A Comparative Analysis of Approaches to Air Pollution Control

by

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Abstract

With the advent of industrialization came an increase in waste production, which invariably led to an increase in pollution, particularly air pollution. This was due to the fact that the atmosphere could no longer endure the arbitrary discharge of wastes using the natural process of dilution and dispersion and of course this resulted in grave health hazards and a lesser degree of survival for human heings as well as animals. Thus there arose the need to impose air pollution control measures which could curtail pollution to such an extent where very little pollutant is diffused into the atmosphere. This being the case, many countries enacted legislation for controlling air pollution, for legislation was seen as the best way to impose measures to achieve this.

In this paper I intend to examine the approaches to air pollution control adopted by three countries vis-a-vis South Africa's approach to air pollution control with a view to offering a comparative analysis and if necessary alternative suggestions to the approach adopted in South Africa.

A general background on issues of air pollution and its control would he done in Chapter one as an introduction to the issues to be dealt with in subsequent chapters. This would be followed by a thorough analysis of the approach adopted in the Atmospheric Pollution Prevention Act, 1956 in Chapter two. Following this, the various legislation which purport to deal with environmental air pollution in the United States of America, the United Kingdom and Australia would be examined in Chapter three with a view to offering a comparative analysis under Chapter four. An overall conclusion would then be given in Chapter five based on the strengths and weaknesses of the laws examined in order to suggest, where and if necessary, an alternative form of approach for South Africa.

DECLARATION

I declare that the whole of this dissertation, save as specifically admitted and acknowledged in the text, is my original work, and has neither been published elsewhere nor submitted in any other University.

ABIMBOLA OLABOWALE AKINNUSI

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DEDICATION

To
God
Who Made Heaven and Earth
And
All Its Fullness Thereof

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AIR POLLUTION CONTROL IN THE UNITED STATES OF AMERICA, UNITED KINGDOM AND AUSTRALIA

Chapter 1
General Background

'Cleaning up our nation's air and water is clearly an important goal of environmental law ...'

-Findley & Farber 'Environmental Law in A Nutshell' (1988)

1.1 Introduction

The World Health Organisation has identified pollution as one of the six major global health hazards.[1] Thus the issue of pollution has become a pertinent one for environmentalists and one of the subject matters of environmental law, is its control. Therefore throughout the world there is a growing concern over increasing pollution and how it can be controlled if not curbed. In this chapter, a general background on air pollution would be given. Specifically, we would look at the ways in which air becomes polluted as well as the attendant results of air pollution. After this would be an examination of the principles of pollution control and the various approaches to pollution control that has been adopted by different countries before a general overview is given on South Africa and air pollution. The approaches to pollution control would form the basis of our comparative analysis in the subsequent chapters.

1.2 Types of Environmental Pollution

Pollution has been defined as 'the introduction by Man into the environment of substances or energy liable to cause hazards to human health, harm to living resources and ecological systems, damage to structures or amenity or interference with legitimate uses of the environment.'[2] There are basically four types of pollution - air pollution, water pollution, land pollution and noise pollution. Of all these, air pollution is the most difficult to remedy because given the ambivalent

[1] AJ McMichael *Planetary Overload* (1993) 298, quoting WHO Environmental Health in Urban Development (1991) in: M Kidd *Environmental Law: A South African Guide* (1997)121

[2] MW Holdgate *A Perspective of Environmental Pollution* (1979) 7 in Kidd op cit 121

nature of air it cannot be amassed in one place for the purpose of purifying.

Air pollution can be defined as 'the introduction by man into the *atmosphere* of substances[3] or energy liable to cause hazards to human health, harm to living resources and ecological systems, damage to structures or amenity or interference with legitimate uses of the environment.[4] Another writer has defined air pollution simply as 'the presence of disturbing quantities of pollutants in the atmosphere.'[5] Whatever definition may be assigned to air pollution, it must be emphasized that it is the most difficult type of pollution to remedy and it brings with it serious damage and lethal consequences.[6] This is because the nature of air is such that as essential as it is, it cannot be amassed in a particular place for the purpose of purifying. This makes it necessary for stringent controls to be imposed to curb the occurrence of air pollution. But then how does air pollution occur and what if any are the lethal consequences referred to above?

1.3 Ways in Which Air Becomes Polluted

Air becomes polluted as a result of diverse human activities and natural causes through which, certain pollutants are released into the atmosphere. At present six pollutants have been identified as primary air pollutants.[7] These are particulate matters[8], sulphur dioxide[9], oxides of nitrogen[10],

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[3] Substances means 'any natural or man-made chemical elements or compounds capable of being airborne' - see JH Seinfeld *Atmospheric Chemistry and Physics of Air Pollution* (1986) 3

[4] This definition is based on the definition of pollution given above.

[5] Dept. Of Environmental Affairs 'We Are All Responsible' (1990) Prisma 23 at 24

[6] ARabie *South African Environmental Legislation* (1976) 93

[7] Smog Busters, www.environment.gov.au/epg/smoggy/pollution.html accessed 11 August, 1998; Cf FR Fuggle and MA Rabie (eds) *Environmental Management In South Africa* (1996) 418

[8] These includes particles of solid or liquid substances in a very wide range of sizes, from those that are visible as soot and smoke to particles too small to detect except under an electron microscope - DP Currie *Pollution: Cases and Materials* (1975) 10

[9] The source of this is from the burning of coal and oil, especially high-sulfur coal - B Callaghan (ed) *The*

carbon monoxide[11], lead [12]and volatile organic compounds[13]. These pollutants are usually discharged directly into the atmosphere and chemical transformation of these primary pollutants in the presence of sunlight or other primary sources may result in the formation of secondary pollutants such as ozone and peroxyacylnitrates.[14]

Human activities produce smoke, soot, gases, fumes and particles which, contain these primary pollutants. Specifically, human activities which, result in air pollution can be classified into two main sources. These are stationary sources and mobile sources.[15] The former includes, activities in power stations and other heavy industries, solid waste disposal, agricultural activities, residential heating as well as institutional and commercial heating while the latter is made up of different forms of transportation.[16]

As pointed out above, human activities do not account for the total percentage of air pollutants released into the air. Natural causes also contribute to air pollution and these natural causes include volcanic eruptions, dust storms, salt-laden sea-spray and veld and forest fires.[17]

Plain English Guide to the Clean Air Act (1993) 24

The source of this is from the burning of gasoline, natural gas, coal, oil etc, cars are an important source of this pollutant - Callaghan op cit 24

[11] The source of this is from the burning of gasoline, wood, natural gas, coal, oil etc - Callaghan op cit 24

[12] This pollutant comes about as a result of leaded gasoline, paint from houses and cars, smelters, manufacturing of lead storage batteries - Callaghan op cit 24

[13] VOCs are released from burning fuel (gasoline, oil, wood, coal, natural gas, etc), solvents, paints, glues and other products used at work or at home. Cars are also an important source of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride and methyl chloroform - Callaghan op cit 24

[14] Fuggle and Rabie op cit (n. 7) 418

[15] MN Rao & HVN Rao *Air Pollution* (1989) 12

[16] Dept. of Environmental Affairs 'We Are All Responsible' (1990) Prisma 23 at 24; Cf MN Rao & HVN Rao op cit 12

[17] Callaghan op cit (n.11) 24

1.4 Results of Air Pollution

The environmental effects of air pollutants on the atmosphere has resulted in certain conditions in the ambient air quality. The conditions identified over the years and supported by a weight of scientific evidence are as follows[18]:

1. Acidic deposition: This occurs when sulphur and nitrogen compounds present in the atmosphere as gases or particles are transported to the ground either directly by an expanded pollution plume layer[19] or by being washed out by rain[20] or by being captured by impaction on aerosols which are subsequently deposited on vegetation (occult deposition).[21] The damaging result of acid deposition includes acidification of freshwater ecosystems, denudation of forests and agricultural crops, erosion of metallic surfaces and destruction of masonry structures. The major impact on human health can be seen from the fact that the acids are able to dissolve lead and other heavy metals from water catchment areas and plumbing systems[22]. Acid rain is only one component of acidic deposition and occurs either as a result of wet deposition or occult deposition.[23]

2. Smog Formation and visibility reduction: Smog is a synchronym of two words - smoke and fog.[24] There are two types of smog - photochemical or coal induced.[25] The latter results

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[18] Fuggle & Rabie op cit (n. 7) 418-9

[19] Also called dry deposition

[20] Also called wet deposition

[21] Fuggle & Rabie op cit (n. 7) 418

[22] Fuggle & Rabie op cit (n. 7) 418

[23] RW Boubel et al *Fundamentals of Air Pollution* (1994) at 155

[24] Rao & Rao op cit (n. 16) 11

[25] ibid

from particles emitted during solid fuel combustion combined with fog while the former results from the presence of secondary pollutants such as ozone and peroxycetylnitrate (PAN) and usually occurs under adverse meteorological conditions when the air movement is restricted. [26] Smog is principally responsible for visibility reduction and causes eye irritation, damage to vegetation and cracking of rubber.[27]

3. Ozone Depletion: This occurs as result of chlorofluorocarbons, halons and nitrous oxide released into the atmosphere by various natural and industrial processes.[28] Previously the destruction and creation of stratospheric ozone occurred as part of a natural process that maintained a relatively constant amount of ozone in the stratosphere.[29] Over the years however, the constant use of chemicals, notably chlorofluorocarbons (hereinafter referred to as CFCs) and halons and their related compounds, have affected the natural balance of nature to such an extent that the natural process is unable to cope with the large amount of chemicals being released into the atmosphere thus resulting in the gradual depletion of the ozone layer. As a result of this depletion, the levels of ultraviolet radiation reaching the earth's surface has increased. Ultraviolet radiation has been found to result in an increase in the incidence of skin cancer and cataracts as well as cause suppression of the immune system.[30] It has also been shown that crops[31] and marine resources[32] suffer

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[26] ibid

[27] ibid

[28] Fuggle and Rabie op cit (n. 7) 419

[29] SJ Shimberk 'Stratospheric Ozone and Climatic Protection: Domestic Legislation and the International Process' 21 (1991)*Environmental Law* at 2182

[30] 'Stratospheric Ozone Depletion Hearing' in: Shimberk op cit (n. 29) 2182

[31] For instance, ultraviolet irradiated plants suffer from reduced leaf areas, plant stunting, a reduction in total dry weight of the plant and increased plant diseases - see A Temura, "Overview of our Current State of Knowledge of UV Effects on Plants," 1986 Ozone and Climate Study at 147 in: VP Nanda (ed) *International Environmental Law & Policy* (1995) 214

negative consequences.

4. Changes in Global climate: This is otherwise known as the 'Greenhouse effect'. It is believed to occur as a result of gases like carbon dioxide, methane, water vapour, nitrous oxide, chlorofluorocarbons, halons and peroxyacetylnitrate (PAN) trapping outwardly radiated long-wave radiation.[33] It has been predicted that this action will lead to a global warming of the earth's atmosphere with major changes in patters, rising sea levels and extended desertification.[34]

The various conditions discussed above have an adverse effect on man and the environment in many ways. These effects, in addition to those mentioned above, include soiling homes, interfering with the growth of plants and shrubs, diminishing the value of agricultural products, obscuring our view, adding unpleasant smells to the environment and most particularly endangering our health.[35]

1.5 Principles of Pollution Control

Over the years certain principles have been generally agreed upon as constituting principles of pollution control. These principles do not aim to completely prevent pollution.[36] For to attempt to do this would be unrealistic as well as impossible. Instead they aim to reduce pollution of the different media - air, water and land - to the greatest possible minimum. Of the various principles

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[32] For instance ultraviolet radiation damage fish larvae and juveniles, shrimp larvae, crab larvae, and other small animals and plants which are essential to sustain the marine food chain - see Nanda op cit 214

[33] Fuggle and Rabie op cit (n. 7) at 419

[34] ibid

[35] Currie op cit (n. 8) 11; it is well established that air pollution contributes to the incidence of such chronic diseases as emphysema, bronchitis and other respiratory ailments.

[36] Kidd op cit (n. 1) 122

to be discussed below, the first two are said to be universally agreed upon.[37]

1. **The Polluter Pays Principle**: This principle was first set out by the Organization for Economic Co-operation and Development in 1974.[38] It entails that a person who produces pollution or is involved in any polluting activity be responsible for the costs of preventing or dealing with any pollution caused by that activity, instead of having these costs passed on to somebody else.[39] It has, however been argued that this principle is an elusive one because it is not clear whether it means that the person producing the pollution should pay for all costs of eliminating pollution or whether he must pay to continue pollution or that there is an acceptable level of pollution and if the polluter does not exceed that level, he does not have to pay at all.[40] Whatever may be the case it must be pointed out that in reality it is not the polluter that pays but rather the consumer of the products through the imposition of higher prices to cover the costs incurred.[41]
2. **The Precautionary Principle**: This principle is highly conservative in its approach and is said to have originated in Germany based on the fact that the German word *Vorsorgprinzip* literally means 'precaution or foresight'.[42] It posits that polluters minimize and wherever possible prevent the discharge of harmful substances through the application of preventive measures in situations of scientific uncertainty where a course of action may cause harm to the environment.[43] This principle has been justified by the fact that it is

[37] Kidd op cit (n. 1) 8

[38] D Pearce et al *Blueprint for a Green Economy* (1989) 156-7 in Kidd op cit (n. 1) 8

[39] M Purdue 'Integrated Pollution Control in the Environment Protection Act 1990: A Coming of Age of Environmental Law?' 54 (1991) *Modern Law Review* 534 at 536; Cf Kidd op cit (n. 1) 8

[40] Purdue op cit 536

[41] Purdue op cit 536

[42] Purdue op cit (n. 39) 535; Cf Kidd op cit (n.1) 9; it has come to mean the minimisation of the risk of pollution.

[43] Purdue op cit (n.39) 535; Cf R Malcolm *A Guidebook to Environmental Law* (1994) 27

better to err on the side of caution than to take risks with the environment.[44]

3. **The Preventative Principle**: As the phrase implies this principle entails that pollution should be prevented and is based on the maxim that prevention is better than cure.[45] However it is obvious that this is practically impossible for as it would later be shown many necessary activities would have to be stopped in order for there to be complete prevention.[46] More so as one writer noted, ' ... it [is] only achievable when starting with a clean slate'[47] which definitely is not the case with many countries.

4. **The Cradle-To-Grave Principle**: This principle posits that steps be taken right from the stage of production to the end of production to reduce or eliminate pollution. It is definitely a step in the right direction for it takes into cognisance the fact that pollution occurs all through the different stages of production.

5. **End-of-Pipe Principle**: This principle emphasizes the cleaning up operations at the end of production. While not saying that cleaning up operations is not important to pollution control, it must be pointed out that emphasizing on cleaning up operations would do little to minimize pollution that occurs during the different stages of production.

1.6 Fundamental Objectives of Pollution Control

The United Nations Commission on Environmental Development (UNCED) identified four programme areas in the 1992 Agenda 21 document relating to environmentally sound waste management.[48] The programme areas which, are outlined below are interrelated and mutually

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[44] Malcolm op cit 27

[45] Malcolm op cit 28

[46] Purdue op cit (n.39) 535

[47] Malcolm op cit 28

[48] NA Robinson (ed) *Agenda 21: Earth's Action Plan* (1993) 462

supportive and listed in order of hierarchy.[49]

The programme areas are:

1. minimizing wastes;
2. maximizing environmentally sound waste reuse and recycling;
3. promoting environmentally sound waste disposal and treatment;
4. extending waste service coverage.[50]

The first three programme areas correspond with the conventional view as to what constitutes the three fundamental objectives of waste management.[51] These are:

1. The avoidance of waste production;
2. The reduction of those wastes which cannot be avoided and
3. The disposal of the residue in an environmentally acceptable and safe way.[52]

Though dealing with waste management, these fundamental objectives of waste management accord with the general objectives of pollution control.[53] This is because waste and pollution are in many cases inextricably linked for most often than not pollution occurs as a result of waste production and subsequent disposal.[54]

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[49] See section 21.6 of Agenda 21

[50] See section 21.4 of Agenda 21

[51] Kidd op cit (n.1) 123

[52] Republic of South Africa *Report of the Three Committees of the President's Council on a National Environmental Management System* (1991) 94; this Report also includes two other objectives: i) greater use of degradable packaging material and ii) the sorting of household waste at source to facilitate disposal and recycling

[53] Robinson op cit (n. 48) 462

[54] The definition of waste here need not necessarily mean waste in the sense of that which we do not want; it encompasses the broader definition of that which we fail to use for its proper purpose - Kidd op cit (n.1) 121

1.7 Approaches to Pollution Control

So far we have looked at the principles of pollution control and the fundamental objectives of pollution control. We are now going to look at various approaches to pollution control which are more or less based on some of the principles discussed above. These approaches, which have the fundamental objectives outlined previously as a focal point, usually form the basis of the provisions of the different legislation used by countries to control pollution.

Basically, pollution control can be effected by regulating the source of air pollution or regulating the emission itself. Regulation of source can be effected by (1) using devices to remove all or part of the pollutant from the gases discharged to the atmosphere, (2) changing the raw materials used in the pollution-producing process or (3) changing the operation of the process so as to decrease pollutants emitted.[55]

Over the years certain strategies for pollution control have developed either aimed at regulating the source of air pollution or regulating emissions of air pollutants. These strategies are air quality management strategy, emission standard strategy, financial incentives strategy and cost-benefit strategy. Air quality management strategy is effected by setting certain emission limits for the different air pollutants.[56] Emission standard strategy involves developing and promulgating an emission standard or determining on a case by case basis an emission limit on sources.[57] Financial incentives strategy involves the imposition of tax, fee or fine schedule on emissions usually based on the promulgation of air quality standards while cost-benefit strategy seeks to maximise cost effectiveness.[58]

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[55] Boubel et al op cit (n. 23) 66

[56] Boubel et al op cit 68

[57] Boubel et al op cit (n. 23) 69

[58] Boubel et al op cit (n. 23) 69

The following approaches, which form the clean air philosophy of different countries are based on one of the strategies discussed above.

1.7.1 Best Practicable Means

The 'best practicable means'[59] (hereinafter referred to as BPM) is an approach which focuses on controlling the source of pollution and it does this by laying down a specification standard which entails the specification of equipment, type of construction or particular method to be used in reducing pollution.[60] This standard determines that only pollution control equipment which meets certain design requirements may be used in operating certain processes that are responsible for air pollution. The permit system is usually involved and so grant of a permit to carry out a scheduled process is subject to the polluter complying with certain minimum specification standards.[61]
The essential elements of BPM are as follows:

a) No emission can be tolerated which constitutes a recognised health hazard, either short or long term;
b) emissions in terms of both concentration and mass must be reduced to the lowest practicable

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[59] Which involves the emission standard strategy

[60] Rabie op cit (n. 6) 95

[61] Rabie op cit (n. 6) 95

amount taking into account local conditions and circumstances, current state of knowledge on control technology and effects of substances emitted, financial considerations and the means to be employed;

c) having secured the minimum practicable emissions, the height of discharge must be arranged so that the residual emission is rendered harmless and inoffensive by dilution and dispersion.[62]

The BPM approach allows for flexibility and is a sensitive means of achieving a balance between costs and benefits of control.[63] It is also very adaptable because the demands that are made on industries in applying the BPM of air pollution control can be increased as improved methods of air pollution control are discovered.[64]

Despite all these merits in its favour, the BPM approach has been criticised as an approach, which puts economic costs above and before the environment. It does not promote a holistic approach to the prevention of pollution.[65] Yet, the best form of approach should be one that puts the environment as a whole first, particularly since air once polluted cannot be easily cleansed and can go on to affect other parts of the environment.

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[62] I & J Baker (eds) *Clean Air Round The World: The Law & Practice of Air Pollution Control in 14 Countries in 5 Continents* (1988) 127

[63] ibid

[64] Rabie op cit (n. 6) 96; Cf Kidd op cit (n. 1) 128

[65] Republic of South Africa *Report of the Three Committees of the President's Council on a National Management System* (1991) 62

In addition, the BPM approach needs close monitoring in order to be effective. This is a problem, particularly in South Africa, because there is usually a dearth of manpower to carry out the arduous task of inspection of premises where scheduled processes are being carried out to ensure compliance with the terms of the specification standard. This approach is that presently being utilised in South Africa.

