

REGULATION OF AIR POLLUTANTS

Prabir Ganguly

*Centre for European Studies, VSB-Technical University of Ostrava, Ostrava-Poruba,
The Czech Republic*

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Summary

Regulation of air pollutant is effected primarily by prevention at source. The basic approach has been to establish environmental quality standard by specifying maximum allowable concentrations of particular pollutants in the ambient air. To achieve this, emission limits (allowable discharge) of pollutants from plants and vehicles have been established. The other important approach that has been developed is product standard, limiting the pollutant in the material used in plant and machinery or suitable modification of parameters of appliances, equipment, machinery and plant to conform to certain standards. Not many international regulations are available, but the European Community law may be a source of inspiration for countries for developing further legislation in this area.

1. Introduction

Air pollution occurs when, as a result of activities of human beings, enough of a substance is present in the air to have harmful effects on health of all living organisms and ecosystems. Many substances which can become pollutants are present naturally in air in lesser amounts. It needs to be mentioned that the composition of atmosphere may be effected by natural phenomena (volcanic eruptions, forest fires, dust and sand storms etc.) but their effects on air pollution are more or less restricted to a local scale and in most cases indistinguishable from the impact of human activities. As these natural

phenomena do not cause pollution in the accepted sense, it may be said that air pollution, for the purpose of this topic, is generated by human beings by releasing into air substances (from some process or material) which are capable of causing harm to human beings or to any other living organisms. The substances, when present in enough quantity and capable of causing such harm are known as pollutants. The aims of pollution control, therefore, are:

- to reduce and when necessary eliminate hazards to human health and safety, taking into account both the magnitude and certainty of the risks, including the susceptibilities of critical groups, and the resulting costs to the community;
- to reduce damage to amenity, property and plant and animal life to a minimum compatible with the wider public interest (taking into account such factors as economics, employment and trade), and
- to prevent irreversible damage to the natural environment.

Atmospheric pollution arises from numerous sources, including heating plants, both industrial and domestic, industrial processes, waste incinerators, automobiles and other transport vehicles. The amount of pollutants emitted varies from one area to another, depending on the type and concentration of human activities and on the measures taken to reduce emissions. Due to the transitory nature of the atmosphere, pollutants usually remain in air only for a short time; they may undergo modifications in their composition and are usually returned to one of the other environmental media. However, even during their short-term presence in the air, due to their specific physical properties, they may travel a great distance before being deposited to soil or water.

2. International Efforts to Regulate Air Pollutants

Curiously enough, although as early as in 1968 the World Meteorological Organization established a global network to monitor atmospheric chemical components related to climate change and environmental issues, the first binding rules of a global nature concerning atmospheric pollution are found in the UN Convention on Law of the Seas adopted in 1982. According to article 212, states must adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere. These laws and regulations should apply to the states' air space, and to vessels and aircraft flying their flag or under their registry. States must also take other measures which may be necessary to prevent, reduce and control such pollution. On the international level, they must endeavor to establish global and regional rules and procedures. Within the limits of their jurisdiction, they must enforce the laws and regulations they adopt.

A second global convention is related to the protection of the ozone layer and is known as convention for the Protection of the Ozone Layer; it was adopted in Vienna in 1985 and was later supplemented by the Montreal Protocol on Substances that Deplete the Ozone Layer, and then by the London Protocol. The convention has reacted to the danger of reduction of the earth's ozone layer which protects living beings from ultraviolet radiation. It has been felt that the main cause for reduction of ozone layer is the utilization of chlorofluorocarbons contained in aerosol sprays and to a lesser extent

in solvents and refrigeration. The Vienna Convention identifies in article 4 of Annex 1, chemical substances of natural and anthropogenic origin, which are thought to have the potential to modify the chemical and physical properties of the ozone layer. The substance listed are:

- a) Carbon substances, such as, carbon monoxide, carbon dioxide, methane, non-methane hydrocarbon species;
- b) Nitrogen substances, for example, nitrous oxide, nitrogen oxides;
- c) Chlorine substances, such as, fully halogenated alkanes and partially halogenated alkanes;
- d) Bromine substances;
- e) Hydrogen substances, such as hydrogen and water.

