

Disease over our cities

Take a drive across the Eastern Transvaal Highveld at dawn and witness one of the enduring legacies of industrialisation in South Africa: a thick black ribbon across the horizon that is made up of more soot, sulphur dioxide and other noxious gases than exists in most other parts of the world.

Media coverage

A series of articles in the media have recently suggested that some of the most polluted air on earth hovers over cities and black townships in the Transvaal and the people who live there appear to be trapped in a haze of contradictory government policies.

The articles have painted a bleak picture of life in regions of the Eastern Transvaal Highveld, the Vaal Triangle and the Witwatersrand, citing statistics that even government officials acknowledge place these areas on top of the world-wide list of regions with the highest levels of atmospheric pollution in the world.



Statistics indicate that levels of atmospheric pollution in certain areas of South Africa are among the highest in the world.

At the same time at least three studies into the social incidence of respiratory disease have been conducted which, with varying degrees of certainty, point to increased rates of lung and chest disorders, especially amongst children, in the areas that form the industrial heartland of South Africa.

Pollution statistics

The evidence of severe pollution in the Transvaal's atmosphere is compelling. Early this year two private consultants produced a report which claims that coal-burning power stations and factories are pumping amounts of acid-rain-causing sulphur dioxide into the air that are twice those in East Germany, the country which has the highest level of air pollution in the world.

The report says emissions from 12 power stations and the Sasol fuel from coal plants in the Eastern Transvaal emit 57,7 tons of sulphur dioxide per square kilometre each year. The air over East Germany absorbs 30 tons of sulphur dioxide per year, while the next most polluted country, the United Kingdom, has 14,34 tons of the toxic gases, says the report. More menacingly, the consultants predict these levels will rise to 80 tons per year when two new power stations start operating.

These statistics apply to an area with a radius of some 80 kilometres and would even out when the atmosphere of larger areas is measured.

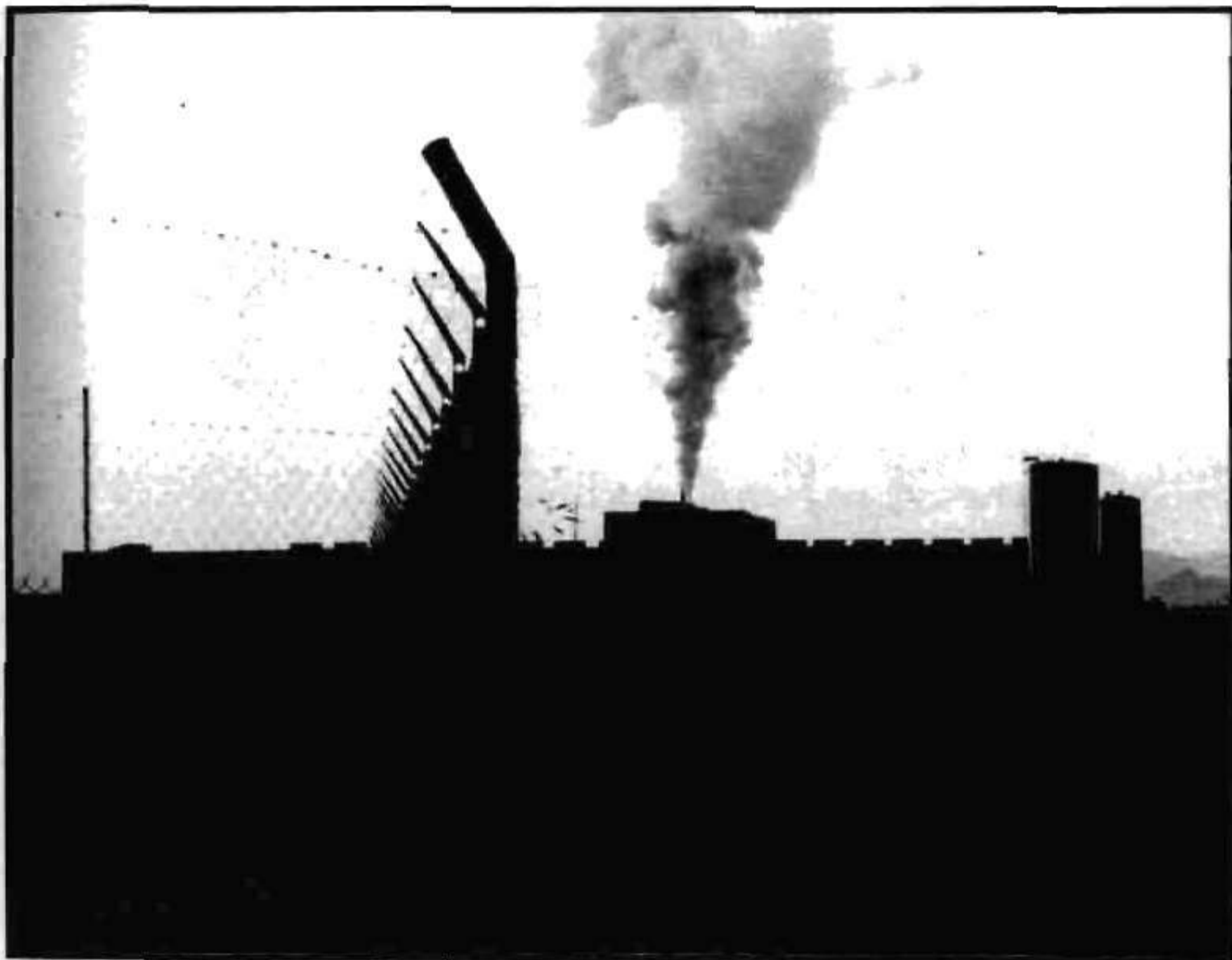
Also, says government pollution control officer Martin Lloyd, the measurements are taken close to the stacks that emit the gases and the figures would be much lower after the smoke disperses. But even the government's official figures, produced by the Council for Scientific and Industrial Research (CSIR), are cause for alarm.