1.7.2 Market Approach

According to formulators of the market approach[66], 'pollution rights' should be allocated to permit a business ... to pollute above the allowable federal limit.' [67] In other words, pollution rights would be allocated to a business in the form of a permit. The business would then be allowed to pollute above the allowable federal limit but the incentive would be the tradeability of the permit. Thus where the business cleaned up its pollution source it would be allowed to realize a profit by selling its permit to pollute to another business.[68] Of course until the business cleaned up its pollution sources it cannot sell the permit.

The motivation for the use of the market approach is that 'once a business recognised the possibility of selling its permit it would see that pollution is not costless'[69] and also that 'the creation of new markets to reduce pollution reduces the external aspects to waste disposal and makes them internal costs, just like costs of labour and capital'[70] thus 'encouraging more ecologically sensitive behaviour.'[71] The advantages of the market approach can be outlined as

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[66] Which adopts the financial incentivestrategy and emissions standards strategy

[67] ED Enger & BF Smith *Environmental Science: A Study of Interrelationships* 4th ed (1992) 393

[68] ibid

[69] ibid

[70] ibid

[71] MS Greve & FL Smith Jr (eds) *Environmental Politics: Public Costs, Private Rewards* (1992) 187

follows:[72]

1. It reduces the regulators' need for information and technical expertise. Thus the regulators need just determine overall price or quantity of pollution and leave it to the pollution sources to decide which firms would clean up and to what degree.

2. It allows for a large amount of flexibility because productive activities are not banned outright but can continue where most valuable.

3. When contrasted to mandated technology approaches, this form of approach improves the visibility of pollution control costs which in turn may encourage greater attention to the costs and benefits of each particular control program or at the very least reduce the tendency to view environmental protection as a "free" good.

4. Imposing the charges or financial burdens of emission rights schemes directly on polluters and in proportion to their actual pollution output, tends to produce long-term improvements in the availability and selection of pollution-reducing technologies and operating policies.

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[72] ibid

However opponents of the market approach say that pollution permits are nothing more than taking public resources and turning them into something that can be treated as if it were property.[73] Others argue that the permit system seems to approve of a given amount of pollution which, would not be of benefit towards curbing pollution.[74]

A good example of the use of the market approach can be found in the bubble concept as used in the United States of America. Under the bubble concept, a complex is treated as a whole as though there were a dome or bubble over it and the emissions are measured in totality instead of the situation where each discharge point is focussed on.[75] Thus when a new source has been added to a group of existing sources under the same ownership in the same industrial complex, instead of requiring the new source to meet at the offset, new source performance standard (NSPS), best available control technology (BACT) and or lowest available emission rate (LAER), the new source is allowed to be added provided the total emission of the relevant regulated pollutants from the total complex is decreased.[76] In other words, total emissions cannot exceed the aggregated amount for the four stacks.[77]

1.7.3 Uniform Standards

The uniform standards approach[78] involves setting a particular standard for emissions of air pollutants which is uniformly adopted throughout the country. Here the idea is to have a uniform emission level for different air pollutants. The problem with this approach is that it is not realistic

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[73] Enger & Smith op cit (n. 67) 394

[74] ibid

[75] VR Patton-Hulce *Environment and the Law: A Dictionary* (1995)123

[76] Boubel et al op cit (n. 23) 415

[77] Patton-Hulce op cit (n. 75) 123

[78] Which involves the air quality management strategy

to assume that air pollutants are released in the same measure and degree all over the country. This is because certain parts of a country may be subjected to greater releases of pollutants compared to other parts of the country.

1.7.4 Best Practicable Environmental Option

This approach is 'the result of systematic consultation and procedures that stress the protection and preservation of the environment as a whole - that is air, land and water.'[79] According to the South African Department of Environmental Affairs, it results in the greatest benefit for or least damage to the environment at an acceptable cost in both the long and the short term.[80] It focuses on the potential for waste elimination from a given process and will lead to improved design and operation of industrial processes, minimizing waste generation through the application of 'clean technologies'.[81]

This is obviously a better approach than the BPM approach and the market approach because it takes into account the environment as a whole and puts the environment first which is not a consideration of the BPM approach. It is an approach which is a criterion for integrated pollution control[82] action and is aimed at preventing and minimizing the release of pollutants to air water and land from industrial processes and other economic activities and where pollution does occur to keep them to a minimum and make them harmless to people and the environment as well.[83] It

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[79] Fuggle & Rabie op cit (n. 7) 439

[80] Fuggle & Rabie op cit (n. 7) 439

[81] Fuggle & Rabie op cit (n. 7) 454

[82] Integrated Pollution Control action can be defined as the range of organisational and legislative changes that enable institutions deal with the connected nature of environmental problems - Brussels Symposium on Integrated Pollution Control (1988) - N Haigh & F Irwin (eds) *Integrated Pollution Control in Europe and North America* (1990) 9; Cf M Kidd 'Integrated Pollution Control in South Africa: How easy a Task?' 1 (1995) SAJELP at 37-8

[83] Kidd op cit (n. 1) 170

has been adopted by the United Kingdom as her technique for pollution control.

Having examined the different approaches to air pollution control, we would now go on to briefly look at the situation in South Africa with regards to air pollution.

1.8 South Africa & Air Pollution Control

South Africa is the most highly industrialised country in Africa and one of the more highly developed industrial countries in the South Hemisphere.[84] As a result of South Africa's wealth, variety of natural resources and her drive to achieve independence from overseas sources, she presents examples of almost every possible source of air pollution and most types of pollutants.[85] The major sources of air pollution in South Africa comes from pollution generated by vehicles and the combustion of fossil fuel.[86] More specifically there are five major activities which generate air pollution in South Africa. These activities are fuel combustion and gasification from stationary sources, fuel combustion in mobile sources, industrial and chemical processes, solid waste disposal and land surface disturbances.[87] Fossil fuel utilisation is divided between coal and oil.[88] Coal is the country's primary energy source while oil is ranked second.[89] With the combustion of coal and oil, pollutants like carbon monoxide, nitrogen dioxide are released into the atmosphere in the form

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[84] G Grange 'The More Important Sources of Air Pollution in the Republic of South Africa and the Most Recent Control Policies Adopted By Authorities' (1991) Clean Air Journal 4

[85] Dept. o f Environmental Affairs First Report on the Situation of Waste Management & Pollution Control in South Africa (1991) 37

[86] Fuggle & Rabie op cit (n. 7) 417

[87] Fuggle & Rabie op cit (n. 7) 417- 8

[88] Fuggle & Rabie op cit (n. 7) 420

[89] Fuggle & Rabie op cit (n. 7) 420 where coal is said to contribute 82.3% of South Africa's primary energy demand while coal contributes 10.4%

of a plume from a tall stack after which they are dispersed by wind.[90]

Certain problem areas affected by air pollution have been identified by Prof. HJ Annegarn.[91] These areas are Soweto, Townships like Meadowlands and Kagiso, the Vaal Triangle, city centres in Johannesburg and Pretoria, Cape Town, Durban and over the Drakensburg escarpment.[92] The air pollution problem in these areas range from mine dust pollution to photochemical smog as well as coal smoke from fires and sulphur dioxide problems.[93] In particular, the Eastern Transvaal Highveld (ETH) (which includes the Vaal Triangle) has been identified as a region of major environmental concern for South Africa because it forms the country's industrial powerhouse and from surveys conducted it was found that particulate emissions in the ETH totalled 427, 264 tonnes per annum while sulphur dioxide, nitrogen oxide and carbon monoxide emissions per annum totalled 1, 217, 728 tonnes, 407,001 tonnes and 371,888 tonnes respectively.[94] Of each of the sulphur dioxide, nitrogen oxide and carbon monoxide emission in the eastern Transvaal Highveld, more than 90 percent derived from coal combustion at Eskom power stations.[95]

With regards to air pollution from mobile sources, internal combustion petrol engines produce carbon monoxide, unburned hydrocarbons and oxides of nitrogen. These unburned hydrocarbons and the oxides of nitrogen may also combine when exposed to rays of sun to form photochemical smog. Although the admissible amount of lead in petrol has been reduced by 50 per cent (since

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[90] Fuggle & Rabie op cit (n. 7) 423

[91] See I Jones 'All We Need is the Air We Breathe' *Sunday Times* March 1 1998 at 16; Prof. Annegarn is of the Scholand Research Centre for Nuclear Sciences at the University of Witwatersrand.

[92] ibid

[93] ibid

[94] Els Strategies for dealing with Transvaal Highveld acidic deposition situation First IUPPA regional conference on Air Pollution, National Association for Clean Air, Pretoria (1990) in: Fuggle & Rabie op cit (n.7) 425

[95] Fuggle & Rabie op cit (n. 7) 425

1987) the amount of lead in the air is still well below internationally acceptable levels.[96]

Legislation has been seen as the best way to control air pollution particularly with the use of the permit system and the imposition of criminal sanctions for non-compliance. Thus South Africa like many other countries has attempted to control air pollution through different legislation,[97] the most important being the Atmospheric Air Pollution Prevention Act, 1965 which we shall be examining in the next chapter.

[96] Dept. of Environmental Affairs 'We Are All Responsible' (1990) Prisma 23 at 24

[97] For example the Health Act 63 of 1977, regulations in terms of the Mines and Works Act 27 of 1956 (now applicable in terms of the Minerals Act 50 of 1991)and the Road Traffic Act 29 of 1989

Chapter Two
South Africa's Air Pollution Control Legislation

2.1 Introduction

Prior to the enactment of the Atmospheric Pollution Prevention Act 45 of 1965, South African legislation provided only a limited degree of control over air pollution. This was done through the Public Health Act 36 of 1919, where air pollution was classified as a statutory nuisance to be regulated by local authorities and enforced by way of notice of abatement and criminal sanction. In 1958, a bill for air pollution control was introduced and in April 1965, the Atmospheric Pollution Prevention Act 45 of 1965 was promulgated.[1] The Act is based on the British Alkali etc Works Regulation Act of 1906 and the British Clean Air Act of 1956. At its inception the Act was administered by the Department of National Health and Population Development but it is now being administered by the Department of Environmental Affairs.[2]

2.2 The Atmospheric Pollution Prevention Act 45 of 1956

The Atmospheric Pollution Prevention Act (hereinafter referred to as the Act) provides for the uniform and comprehensive control of four different types of air pollution - pollution resulting from noxious or offensive gases, smoke pollution, dust pollution and pollution as a result of vehicle emissions. The Act draws a distinction between control aimed at regulating the source of air pollution and control aimed at regulating the emission itself and places more emphasis on control aimed at regulating the source of air pollution.[3] The approach adopted by the Act for regulation of air pollution is the 'best practicable means' approach. The merits and/or demerits of this approach would be examined later on in the chapter. The Act is divided into six parts which, deal

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[1] FR Fuggle and MA Rabie (eds) *Environmental Management in South Africa* (1996) 436

[2] Control was transferred in 1995 - M Kidd *Environmental Law: A South African Guide* (1997) 127

[3] Y Burns 'To Breathe or Not To Breathe: How Effective is Legislation Governing Air Pollution' 8 (1992) *Clean Air Journal* 5

with a knowledge of the problems concerning atmospheric pollution.[8] The powers of the chief officer and inspectors are set out in section 7 and include the power to examine without previous notice and at any time any process in which any noxious or offensive gas is used or produced and any apparatus for condensing any such gas or otherwise preventing the discharge thereof into the atmosphere for rendering any such gas harmless or inoffensive when discharged; to demand for the production of the registration certificate or provisional registration certificate issued in respect of such premises, and to apply such tests and take such samples and make such enquiries and investigations as appear to him to he necessary for the due performance of his functions under the Act.[9] Refusing to cooperate as well as obstructing the chief officer or inspectors from carrying out their duty constitutes an offence under the Act.[10]

2.2.2 Part II: Control of Noxious or Offensive Gases

This part relates to atmospheric pollution resulting mainly from industrial processes. Controlling noxious and offensive gases[11] is the direct responsibility of the chief officer. Section 8 provides for the declaration by the Minister of a controlled area. In 1968 the whole of South Africa was declared a controlled area.[12] Thus this Part of the Act is applicable to the whole of South Africa and so no scheduled process[13] can be carried on in any premises within any area in South Africa

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[8] Section 6(3)

[9] Section 7(1) (a), (b), & (c) of the Act

[10] Section 7(2)

'Noxious and offensive gases' is defined under the Act as '*any of the following group of compounds when in the form of gas, namely, hydrocarbons, alcohol, aldehydes, lectones, ether, esters, phenols, organic acids and their derivatives, halogens, organic nitrogen, sulphur and halogen containing antimony, arsenic, beryllium chromium, cobalt, copper, lead, manganese, mercury, vanadium or zinc or their derivatives, cement works, fumes and odours from purification plants, glue factories, cement works and meat, fish or whale processing factories, and any other gas, fumes or particulate matter which the Minister may by notice in the Gazette declare to be noxious or offensive gas for the purpose of this Act; and includes dust from asbestos treatment or mining in any controlled area which has not been declared a dust control area in terms of section 27.*

[12] GN R1776 GG 2179 4

[13] This means any works or process specified in the Second Schedule; The Second Schedule contains a list of seventy-one scheduled processes which include sulphuric acid processes, roasting processes, producer gas processes, amine processes, magnesium processes selenium processes, chlorine processes, hydrofluoric

without a registration certificate authorising the carrying on of such process in or on those premises[14] and where a person was carrying on a process on any premises prior to the declaration of the area as a controlled area, he must apply for a registration certificate within three months.[15]

Sections 9 (1) (b) & (c) goes on to provide for situations where a person wishes to erect, alter or extend any building or plant or existing building or plant which is intended to be used for the purpose of carrying on any scheduled process. In such situations the person must be a holder of a provisional registration certificate authorising him to make the alteration, erection or extension. The exception to this (and this only applies to a situation where there is a current registration certificate) is where the alteration or extension will not affect the escape into the atmosphere of noxious or offensive gas produced by the scheduled process in question.[16]

However before the Chief Officer can issue a registration certificate or provisional registration certificate he must be satisfied that the best practicable means[17] are being adopted for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases produced or likely to be produced by the scheduled process in question.[18] And in order for him to be satisfied, he is required by the Act to look at:-

- the nature of the process;
- the character of the locality in question;
- the purposes for which other premises in such locations are used;
- any other considerations which in his opinion have a bearing on the matter; and

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[14] Section 9

[15] Section 9 (1) (a) (ii)

[16] Section 9 (1) (c)

[17] Defined by the Act to mean the provision and maintenance of the necessary appliances to that end, the effective care and operation of such appliances, and the adoption of any other methods which having regard to local conditions and circumstances the prevailing extent of technical knowledge and the cost likely to be involved may be reasonably practicable and necessary for the protection of any section of the public against the emission of poisonous or noxious gases, dust or any such fumes

[18] Section 10 (2) (i)

- whether the carrying on of that process in or on the premises in question would not be in conflict with any town planning scheme and operation or in course of preparation in respect of such locality.[19]

Where however the Chief Officer is not so satisfied he has to, by notice in writing, require the applicant to take the necessary steps within a period stipulated in the notice for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases produced or likely to be produced by the scheduled process.[20] A person found to be in contravention of the provisions of section 9 would be deemed to have committed an offence for which penalty is provided for under section 46 of the Act.[21]

A person may appeal to the Air Pollution Appeal Board where he is aggrieved by the decision of the Chief Officer[22] and section 13 (1) (b) goes on to provide that such a person may continue to carry on the scheduled process to which such appeal relates pending the decision of the Board on such appeal if such scheduled process was being carried on prior to the decision of the Chief Officer or the imposition by him of the requirement which is the subject of the appeal and if the Chief Officer has been satisfied that the escape into the atmosphere of gases produced by the said process is not or is not likely to give rise to a danger to the health of man and has granted permission that the carrying on of that process be continued.

2.2.3 Part III: Smoke Control

This part of the Act regulates the emission of smoke from industry and from residential and rural areas but only in respect of areas which, this Part has been declared to be applicable.[23] However,

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[19] Section 10 (4)

[20] Section 10 (2) (b)

[21] Section 9 (2)

[22] Section 13 (1) (a)

[23] Section 14(1)

the provisions of this Part do not apply to the State.[24]

A local authority must concur before the Minister can declare an area to be subject to smoke control under the provisions of this Act.[25] This is because the powers conferred by this part of the Act for the control of smoke in controlled areas is exercised by local authorities. But the Minister may, after consultation with the Minister of Finance and the local authority in question, direct that the powers of the local authority be transferred to the chief officer.[26] In addition, where a smoke control zone does not fall within the jurisdiction of a local authority , the Minister may appoint either the chief officer or an adjoining local authority to exercise the necessary powers.[27]

Where the Minister receives a report from NAPAC and is satisfied from the report that smoke is causing a nuisance, he may order that the powers with regards to smoke control be exercised by the chief officer if he believes that the local authority, under whose jurisdiction the area falls, has not taken any reasonable steps to prevent the continuation of the nuisance. But where the smoke does not emanate from a smoke control zone the Minister may declare the smoke control provisions of the Act applicable in the area to the extent necessary to prevent the continuation of the nuisance and in which case he may authorise the chief officer to regulate smoke control in that area.[28]

Local authorities are empowered under section 18 to make regulations prohibiting the emission of dark smoke; the installation alteration or extension of fuel-burning appliances; the removal of such appliances; the use or sale for use of solid fuel for a fuel-burning appliance; the regulation of records relating to fuel-burning appliances; the inspection of fuel-burning appliances and generally for the effective control of the emission or emanation of smoke from any premises. The regulations may

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[24] Section 47; Although the chief officer has intimated that parastatals such as Eskom and Sasol are bound - Fuggle & Rabie op cit (n. 1) 446

[25] Section 14(2)

[26] Section 14(3); see also section 14(4) where the local authority may also request the Minister to do so.

[27] Section 14(5)

[28] Section 14(6)

provide for penalties for any contravention or failure to comply with the provisions of the regulations and in the case of a first offence, a fine of two hundred rand is not to be exceeded and in default of payment, imprisonment for a period of six months and in the case of a second or subsequent offence a fine of one thousand rand or in default of payment, imprisonment for a period of one year.[29]

The First schedule to the Act contains a Ringelmann Smoke chart[30] which sets out the permissible density or colour of smoke. The installation in or on any premises of fuel-burning appliances[31] is prohibited, unless the appliance complies as far as is reasonably practicable to certain standards, that is the colour of the smoke is prescribed by regulation. However concessions are made for the unavoidable emission of dark smoke during the starting up, breakdown or disturbance of the appliance or for any fuel-burning appliance designed to burn pulverised solid fuel.[32] The prohibition does not also apply to the installation of a fuel-burning appliance in a dwelling house not to the situation where the installation was commenced or the agreement for its acquisition was entered into prior to a fixed date.[33] To install a fuel-burning appliance, a written notice must be given to the local authority or chief officer as the case may be.[34]

A plan providing for the construction of a chimney or other opening for carrying smoke, gases, vapours, fumes, grit, dust or other final escape from any building or for the installation of any fuel-burning appliance must be of such a height that is as far as practicable sufficient to prevent smoke

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[29] Section 18(4)

[30] The Ringelmann Smoke Chart which has been in use for over 90 years and is widely accepted for grading the blackness of black or gray smoke emissions. Within the past four decades, it has been used as the basis for "equivalent opacity" regulations for grading the optical density of emissions of colors other than black or gray - RW Boubel et al *Fundamentals of Air Pollution* (1994) 408

[31] 'Fuel-burning appliance' is defined as any furnace, boiler or other appliance designed to burn or capable of burning liquid fuel or gaseous fuel or wood, coal, anthracite or other solid fuel or used to dispose of any material by burning or to subject solid fuel to any process involving the application of heat - section 1(1)

[32] Section 15(1)(a)-(b)

[33] Section 15(3)

[34] Section 15(2)

or any other product of combustion form becoming prejudicial to health or a nuisance to occupiers of premises in the surrounding areas or in the case of a fuel-burning appliance that it is suitably sited in relation to other premises in the surrounding areas before it can receive approval from a local authority.[35]

The Act provides for situations where smoke or other products of combustion cause nuisance. However, because the Act does not define the word 'nuisance' interpreting what constitutes a nuisance is difficult and most often than not there is a measure of subjectivity present when either the local authority or chief officer is interpreting the term.[36] Section 17(1) provides that where a local authority is satisfied that smoke or any other product of combustion emanating from premises constitutes a nuisance to the occupier of the affected premises, the local authority is to serve a notice on the person responsible for the nuisance calling upon him to abate the nuisance within a specific period and to take steps to prevent the nuisance.

