production differs from the modality recommended by the BAT, it is mandatory to demonstrate that the method used is as sensitive to environment as the modality advised by the BAT.

The situation in new member states

The Integrated Pollution Prevention and Control (IPPC) directive is the system that grants sole environmental permission to particular industrial facilities. This directive must be put into practice by Turkey during the process of adapting to EU regulations. However, there is mandatory adaptation for facilities that will be founded after this directive comes into effect. The newly-admitted countries of Estonia, Poland and Slovakia have negotiated to take the years of 2007, 2010 and 2012 respectively as the application date for existing facilities. 20% of existing facilities in certain countries are taking advantage of this transition process. These firms are obliged to comply with the limit values determined by the BAT between 2008 and 2012. Complete compliance has been achieved in eight of the member countries. The complete application is about to start in three new member states. The new member states mostly support the integrated permission system as their regional and local administration system would be empowered. Sometimes it is necessary to train personnel who would grant integrated permits, and in some circumstances it is essential to raise the number. Candidate members would find it hard to execute this directive for all new facilities as soon as they become permanent members. Although the European Commission has stated that the shift to BAT production methods would not regress the national and international rivalry of the companies, but would enable them to compete, various difficulties are being encountered during the initial execution phase.

Although it is not a suitable country to compare by means of its textile sector, the experiences Hungary gained during the transition to the IPPC process may be a precedent for Turkish industry in certain aspects. Hungary made 163 new le-

gal arrangements between 1998 and 2005 while the environmental regulations were adjusted to those of the EU. Half of the money reserved for environmental studies in Hungary was spent on protection of water quality, whereas 30% of the expenses were for waste management. Air and noise pollution comprised 15% of the cost and prevention of industrial accidents counted for 1% of the costs. 90% of an expenditure of €10 billion was provided from local resources, 30% of which were undertaken by the private sector. The alterations experienced by Hungary due to the IPPC are listed below:

1. A remarkable increase was observed both in the number of sectors that required costly environmental arrangements and in the price of the products that are manufactured by these sectors.
2. Considerable demands occurred in the industry participating in the environmental arrangements.
3. The environmental awareness of manufacturers improved, and trust in Hungarian products was augmented.
4. An apparent change was experienced in the distribution of income. The burden of environmental expenses was mainly placed on heavy industry, transportation and light industry (textiles), whereas tourism, the environmental industry, construction, banking and insurance, health insurance, education and local administrations benefited greatly thanks to these arrangements.
5. Modern technologies also increased the costs of environmental infrastructure (city water, waste water, solid waste management etc.).
6. The Environmental Effect Assessment increased the planning costs and also caused the permissions to be granted over an extended time. However, probable adversities in the future were minimised.

How would the IPPC affect the environmental inspections?

The Ministry of Environment and Forests, along with the local administrations (Provincial, Municipality and Provincial Environmental Administrations) is responsible for preparing legal regulations, communication and applying environmental rules in the sector. In other words, the complex measures of law execution, granting permission and inspection have been burdened on these organisations. However, this structure is totally differ-

ent in the European Union, which has established an isolated organisation for granting permission and announcement, and another organisation for law execution and inspection. The Ministry of Environment was only referred to as the 'Environmental Policy Manager'. These three organisations communicate continuously with the industries of the member countries. Some EU member countries have also set up various independent organisations that include technical personnel (such as environmental engineers and lawyers). Since permissions granted through the IPPC can be grouped under one topic, different permissions granted by both the Ministry of Environment and local administrations would be eliminated, and the industrialist could trace the feasibility of his facility within the environment via the sole authority when this regulation is put into effect in Turkey [5].

■ Summary and conclusions

Intensive arrangements are needed for the financial requirements and technical considerations related to Industrial Pollution Control and Risk Management within the scope of adapting to the EU. The matter concerns local, regional and national administrations. Moreover, it also involves various types of issues such as consumer rights and the continuity of development.

The IPPC is a highly essential directive for the continuity of development which is inextricably related to the prevention of pollution. Environment-friendly technologies would both contribute to the protection of natural resources and provide opportunities for recycling and reusability. Therefore, the concept that 'No contamination is essential' would be replaced with 'Who contaminates, pays for it!' This accounts for the compensation of the financial loss experienced at the beginning, so that the products would be manufactured more cheaply. It is estimated that all the arrangements, including Industrial Pollution Control and Risk Management, would cost €1 billion. This value depends on a number of estimations in the absence of reliable data. Therefore, it should be expected that the amount of money required to perform the investments will differ much more from the suggested amounts [9].

The cost of this *acquis communautaire* in administrations should be examined

in two phases. Since the adjustment conditions would be requested from establishing facilities on the basis of the EU guidelines, the expenses of new organisations would be greater. Simultaneously, the expenses of present administrations would increase as they adopt the EU's environmental *acquis communautaire*. Nowadays, environmental awareness is rising, and products manufactured by ecological methods are in greater demand, so that the competitive power of firms within the member and candidate countries of the EU would develop. The issue of ecology in textile products was considered for the first time in the Council directive 76/69/EEC published in 1976. This issue was revised approximately 20 times until today, and was thus converted into a legislation that prohibits the usage of certain hazardous chemicals in textile products while specifying some chemicals to be used below certain ppm values [3]. The EU also seeks this condition in import products, as these directives are applied both to EU firms and to the products manufactured by these firms.

IPCC directives within the scope of EU adaptation would provide extra competitive power for companies by means of their more ecological products and lower operation costs, while these directives would present methods for using fewer chemicals, less energy and causing less environmental pollution so that the eliminated quotas and obstacles other than tariffs would do no harm.

The application of the IPPC directive in Turkey would be both difficult and time-consuming. The IPPC requires educated specialists due to its large and extremely technical content. The Ministry of Environment and Forest carried out a 2-year-long project named 'Increased Capacity for the Utilisation of the IPPC Directive within Internal Regulations' for this purpose. The selected administrators were educated, and the officials charged with implementing this regulation in Turkey gained a certain degree of knowledge and skill through the contributions of Dutch expertise. They concluded that the process of adapting to the IPPC would take approximately 10 years. Meanwhile, a communication network between organisations would develop, a databank would store environmental data, an integrated environmental management would be set up and the present processes of environmental inspection and granting

permission would be modified according to EU norms.

As the experiences of the EU countries throughout the process of adapting to the IPCC are shared and studied, Turkey would proceed through the adaptation process more rapidly and safely. The participation of industrialists and the community at every stage of IPPC adaptation is widely observed in Europe; for this reason, the productive advance of this process in Turkey is possible only through Turkish industrialists who adopt this process personally [5].

Although the execution of IPPC directives that require a certain degree of environmental protection would be difficult and costly, these directives are an obligation of humanity towards nature, because nature forms the basis for everything. The importance of these precautions becomes more evident if it is considered that the earth has been exposed to more contamination than ever during the last 50 years.



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