

PROGRESS IN THE APPLICATION OF PART II OF THE
ATMOSPHERIC POLLUTION PREVENTION ACT

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The Atmospheric Pollution Prevention Act has a schedule of all those industrial processes, mainly of a chemical, metallurgical and petrochemical nature, which may not be operated without a certificate from the Chief Control Officer.

The act states that, to receive a certificate, a process must be carried on so as to use the "best practicable means" for reducing the emission of pollutants to a minimum.

The task of the Chief Officer is to assess the 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 available, the costs associated with their installation and operation and the effects which these costs will have on the ability of the firms concerned to operate without financial loss.

The Chief Officer is therefore involved in the closest of discussions with all the industries and out of these discussions arise industrial air cleaning programmes which eventually result in a substantial reduction in emissions.

Below is outlined the end points of some of these discussions and the action which has been taken by a number of industries in the Republic.

In the production of steel, the tendency is towards the use of high productivity units, like arc furnaces and improved versions of the tandem. As the throughput per size unit of equipment

increases, the total volume of air or gas to be cleaned per ton of product can be reduced. Two bag filter installations have been in operation on arc furnaces now for more than a year. This is significant, because they represent the extremes of the size scale, namely 5 tons and 150 tons. The disposal of the collected material has not been solved to perfection yet, but is receiving attention.

A new development in stainless steel production is the use of argon-oxygen blows on hot metal made up with high carbon ferro-alloys. Not only does this stimulate the production of high carbon ferroalloys at the cost of the higher temperature operations for the low carbon counterparts, but the total volume during blowing may be reduced. Discussion on the first such installation is under way.

With two double contact sulphuric acid plants in operation, one on a zinc sulphide and the other on pyrite, the feasibility of the operation on local raw materials has been demonstrated. Naturally the economic balance of additional recovery versus higher plant cost has not been established yet, but the need for placing requirements on conversion efficiency on such installations falls away in practice. Compared to the average 97% found in practice on the conventional pyrite burners, these plants achieve better than 99% conversion. Thus emission rate falls from 3% to 1%.

The hard work of the South African Sugar Millers on the removal of smut from the bagasse-burning boilers is slowly but surely bearing fruit - or perhaps in this case one should say flowers. In a two-pronged plant sized attack, both water scrubbing and high efficiency cyclones have been put into operation and although formal test results are not to hand eyeball measurements give reason for optimism. From this it should by no means be deduced that the burning of bagasse is the final answer. No substance with a density of about 0.1 gm/ml when uncompacted,

containing 50 to 60% by weight of moisture, has any claim to the name "fuel". The problem really arises from the disposal side. How can a mill handle 100 tons per hour of this material - some 2 000 cubic yards - on a 9 months per year basis without being drowned in it? Alternative uses are being sought - and found - but this takes time. In the meantime, boilers with large combustion spaces and slow air flow, followed by cleaning gear, seem to be the "best practicable means" of handling a sooty problem.

The recovery of sulphur from crude oil is now a normal practice and is being practised by the whole refinery industry. A new member may, however, soon join this fraternity, when the recovery of sulphur from coke oven gas becomes a reality. Admittedly, the efficiency of the Claus furnace for combining H_2S and SO_2 to form elemental sulphur, is only of the order of 90%. A recent development may however pave the way to 99% recovery.

While on the topic of sulphur, the removal of SO_2 from the off-gas of sulphide roasting operations is possible only if the converting is done on a continuous basis. In literature, a new hydro-metallurgical scheme was announced recently which would make the recovery of sulphur possible directly from the leach liquor.

With the SO_2 scrubbers on power stations in England to be shut down and America contemplating entering the field, it is my opinion that South Africa, with its meagre water supply, should wait for a more practical solution. In the meantime, the requirement for fly ash removal is now such that this source of pollution will not increase in future.

Probably the three largest lead handling plants in the country have now completed their bag filter installations on all points of lead fume emission and the others are in the process of following suit.

Based on the close correlation between the design expectations and the actual measurements of the emissions at the new alumina smelter at Richards Bay, the installation can be considered successful and we therefore need not fear the problems which developed at older smelters elsewhere in the world. While it is true that we reaped the benefit of their experience, it must not be overlooked that this represents success under different climatic conditions.

Except for the last case, I have intentionally not mentioned specific plants, in order to present a wider picture. Many special problems have been solved, and a considerable amount of research has been done in the past three and a half years. It is also true that many installations are in the process of erection at this moment, but comment on their degree of success can only be written after some period of satisfactory operation.

It must also be borne in mind that industrialization in South Africa is in its infancy and an unreasonable cost burden may well make the establishment of a manufacturing process uneconomical. In Europe and America, with their developed economy and industry, as well as available know-how built up over many years of failure and success, many problems still defeat the experts. I am however confident that we will solve our problems with co-operation and a will to succeed.

'N BESPREKING VAN ETLIKE PRAKTIËSE PROBLEME MET
BETREKING TOT ROOKBEHEER INGEVOLGE DEEL III
VAN DIE WET OP VOORKOMING VAN LUGBESOEDELING

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Daar is op die oomblik sowat drie-en-sestig plaaslike besture waarvan die regsgebiede ingevolge artikel 14(1) van die Wet deur die Minister van Gesondheid tot rookbeheergebiede verklaar is. Afhangende van die grootte en mate van nywerheidsontwikkeling in die betrokke gebiede, het die Nasionale Adviserende Komitee op Lugbesoedeling by die Minister aanbeveel dat beheer op een van drie vlakke uitgeoefen word.

Reeds in November 1968, is dit besef dat dit van groot waarde sal wees om 'n groep van die plaaslike besture byeen te roep om 'n mate van eenvormigheid in optrede te verseker. Terselfdertyd kan dit as forum dien waarby plaaslike besture in besprekings kan deelneem en leiding kan ontvang in verband met praktiese probleme wat in hul gebiede bestaan.

Sedert die eerste vergadering waarby 15 plaaslike besture van die Witwatersrand/Pretoria-kompleks verteenwoordig was, is daar reeds nege sodanige byeenkomste gereël en het die ledetal uitgebrei na die huidige 27 Rade wat binne die gebied begrens deur Rustenburg, Witbank, Welkom en Klerksdorp, geleë is.

Die doelstellings van die Groep word grootliks bereik deur die onderlinge bespreking van rookbeheerprobleme en dit mag interessant wees om 'n paar gevolgtrekkings van die Groep hier bekend te maak.

Die kwessie van die gebruik van olie in plaas van steenkool is reeds van hoek tot kant bespreek. Die voor- en nadele van die besondere brandstowwe is tot in die fynste besonderhede uitgepluis en die Groep se gevolgtrekking is dat die besluit bloot op ekonomiese oorgewings berus. In die groter aanleg, waar die