The Court may order a person who has failed to comply with an abatement notice to take such step as may be necessary to prevent a recurrence of the nuisance and failure to take the prescribed step within the specified time shall constitute an offence as well as empower the local authority to abate the nuisance and to recover costs.[37]

A person who receives an abatement notice form the local authority regarding the causation of a nuisance through smoke may appeal to the regional appeal board. The regional appeal board's decision is subject to a right of appeal to the air pollution board.[38]

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[35] Section 16(1)

[36] Fuggle & Rabie op cit (n. 1) 445

[37] Section 17(4)

[38] See section 25(1) - an appeal to the regional appeal board can either be directly upon service of a notice under section 17 or 19 or after making an appeal to the local authority which served the notice. An appeal to the regional appeal board must be made within 30 days after the date on which such notice was served or such decision was given

2.2.4 Part IV: Dust Control

South Africa is richly endowed with minerals and its past economy has been largely supported by the exploitation of these minerals.[39] Thus there are a large number of waste rock dumps, slimes dams and waste coal dumps. This accumulation of waste has constituted a major source of wind-borne dust on the dry Transvaal Highveld.[40]

Part IV of the Act provides for the control of dust from mine dumps and industrial processes not covered by Part II of the Act.[41] Abatement of dust is centered on control at the source of the nuisance and the Act provides for declaration of dust control areas by the Minister after consideration of a report by NAPAC and consultation with the Minister of Trade and Industry.[42]

The Act provides that a person in a dust control area who carries on any industrial process liable to cause, in the opinion of the chief officer, a nuisance to persons residing or present in the vicinity shall take prescribed steps or adopt the best practicable means for preventing such dust from becoming so dispersed or cause a nuisance.[43] Where dust emanates from the deposition of matter in excess of 20,000m3 in volume the owners or occupiers of land must carry out the directions of the chief officer with regard to the abatement of the dust nuisance.[44]

Where the Chief Inspector (as contemplated in the Mine Health and Safety Act, 1996) is of the opinion that a mine will cease operations within a period of five years, he must notify the Minister

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[39] G Grange 'The More Important Sources of Air Pollution In the Republic of South Africa & the Most Recent Control Policies Adopted by the Authorities' 8 (1991) *Clean Air Journal* 4 at 7

[40] Fuggle & Rabie op cit (n. 1) 446

[41] Examples of the this type of processes include sandblasting operations, dry powder spray painting, woodworking and carpentry shops and the handling of various chemicals in dry powder form - Fuggle & Rabie op cit (n. 1) 446

[42] See section 27; Fuggle & Rabie op cit (n. 1) 446

[43] Section 28(1)

[44] Section 28(1)

of Mineral and Energy Affairs and owner of the mine and advise the Minister of Environmental Affairs accordingly.[45] In addition the owner of a mining operation which, is due to cease operations cannot dispose of any mine assets before he has received a certificate from the chief officer stating that necessary steps have been taken or that adequate provision has been made to prevent the pollution of the atmosphere by dust emanating from the mine.[46] Where the owner disposes of the assets before without the prior consent of the chief officer he would be deemed to have committed an offence.[47]

The Minister is also empowered to control dust pollution. This can be done, after consideration of a report by NAPAC, by his issuing regulations prescribing steps to be taken to prevent the creation or continuation of a nuisance or to minimize the nuisance; provide for the inspection of premises within a dust control area by the chief inspector or an inspector; and prohibit the damage to any means adopted to prevent the dispersion in the atmosphere of matter which may cause a nuisance.[48] The Minister is also authorized to transfer powers and duties of the chief officer to the Director-General: Mineral and Energy.[49]

A person aggrieved by a notice served on him in respect of dust control may appeal to the Air Pollution Appeal Board within 30 days after service of the notice.[50] The board has the power to confirm, modify or set aside the notice and the decision of the board is final.[51]

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[45] Section 32(1)

[46] Section 32(2)

[47] Section 32(2)

[48] Section 33(1)

[49] Section 6(2)

[50] Section 35

[51] Fuggle & Rabie op cit (n. 1) 448

2.2.5 Part V: Control of Emissions From Vehicles

This part of the Act applies only in areas which, are under the jurisdiction of a local authority in respect of which they have been declared applicable by the Minister in consultation with NAPAC and the Premier of the province in which such areas are situated.[52] Where the Minister, after consideration of a report by NAPAC, is of the opinion that the local authority has not exercised its powers satisfactorily, he may after consultation with the Minister of Finance and the local authority concerned direct that the powers be exercised by the chief officer and the costs incurred by the chief officer may be recovered from the local authority in question.[53]

Control of emissions from vehicles is exercised in two ways:

1. A person authorised by a local authority may require the driver of a vehicle on a public road to stop to enable him carry out a prescribed examination of the vehicle; or
2. the authorised person may serve a notice on the registered owner of the vehicle to make it available for the prescribed examination.

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[52] Section 36(1)

[53] Section 36(4)

If after examining the vehicle, the authorised person is satisfied that the vehicle is emitting noxious or offensive gases contrary to the regulations, he shall notify the owner of the vehicle to take the necessary steps to prevent the emission and to make the vehicle available for re-examination. Any person who fails to stop; fails to co-operate; or interferes with or obstructs an authorised person is deemed to have committed an offence.[54]

Any person aggrieved by a notice served on him may appeal to the Air Pollution Appeal Board within fourteen days after receipt of a notice and the Board's decision to confirm, modify or set aside the notice is final.[55]

The Minister may make regulations providing for the use on a public road of vehicles emitting noxious or offensive gases or gases which are of a darker colour or greater density or specific content and he may also prescribe steps to be taken to prevent the emission of noxious or offensive gases and the methods to be applied to determine whether noxious or offensive gases are being emitted.[56]

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[54] Section 37

[55] Section 37(2)

[56] Section 39; The Minister made regulation on vehicle emissions applicable to certain local authorities - see GN R1651 of 20 September 1974, GN R1816 of 26 August 1983 and GN R517 of April 1974

2.2.6 Part VI: Penalties

Part VI provides for, *inter alia*, penalties. Specifically, section 46 states that a person convicted of an offence under this Act shall be liable in the case of a first conviction to a fine not exceeding five hundred rand or imprisonment for a period not exceeding six months and in the case of a second or subsequent conviction to a fine not exceeding two thousand rand or imprisonment for a period not exceeding one year.

2.3 Critical Analysis

Having examined the provisions of the Act we would now go on to look at the approach adopted by legislature to regulate air pollution and enforce compliance. The basis of regulation under the Act rests on the best practicable means approach and the use of abatement notice to enforce compliance with the final imposition of criminal sanctions in perpetual breach of compliance.

2.3.1 The Best Practicable Means

As stated previously the approach adopted by the legislators of the Act to implement control over air pollution is the 'best practicable means' approach (hereinafter referred to as BPM). BPM is defined in the Act[57] and may be summarised as follows: "the measures which are technically feasible and economically possible bearing in mind the well being of the people in the area of the plant."[58] It involves the emission standard strategy.[59]

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[57] Section 1

[58] Du Plessis(1971) 12 No.1 Codicillus in A Rabie *South African Environmental Legislation* (1976) 96

[59] See Chapter One at 11

This approach is based on practicable principles which include,

1. the need for a safe and healthy environment,
2. the fact that South Africa is a developing country,
3. the maintenance of a delicate balance between what is essential for a safe and healthy environment and what can be afforded, and
4. the determination of realistic emission levels for the normal operation of plants.[60]

It falls under the third fundamental objective of waste management - that is disposal of the residue in an environmentally acceptable and safe way and "focuses on 'end-of-pipe' solutions rather than incorporation of proactive measures...."[61] The essential elements of BPM was stated by Britain's Department of Environmental Affairs as follows:

1. No emission can be tolerated which constitutes a recognised health hazard, either short or long term;
2. emissions in terms of both concentration and mass must be reduced to the lowest practicable amount taking into account local conditions and circumstances, current state of knowledge on control technology and effects of substances emitted, financial considerations and the means to be employed;
3. having secured the minimum practicable emissions the height of discharge must be arranged so that the residual emission is rendered harmless and inoffensive by dilution and dispersion.[62]

As applied in South Africa, no ambient air quality standards are set and so the degree of air pollution tolerated depends upon the discretion of the current Chief Officer of the country.[63] The Chief Officer has given the interpretation of his task under BPM as follows: "... to assess the

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[60] Press Release, Department of National health and Population Development 17 Sept 1990 in: Fuggle & Rabie op cit (n. 1) 437

[61] Kidd op cit (n. 2) at 128-9

[62] I & J Baker (eds) *Clean Air Round The World: The Law & Practice of Air Pollution Control in 14 Countries in 5 Continents* (1988)

[63] Fuggle & Rabie op cit (n. 1) 439-40

problems of air cleaning associated with each type of process of which there may be many examples in the country and to decide what degree of air cleaning can be achieved bearing in mind the different techniques which these costs will have on the ability of the firms concerned to operate without financial loss."[64]

The BPM approach as it is used in the Act is focussed on controlling the sources of pollution and it does this by laying down a specification standard for the type of equipment, type of construction or particular method to be used in reducing pollution.[65] This standard determines that only pollution control equipment which meets certain design requirements may be used in operating certain processes that are responsible for air pollution and that grant of a permit to carry out a scheduled process or install a fuel-burning appliance, is subject to the polluter complying with certain minimum specification standards.[66]

The results of the BPM approach is that the Act seems to put what is economically affordable for control of air pollution above what is best for the environment thus undermining its aim of controlling air pollution. This is because the Chief Officer has to bear in mind the costs associated with the installation and operation of the air cleaning devices and the effects these costs will have on the ability of the industries concerned to operate without financial loss. It does not promote a holistic approach to the prevention of pollution.[67]

Furthermore the burden is left on the Chief Officer to find out the best technique for air cleaning and the degree of air cleaning which can be achieved; which means the "the degree of industrial pollution tolerated will depend almost entirely upon the discretion of the Chief Officer"[68] and as

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[64] Boegman (1972) 1 No. 2 Clean Air Journal in: Fuggle & Rabie op cit (n. 1) 439

[65] Rabie op cit (n. 58) 95

[66] ibid

[67] Republic of South Africa *Report of the Three Committees of the President's Council on a National Management System* (1991) 62

[68] Fuggle & Rabie (n. 1) 440; Cf Rabie op cit (n. 58) 96-97

such the degree of industrial air pollution tolerated would differ in different parts of the country.[69] It also means that "instead of placing the onus on the [polluter] to discover and develop new control methods, the burden of enduring the [air pollution] is on the public while the polluter waits for someone else to come up with the answer"[70]

The Chief Officer is also given a tremendous amount of power over industries. In other words it is as if to say his word is law. This can create a lot of problems for industries and also for the country if the wrong person is appointed to the position particularly where such a person lacks integrity.[71]

In addition, the BPM approach needs close monitoring in order to be effective. This is a problem because there is a dearth of manpower to carry out the arduous task of inspection of premises where scheduled processes are being carried out to ensure compliance with the terms of the certificate.

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[69] Kidd op cit (n. 2) at 128 where he said that "the best practicable means approach obviously differs according to the circumstances which means that there are no uniform nationwide standards of air cleanliness"

[70] Rabie op cit (n. 58) at 97

[71] ibid

However this is not to say that the BPM approach does not have any merits. The approach as administered under the Act allows for flexibility and is a sensitive means of achieving a balance between costs and benefits of control.[72] It is also very adaptable because the demands that are made on industries in applying the BPM of air pollution control can be increased as improved methods of air pollution control are discovered[73] ; thus as technology improves the Chief Officer can under section 12 (2) and (3) require the holder of a registration certificate to take steps to ensure the more effective operation of his appliances for the prevention of air pollution or simply the more effective prevention of air pollution.[74] And where the holder refuses or fails to take the necessary steps during the period of notice given to him, he would have his registration certificate cancelled or suspended.[75]

In addition to its flexibility, the concept has the advantage of being a realistic approach to the problem of air pollution for as Rabie points out,

> "it is unrealistic to set certain standards if there are no practicable means by which they can be achieved, particularly where there are so many and varied industrial processes."[76]

2.4.2 Use of Administrative/Criminal Sanctions

Abatement notices are used in the first instance to achieve the purpose of the Act failing which resort is then made to criminal sanctions to enforce compliance.[77] Abatement notices are proactive in nature and so of greater advantage when compared to the use of criminal sanctions which is

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[72] Baker op cit (n. 62) 127

[73] See Section 12 (2) & (3); Rabie op cit (n. 58) 96; Cf Kidd op cit (n. 2) 128

[74] Rabie op cit (n. 58) 98

[75] Section 12 (4) of the Act

[76] Rabie op cit (n. 58) 98

[77] C Loots 'Making Environmental Law Effective' 1 (1994) *SAJELP* 17; However the use of abatement notice does not extend to pollution through dust and vehicle emission fumes.

reactive in nature. It calls upon the receiver to cease his potentially harmful activity or to take precautionary measures to minimize harm.[78] However as previously stated, where the abatement notice fails to achieve compliance, the offender would be deemed to have committed an offence and liable to conviction under the Act. A person convicted of an offence under the Act is liable in the case of a first conviction to a fine not exceeding five hundred rand or imprisonment for a period not exceeding six months and in the case of a second or subsequent conviction to a fine not exceeding two thousand rand or imprisonment for a period not exceeding one year.[79]

The penalty imposed is obviously not strict enough to serve as a deterrent, for many industrialists would rather risk the fine knowing that it is quite minimal (and can even be regarded as the cost of doing business[80]) than go through the 'tedious' process involved in applying for a registration certificate or adopting clean up operations and technologies.[81] Apart from this criminal sanctions have been found to be ineffective in South Africa due to certain reasons[82]:

1. Inadequate policing of prohibited activities which is made worse by the fact that there are no sufficient officials to keep a check on these activities and even the regular police generally have no knowledge of this type of crime and so do not include it in their sphere of activities.
2. There is virtually no public awareness of the threat to the environment and so most members of the public do not know what constitutes an environmental offence. This is even more so with the cumbersome nature of the Act and indeed many other Acts which deal with environmental protection.
3. Investigating offences against the environment is difficult and usually many of the

[78] Loots op cit 22

[79] Section 46

[80] Fuggle & Rabie (n. 1) 44

[81] Y Burns 'To Breathe or Not to Breathe: How Effective is Legislation Governing Air Pollution?' 8 (1992) *Clean Air Journal* at 6

[82] Loots op cit (n. 77) 17-18

investigating officers do not have a specialized knowledge of the particular aspect of the environment with which they are concerned and particularly with regards to the procedures to follow and what evidence is required to obtain a conviction.

4. Most prosecutions have failed because the prosecutors have no knowledge of the law and it is often difficult to meet the criminal law standard of proof which, is to prove the commission of the offence beyond all reasonable doubt.

Thankfully the Chief Officer is not limited to criminal sanctions as a means of enforcing the provisions of the Act. The use of interdicts is now a more likely means of enforcing compliance with the provisions of the Act. This occurred recently in the case of *Minister of Health & Welfare v. Woodcarb (Pty) Ltd. & anor*[83] where the court granted an interdict on the application of the Minister of Health and Welfare. The Respondents had contended that the Act did not authorise the Applicant to take civil action to enforce its provisions because the applicant was limited to specific criminal penalties as provided in the Act. However the court was of the opinion that since the Act contains no specific 'remedies' which an applicant or interested party could invoke to stop a person from contravening it, one cannot use the principle that the Act is exclusive as to what may be done to enforce its provisions.[84]

The use of the common law remedy of interdict is important particularly for control of atmospheric pollution because it is proactive in nature and unlike the use of criminal sanctions would be a higher deterrent because for as long as the interdict exists the offender is at an economic disadvantage and as such there would be a higher likelihood of compliance with the conditions stated under the Act. It is also useful for regulating future conduct as opposed to the use of criminal sanctions.[85]

[83] 1996 3 (SA) 155 (N)

[84] See pg 160-161; the court based its opinion on the reasoning of the courts in *Mandrassa Anjuman Islamia v. Johannesburg Municipality* 1917 AD 718 in which the courts stated that to exclude the right of the court to institute an interdict where special remedies are provided by statute could in many instances deprive an injured person of the only effective remedy it has and that the interdict is applicable to future and continuing breaches and the statutory remedy of prosecution and punishment to past breaches and so the two sanctions can therefore co-exist without any conflict.

SC McCaffrey & R E Lutz (eds) *Environmental Pollution and Individual Rights: An International Symposium* (1978)107

Chapter Three

Air Pollution Regulation in the United States of America, United Kingdom & Australia

3.1 Introduction

In this chapter the air pollution legislation of the United States of America, United Kingdom and Australia would be examined with a view to offering a comparative analysis in the following chapter. We would examine the provisions of the relevant legislation of each country before taking a looking at the particular approach adopted by the legislature to control air pollution as well as the means of enforcing compliance with the provisions of the legislation.

3.2 Air Pollution Regulation in the United States of America

3.2.1 General Background

The United States is made up of 50 states[1], the District of Columbia[2] and four territories[3]. The US Constitution divides governing authority between three branches of the federal (national) government: executive, legislative and judiciary. Each of these branches play a role in environmental law and in addition the 50 states exercise authority in many areas of environmental law.[4] Local governments also exercise authority after delegation of power from the state. However as would soon be seen, environmental law is largely implemented by administrative agencies through permit programmes.

3.2.2 Air Pollution Control in the United States of America

With regards to air pollution control, Congress started with the enactment of the Air Pollution

[1] That is the 48 contiguous states plus Alaska and Hawaii

[2] Which is the capital, Washington DC

[3] Puerto Rico, the Virgin Islands, Guam and the Northern Mariana Islands

[4] M Bocs (ed) *Encyclopedia of Laws Environmental Law* Vol. 3 (Suppl. 14, September 1997) 16

Control Act 1955 which, focused primarily on researching the growing air pollution problem. In 1963, the first Clean Air Act was passed[5] followed by the Air Quality Act of 1967.[6] However because this new Act lacked adequate enforcement power, the Clean Air Act, 1970 was enacted.[7]

The United States Environmental Protection Agency (EPA)[8] has jurisdiction over the Clean Air Act. The Agency is headed by an Administrator appointed by the President and has regional offices in ten regions throughout the country, each with jurisdiction over permits and enforcement in its group of states.[9] Although the states have enacted statutes pursuant to their police power dealing with nearly all facets of environmental law, certain areas are preempted by federal law including air quality controls for motor vehicles. Let us now look at the provisions of the Clean Air Act, 1970 as amended.