Protocols to this convention are concerned with the control of various form of chlorofluorocarbons and halons, and foresees progressive reductions in their use. For CFCs, each signatory is to ensure that between July 1 and December 31, 1992 its calculated level of consumption and production of these substances do not exceed 150% of the 1986 level. During the following two years, the level of consumption should be reduced by 20% of 1986 levels. This reduction should increase to 50% by January 1, 1995 and to 85% on January 1, 1997. The consumption of the listed substances should totally end on January 1, 2000. For both groups of substances, exceptions are foreseen. The limits put forward in the convention may be exceeded by up to 10% in order to satisfy basic domestic needs. Special conditions may be adopted by developing countries whose annual calculated level of consumption of the controlled substances is less than 0.3 kg per capita. However, the annual calculated level of consumption should not exceed 0.3 for CFCs and 0.2 kg for halons.

Apart from these two examples, there is no concrete example of rules of global nature and most other international instruments available are of a regional character.

3. Regional Regulations of Air Pollutants in European Community

Interplay of many issues related to air pollution was not always recognized until the end of the 1960s. The first awareness was expressed in 1968 by the committee of Ministers of the Council of Europe which adopted European Declaration on Air Pollution Control. It enshrines some general principles such as that national legislation should aim to reduce whatever contributes to air pollution in a harmful way. It further states that regulations should be based on principles of prevention, which may differ according to the source, nature and magnitude of pollution. Three methods are seen in this context. First, stationary sources capable of causing a significant increase in air pollution should be subject to individual authorization specifying the conditions of construction and operation in order to limit emission. Sources that do not significantly contribute to air pollution will be subject of general operating conditions if, because of their density in a specific area, they may cause increased concentration of pollutants in the neighborhood. Finally, motor vehicles and mass-produced fuel burning appliances should be subject to special provisions a the principles as adopted, has led to harmonization of national legislation. Consequently, the principle forbidding one state to cause harm to another sovereign state was announced in the context of transfrontier air pollution.

Transfrontier air pollution became an issue in the 1970s. In 1979 the Geneva Convention on Long - Range Transboundary Air Pollution was adopted at the initiative of the United Nations Economic Commission for Europe. The terms of the Convention were specified by the Helsinki Protocol (1985) of the Reduction of Sulfur Emissions or their Transboundary Fluxes which aimed for reduction by at least 30%. By 1986, ten countries had already achieved the 30% reduction. However, increases were recorded in countries not party to the Protocol. The Sofia Protocol (1988) calls for freezing nitrous oxides emission and their transboundary emission and their transboundary fluxes at their 1987 level by the end of 1994.

In Europe, the different Directives of the European Commission have been very influential instruments to harmonize legislation in Member States. However, the protection of the atmosphere was not seen as a priority by the EC until the mid 1980s. The main framework Directive on emissions from industrial plant (84/360/EEC of 28 June, 1984) was issued after pressure from the German government as a result of the effect of acid rain. Since then, concern about transboundary air pollution, global warming and ozone depletion has led to a wide range of Directives.

The European Commission has approached the regulation of air pollutant through various mechanisms, such as: Environment quality standards; Emission limits; Product standards; Prohibitions; Market mechanism, and Global action.

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Biographical Sketch

After graduating from Calcutta University (India) in 1967, **Dr. Prabir Ganguly** worked for four years in Indian coal mines in various capacities, rising to the position of Manager of a large coal mine. In 1971 he went to what was then Czechoslovakia to do his PhD, which he completed in 1975. He worked in the coal industry in India until 1980 as a senior planning engineer. In 1980 he took up an assignment to work at the University of Liberia in West Africa. He completed this assignment in 1986, following which he joined the Faculty of the Technical University of Ostrava in the Czech Republic. During his tenure at that university he became head of the Institute of Environmental Engineering and "Phare Project Management Cell" of the university. Currently he is the Director of the Centre for European Studies of that university.

Dr. Ganguly has been responsible for organising and participating in several international postgraduate teaching and training programmes sponsored by the Commission of the European Communities, as well as a number of international conferences and seminars.

Dr. Ganguly has published widely, mainly on sustainable development, environmental protection and related issues. He is on the Editorial Board of the journal, *Environment, Development and Sustainability* published by the Kluwer Academic Publishers of Dordrecht, the Netherlands.