3.2.3 The Clean Air Act, 1970

The Clean Air Act, 1970 (hereinafter referred to as CAA) provides for cooperative federal-state enforcement except in three major areas where federal law preempts the states' new motor vehicles, aircraft and the fuels they use.[10] The Act requires the United States Environmental Protection Agency to identify air pollutants 'emissions of which ... cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare' to be

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[5] This Act signalled a gradual departure form local and state control toward a more centralized federal control -1 Frank P. Grad. Treatise on Environmental Law § 2.03[1] in: DF O'Sullivan 'The Clean Air Act Amendment of 1990: Permits and Enforcement - The Gut of the New Law' 18 (1992) *University of Dayton Law Review* 275 at 279

[6] Which was the first law to authorize a full scale federal air quality regulatory program - 3 Mark Squillace Environmental Law: Air Pollution 41 (1988) in: DF O'Sullivan op cit 280

[7] A English, Comment, State Implementation Plans and Air Quality Enforcement 4 (1975) *Ecology LQ* 595 in: DF O'Sullivan op cit 280

[8] The EPA was created in 1970 by the executive order of President Nixon; see DF O'Sullivan at 280

[9] Boes op cit (n. 4) 27

[10] When enacting the CAA, Congress determined that three major sources of air pollution - new motor vehicles, aircraft and the fuels that these sources use, would best be controlled at the federal level. This was as a result of the perceived need for uniformity in regulating those sources known collectively as mobile sources. herefore the Act provides for federally-established emission standards for new vehicles and fuel standards as well as emission standards or aircraft - Boes op cit (n. 4) 50

controlled and to prescribe standards for exposure to these pollutants.[11] In other words, to issue air quality criteria indicating the adverse effect of that pollutant, alone or in concert with others and set National Ambient Air Quality Standards[12] for each such pollutant.[13] These pollutants are known as 'criteria pollutants' and the six that have been identified by the Agency are carbon monoxide, sulfur dioxide, nitrogen oxide, photochemical oxidants or ozone, particulate matter or fly ash and lead.[14]

3.2.3.1 National Ambient Air Quality Standards

National Ambient Air Quality Standards are divided into primary and secondary standards. The former is one 'requisite to protect the public health' while the latter is a stricter standard 'requisite to protect the public welfare' including effects of the pollutant on crops, trees, livestock, buildings and the like.[15] The Act requires the EPA to review both criteria and standards at five-year intervals to ensure their continued validity and appropriateness.[16]

It must be pointed out that the standards determine the acceptable quality of air throughout the United States and as such do not indicate the limits on emissions from any one source. To accomplish this, provision is made for the State Implementation Plan (SIP) together with new source performance standards. Thus each state is required to prepare and submit to the EPA an implementation plan or SIP[17] for each of the six criteria pollutants.[18] Once these plans are approved by the EPA, they have the effect of federal law. The EPA may disapprove a SIP as

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[11] 42 USC § 7408(a)(1)(A)

[12] These are limits set by the EPA for air pollutants and are applicable to ambient air. They state the maximum permissible concentrations in outdoor air - VR Patton-Hulce *Environment and the Law: A Dictionary* (1995) 205

[13] However, the states actually set specific emission standards for smokestacks and other stationary sources of pollution and issue permits embodying these levels.

[14] Boes op cit (n. 4) 52

[15] 42 USC § 7409(b)(1), (2)

[16] 42 USC § 7409(d)

[17] Each SIP is to contain enforceable emission limitations and other control measures such as economic incentives, compliance schedules, monitoring, reporting and enforcement mechanisms and similar strategies - 42 USC § 7410(a)(2)

[18] 42 USC § 7410(a)(1);

not adequate to meet the goals of the Act and where it does this it must adopt an implementation plan of its own for that pollutant.[19]

3.2.3.2 Stationary Sources

The Act distinguishes between stationary, mobile and indirect sources and also between new and existing sources. New stationary sources[20] are held to considerably stricter standards than existing sources.[21] They have been required to obtain permits (specifying the exact quantities of pollutants discharged) since the inception of the Act, while existing sources were only subject to emission limitations and have only required permits since the 1990 amendments.[22] In addition they must also meet far more stringent limits. For instance, in non-attainment areas,[23] new sources must meet the lowest achievable emission rate (LAER),[24] while in attainment areas[25], new sources must meet the somewhat less severe standard of best available control technology (BACT).[26] Existing sources need only employ a reasonably available control technology (RACT).[27]

In 1977 following the prevention of significant deterioration (PSD) issue,[28] the Act was amended to require each state to divide its attainment areas for each criteria pollutant into three levels or zones. In class I zones few new sources are to be allowed. More are permitted in class

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[19] 42 USC § 7410(c)

[20] Defined to include both new sources built after adoption of a standard or performance and older sources discharging increased amounts of pollutants

[21] 42 USC § 7411(a)(2)

[22] 42 USC § 7661a

[23] These are regions in which the level of a criteria air pollutant is higher than the level allowed by the federal standard - B Callaghan *The Plain English Guide to the Clean Air Act* (1993) 22

[24] 42 USC § 7501(3)

[25] These are regions in which levels of a criteria air pollutant meet the health-based primary standard for the pollutant - Callaghan op cit 21

[26] 42 USC § 7479

[27] 42 USC § 7502(c)(1)

[28] This issue here was that whether new sources in attainment areas may reduce air quality to the level of the primary standard

II and in class III new sources may reduce air quality to the level of the primary standard.[29] The Agency's rules allow stationary sources in both attainment and non-attainment areas to offset increased emissions from a new smokestack against reductions from other outlets as long as there is a net reduction in emissions.[30]

3.2.3.3 Hazardous Air Pollutants

With regards to hazardous pollutants, the 1970 Act defines these as pollutants that cause or contribute to air pollution reasonably anticipated to result in greater mortality or serious illness.[31] Previously the Agency was empowered to identify these pollutants and adopt standards with an ample margin of safety to protect public health.[32] Unfortunately this was difficult to achieve because the severity of the standard set threatened industries like oil refining, coke production and copper smelting. In the end very few hazardous pollutants were named and very few standards were adopted. At present, the 1990 amendments has tried to provide a solution by altering the prior standard to that of maximum achievable control technology (MACT) and also imposing requirements to prevent accidental releases of hazardous air pollutants and to minimize their damage.[33]

3.2.2.4 Mobile Sources

With regards to mobile sources[34], standards are set by the federal government thus the controls required are quite different from that of stationary sources. The CAA specifies the reductions in hydrocarbons, carbon monoxide and nitrogen oxide to be achieved by light-duty cars and trucks.[35] Buses and trucks are to be controlled under regulations to be promulgated by the EPA.[36] Apart from this new automobiles have been required since 1970 to be equipped with

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[29] 42 USC §§ 7471 - 7475

[30] This is known as the bubble concept; see Chapter one at 14 - 15

[31] Former 42 USC § 7412 (1970)

[32] Former 42 USC § 7412 (1970)

[33] 42 USC § 7412(d)(2) and 7412(r)

[34] New motor vehicles and aircraft

[35] 42 USC § 7521

[36] 42 USC §§ 7541(j)(4), 7554

catalytic converters to control their exhaust emissions subject to warranty for five years or 50,000 miles whichever is longer.[37] The 1990 amendments extended the warranty period as to catalytic converters required for 1995 and later models to eight years or 80,000 miles.[38] Under the Act, manufacturers must certify that their vehicles meet the statutory mandates and are subject to random testing.[39] Section 7543(b) allows for situations where a state is free from the statute's preemption of stricter state regulation as long as the state in question has regulations requiring low-emissions vehicles considerably in excess of the Act's requirements.

In addition, the Act now contains provisions requiring the Agency to adopt rules regarding clean fuel vehicles such as natural gas or electric cars.[40] Fuel is also exclusively regulated by the EPA under the Act and the EPA's phase-out of lead as an additive to gasoline was sustained by the courts in 1976.[41]

States are also involved with the issue of vehicle emission control for they may regulate in-use vehicles as well as vehicle traffic in their SIPs through the mechanism of a transportation control plan (TCP) for areas that have not attained the Act's ambient air quality standards for automative-related pollutants.[42] The TCPs have included limits on parking, tolls, high-occupancy vehicle lanes and the like.[43]

3.2.2 Enforcement

The CAA is largely enforced through abatement orders and civil penalties that the EPA is empowered to impose as well as criminal penalties and injunctive orders.[44] Under section 7413 (a)(1), the Administrator is to notify any person who is found to be in violation of any

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[37] 42 USC § 7541

[38] 42 USC § 7541(i)(2)

[39] 42 USC § 7525

[40] 42 USC §§ 7581 - 7590

[41] 42 USC § 7545; See Ethyl Corp v. EPA, 541 F2d 1 (DC Cir. 1976) certerorari denied

[42] Boes op cit (n. 4) 56

[43] ibid

[44] 42 USC § 7413

requirement of an applicable implementation plan of the violation of that plan and if the violation extends beyond the 30th day after the issue of the notification, the Administrator may issue an order requiring such a person to comply with the requirement of the plan or he may bring a civil action. For violations by owners or operators of major stationary sources, the Administrator shall in such cases and may in other cases, commence civil action for a permanent or temporary injunction or to assess and recover a civil penalty of not more that $25,000 per day of violation or both.[45]

Under section 7413 (c) (1), a person who knowingly violates any requirement of an applicable implementation plan during any period of federally assumed enforcement[46] or more than 30 days after having been notified by the Administration of the violation or violates other sections of the Act[47] shall be punished by a fine of not more than $25,000 per day of violation or by imprisonment for not more than one year or by both and for subsequent convictions, a fine of not more than $50,000 per day of violation or by imprisonment for not more than two years or by both.

Under section 7603, the Administrator, upon receipt of evidence that a pollution source or combination of sources (including moving sources) is presenting imminent and substantial endangerment to the health of persons and that appropriate State of local authority have not acted to abate such sources, may bring a suit on behalf of the United States to immediately restrain any person causing or contributing the alleged pollution. Where it is not practicable to assure prompt protection of the health of persons solely by commencement of such a civil action, the Administrator may issue orders as may be necessary to protect the health of persons who are or may be affected by such pollution source (or sources)after consultation with the

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[45] 42 USC § 7413 (b)

[46] A period of Federally assumed enforcement occurs when the Administrator finds that the violations of an applicable implementation plan are so wide spread due to a failure from the State to enforce the plan effectively. If after notifying the State and the failure still extends beyond the 39th day after such notice, the Administrator is to give public notice of such finding. The period beginning with such public notice and when the State satisfies the Administrator that it will enforce such plan is regarded as Federally assumed enforcement - 42 USC § 7413 (a) (2)

[47] Violation of § 7419 - which relates to primary nonferrous smelter orders; § 7411(e) - which relates to the violation of any standard of performance applicable to existing sources; § 7412(c) which relates to emission standards for national emission standards for hazardous air pollutants; § 1857c - 10(g); §7420(b)(7) or (d)(5) and any requirement of part B - which relates to ozone

State and local authorities.[48] A wilful violation or failure or refusal to comply with any order issued by the Administrator may result in a fine of not more than $5,000 for each day during which such violation occurs or failure to comply continues after an action in the appropriate United States district court to enforce the order.

A vital and innovative provision of the Act furnishes any citizens with standing to bring an injunction action to restrain violations of an emission standard or limitation or to direct the EPA to perform a non-discretionary duty.[49] This citizen suit provision finesses the ordinary standing requirements imposed by the courts. Federal instrumentalities are specifically made subject to state enforcement, including state permit requirement unless expressly exempted by the President in the 'paramount interest of the United States'.[50] In addition the federal government is precluded from contracting with convicted violators of the Act.[51]

3.3 Approach Adopted by the United States of America

3.3.1 Market Approach

The United States has adopted the market approach as her technique for controlling air pollution. The market approach basically involves allocating pollution rights to a business in the form of permits with the major incentive being the tradeability of the permits. Under the 1990 amendments to the Clean Air Act, the permit program (which is the main focus of the amendments) is regarded as the key to effective enforcement and implementation of the law.[52] The permit includes all of a source's obligations under the Clean Air Act. The incentive created as a result of the permit program is such that the Clean Air Act Amendment Act 1990 authorizes emission allowances and emission trading and permit a facility to shift allowances

[48] Such orders shall be for a period of twenty-four hours unless the Administrator brings an action before the expiration of such period which then means that the order shall be effective for a period of forty-eight hours or such longer period as may be authorized by the court pending litigation or thereafter.

[49] 42 USC § 7604

[50] 42 USC § 7418

[51] 42 USC § 7606

[52] O'Sullivan op cit (n. 5) 285

from one source to another.[53]

In some locations a new facility may be able to begin operations by purchasing emissions that are not being used by an existing source.[54] So if a source wishes to emit only 100 tons of a particular pollutant, it may have to buy an allowance of 150 tons.[55] This is a way of retiring some of allowances so the area can attain compliance. If it wants to emit more than 100 tons, the new source will have to obtain credits from another facility within the same air control region.[56] This is an extension of the bubble concept as it was originally conceived because the entire area is perceived as being within a bubble.[57]

The ultimate goal of the market approach is to allow for flexibility in industries. At the facility level, the operator may shift financial resources to control emissions without decreasing the total amount released, so emissions trading can sometimes result in innovative approaches to pollution control.[58]

3.3.2 Use of Administrative, Civil and Criminal Penalties

The 1990 Amendments substantially improved the old enforcement provisions by creating more effective mechanisms for enforcement and increasing both civil and criminal penalties. It was realised that aggressive enforcement is the key to a clean environment thus the need was seen to increase enforcement efforts and penalties for violation so these penalties would not only punish offenders but also deter future violations.[59] The CAA relies on the use of administrative,

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[53] ibid

[54] VR Patton-Hulce *Environment and the Law: A Dictionary* (1995) 59; But in nonattainment areas, a new source will probably not be permitted to use all of the allowances it purchases.

[55] ibid

[56] ibid

[57] ibid

[58] Patton-Hulce op cit (n. 54) 124

[59] 1990 Council on Environmental Quality Annual Report 144 in DF O'Sullivan 'The Clean Air Act Amendment of 1990: Permits and Enforcement - The Gut of the New Law' 18 (1992) *University of Dayton Law Review* 275 at 303

civil as well as criminal penalties for enforcing its provisions. The principal enforcement mechanisms are compliance orders, administrative penalties, field citations[60] and civil actions.[61]

Through administrative proceedings, the EPA can impose civil penalties of up to $25,000 per day for each violation and may impose administrative penalty for both past and present violations after issuing compliance orders to the violator.[62] The compliance order must state the nature of the violation and specify a deadline for compliance and it does not prevent the EPA from taking other enforcement actions against the violator thus providing the EPA with discretion on how to ensure compliance.[63] It may choose to rely solely on the compliance order or it may choose to pursue other avenues of enforcement at well. This mode of enforcement has the advantage of being faster, less costly and more beneficial to the environment.[64]

Violations may also result in criminal penalties. A person or organisation who knowingly releases pollutants into the air placing another in imminent danger of death or serious bodily injury can face up to 15 years imprisonment and a $250,000 fine and in the case of organisations $1,000,000 fine.[65] In addition citizens may bring suit in federal district court after giving 60 days notice of intent and injunctive reliefs may be granted or civil penalties of up to $25,000 per day violation may be imposed. The courts may also decide to award litigation costs to the citizen bringing the suit.

3.4 Air Pollution Regulation in the United Kingdom

3.4.1 General Background

The United Kingdom is made up of the countries of England, Wales and Scotland together with

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[60] This is a new enforcement option available to the EPA under the administrative penalty. They are a sort of environmental traffic ticket in that both the violation and the fine involved are minimal. It provides the EPA's officers and employees with authority to assess penalties for minor violations at the time of the violation and penalties of up to $5,000 may be assessed under this option - O'Sullivan op cit 306

[61] O'Sullivan op cit 305 - 6

[62] O'Sullivan op cit 305

[63] O'Sullivan op cit 305

[64] DF O'Sullivan op cit (n. 59) 305

[65] GI McGregor *Environmental Law and Enforcement* (1994) 19

Northern Ireland. There is no general body of law in England and Wales which deals with environmental matters thus environmental law has developed on a sectoral basis.[66] However with the realisation in recent years of the important inter-relationship of environmental controls, modern legislation has evolved on the basis of common regulatory principles.[67] Criminal offences imposing strict liability, a common licensing system, enforcement mechanisms such as notices and powers for the authorities to revoke licences and to undertake remedial measures at the cost of the person involved appear in most modern environmental statutes.[68]

3.4.2 Air Pollution Control in the United Kingdom

Air pollution has been a major issue in the United Kingdom for many centuries. For as far back as the thirteenth century, regulations were enacted forbidding the use of sea coal in London.[69] Prior to 1990, legislation governing atmospheric pollution from stationary sources was to be found in a variety of statutes made up of two major regimes. The first was that under Her Majesty Inspectorate of Pollution (HMIP). This body enforced legislation controlling noxious emissions from certain industrial processes under the provisions of the Alkali etc Works Regulation Act 1906, the Health and Safety at Work Act 1974 and their Regulations. The second is that controlled by the environmental health department of local authorities under separate legislation - Part III of the Environmental Protection Act 1990, the Clean Air Act, 1956 and 1968 and Part IV of the Control of Pollution Act 1974. With regards to atmospheric pollution from mobile sources, much of the legislation controlling this is derived from the EC.

Presently, a new pollution control regime has been established by the Environmental Protection Act, 1990 - integrated pollution control - for prescribed industrial, commercial and other processes to be operated by Her Majesty's Inspectorate of Pollution and a parallel regime providing for local authority control of air emissions from a second tier of less polluting

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[66] Boes (ed) *Encyclopedia of Laws Environmental Law* Vol. 3 Suppl. 2 (April 1992) 41

[67] ibid

[68] ibid

[69] Boes op cit (n. 66) 43

processes.[70] Under the new system, HMIP controls releases to air, water and land from the most polluting industrial processes.

3.4.3 Integrated Pollution Control & the new Local Authority Air Pollution Controls

The Environmental Protection Act 1990 (hereinafter referred to as EPA) provides for integrated pollution control along the lines of relevant EC legislation on air pollution. The latter requires authorisations to be granted by the competent national authorities for emissions from certain industrial plants. It also introduces the new concept of integrated pollution control, under which controls over certain processes will take account of discharges to water, land and air.The Secretary of State for the Environment has power to designate processes which, are to be controlled centrally by Her Majesty's Inspectorate of Pollution (HMIP) or locally by local authorities. In addition he may also prescribe for control substances arising from those processes. The Environmental Protection (Prescribed Processes and Substances) Regulations 1991[71] designates prescribed processes and substances for control in relation to air, water and land respectively.[72] Each category of processes is divided into Part A and Part B. Processes under Part A are controlled by HMIP for the purposes of preventing or minimising pollution of any environmental medium and those under Part B are controlled by local authorities for air pollution purposes only. The Secretary of State may transfer local authority functions (in relation to air pollution only) to HMIP, in relation to all or any categories of prescribed processes or in relation to a particular process on a particular site.[73] Section 3 empowers the Secretary of State to set emission limits and environmental quality standards and to make statutory plans for, *inter alia*, establishing limits for the total amount of any substance which may be released into the environment so as to progressively reduce pollution of the

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[70] Preliminary Notes Halsbury's Statutes 4th ed Vol 35 at 6

[71] Which came into force in England and Wales on 1 April 1991 and in Scotland on 1 April 1992

[72] These processes include fuel production processes, combustion processes, metal production and processing, processes involving asbestos, cement and lime manufacture and other associated processes, ceramic production including heavy clay goods, salt glazing, petrochemical processes, acid processes including manufacturing and/or releases to atmosphere of sulphur or nitrogen oxides, incineration, tar and bitumen processes, timber processes including chemical treatment, preservatives and the treatment and processing of animal and vegetable matter - see the Environmental Protection (Prescribed Processes and Substances) Regulations 1991 as amended

[73] See section 4(4) of the EPA, 1990

environment.

3.4.3.1 The Authorisation Procedure

Under section 6 of the EPA, 1990 a person must obtain authorisation for certain prescribed processes. The authority must determine an application within four months beginning with the day on which it was received or such longer period as may be agreed with the applicant. However, the Secretary of State may substitute a period or periods other than 4 months for this purpose and has done so in relation to certain part B processes.[74] The enforcing authority may either refuse the application or grant it subject to conditions. The authority must not grant the application unless it considers that the applicant will be able to carry on the process so as to comply with the conditions which, they would include in the authorisation. Enforcing authorities are required to review the conditions of authorisations periodically and not less than once in every four years unless the Secretary of State substitutes another period.

The conditions which may be included in authorisations are those that are necessary to achieve certain statutory objectives and directions given by the Secretary of State or enforcing officer, such as ensuring that the best available techniques not entailing excessive cost will be used - i) for preventing or reducing to a minimum the release of substances prescribed for any environmental medium into that medium; ii) for rendering harmless any other substances which might cause harm[75] if released into any environmental medium; and iii) for minimising the

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[74] See section 6(7)

[75] 'Harm' means any harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes offence caused to any of his senses or

pollution which may be caused to the environment[76] taken as a whole by the releases having regard to the best practicable environmental option available as respects to substances which may be released.[77]

To the extent not covered by express conditions, a condition is implied in every authorisation that in carrying on a process best available techniques not entailing excessive cost (BATNEEC) must be used for preventing or reducing to a minimum the release of substances prescribed for any environmental medium into that medium and for rendering harmless any such substances or any other substances which if released might cause harm to any environmental medium.

harm to his property; and 'harmless' has a corresponding meaning.

[76] The 'environment' consists of one or more of the following media: air, water and land and there are detailed rules for determining what is included in those media; 'Pollution of the environment' means pollution of the environment due to the release (into any environment medium) from any process of substances which are capable of causing harm to man or any other living organisms supported by the environment

[77] This objective only applies in the case of processes under the control of HMIP which are likely to involve the release of substances into more than one environmental problem - section 7(7) EPA 1990

Enforcement

Enforcement may be in the form of an enforcement notice or prohibition notice. The former is issued where the enforcing authority is of the opinion that the person is contravening or is likely to contravene any condition of his authorisation while the latter is issued where the enforcing authority is of the opinion that a process involves an imminent risk of serious pollution of the environment.[78] Failure to comply with any of the notices constitutes an offence for which a person can be summarily convicted and liable to a fine not exceeding £20,000 or to imprisonment for a term not exceeding three months or to both and on conviction on indictment to a fine or to imprisonment for a term not exceeding two years or both.

Section 23 contains provisions which, relates to offences essentially constituting failures to comply with the various obligations imposed by the IPC structure. A person may be found liable either summarily or on indictment. The offences relate to contravention of the conditions in authorisations, failure to comply with the requirements of a notice, intentionally making a false entry in any record forging or using a document issued or authorised to be issued under section 7 and failure to comply with a court order made under section 26. The penalty for these offences are fines which range between £5000 and £20000 and/or terms of imprisonment which range between three months and two years. However if the authority considers that criminal proceedings would be ineffectual, the authority may bring civil proceedings for an injunction including interlocutory relief.[79]

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[78] Section 13 and 14 of the EPA, 1990

[79] JD Lecson *Environmental Law* (1995) 59

3.4.4 Controls by Local Authorities

Air pollutants as a result of smoke, grit and dust from furnaces are controlled by local authorities. In practice the enforcement powers of the local authorities are delegated to Environmental Health Officers (EHO). The provisions for controlling atmospheric pollution from these pollutants are contained in the Clean Air Act of 1993 which consolidated principally the Clean Air Acts of 1956 and 1968 and Part IV of the Control of Pollution Act 1989.[80] The Act is divided into seven parts - Part I deals with dark smoke, Part II deals with smoke, grit, dust and fumes, Part III deals with smoke control areas, Part V deals with information about air pollution, Part VI deals with special cases and Part VII contains miscellaneous and general matters.

3.4.4.1 Dark Smoke

Dark smoke is defined as smoke which, on comparison appears to be as dark or darker than shade 2 on the Ringlemann chart.[81] Under section 1(1) of the Clean Air Act 1993, it is an offence for dark smoke to be emitted from the chimney of any building (or any boiler or industrial plant attached or fixed to or installed on land). Similarly, under section 1(2) of the Clean Air Act 1993, an occupier of industrial or trade premises commits an offence if dark smoke is emitted from the premises.[82]

It must be pointed out that this Part of the Act does not apply to any process which is a prescribed process within the meaning of the Environmental Protection Act 1990 or to smoke, grit or dust from the combustion of refuse deposited from any mine or quarry to which section 42 applies or any smoke, grit or dust form any railway locomotive engine or smoke, grit or dust from any vessel.

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[80] Preliminary Notes Halsbury Statutes 4th ed at 8

[81] Section 3 of the Clean Air Act, 1993

[82] The penalty imposed for an offence under section 1(1) is a fine not exceeding £1000 and in respect of an offence committed under section 1(2) to a fine not exceeding £5000 - Section 1(5) of the CAA 1993

3.4.4.2 Controls on the Emission of Smoke, Grit and Dust from Furnaces

Under section 4(1) of the Clean Air Act 1993, no furnace is to be installed in a building or in any fixed boiler or industrial plant unless notice of the proposal to install it has been given to the local authority.[83] It is also an offence to install a furnace in a building (or in a boiler or industrial plant attached to a building) unless it is so far as practicable capable of operating continuously without emitting smoke when burning fuel of a type for which the furnace was designed.[84] Any furnace which, has been installed in accordance with plans and specifications approved for this purpose by the local authority is deemed to comply with this requirement.[85]

Under section 5 which, applies to furnaces other than a domestic furnace, the Secretary of State may by regulations prescribe limits on the rates of emission of grit and dust from the chimneys of furnaces.[86] Any emission of dust or grit above the prescribed limit is deemed to be an offence for which the occupier of the building in which the furnace is situated is liable.[87] However the defence that the 'best practicable means' is being used for minimizing the alleged emission is allowable.

Section 6 makes it is an offence to use a furnace in a building (a) to burn pulverised fuel or (b) to burn at a rate of 45.4 kilogram or more per hour any solid matter or to burn at a rate equivalent to 366.4 kilowatts or more any liquid or gaseous matter unless the furnace is provided with plant for arresting grit and dust which has been approved by the local authority or installed in accordance with plans and specifications submitted to and approved by the local authority.[88]

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[83] A person would liable on a summary conviction for a fine not exceeding £1000 - Section 4 (4) of the CAA, 1993

[84] Section 4(2) of the CAA, 1993 - contravention of this section would make a person liable on a summary conviction for a fine not exceeding £5000

[85] However these provisions do not apply to furnaces for domestic purposes used for heating boilers with a maximum heating capacity of less than 16.12 kilowatts - See section 4(5) and see also section 64

[86] Section 5

[87] Liable to a fine of £5000

[88] The penalty for this is a fine not exceeding £5000; section 7 provides that applications for exemption from the requirements of section 6 may be made to the local authority. Such an application may be granted if the emission of grit and dust will not be prejudicial to health or a nuisance.

3.4.4.3 Chimney Height Controls

This is an old fashioned form of control designed to disperse rather than reduce or eliminate air borne pollution. Any occupier of a building and any other person who knowingly causes or permits a furnace to be used in the building to burn pulverised fuel or to burn at a rate of 45.4 kilograms or more an hour, any other solid matter or to burn at a rate equivalent to 366.4 kilowatts or more any liquid or gaseous matter where the chimney heights have not been approved by the local authority would be deemed to have committed an offence.[89] The same provisions applies to the owner of any fixed boiler or industrial plant other than an exempted one.[90]

3.4.4.4 Smoke Control Areas

Under section 18 of the CAA 1993, a local authority may by order designate the whole or part of its area a smoke control area. The effect of such an order is that, subject to exemptions and limitations in force, the occupier of a building commits an offence if smoke is emitted from a chimney of a building within a smoke control area.[91] The controls extend to chimneys serving furnaces of fixed boilers or industrial plant as well as the chimneys of buildings. However the defence that the alleged emission as not caused by the use of any fuel other than authorised fuel is allowed.[92] A person found guilty of an offence shall be liable on summary conviction to a fine not exceeding £1000.[93]

3.4.4.5 Mobile Sources

The present national controls on pollution from mobile sources are based on EC directives. The controls are aimed at regulating the composition of fuel and setting standards for vehicle design and construction. To achieve the latter two major approaches are used - a) requiring new models of vehicles to satisfy certain standards, including those relating to pollution emissions and to receive Type Approval before being introduced into production and b) requiring vehicles

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[89] Section 14(2) - the person guilty of committing the offence shall be liable on summary conviction for a fine not exceeding £5000 (see section 14(6))

[90] See section 14(4)

[91] Section 20 (1) and (2)

[92] Section 20 (4)

[93] Section 20(5)

to comply with construction and use standards throughout their operational life.

With regards to the former, that is composition of fuel, regulations governing this is provided for by section 30 of the Clean Air Act, 1993. Under subsection (1), the Secretary of State may by regulations impose requirements as to the composition and content of any fuel of a kind used in motor vehicles and where such requirements are in force, prevent or restrict the production, treatment, distribution, import, sale or use of any fuel which in any respect fails to comply with the requirements. The current regulations govern the lead content of petrol and the sulphur content of gas oil.

With regards to the lead content of petrol, the relevant regulations are the Motor Fuel (Lead Content of Petrol) Regulations 1981 as amended in 1985 and 1989. Regulation 4 provides that the maximum permitted lead content is 0.15 grammes per litre when tested[94] and it is an offence to produce, treat, distribute, import, sell, possess or offer for sale any petrol the lead content of which exceeds the maximum permitted.[95] The 1985 amendment added a maximum level for unleaded petrol of 0.013 grammes per litre.

The penalty for breach of these provisions is provided under section 32(2) of the Clean Air Act 1993 which states that a person who contravenes or fails to comply with any provisions under section 30 or 31 shall be guilty of an offence and liable on conviction on indictment to a fine and on summary conviction to a fine not exceeding the statutory maximum which is £5000.

With regards to the sulphur content of diesel fuel, the Motor Fuel (Sulphur Content of Gas Oil) Regulations 1976 as amended by the Motor Fuel (Sulphur Content of Gas Oil) (Amendment) Regulations 1990. Regulation 4 of the 1976 Regulations stipulates that the maximum permitted amount of sulphur per 100 grammes of gas oil when tested should be 0.3 grammes.[96] However the strict liability nature of the offence in regulation 5(b) is yet to be amended. Thus there is no

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[94] This was a reduction made in 1985 from the former 0.45 grammes per litre and is the lowest permitted level under the Community equalisation provisions of Directives 78/661/EEC. - JD Leeson op cit (n.79) 237

[95] Regulation 5

[96] It is an offence to produce, treat, distribute, import, sell, possess or offer for sale any diesel the sulphur content of which exceeds the maximum permitted - Regulation 5(b)

need to prove the state of mind of a person who uses, causes or permits to be used any gas oil the sulphur content of which exceeds the permitted amount.

The provisions governing type approval are to be found in the Road Traffic Act 1988 under sections 54 - 59. Under section 54, the Secretary of State is given the power to prescribe by regulations type approval requirements with respect to the design, construction, equipment and marking of vehicles and vehicle parts of any class used on a road and section 61 specifies the structure and content of such regulations including examinations, certificates, fees and the authorisation of examiners. Under section 55(1) the Secretary of State upon approving a vehicle as a type vehicle is required to issue a 'type approval stating the fact of compliance, the permitted variations from the type vehicle and the design weights for vehicles so conforming with any such variations.[97] The certificate may be issued subject to conditions and may be cancelled or suspended.[98] The issues covered by type approval are far wider than the question of exhaust emissions. Issues such as evaporative emissions and emissions of crank-case gases and the durability of anti-pollution devices for all motor vehicles equipped with positive ignition engines are taken into cognisance.[99]

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[97] Section 55(2)

[98] Section 56

[99] See Schedule I to the Motor Vehicle Type Approval(GB) Regulations 1984 as amended; schedule I specifies the applicable type approval requirement by reference to Annexes I of the Community Directives

3.4.4.6 Enforcement

Under section 55 of the Clean Air Act 1993, the local authorities have a duty to enforce the provisions of Parts I to III, section 33 and Part IV of the Act as well as the provisions of Part VII so far as relating to those provisions. Enforcement as we have seen is mainly through the imposition of fines which, range from £1000 to £20,000 after conviction. Convictions are usually obtained by way of summary trial, thus dispensing with long and tedious trials.

3.4.5 Approach Adopted By the United Kingdom

3.4.5.1 Best Practicable Environmental Option

The United Kingdom legislation on pollution control is largely based on two principles - the polluter should pay and pollution should be minimized at source. Thus regulatory controls aim to minimise pollution by allowing only the emission of pollutants in accordance with the terms of a permit which, may set limits on the release of certain substances.[100] If the polluter is in breach of the terms of a permit or discharges pollutants without a permit he commits a criminal offence and in addition he may face claims for compensation from anyone who suffers damage as a result.[101]

The United Kingdom aims to operate a flexible pollution control system. Prior to 1976, the concepts of best practicable means (BPM) and best available techniques not entailing excessive costs (BATNEEC) were the concepts by which the regulatory authorities set the pollution limits in permits. However following the report of the Royal Commission on Environmental Pollution in 1976, a concept known as the Best Practicable Environmental Option (BPEO), which aims to provide a measure of co-ordination within the complicated weave of law, institutions and policies governing the control of pollution, was formulated.[102] BPEO was seen as a more co-ordinated and integrated functioning of BPM and BATNEEC.

The BPEO concept is based on the argument that the pollution or wastes generated by an

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[100] Boes op cit (n. 66) 28

[101] ibid

[102] LD Guruswamy and SR Tromans 'British Environmental Policy: Towards the Best Practicable Environmental Option' 16 (1987) Anglo-American Law Review 76

industrial activity could potentially affect water and land as well as air. Thus, when HMIP applies BATNEEC or BPM to controls to limit releases into more than one environmental medium, they must have regard to the best practicable environmental option available to the substances which, may be released. The BATNEEC approach as used in the United Kingdom encompasses a few meanings. The term 'best' means the most effective in preventing, minimizing or rendering harmless polluting emissions and implies demonstrated effectiveness but there may be more than one set of techniques which achieve the same degree of effectiveness. [103] The term 'available' means procurable by the operator for the type of process in question. It does not imply that the technology is in general use but does require general accessibility.[104] The term 'techniques' embraces both the process and the manner in which it is operated.[105] And to sum it all up the best available techniques need not be used if the cost would be excessive. The criteria for deciding what is excessive differs depending on the type of source. For new sources, excessiveness is an objective criterion which, must be judged in relation to the environmental benefit to be attained while for existing sources, attention will be paid to the particular circumstances of the plant, its rate of utilisation and length of remaining life in deciding what is excessive.[106]

3.4.5.2 Use of Criminal and Administrative Sanctions

Under both regimes - administrative sanctions are first made use of to enforce the provisions of the relevant legislation. Where this fails, the person is charged to the magistrate court and summarily convicted. Liability is usually in the form of fines which, range between £1000 to £20,000 depending on the provisions of the legislation of which he/she is in breach. The use of

[103] Boes op cit (n. 66) 56

[104] Boes op cit (n. 66) 56

[105] Boes op cit (n. 66) 56

[106] Boes op cit (n. 66) 56; Cf Leeson op cit (n. 79) 46

summary convictions here is quite significant because as pointed out above it allows for quicker trials thus avoiding long and unnecessary trials which in the long run affect either directly or indirectly the outcome of a case.

3.5 Air Pollution Regulation in Australia

3.5.1 General Background

Australia is a federation of six sovereign states, New South Wales, Victoria, South Australia, Western Australia, Queensland and Tasmania and some additional territories such as the Northern Territory and Australian Capital Territory. The various states and territories are responsible individually for the control of air pollution although the federal government plays a co-ordinating role through such intergovernmental groups such as the National Health & Medical Council, the Australian Environmental Council and the Australian Transport Advisory Council. These bodies issue guidelines such as recommended ambient air quality goals, uniform methods of measuring air impurities and design rules for emission controls on new motor vehicles sold in Australia.[107] Thus the state authorities are encouraged to take these national figures into account when setting their own legislated emission limits or air quality standards.[108]

The provisions for air pollution control in New South Wales, Tasmania, West Australia, Victoria and South Australia would now be examined before an overall analysis of the approach adopted by the states to control air pollution and enforce compliance is given.

3.5.2 Air Pollution Regulation in New South Wales

Air pollution in New South Wales (hereinafter referred to as NSW) is presently being regulated by the Clean Air Act 1961.[109] The Act which defines air pollution as the emission into the air of any air impurity[110] is divided into five parts - Preliminary (Part 1); Scheduled premises (Part

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[107] L Murley (ed) *Clean Air Around the World: National and International Approaches to Air Pollution Control* (1991) 41

[108] ibid

[109] The Protection of the Environment Operations Act, 1997 is yet to come into force - personal communication with Linda Roy (Pollution Line Coordinator for New South Wales webpage)

[110] Air impurity is defined to include smoke, dust (including ash fly), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances - section 5

3); Premises other than scheduled premises (Part 4), Motor Vehicles (Part 4A); Scheduled Equipment (Part 4B) and General Provisions (Part 5).[111]

Scheduled Premises

Under Part 3, which provides for scheduled premises, a person who is the occupier of any scheduled premises[112] must hold a licence to carry out scheduled activities and maintain any control equipment in or on such premises in an efficient condition and shall operate such equipment in a proper and efficient manner.[113] The occupier of a scheduled premises would be liable for the operation of a fuel burning equipment or industrial plant which causes air pollution or an increase in air pollution.[114]

Where no standard has been prescribed for the emission of air impurities, the occupier of a scheduled premises is expected to apply the 'practicable means' as may be necessary to prevent or minimise air pollution.[115] "Practicable means" is defined to mean reasonably practicable having regard, amongst other things, to local conditions and circumstances and to the current state of technical knowledge and includes the provision and maintenance of plant and the proper use thereof.[116] The Environment Protection Authority may by notice in writing require the occupier of a premises to install, operate, repair, alter or replace any control equipment installed in or on such premises or erect or alter the height of any chimney through which air impurities may be emitted from any such premises or install fuel burning equipment or industrial plant or use fuel of a specified type in or on such premises or carry out such other work for the purpose

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[111] Part 2 has been repealed

[112] This means any premises used for any of the facilities or works for the time being prescribed by clause 1 of Schedule 1 on which there is any fuel burning equipment or industrial plant prescribed by clause 2 of Schedule 1 or which a fire is used in or in connection with any trade, industry of process to burn combustible material, other than vegetation growth on those premises at a rate of more than 300 kilograms per hour - section 5

[113] Section 10 & 14

[114] Section 14 (2A), & (3)

[115] Section 15(2); but where a standard has been prescribed then the occupier of a scheduled premises shall not, except in special circumstances, conduct any trade, industry or process or operate any fuel burning equipment or industrial plant in such a manner which would lead to an emission in excess of the standard of concentration and rate of prescribed for the air impurities or prescribed for the trade, industry, process, fuel burning equipment or industrial plant - Section 15(1)

[116] Section 5

of preventing or minimising air pollution.[117]

In respect of unscheduled premises, the same rules are applicable except that it is the local authority who gives the abatement notice in respect of premises where any impurities are being or are likely to be emitted from the unscheduled premises.[118]

However where the Environment Protection Authority is of the opinion that the occupier of any premises has not taken all practicable means to prevent or minimise the emission of air impurities from an unscheduled premises or is not operating any control equipment in an efficient manner and the local authority has not served a notice as required under section 20(1), the Authority may by notice in writing require the occupier to carry out such work within a time and in such manner as may be specified in the notice or to operate such control equipment in accordance with directions contained in the notice.[119]

Scheduled Equipment

Section 21O, requires that a person who is the owner of any scheduled equipment[120] be in possession of a licence failing which he would be guilty of an offence against the Environmental Offences and Penalties Act, 1989. Further it is an offence for a person to construct or carry out any scheduled equipment or carry any work that constitutes the beginning of or any subsequent step in, such a construction, except in accordance with a pollution control approval.[121]

Mobile Sources

With regards to pollution control from mobile sources, the Act provides that a motor vehicle emits excessive air impurities if it emits at any point air impurities in excess of the standard or concentration and the rate prescribed in respect of the class of motor vehicles to which that

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[117] Section 17(1)(a - c)

[118] Section 20(1); see section 19 (1) & (2)

[119] Section 20(3)

[120] This means any mobile plant or equipment used for any facilities or worked for the time being prescribed by clause 1 of schedule 1 or on which there is or which consists of any fuel burning equipment or industrial plant prescribed by clause 2 of schedule 1 - section 5

[121] Section 21Q

motor vehicle belongs to when tested it emits air impurities in excess of the amount per test prescribed in respect of the class of motor vehicles to which that motor vehicle belongs.[122] The sale or use of such a motor vehicle is not allowed.[123] Anti-pollution devices are also prescribed for the different classes of motor vehicles and their removal, disconnection or impairment is also forbidden except where it is for the purpose of servicing, repairing or replacing.[124]

Penalties

Section 32 provides for penalties. Failure or neglect to comply with any of the provisions of the Act or any requirement made or given pursuant to the Act constitutes an offence for which penalty is provided for under the Environmental Offences and Penalties Act 1989.[125] Under section 8A of the Environmental Offences and Penalties Act, subsection (1) provides that any person who is guilty of an offence against the Act is liable in the case of a corporation to a penalty not exceeding $125,000 and in the case of a continuing offence to a further penalty not exceeding $60,000 for each day the offence continues. With respect to individuals the penalty is a fine not exceeding $60,000 and in the case of continuing offence to a further penalty not exceeding $30,000 for each day the offence continues. However persons who commit an offence for which the penalty is provided for within the Clean Air Act itself are not liable to any penalty under this subsection.[126] Regulations may impose penalties not exceeding $10,000 in the case of individuals and $20000 in the case of corporations.[127]

3.5.3 Air Pollution Regulation in Victoria

The State of Victoria controls air pollution through the provisions of the Victorian Environmental Protection Act 1970. The Act establishes the Environment Protection Authority

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[122] Section 21A(2)

[123] Section 21B

[124] Section 21C; Section 21BA

[125] Except those directions given under section 21EA which relate to notices to repair, readjust or restore prescribed anti-pollution devices.

[126] Section 8A(2)

[127] Section 8A(3)

and makes provision with respect to the powers, duties, and functions of that Authority as well as provisions for the protection of the environment.[128]

Part III of the Act deals with environment protection. Section 16 provides for the declaration of the State environment protection policy by the Governor in Council on the recommendation of the Authority with respect to the environment generally or in any portion or portions of Victoria or with respect to any element or elements or segment or segments of the environment in relation to the generation, storage, treatment, transport and disposal and generally the handling of industrial waste. The Order may incorporate a national environment protection measure or vary a State environment protection policy or industrial waste management policy so as to make the policy consistent with a national environment protection measure.[129]

Works Approval & Licences

Under section 19A, the occupier of schedule one premises[130] are required to obtain a works approval or licence in order to make any form of alteration which would affect the fuel burning equipment or industrial plant being used to carry out trade on the premises.[131] He is also prohibited from discharging or emitting any waste into the atmosphere unless the discharge or emission in licensed under the Act.[132] Non-compliance with this provision results in an offence for which the offender would be liable to a penalty of not more than 200 penalty units.[133] Section 21 provides for special conditions which, may be imposed when issuing a works approval or licence. These conditions include installation of pollution control equipment of a type specified by the Authority provided that such equipment is reasonably available to be

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[128] See Long Title to the Act

[129] Section 17A(1)

[130] "Schedule one premises" means any premises (a) prescribed by regulation; or (b) which are of a class prescribed by regulation as premises from which waste is or is likely to be discharged to the atmosphere;

[131] The exceptions to the requirement for works approval or licence is where such work is only in the course of and for the purpose of general maintenance or where the work will not result in a discharge, emission or deposit of waste which by reason of volume, location, constituency or manner-- (a) affects adversely the quality of any segment or element of the environment; or (b) affects adversely the interests of any person other than the applicant. See section 19A(5)

[132] Section 20 (1)

[133] Section 19A (7)

operated in a manner specified by the Authority.

Provisions On Clean Air

Part VI provides for clean air. Under section 40 the discharge or emission of wastes into the atmosphere is required to be in accordance with declared State environment protection policy specifying acceptable conditions for discharging or emitting wastes into the atmosphere and any standards prescribed therefor under the Act. Further under section 41, a person shall not pollute the atmosphere so that the condition of the atmosphere is so changed as to make or be reasonably expected to make the atmosphere (a) noxious or poisonous or offensive to the senses of human beings; (b) harmful or potentially harmful to the health, welfare, safety or property of human beings; (c) poisonous, harmful or potentially harmful to animals, birds or wildlife; (d) poisonous, harmful or potentially harmful to plants or other vegetation; or (e) detrimental to any beneficial use made of the atmosphere.[134]

Pollution Abatement Notices

The Authority may serve a pollution abatement notice on the occupier of a premise if it is satisfied that a process or activity which is being carried on or is proposed to be carried on at any premises or the use or proposed use of any premises has caused or is likely to cause pollution; failure to comply with any standard prescribed by the regulations, policy or any condition in a licence or permit; or has created or is likely to create an environmental hazard.[135]

The notice may require the occupier to, *inter alia*, cease carrying on or not commence the process, activity or use; carry on, modify or control the process, activity or use in the manner specified in the pollution abatement notice; to supply to the Authority plans, specifications and other information as is specified in the pollution abatement notice showing how the process,

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[134] Section 41 (2) provides specific instances where a person would be deemed to have polluted the atmosphere where (a) that person causes or permits to be placed in or so that it may be released into the atmosphere any matter whether solid, liquid or gaseous which-- (i) is prohibited by or under this Act; or (ii) does not comply with any standard prescribed for that matter; or (b) that person causes or permits the discharge or emission of any matter or substance into the atmosphere in contravention of this Act; or (c) that person uses any chemical substance or fuel the use of which is prohibited by the regulations; or (d) that person contravenes any regulation dealing with the use of any ozone-depleting substance or the manufacture, assembly, installation, operation, maintenance, removal, sale or disposal of goods, equipment, machinery, or plant containing or using an ozone-depleting substance.

[135] Section 31A (1)

activity or use will be carried on, modified or controlled; to comply with (i) any standard prescribed by the regulations, Order declaring policy or licence or permit.[136]

An occupier of any premises on whom a pollution abatement notice or a notice of amendment has been served under this section but who contravenes a requirement specified in the notice shall be guilty of an offence and liable to a penalty of not more than 200 penalty units and in the case of a continuing offence to an additional daily penalty of not more than 80 penalty units for each day upon which the offence continues after conviction or after service by the Authority on that person of notice of contravention of this section.[137]

Offences

Offences are provided for under section 27. Specifically subsection (1) provides that a person who is the occupier of a schedule one premises from which waste is discharged or emitted to the atmosphere (a) without a licence where a licence is required by this Act; or (b) while the licence is suspended shall be guilty of an offence against this Act and liable to a penalty of not more than 200 penalty units and in the case of a continuing offence to a daily penalty of not more than 80 penalty units for each day the offence continues after conviction or after service by the Authority on the defendant of notice of contravention of this section. The holder of a licence who contravenes any condition to which the licence is subject shall be guilty of an offence against this Act and liable to a penalty of not more than 200 penalty units and in the case of a continuing offence to a daily penalty of not more than 80 penalty units for each day the offence continues after conviction or after service by the Authority on the defendant of notice of contravention of the condition.[138]

However it is a defence under the Act if the person charged is able to prove that (a) the discharge, emission or deposit of waste to which the charge relates occurred in an emergency to prevent danger to life or limb other than an emergency arising from the negligent act or omission of the person charged; and (b) as soon as reasonably practicable after that discharge, emission or deposit of waste that person notified particulars thereof in writing to the Authority

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[136] Section 31A (2)

[137] Section 31A (7); section 35 provides for reviews in respect of notices under section 31A

[138] Section 27 (2)

or the delegated agency as the case may be.[139]

Mobile sources

Under section 42 subsection (1), a person who (a) constructs, manufactures, assembles or sells any vehicle, whether old or new, capable of emitting into the atmosphere any matter that does not comply with any prescribed emission standard or prescribed standard of maximum permissible concentration for visible emissions or for the emission of carbon monoxide when the engine of the vehicle is idling shall be guilty of an offence. Similarly a person who constructs, manufactures, assembles, sells, instals or offers to instal any machinery, facility, vehicle or ship required by or under this Act to be fitted or equipped with any device or equipment so as to prevent or minimize pollution of the atmosphere without the machinery, facility, vehicle or ship being so fitted or equipped shall be guilty of an offence.[140]

Sale of petrol containing excess lead is prohibited under section 42A.[141] However it is a defence if the defendant proves (a) that he purchased the petrol in question with a warranty from the seller as regards it content; and (b) that he sold the petrol in question in the same state as when he purchased it.[142]- The provisions in respect of unleaded petrol[143] are the same as that discussed above and can be found in section 42B. A person who is the owner or driver of a motor vehicle, whether registered or not which is used on a highway and at the time of use (a) is not equipped with any device or equipment required by the regulations to be fitted to the motor vehicle so as to prevent or minimize pollution; or (b) is capable of emitting into the

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[139] Section 30B (1)

[140] Section 42 (2)

[141] The provisions for excess lead can be found under section 42A (3) which states that a person who (a) on or after the commencement of section 15 of the Environment Protection (General Amendment) Act 1994 but before 1 January 1995, sells any petrol which (i) would, if tested at a temperature of 15° Celsius, contain lead in excess of 0·25 grams per litre; and (ii) does not comply with any requirements prescribed under section 71(1)(cc); or (b) on or after 1 January 1995, sells any petrol which (i) would, if tested at a temperature of 15° Celsius, contain lead in excess of 0·20 grams per litre or such lower amount as is prescribed under section 71(1)(cd); and (ii) does not comply with any requirements prescribed under section 71(1)(ce) is guilty of an offence.

[142] Section 42A (7)

[143] Defined to mean petrol which does not contain more than the prescribed amounts of lead, sulphur and phosphorus per litre and which complies with the prescribed specifications for motor octane number and research octane number.

atmosphere any matter that does not comply with any prescribed (i) emission standard; or (ii) standard of maximum permissible concentration for emissions shall be guilty of an offence.[144] Under section 43, any person who contravenes any of the preceding provisions of this Part is guilty of an offence and liable to a penalty of not more than 200 penalty units and in the case of a continuing offence to a daily penalty of not more than 80 penalty units for each day the offence continues after conviction or after service by the Authority on the defendant of notice of contravention of the preceding provisions of this Part (whichever is the earlier).

3.5.4 Air Pollution Regulation in South Australia

In South Australia, air pollution is controlled by the South Australian Environmental Protection Act, 1994. The Act provides for the protection of the environment and establishes the Environment Protection Authority. The Act aims to promote the principles of ecologically sustainable development and ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment having regard to the principle of ecologically sustainable development.[145]

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[144] Section 43A(1)

[145] Section 10

General Environmental Duty

The Act imposes a general environmental duty on persons living within the state not to undertake an activity that pollutes, or might pollute, the environment unless he takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.[146] A general defence in proceedings against a person who fails to carry out this general duty is provided under section 25 (3).[147] Although failure to comply with the duty is not of itself an offence, compliance with the duty may be enforced by the issuing of an environment protection order and a clean-up order or clean-up authorisation may he issued, or an order may be made by the Environment Resources and Development Court under Part 11 in respect of non-compliance with the duty.[148]

National Environment Protection Measures

National environment protection measures automatically operate as policies as soon as they come into operation under the prescribed national scheme laws.[149] Such a policy is to be treated as a policy that is to he taken into account by the Authority in determining any matters under the Act (or under the Development Act 1993) to which the policy has relevance; and may be given effect to by the issuing of environment protection orders under Part 10. Under subsection (4) an environment policy that comes into operation by virtue of subsection (1) prevails over an environment protection policy made by the Authority except if the latter policy is more stringent than the provisions of the national environment protection policy.

Works Approval &Licences

A person carrying out works for the construction or alteration of a building, structure, plant or equipment for use for a prescribed activity of environmental significance is required to have a works approval or licence.[150] Failure to comply with this provision constitutes an offence for which the person would be liable to pay a division 1 fine and if it is a corporate body, a fine of

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[146] Section 25; 'environmental harm' is defined to mean any harm, or potential harm, to the environment (of whatever degree or duration), and includes an environmental nuisance - section 5 (1)

[147] Compliance with the mandatory provisions of an environment protection policy or authorisation

[148] Section 25 (4)

[149] Section 28A

[150] Section 35 and 36

$120,000.[151]

Environmental Harm

Where a person causes serious environmental harm by polluting the environment intentionally or recklessly and with the knowledge that serious environmental harm will or might result, the person would be deemed to have committed an offence for which he is liable to a $250,000 or division 4 imprisonment (or both) and where it is a body corporate to a fine of $1, 000, 000.[152] Under subsection (2), a person who by polluting the environment thereby causing serious environmental harm is guilty of an offence for which he or she would be liable to $120,000 and where it is a body corporate to a fine of $250 000.

Where an incident occurs so that serious or material environmental harm from pollution is caused or threatened in the course of an activity undertaken by a person, the person must, as soon as reasonably practicable after becoming aware of the incident, notify the Authority of the incident, its nature, the circumstances in which it occurred and the action taken to deal with it or else the person would be liable to a division 1 fine and in the case of a body corporate to a fine of $120,000.[153] The requirement of notification is removed where the person has reason to believe that the incident has already come to the notice of the Authority or any officer engaged in the administration or enforcement of the Act.[154]

Civil Remedies

Civil remedies are provided for under section 104 and it states that applications[155] may be made

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[151] Section 35 (1) (b); However a works approval is not required under subsection (1) for- (a) works in respect of a building, structure, plant or equipment for use for an activity that is authorised by a licence under this Part; or (b) works for which development authorisation is required under the Development Act 1993. - section 35(2)

[152] Section 79 (1)

[153] Section 83 (1)

[154] Section 83 (2); it is a defence if the defendant can prove that the harm or nuisance was as a result of complying with the conditions or provisions of an authorisation or order of policy or that the pollution resulted in actual or potential harm only to that person or that person's property, or to some other person or some other person's property with that other person's consent - Section 84 (1)

[155] An application under this section may be made (a) by the Authority; or (b) by any person whose interests are affected by the subject matter of the application; or (c) by any other person with the leave of the Court.- section 104 (7); it may be made exparte or in a representative capacity - see subsection 10

to the Environment, Resources and Development Court for certain orders including an order restraining person from engaging in conduct contrary to the provisions of the Act; an order requiring the person to take any action required by the Act where he has failed or refused to do so; an order against a person for the costs or expenses incurred in taking action to mitigate an environmental harm caused by that person or an order for enforcement of the provisions of an environment performance agreement.

3.5.5 Air Pollution Regulation in Western Australia

Western Australia's control over air pollution can be found in the Western Australia Environmental Protection Act 1994. The Act provides, *inter alia*, for the prevention, control and abatement of environmental pollution.[156] 'Pollution' is defined as the direct or indirect alteration of the environment to its detriment or degradation; to the detriment of any beneficial or prescribed use.[157]

Control Of Pollution

Part V provides for the control of pollution. Under section 49(1), it is an offence to allow or cause pollution. Similarly a person who emits or causes or allows to be emitted from any premises noise, odour or electromagnetic radiation which unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person is deemed to have committed an offence.[158] Section 50 goes further to provide that a person who causes or allows waste to be placed in any position from which the waste could reasonably be expected to gain access to any portion of the environment and would in so gaining access be likely to result in pollution commits an offence.

Works Approval & Licences

Certain premises are deemed to be prescribed premises and the occupier of such premises are

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[156] See Long Title

[157] Section 3

[158] Section 49(2)

required to carry out work on the premises in accordance with a works approval.[159] Where the occupier of a prescribed premises causes an increase in the discharge of waste or the emission of noise , odour or electromagnetic radiation, or alters the nature of the waste discharged or noise, odour or electromagnetic radiation emitted or the method of operation of any trade or any equipment without a works approval,[160] a licence[161] or in contravention of a requirement contained in a pollution abatement notice, he would be deemed to have committed an offence.[162]

The approval of a works approval or licence may be subject to the condition that a person install within a specified period a specified pollution control equipment as is reasonably available to persons in the State or that the applicant take specified measures for the purpose of minimizing the likelihood of pollution occurring or to provide within a specified period a specified monitoring equipment of a specified type or a specified monitoring programme for the purpose of supplying the Chief Executive Officer information relating to the characteristics, volume and effects of the waste being or to be discharged. [163]

Pollution Abatement Notices

Section 65 provides for pollution abatement notices to be issued by the Chief Executive Officer

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[159] Section 52

[160] Section 54 provides for the application for works approvals

[161] Section 57 provides for the application for a licence

[162] Section 53(1) - the defence of for the purpose of general maintenance required to maintain the efficient operation of any pollution control equipment or procedure is also allowed.

[163] Section 62(1)(a - h)

on the owner or occupier of a premises where any waste, noise, odour or electromagnetic radiation (which does not comply with any standard required by or under an approved policy or any prescribed standard) is being or is likely to be discharged or emitted from the premises into the environment.

The notice is to specify the reason for which it is served and may require any person bound by it to take such measures as the Chief Executive Officer considers necessary to prevent, control or abate the discharge of waste or emission of noise, odour or electromagnetic radiation to which the pollution abatement notice relates within such period as is specified in the pollution abatement notice.[164] A person who is bound by a pollution abatement notice and who does not comply with a requirement contained in the pollution abatement notice commits an offence.[165]

The Minister may by notice served on order a person to stop carrying on the whole or any part of the trade, process or activity, and to close down the whole or any part of the premises, to which the pollution abatement notice referred to in that paragraph relates immediately if the person does not complied with a requirement contained in the pollution abatement notice.[166] Failure to comply with this subsequent order constitutes an offence.[167]

However it is a defence proceedings under this part if the defendant can prove that the discharge or emission occurred for the purpose of preventing danger to human life or health or irreversible damage to a significant portion of the environment; or (ii) as a result of an accident caused otherwise than by the negligence of that person and that the occupier of the premises, if any, from which that discharge or emission occurred took all reasonable precautions to prevent that discharge or emission; and that as soon as was reasonably practicable after that discharge or emission that person notified particulars thereof in writing to the Chief Executive Officer.[168]

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[164] Section 65 (2)

[165] Section 65 (5)

[166] Section 69

[167] Section 69 (5)

[168] Section 74 (2) - The defence referred to in subsection (1) is not available to a person unless he notifies the Chief Executive Officer of his intention to rely on that defence within 21 days after the day on which (a) the relevant summons is served on him; or (b)if no summons is served on him in respect of the relevant offence, he is informed of the place and time at which he is alleged to have committed that offence and of

Miscellaneous Offences

The Act also provides for miscellaneous offences relating to construction, manufacturing, assembling or selling a vehicle or vessel capable of discharging into the atmosphere or any waters any matter that does not comply with any prescribed standard.[169] It is also an offence for a person to construct, manufacture, assemble, sell or install any equipment required by or under this Act to be fitted or equipped with any device so as to prevent or minimize discharges of any matter into the atmosphere or any waters without that equipment being so fitted or equipped.[170]

Mobile Sources

With regards to pollution form mobile sources the Act provides under section 77 (1), that a person who is the owner or driver of a vehicle or vessel to which is fitted a device referred to in section 78 (1) who does not maintain that device in an efficient condition commits an offence. In addition under subsection (2) and (3), a person who is the owner or driver of a vehicle or the owner of a vessel which is at the time of its use on a road, public place or reserve capable of discharging into the atmosphere or any waters any matter that does not comply with any standard prescribed for the purposes of this subsection commits an offence.

Interference with anti-pollution devices on vehicles or vessels by way of removal, disconnection or impairing constitutes an offence under section 78 (1) where the device is fitted for the purpose of preventing the discharge of matter from, or controlling or dispersing matter discharged by, the vehicle or vessel into the atmosphere or any waters or of controlling noise

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the nature of that offence.

[169] Section 76 (1)

[170] Section 76 (2)

emitted by the vehicle or vessel.

Enforcement

Part VI provides for enforcement. Under this part authorized persons[171] and analysts[172] may be appointed by the Chief Executive Officer as well as an Inspector who is empowered to (a) take measurements and collecting samples of any waste before, during or after its discharge into the environment; (b) inspect, evaluate and analyse the records of monitoring and other equipment and installations approved for detecting the presence, quantity and nature of any waste and the effects of that waste on the portion of the environment approved for receiving that waste; (c) record, measure, test or analyse noise, odour and electromagnetic radiation emissions; (d) inspect, evaluate and analyse the records of monitoring and other equipment and installations approved for detecting the presence, level and other characteristics of noise, odour and electromagnetic radiation; (e) ascertain whether or not any circumstances, conditions, procedures or requirements imposed by or under this Act are being complied with; and (f) perform such other functions as are conferred or imposed on him by or under this Act.[173]

Where an offence under this Act has been committed by a body corporate is proved to have been committed with the consent or connivance of, or to be attributable to any neglect on the part of, a director or other officer concerned in the management of the body corporate, or a person who was purporting to act in any such capacity, he as well as the body corporate is guilty of the offence.[174] Thus a director or other officer who is guilty of an offence under this Act by virtue of subsection (1) is liable to the penalty to which an individual who is convicted of the same offence is liable.[175]

Penalties

The penalty for offences can be found under Schedule one. Here penalties for individuals are

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[171] Section 87

[172] Section 94

[173] Section 88

[174] Section 118 (1)

[175] Section 118 (2)

distinguished from that of corporate bodies. The penalty is in the form of fines and for individual range from between $5000 to $25000 and for continual offences the penalty range from between $1000 to 5000 daily. For corporate bodies the penalty range from between $10000 to $50000 and for continual offences a daily fine ranging between $2000 and $10000. Some offences carry six months imprisonment with or without a fine.

3.5.6 Air Pollution Regulation in Tasmania

Tasmania deals with air pollution under the Tasmanian Environmental Management and Protection Control Act 1994. The Act was enacted to provide for the management of the environment and the control of pollution in the State of Tasmania.[176]

Under the Act, ' environment' means "components of the earth including land, air and water and any organic matter and inorganic matter and any living organism and human-made or modified structures and areas and includes interacting natural ecosystems ... ."[177] Environmental harm is provided for under section 5 and is defined as any adverse effect on the environment of whatever degree or duration and includes an environmental nuisance and the Act further states that environmental harm would be caused by pollution whether the harm is a direct or indirect result of the pollution and whether the harm results from the pollution alone or from the combined effects of the pollution and other factors.[178]

Best Practice Management

The occupier or person in charge of a place or vehicle at or from which a pollutant[179] escapes or is discharged, emitted or deposited is taken to have polluted the environment with the pollutant.[180] A person wishing to carry out a controlled activity is required to apply the best

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[176] See the Long Title to the Act

[177] See section 3(1) of the Act

[178] Section 5(5)

[179] This includes a gas, liquid or solid; or an odour; or an organism (whether alive or dead), including a virus or energy, including noise, radioactivity and electromagnetic radiation or a combination of pollutants that may cause environmental harm - section 3(1)

[180] Section 6

practice environmental management to the activity in order to achieve an ongoing minimization of the activity's environmental harm through cost-effective measures assessed against current international and national standards to applicable to the activity.[181] To determine the best practice environmental management regard is to be had to strategic planning, administrative systems, public consultation, product and process design, waste prevention, treatment and disposal.[182]

Permits

Schedule 2 contains a list of activities which, may result in pollutants being released into the environment or may cause environmental harm. For such activities, the Act provides that where an application has been made to a planning authority under the Land Use Planning and Approvals Act 1993 for a permit in respect of the activity, the planning authority is to refer the application to the Board of Environmental Management and Pollution Control for assessment.[183] Where the Board is of the opinion that the activity would result in serious or material environmental harm, she is required to notify the planning authority of any condition or restriction which she requires to be contained in a permit granted by the planning authority or direct the planning authority to refuse to grant the permit.[184]

Enforcement

Enforcement provisions are contained in part 4 of the Act. Section 44 provides for environment protection notices and it states that where the Director is satisfied that in relation to an environmentally relevant activity, environmental harm is being or is likely to be caused or has

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[181] Section 4(1)

[182] Section 4(2)

[183] Section 25(1)(b)

[184] Section 25(5(a) & (b)

occurred and remediation of that harm is required, he may issue an environment protection notice to be served on the person who is responsible for the activity. Contravention of the requirements of the notice constitutes an offence for which the person may be summarily convicted and liable to a penalty not exceeding 1000 penalty units in the case of a body corporate or 500 penalty units in any other case.

A person who causes material environmental harm by polluting the environment intentionally or recklessly and with the knowledge that material environmental harm will or might result, is guilty of an offence, the penalty of which is, in the case of a body corporate, a fine not exceeding 2,500 penalty units or a natural person 1,200 penalty units or imprisonment for a term not exceeding 2 years or both.[185] Under section 51(2), a person who causes material environmental harm by polluting the environment is guilty of an offence for which in the case of a body corporate, she would be liable to a fine not exceeding 1200 penalty units and in the case of a natural person to a fine not exceeding 600 penalty units. It is also an offence to cause an environmental nuisance - the penalty being 100 penalty units in the case of unlawfully causing an environmental nuisance and 300 penalty units in the case of wilfully and unlawfully causing an environmental nuisance.[186]

In the case of a continuing offence after the person alleged has been served with notice of the alleged offence and subsequently convicted, the person would, in addition to the penalty applicable to the offence be liable for each day during which the act or omission continues for an amount equal to one-fifth of the maximum penalty prescribed for that offence.[187]

3.5.7 Overall Analysis of the Approach Adopted by the States in Australia

Basically it would be seen that Australian states have adopted two basic approaches to air pollution control - best practicable means and air quality standards as used in the United Kingdom and United States. In addition, the states have attempted to integrate pollution

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[185] Section 51 (1)

[186] Section 53(1) & (2)

[187] Section 54; the same provisions apply where the offence is actually committed and not just alleged to have been committed.

control by emphasising on the control of all three media - land, water and air together and not separately. This is quite similar to the best practicable environmental option as currently being applied in the United Kingdom. That is the application of best practicable means taking into cognisance the environment as a whole.

The states make use of the permit system with their requirement for work approvals or licences in order to carry out certain types of activities which are mainly industrial processes. With regards to pollution from mobile sources emphasis is placed on the type of fuel used and the requirement for installing anti-pollution devices in motor vehicle.

On the issue of enforcement, the states make use of civil remedies as well as criminal sanction with the imposition of fines and sometimes imprisonment. Corporate bodies are also not left out of the issue of enforcement for the states make distinctions between fines for corporate bodies and those for individuals.

Chapter Four
Comparative Analysis

4.1 Introduction

So far the provisions of the air pollution legislation in South Africa, United States of America, the United Kingdom and Australia have been examined. In this chapter, we intend to look at the different approaches adopted by these countries to control pollution and to enforce the provisions of their legislation with a view to offering a comparative analysis. But first let us undertake a general summary of the issues addressed so far.

4.2 General Summary

From our examination of the air pollution legislation in the four countries under analysis, it would be seen that each country has adopted one approach or the other all aimed at achieving effective air pollution control. In the United States of America, the approach adopted is the emission standards and market approach; in the United Kingdom, it is the best available technology not entailing excessive cost (BATNEEC) in the light of best practicable environmental option (BPEO)[1]; in South Africa and the Australian states it is the best practicable means (BPM).

These approaches either aim to statutorily regulate the plant or equipment used to carry out certain processes which cause air pollution or to statutorily regulate emissions. The approaches adopted in the United Kingdom, South Africa and Australia can be grouped under the former strategy while the approach adopted by the United States falls under the latter strategy. All four countries rely on the use of permits or authorisations to carry out certain prescribed activities or processes (which are usually industrial activities). With regards to enforcement, all four countries make use of administrative sanctions first before the subsequent imposition of criminal sanctions and/or civil sanctions thus applying the "polluter pays" principle. For purposes of clarity each approach would be dealt with under two broad headings - regulation of plant or equipment and regulation of emissions before we go on to look at the issue of enforcement under the headings of criminal sanctions and civil sanctions.

[1] However 'best practicable means' is used in limited circumstances as a defence when dealing with air pollution control under the local authority regime - see section 79 of the EPA, 1990 (UK)

4.3 Approaches

4.3.1 Regulation of Plant or Equipment

As pointed out above the approach which aims to control pollution through the regulation of plant or equipment (also referred to as regulating the source of pollution) can do so through BATNEEC or BPM. The proponents of this approach believe that if equipments that reduce emissions during certain prescribed activities are employed then the amount of air pollutants that escape into the atmosphere would be minimal. Thus persons who carry out certain prescribed activities (which as pointed out above are usually industrial activities) are required to install these equipments or plants before being granted permission (usually in the form of authorisations or permits) to carry out the activities.[2] Similarly burners, furnaces and chimneys are required to be of a particular type, specification or height which is believed would reduce the escape of air pollutants into the atmosphere.[3]

It is generally believed that this approach is more realistic and flexible because as newer and better equipment or plant become available, they can be made use of and adopted by industrialists. However this flexibility is at times seen as a disadvantage because much is often left to the discretion of the Chief Officer (which is the case in South Africa) or the Chief Inspector (which is the case in the United Kingdom) in deciding which technology should be adopted or which degree of air cleanliness can be achieved.[4] In addition it must be pointed out that the extent of flexibility is usually limited by the financial capability of the industrialist or person required to install these equipments or plants. In other words, installation of these equipments or devices is based on their availability as well as the costs of obtaining them. For instance under the BPM approach as applied in South Africa, account must be taken of available technologies and the impact of costs on the process in question.[5] Similarly under the BATNEEC approach, account will also be taken

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[2] See sections 10 & 12 of the Atmospheric Pollution Prevention Act, 1965; section 6 of the Environment Protection Act, 1990 (UK) and section 4(1) of the UK Clean Air Act, 1993; see also section 10 & 14 of the Clean Air Act, 1960 (NSW)

[3] See sections 6 & 14 (2) of the UK Clean Air Act, 1993

[4] FR Fuggle and MA Rabie (eds) *Environmental Management in South Africa* (1996) 439, 440; Cf JD Leeson *Environmental Law* (1995) 42

[5] Fuggle and Rabie op cit (n. 4) 439; Cf JD Leeson *Environmental Law* (1995) 41

of the financial implications in relation to capital expenditure and revenue cost.[6] Thus in applying both approaches an attempt is made to strike a balance between the availability of technology to achieve emission reductions of specific pollutants and the costs required to install the equipment[7] which often results in little consideration for the environment.[8]

However in the United Kingdom the position is slightly different, for BATNEEC is used in the light of the best practicable environmental option (BPEO).[9] As pointed out previously BPEO is primarily concerned with selecting the most appropriate or least damaging environmental alternative for the reception of polluting material including the reduction of emissions by modifications of processes and plants.[10] It aims to 'find the optimum combination of available methods of disposal so as to limit damage to the environment to the greatest extent achievable for a reasonable and acceptable total combined cost to industry and the public purse'[11] and 'emphasises the protection and conservation of the environment across land, air and water'.[12] This is because wastes generated by an activity do not disappear when transferred from one receiving medium to another.[13] For instance an air pollution requirement for reducing air pollution could increase the problem of water pollution if any resulting effluent was then disposed of into a river or stream.[14]

Rightfully the aim of any approach to pollution control should be such that all three media - air,

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[6] Leeson op cit 46

[7] RA Preston Whyte 'Air Quality Management in the United States and Some Policy Considerations for South Africa' 71 (1989) *South Africa Geographical Journal* at 17

[8] MA Kidd *Environmental Law: A South African Guide* (1997) 128

[9] BPEO does not however apply to local authority air pollution control because such controls relate entirely to air pollution only and not all the three media - R Malcolm *A Guidebook to Environmental Law* (1994) 157

[10] Leeson op cit 42

[11] Eleventh Report 1985 'Managing Waste: The Duty of Care' Cmnd 9675 (HMSO) in: Leeson op cit 43

[12] Twelfth Report 1988 'Best Practicable Environmental Option' Cm 310 (HMSO) paragraph 2.1 in: Leeson op cit 43

[13] LD Guruswamy & SR Tromans 'British Environmental Policy: Towards the Best Practicable Environmental Option' 16 (1987) *Anglo-American Law Review* 76 at 81; Cf Kidd op cit 169

[14] Guruswamy & Tromans op cit (n. 13) at 76; Cf Kidd op cit (n. 8)169; Cf Malcolm op cit (n. 9) 145

land and water - is taken into account. In other words an integrated approach which does not separate the different media is one which would be seen as taking into account the environment as a whole. This form of approach is gaining acceptance in many countries for it has been seen that it would be difficult to attempt to control the pollution of the three media separately and also because such an approach would aid the objectives of sustainable development.[15]

As it is BPEO does not just involve taking into account environmental factors. Rather it involves identifying all feasible options for achieving an objective and choosing that option which is both practicable and environmentally acceptable.[16] Thus a sound environmental impact assessment system is a basic requirement for a proper and effective working of the BPEO approach.

4.3.2 Regulation of Emissions

This approach is based on the premise that, since it is impossible to avoid a situation where pollutants would be released into the atmosphere, it is more feasible to prescribe standards for the amount of pollutant that can be dispersed into the atmosphere. As used in the United States, the standards prescribed are based on 'threshold levels' of pollutants.[17] The term 'threshold' refers to the amount of a particular pollutant that can be present in the air without adversely affecting humans or the environment.[18] A national ambient air quality standard, which reflects the minimum allowable air quality for each pollutant is set and is applicable uniformly throughout the country.[19] Thus each state is required to set air quality standards along the lines of the national ambient air quality standard in their state implementation plan (SIP) and the only time this can be different is if the state imposes stricter standards than those set nationally.[20]

In the United States, the emissions standard approach is used along the lines of the

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[15] Kidd op cit (n. 8) 129

[16] Leeson op cit (n. 5) 44 - usually the choice will depend on the weight given to the environmental impacts and associated risks as well as to the costs involved but overall the environment is given a higher consideration.

[17] Dl' O'Sullivan 'The Clean Air Amendments of 1990: Permits and Enforcement - The Guts of the New Law' 18 (1992) *University of Dayton Law Review* 275 at 282

[18] O'Sullivan op cit 282

[19] 42 USC § 7408(a)(2), 7409

[20] 42 USC § 7409(d)

market/economic approach through the concept of emissions trading. Emissions trading, refers to any method of reducing emissions from one source to compensate for new emissions from another.[21] Simply put, the owner of an original emission limit may use trading to meet his own limit and still expand a facility or sell or trade reductions to another facility.[22] Its use in the United States, falls under four categories: bubbles[23] - used with existing sources; emissions offsets[24] - used with major new emission sources; ; emission reduction banking[25] - which allows emission reduction credits to be sold or saved for future use; and netting[26] - used for modification of existing sources that result in increased emissions at one or more discharge points.[27]

The ultimate objective of emissions trading is to provide flexibility for the industry. That is leaving it to them to decide the best mode of reducing pollution while at the same time providing an incentive to do so efficiently. But despite all efforts to develop it industry has been slow to use emissions trading as a means of controlling air pollution.[28] According to one writer, this may be due to the complex nature of the system which makes it difficult to apply in reality and perhaps

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[21] VR Patton-Hulce *Environment and the Law: A Dictionary* (1995) 123

[22] ibid

[23] Emissions trading began with the bubble concept which refers to an imaginary boundary device placed over a polluting plant or other facility with many individual sources of air pollution emissions. Instead of regulating emissions from each smokestack, pipe or fugitive emission source, only the total pollution of the plant is regulated as if it was coming from a single imaginary outlet in the bubble - AW Reitze Jr. 'A Century of Air Pollution Control Law: What's Worked; What's Failed; What Might Work' 21 (1991) *Environmental Law* 1549 at 1622; Cf Patton-Hulce op cit 123

[24] Offsets which came into use after EPA established its offset policy in December 1976, require a reduction in one source to offset the increase in other emissions. The sources need not be in the same immediate vicinity but they must be in the same air quality region. They are mandatory for major new sources in nonattainment areas - Patton-Hulce op cit 124; Cf Reitze Jr. op cit 1627

[25] This means that a facility accumulates emission reduction credits which can be stored for later use in bubbles, offsets or netting transactions and if the state allows it the owner of the credits can also sell or trade the credits - Patton-Hulce op cit 124; cf Reitze Jr. op cit 1626

[26] Under this concept a firm can modify a source so that emissions can increase if there are decreases in other emissions at the facility. It is an internal trade and is the most common form of emissions trading. - Reitze Jr. op cit 1628; Cf Patton-Hulce op cit 124

[27] EPA Emission Trading Policy Statement 51 Fed. Reg. 43,814 (1996) in Reitze Jr. op cit (n. 23) 1626; Cf Patton-Hulce op cit (n. 21) 123

[28] Reitze Jr. op cit (n. 23) 1626; Although the EPA has produced glowing reports concerning emissions trading, in reality the promise of marketable transactions in air emissions has not yet been achieved

explains the reluctance of the business community to use it.[29] For instance to be able to calculate surplus emission reduction, requires knowing both the baseline and actual emissions and both are usually not accurately known. Current emissions are especially difficult to know because calculations are usually made by regulators long after the emissions have been dispersed into the air.[30] Apart from this the baseline used to calculate surplus emissions vary considerably among the states.[31] Another writer attributes the slow development to uncertainty on the part of managers who view the future development of the policy in terms of changing standards with concomitant stricter regulations as well as high transaction costs involved in the finding of offset or bubble partners due to the paucity of buyers and sellers in the market and the limits placed on trading by the technological requirements of new and existing sources.[32] They both suggest a significantly less complex economic approach in the form of emission taxes or fees, such as gasoline taxes, sulphur taxes or carbon taxes.[33]

Emission taxes or fees apart from being simpler when compared to emissions trading, has no incentive to delay compliance but rather the incentive would be to reduce pollution releases in order to decrease the cost of governmentally imposed charges.[34] However Kelman points out certain problems that should be envisaged with the use of emissions taxes or charges on the part

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[29] Reitze Jr. op cit (n. 23) 1626 and 1630; Cf Liroff RA 'Air Pollution Offsets: Trading, Banking and Selling, Conservation Foundation, Washington DC in: RA Preston-Whyte 'Air Quality Management in the United States and Some Policy Considerations for South Africa' 71 (1989) 1 *South African Geographical Journal* 17 at 22

[30] Hahn & Hester 'Where Did All The Markets Go: An Analysis of EPA's Emissions Trading Program 6 Yale J. On REG. 109 (1989) 116 in Reitze Jr. op cit (n. 23) 1626

[31] Twenty-two states use allowable emissions; eight states use the lower of allowable or actual emissions; eight states use variable baselines for different kinds of emission trades; four states use actual emissions and eight states have no available information - Hahn & Hester 'Where Did All The Markets Go: An Analysis of EPA's Emissions Trading Program 6 Yale J. On REG. 109 (1989) 119 in: Reitze Jr. op cit (n. 23) 1626

[32] RA Preston-Whyte 'Air Quality Management in the United States and Some Policy Considerations for South Africa 71 (1989) *South African Geographical Journal* 17 at 22 - buyers are required to employ New Source Performance Standards or Lowest Achievable Emission Rate while sellers are required to employ Reasonably Available Control Technology (RACT)

[33] Reitze Jr. op cit (n. 23) 1633; Cf Preston-Whyte op cit 22

[34] Reitze Jr. Environmental Law Intro - 58 (2nd ed. 1972); Wlute & Wittman 'A Comparison of Taxes, Regulation & Liability Rules Under Imperfect Information' 12 J. Legal Stud. 413 (1983) in: Reitze Jr. op cit (n. 23) 1619; Cf Preston-Whyte op cit (n. 7) 22; Cf MA Rabie 'Legal Remedies for Environmental Protection' V (1972) *CILSA* 247 at 252

of industries as well as government.[35] On the part of industries, he believes that they are less likely to embrace this form of approach on the grounds that it would be more expensive than traditional regulation - first because they have to install the best available control technology to abate pollution and, since it is impossible for even the best technology to absolutely curb the emission of air pollutants, still have to pay the government money.[36] Furthermore costly charges could end up being a factor of inflation on the whole because some polluters might choose to pay the costs and pass them on to the consumer instead of controlling pollution and paying less taxes.[37] For some industries an emission tax would reduce their ability to compete against foreign companies and also raises the issue the question of fairness and distribution - first because they tend to impact small businesses more harshly than large businesses and because they affect industries and geographic regions unevenly.[38]

On the part of government, there is a high likelihood that little revenue would be produced if the tax is high enough to act as a detterent for would-be polluters and yet if they are too low as to constitute a license to pollute and thereby increase revenue, the environment would be the one to suffer.[39] Added to this is the fact that the political acceptability of pollution taxes or charges is questionable because there is the fear that they would be unduly repressive.[40] It would also be difficult to detect and monitor the amount of pollutants dispersed into the atmosphere thus creating a licence to pollute for many industries.[41] Though obviously simpler and less complicated to implement than emissions trading, emission taxes are attractive only theorectically and their disadvantages far outweighs advantages. In addition, it is more likely to be a good revenue raising tool than an air pollution control tool.[42] Apart from this it is more likely that the polluting

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[35] J Kelman What Price Incentives? Economists and the Environment 120-21 in: Reitze Jr. op cit (n. 23) 1618-9

[36] J Kelman What Price Incentives? Economists and the Environment 120-21 (1981) in: Reitze Jr. op cit (n. 23) 1619

[37] Kelman op cit 120-22 in: Reitze Jr. op cit (n. 23) 1620

[38] Reitze Jr. op cit (n. 23) 1621

[39] Reitze Jr. op cit (n. 23) 1621

[40] Preston-Whyte op cit (n. 7) 22

[41] MA Rabie 'Legal Remedies for Environmental Protection' V (1972) *CILSA* 247 at 253

[42] Fuggle and Rabie op cit (n. 4) 43

industries would pass the fee on to the consumer by raising the prices of their products.[43]

4.3.3 Final Analysis on Approaches

In the final analysis there is obviously no single or particular solution to the issue of approaches to air pollution control. For whatever approach is adopted would necessarily have its advantages as well as disadvantages. The only apparent solution to the issue of approach is that whatever approach is being adopted, its implementation should be such that would be of maximum benefit to the atmosphere as well as the environment in general. In other words emphasis should not be on costs of obtaining clean technologies but rather the emphasis should be on what would be the best way to conserve and protect the environment. In this regard I would advocate the use of the 'best practicable environmental option' not so much because it is being used by the United Kingdom but because it is obviously an approach which takes into cognisance the environment as a whole and attempts to see that it is being conserved using the best practicable method available. In addition it must be pointed out that the issue of enforcement is of paramount importance to achieving the goal of air pollution control. For this is the crux of any law - how effectively it is being enforced.

[43] ibid

4.4 Enforcement

According to O' Sullivan, '... aggressive enforcement is ... the key to a clean environment.'[44] He goes on to say that 'the purpose of stringent enforcement penalties is not merely to punish offenders but more importantly to deter future violations.'[45] As pointed out previously the 'polluter pays' principle is the basic principle on which all four countries base the enforcement of the provisions of their air pollution control legislation. This principle applies to most environmental laws for there is a general belief that the person who pollutes any of the media should pay for tbe costs of pollution. Paying here may be as a form of punishment or the costs of dealing with the consequences of pollution already caused.

Enforcement usually begins with the issuance of notices like abatement notices or orders, enforcement and prohibition notices requiring the polluter to cease whatever polluting activity he or she is involved in or requiring compliance with the provisions of the law, authorisation or permit as the case may be.[46] Failure to comply with the order or notice usually constitutes an offence and in some cases the authority from whom the notice emanated can take it upon himself to perform whatever action the polluter is supposed to do to clean up and then recover the cost from the polluter.[47]

4.4.1 Criminal Sanctions

Where administrative notices fail to achieve their objective of enforcing compliance, recourse is then made to the use of criminal sanctions. Criminal sanction is one of the most familiar and commonly used techniques for achieving compliance with tlie law, particularly environmental law.[48]

The sanction may be in the form of fines or incarceration and in some instances both. Criminal sanctions may be direct or indirect. An indirect criminal sanction occurs where the sanction is

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[44] DF O'Sullivan 'The Clean Air Amendments of 1990: Permits and Enforcement - The Guts of the New Law' 18 (1992) *University of Dayton Law Review* 275 at 303

[45] ibid

[46] See section 19 (1) of the Atmospheric Pollution Prevention Act, 1965; 42 USC § 7413; sections 13 & 14 EPA, 1990 (UK); section 20 of the Clean Air Act, 1961 (NSW)

[47] MA Rabie 'Legal Remedies for Environmental Protection' V (1972) *CILSA* 247 at 250

[48] Rabie op cit (n. 47) 259-60; Cf Cheryl Loots 'Effective Environmental Law I (1994) *SAJELP* 17; Cf DF O'Sullivan op cit (n. 17) 308

employed as a means of enforcing certain prerequisites, such as compliance with an administrative notice or conditions of a permit or licence.[49] A direct criminal sanction occurs where penalties are prescribed for the performance or non-performance of an act, which is usually directly outlawed.[50] Proving the latter is often more difficult for as Rabie points out, '[i]t is more easier to prove the elements of the crime of engaging in an activity without a licence ... than to prove that [the polluter] has committed a certain kind of environmentally detrimental activity.'[51] In addition, indirect sanctions allows for proactivity as opposed to direct sanctions which are imposed only after the act has been committed and irreparable damage done to the environment.[52] In other words it looks only to the past and seeks punishment for past actions.[53]

The countries under analysis have attempted to impose fines which try as much as possible to depict the gravity of the harm done and at the same time act as a deterrent for would-be offenders.[54] For instance in the United States penalties of up to $25,000.00 a day per violation are imposed[55] while in the United Kingdom penalties of up to £20,000 can be imposed after conviction. In addition a distinction is made between private individuals and corporate bodies when imposing fines.

But the use of criminal sanctions as a means of enforcing environmental laws is often fraught with various problems and difficulties. A major problem is the criminal process itself. According to Rabie, '[it] is the most cumbersome coercive tool available'[56] for the prosecutor often encounters certain difficulties. First he has to discharge the burden of proof beyond a reasonable doubt. This is often difficult to achieve because the prosecutors often have no knowledge of the law and so do not know what procedures to follow and what evidence is required to be able to obtain a

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[49] Rabie op cit (n. 47) 260-61; Cf Loots op cit 17

[50] ibid

[51] Rabie op cit (n. 47) 261

[52] ibid

[53] Rabie op cit (n. 47) 261

[54] Although this is not the case in South Africa

[55] Loots op cit 19

[56] Rabie op cit (n. 47) 262

conviction.[57] The problem of inadequate policing of prohibited activities due to insufficient specialized officials also leads to the inability of obtaining necessary and adequate evidence needed to be able to obtain a conviction.[58] And even the few investigating officers available do not possess the necessary specialized knowledge of the particular aspect of the environment with which they are concerned as well as the legal training required to be able to know what procedures to follow in order to obtain the evidence required for prosecution purposes.[59] Finally the attitude of the general public with regards to criminalizing environmental laws does not help with regards to discouraging would-be offenders and policing of activities.[60] Many people do not see the need for criminalizing environmental laws for to them pollution is not morally wrong - air is a natural resource, which is free and may be abused with impunity.[61] This type of attitude certainly does not help the situation for as Hart rightly points out, '... criminal law always loses face if things are declared to be crimes which people believe they ought to be free to do, even wilfully'.[62]

But despite these difficulties and problems one cannot do away with the use of criminal sanctions for there are certain laws that can only be enforced with the use of criminal sanctions. Thus the difficulties and problems enumerated above must be overcome and the chances of detection, prosecution and conviction made higher. Perhaps a cue can be taken from the United States experience where a federal program was established to investigate and prosecute environmental crimes.[63] The EPA in co-ordination with the Land and Natural Resources Division hired a group of special investigators (most of whom were experienced criminal investigators) as part of its centralized criminal investigations program.[64] The Department of Justice also established a separate Environmental Crimes Unit made up of lawyers with both criminal and environmental law

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[57] Loots op cit (n. 48) 18; Cf Rabie op cit (n. 47) 262

[58] ibid

[59] Loots op cit (n. 48) 18

[60] Loots op cit (n. 48) 18; Cf Rabie op cit (n. 47) 262-3

[61] A Rabie *South African Environmental Legislation* (1976) 103

[62] Rabie op cit (n. 47) 263

[63] This was in October 1982 - H Brunner 'Environmental Criminal Enforcement: A Retrospective View' 2 (1992) *Environmental Law* 1315

[64] Brunner op cit 1315; Cf Loots op cit (n. 48) 21

experience to handle the cases developed by the EPA investigators.[65] The need for the program arose as a result of a fundamental flaw in most of the criminal cases handled by the EPA - EPA personnel made up of lawyers and scientists had neither the training not the expertise necessary to effectively develop criminal cases.[66] The program bas yielded impressive results. According to statistics maintained by the Department of Justice's Environmental Crimes Section, between October 1, 1982 and March 26, 1992, a total of 675 defendants have been convicted federally of environmental crimes of which includes 226 corporations and 450 individuals.[67] In addition fines which total over $332,000,000 have been imposed and defendants sentenced to serve a total of almost 190 years of confinement.[68] The enactment of tbe Pollution Prosecution Act of 1990[69] is also one of the ways in which the Authorities have tried to improve on the program. The Act provides for the creation of a national center to train federal, state and local investigators, prosecutors and technical experts in the enforcement of environmental laws and for the increase in the number of criminal investigators to 200 by October, 1995.[70]

It is hoped that South Africa can embark on a similar programme in order to overcome some of the problems enunciated above although Loots points out that strict enforcement of environmental laws carrying heavy penalties could act as a disincentive to foreign investment which the country needs.[71] She however goes on to say that, since South African corporations are already being required to comply with international standards of environmental protection overseas then it can be assumed that responsible foreign investors will insist that the operations in which they invest should comply with the same standards.[72]

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[65] Brunner op cit 1315; Cf Loots op cit (n. 48) 21

[66] Brunner op cit 1318

[67] Brunner op cit 1326-7

[68] Brunner op cit 1326-7;

[69] 42 USC § 4321 (West Supp. 1992)

[70] As at 1992 there were only 66 criminal investigators in the EPA's Criminal Investigations Division - Brunner op cit 1325

[71] Loots op cit (n. 48) 22

[72] ibid

Nevertheless even if the use of criminal sanctions were to become more effectively implemented, the question still remains, whether fines or incarceration are enough to compensate for the harm done to the atmosphere which in many cases, if not all, is irreparable? In addition would it not be better to have a 'sanction' which is proactive in nature and not reactive as is the case with criminal sanctions. This is because though a polluter may face some form of punishment, the fact still remains that the harm done to the environment cannot in most cases be rectified by any amount of monetary compensation. Thankfully enforcement is not limited to criminal prosecutions but includes civil actions as well which are more proactive in nature.

4.4.2 Civil Actions

Civil actions for civil law remedies can be initiated by the Authority in charge of air pollution control or private individuals. The civil law remedies usually available are injunctions (or interdicts) or civil money penalties (as is the case in the United States).

The civil law remedy of injunction or interdict is of great advantage because of its proactive nature as opposed to criminal sanctions, which are reactive in nature. As one writer puts it, '[a]n interdict is one of the most valuable remedies in the environmental field [for it] can regulate future conduct.'[73] In addition it provides an instant impact on air quality because a polluter is forced to stop operations which in turn would lead to faster compliance with the law of which he or she is in breach of and thus avoid the problem of irreparable damage to the atmosphere.[74] Further advantages are that the applicant can proceed by way of an urgent application where necessary and obtain the interdict in a matter of days or even hours in some exceptional circumstances. The applicant is given leeway to investigate, collect evidence, call in experts and appoint specialized lawyers to handle the case. The standard of proof is much lower than in a criminal trial since the applicant would be required to prove his case on a balance of probabilities and the applicant is entitled to recover the costs of bringing the application from the respondent if the application is successful which is not possible in criminal actions.[75]

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[73] SC McCaffrey & RE Lutz (eds) *Environmental Pollution and Individual Rights: An International Symposium* (1978) 107; Cf Rabie op cit (n. 47) 254

[74] DF O'Sullivan 'The Clean Air Amendments of 1990: Permits and Enforcement - The Guts of the New Law' 18 (1992) *University of Dayton Law Review* 275 at 307

[75] Loots op cit (n. 48) 27-8

Injunctions are of two types. They may be (a) prohibitory in nature and thus issued to halt illegal acts, prevent some specific action or stop identified violations or (b) mandatory and used to compel that some action he taken to correct a violation, adopt a particular technique or control method, apply for a permit, obey a condition, conduct certain tests or report certain activities.[76] To be able to obtain an injunction or interdict, the applicant must prove unlawfulness or a threat of unlawfulness. The remedy is not confined to nuisance but extends to infringement of real and personal rights and rights of personality. In addition it may vindicate aesthetic feelings that have been infringed or threatened by pollution.[77] The applicant may be a private individual or the Authority under whose jurisdiction the Act falls.

4.4.3 Any Alternatives With Regards to Enforcement?

As pointed out above, the basis of any law is not so much the approach used to administer the law but rather how adequate and effective is the means of enforcing the law. This was appropriately summed up by Rabie when he said that, '[e]ffective enforcement is ... the crucial test of any law.'[78] Added to this is the fact that a law which is adequate and effective in itself would serve as deterrents for would-be offenders. So far we have looked at the basic modes of enforcement used by the four countries under analysis and in most cases one would see that great reliance is placed on the use of criminal sanctions. The question is then asked whether there are other remedies available which act as a detterent for would-be offenders as well as be of greater benefit to the environment? Or whether it is possible to make the use of criminal sanction assume a more proactive nature and so act as a deterrent to would-be offenders? To answer this question we would examine various suggestions made by Rabie which attempts to show ways in which criminal sanctions can be used and still act sufficiently as a deterrent to would-be offenders.[79]

He suggests that rather than impose fines or terms of imprisonment which can easily be paid, such fines or terms of imprisonments should be suspended and in the conditions of suspension, measures

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[76] G McGregor *Environmental Law and Enforcement* (1994) 101

[77] MA Rabie 'Legal Remedies for Environmental Protection' V (1972) *CILSA* 247 & 255

[78] Rabie op cit (n. 61) 105

[79] Rabie op cit (n. 61) 99

to control or prevent air pollution be stipulated.[80] He further goes on to suggest placing a prohibition on the disposal of products manufactured in a scheduled process and a clause to the effect that on conviction the premises where or the equipment with which the scheduled process is being operated be sealed or that the equipment be declared by the court to be forfeit.[81]

While not downplaying the importance of any of the forms of enforcement examined above it is humbly submitted that the best way to achieve maximum air pollution control is through adequate social priority. In other words the general public must be socially conscious and concerned about the environment they live in particularly its conservation and preservation.[82]

[80] Rabie op cit (n. 61) 99

[81] ibid

[82] Rabie op cit (n. 47) 108; Cf Loots op cit (n. 48) 34

Chapter Five
Conclusion

5.1 General Summary of Issues

The issues as relates to air pollution control in South Africa can be generally summarized as follows:

1. South Africa makes use of two strategies - statutory regulation of plant or equipment[1] and statutory regulation of emissions[2] to control air pollution.
2. She has adopted the 'best practicable means' approach for implementing the provisions of the Atmospheric Pollution Prevention Act, 1965.
3. With regards to enforcement she relies mostly on the use of criminal sanctions which may be in the form of fines or incarceration or both.

It would be generally agreed that the present Act needs to be revised in terms of approach and enforcement. Apart from the problems and difficulties which affect the effective use of the criminal sanctions (as explained in chapters two and four), it is obvious that even the fines and terms of imprisonment imposed by the legislation are not high enough to act as deterrents.

A further problem is the lack of distinction between corporate bodies and individuals particularly since a greater percentage of air pollution occurs as a result of industrial processes. Since it is generally agreed that industrial pollution is the result of the maximization of profits through the minimization of the costs of waste disposal, the penalties imposed (particularly on industrial polluters) must he stringent enough to overcome the motive of economic gain.[3]

With regards to approach while not suggesting that a change be made completely from the use of

[1] For industrial activities that produce noxious or offensive gases

[2] For smoke control and vehicular pollution control

[3] FR Fuggle and MA Rubie *Environmental Management in South Africa* (1996) at 441

the best practicable means approach to another approach[4], it is suggested that the approach presently being used be revised to allow for a higher concern for the environment - that is using BPM in the light of BPEO.

Thankfully some of the suggestions made above are presently being addressed. This relates to the system of integrated pollution control presently being proposed under the draft environmental management bill. Integrated Pollution Control is defined as '[the system] which aims to prevent or minimize the release of pollutants to air, water and land from industrial processes and other economic activities and where releases do occur it aims to keep them to a minimum and to make them harmless to people and the environment.[5] One of the principles for a national environment policy under the draft National Environmental Management Bill, 1998 is that, '[e]nvironmental management must be integrated, acknowledging that all elements of the environment are linked and it must pursue the selection of the best practicable environmental option, taking into account the effects of decisions on all aspects of the environment and all people in the environment.'[6] With this being one of the main principles it is obvious that a step in the right direction is being taken to integrate pollution control using the best practicable environmental option.

Further, the injunctive relief of interdict is beginning to gain greater acceptance for use in enforcing environmental laws.[7] It is hoped that in the near future there would be cases instituted by private individuals for this remedy, particularly in the light of the recent developments with

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[4] See G Grange 'The More Important Sources of Air Pollution In the Republic of South Africa and the Most Recent Control Policies Adopted By the Authorities' (1991) *The Clean Air Journal* 4 at 9 in which Grange pointed out that the policy of adopting a flexible attitude to air pollution by sticking to the "best practicable means" philosophy appears to be the only way to achieve a delicate balance between protecting the environment and achieving sustainable development.

[5] Department of Environmental Affairs and Tourism *Integrated Pollution Control and Waste Management: The Need for Integrated Pollution Control in South Africa* (1996) at 13 in: M Kidd *Environmental Law: A South African Guide* (1997) 170

[6] See section 2 (1) (b) of the draft National Environmental Management Bill, 1998

[7] See E Bray 'Clearing the Air - Industrial Polluters Beware' 3 (1996) *SAJELP* 211 at 216 & 217 in which Bray points out that the case of *Minister of Health and Welfare v. Woodcarb (Pty) Ltd & anor* 19963 (SA) 155 (N) illustrates the courts' important role of interpreting and applying environmental legislation within the parameters of the 1993 Constitution and also of heeding the warning that the value of common-law remedies (interdict) and its progressive role over the years in environmental conservation and litigation should not be underestimated.

regards to the issue of *locus standi*. Previously, private individuals could not institute actions in court unless they were able to show that they had a personal interest that has been adversely affected. This was often difficult to prove because most often than not the individuals or organisation bringing environmental actions were not doing so for their own interest but rather were motivated by the desire to claim a relief in the interest of the public. This problem has now been addressed to a large extent by the 1996 Constitution of the Republic of South Africa[8] under sections 24 and 38. Under section 24, 'every person has a right to an environment that is not harmful to their health or well-being and to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'. This right may be protected by anyone listed under section 38 and these are anyone acting in their own interest; anyone acting on behalf of another person who cannot act in their own name; anyone acting as a member of or in the interest of a group or class of persons; anyone acting in the public interest and an association acting in the interest of its members. These two sections now make it possible for actions to be instituted by private individuals or organisations (irrespective of personal interests) for harm caused or about to be caused to the environment.

It must however be pointed out that legislation alone cannot make a difference unless there is correct political will, industrial commitment and the involvement of the general population in the decision making process.[9] Further until the general public and even the judiciary accept that polluting the air is as much a crime as robbery or even murder, the efforts being made to criminalize air pollution would be of very little use for as Rabie pointed out, 'it is only against a background of general consciousness and concern coupled with effective action by those controlling air pollution, that enforcement of the [Act] will be maximally effective.'[10]

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[8] Act 108 of 1996

[9] Fuggle and Rabie op cit (n. 3) 455; Cf MA Rabie 'Legal Remedies for Environmental Protection' V (1972) CILSA 247 at 280

[10] A Rabie *South African Environmental Legislation* (1976) 108

5.2 Recommendations

In light of the foregoing, the following recommendations are therefore made:

1. That the system of integrated pollution control using the best practicable environmental option be adopted as soon as possible.

2. That the criminal penalties provided for under the Atmospheric Pollution Prevention Act be revised to conform with present-day realities.

3. That in revising the penalties a distinction be made between corporate bodies and individuals because it is obvious that a greater percentage of air pollution in South Africa occurs as a result of industrial processes and equating the penalties for corporate bodies with those of individuals would not be a fair assessment.

4. That the general public be educated about the role they need to play in the conservation and protection of the environment and that they be encouraged to be a part of any decision making process with regards to this.

5. That the whole Act be made applicable to the Government and not just a part of it as is presently the case.

6. That the personnel and officials involved with enforcing the provisions of the law be properly trained particularly with regards to the process of criminal prosecution.

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