Last year the report of an extensive CSIR study said sulphur dioxide levels stood at some 31 tons per square kilometre per annum. A similar warning was sounded some years ago when the World Health Organisation said that the Eastern Transvaal Highveld had more micrograms of sulphur dioxide per metre of air than any other country in the world.

Local conditions

The scenario is worsened by aggravating local factors. Reports, vigorously denied by industrialists, are rife that big steel smelting works and power stations switch off the filters that inhibit the emission of gas and coal particles at night, when the colour of the smoke cannot be observed, because they are expensive to operate.

The presence of particulate matter, which increases the ability of toxic gases to enter the lungs, is also increased by the fact that most black township residents continue



The industries producing pollution should prove it is safe before they are allowed to operate, rather than the responsibility for this being placed on the public.

to use coal stoves for heating their houses because this is a much cheaper source of energy than electricity.

The Eastern Transvaal is also characterised by low-lying mists which tend to trap and concentrate the pollutants. Ecology expert and journalist James Clark says a Ph level of 2,8 has been measured in the air over parts of the region and in misty conditions this could drop to as low as 1,7. (The Ph levels of unpolluted air range from 4,2 to 5,6 with lower levels indicating an increased acidity.)

The CSIR report says the effects of pollution are worsened by the low levels of oxygen on the Highveld and the lack of air turbulence which inhibits the dispersal of dangerous gases.

Another typical climatic feature on the Highveld is the tendency for a canopy of polluted air to remain trapped over cities and townships in the region, which takes much longer than air in levels higher up in the atmosphere to disperse. In the words of the CSIR report, these factors combine to create "an atmospheric pollution climate amongst the most adverse anywhere in the atmosphere".



Trade unions and community organisations active in the affected areas are dealing with issues of exploitation and as such have not addressed the problem of air pollution.

The profile that emerges of the Eastern Transvaal Highveld cannot be applied exactly to the Vaal Triangle and the Witwatersrand, where much less research has been done and no equivalent figures for air pollution have been released. Observers believe the quality of air over the two areas is probably marginally better because there are not that many power stations crammed into a small area. But both the Vaal Triangle and the Witwatersrand have many more black townships which produce low-lying and dangerous pollution from coal stoves.

In 1952 a killer smog in London, which some statistics say killed 6 000 people in two weeks, contained acid levels of 1,7. General opinion amongst doctors is the smog had such devastating effects because it combined sulphur dioxide with particles of soot and carbon in a thick mist which was capable of penetrating the linings of the lungs.

Findings of studies

While the exact combination of factors and levels of pollution are not serious enough to cause a disaster on this scale, there is enough evidence of a dramatic impact on the health of residents of the affected areas. Three key studies have highlighted these dangers: a 1986 study by Prof A.M. Coetzee, of the University of Pretoria's Department of Community Health, published in the SA Medical Journal; an unpublished study

conducted in 1987 by Prof S. Zwi, from the University of the Witwatersrand's Medical School; and a section in the CSIR report on pollution over the Highveld, released in the middle of last year.

The 1986 study investigated the health of lungs of children from primary schools in Sasolburg and compared these to children from the relatively unpolluted rural towns of Parys, Heilbron and Frankfort. Although no important differences in the incidence of respiratory illness were evident from the survey, there was a significant decrease in the strength of children's lungs (as indicated by lung function tests) - especially those of boys.

Prof Zwi's study of lung disorders in polluted areas went a little further: it claimed that exposed children in the affected areas "have increased frequencies of certain respiratory symptoms such as coughing, wheezing and certain respiratory illnesses - asthma in boys and chest colds in girls".

The CSIR study was more cautious. It noted weaknesses in the previous studies which compared the health of people from polluted areas with that of people from non-polluted areas. The CSIR was especially worried that earlier studies did not take adequate steps to show that there were no other disease-causing pollutants, such as cigarette smoke, in the polluted areas and that there were no industrial pollutants in the rural areas.

Health hazards

According to Dr Bernard Fourie of the Research Institute for Environmental Diseases (RIED) in Pretoria, the results of studies by Prof Zwi and Prof Coetzee were not conclusive as they had compared lung functions of people living in polluted areas with those of people living in non-polluted control areas without rigorously demonstrating the absence of disease causing pollutants in the control regions.

For these reasons, RIED has been commissioned to undertake a major probe into the link between air pollution and respiratory diseases. Dr Fourie said the study, which is still in its planning stages, would investigate possible links between industrial contamination of the air and bronchitis, asthma and other forms of lung impairment.

"Minor ailments such as sinusitis and eye irritation, which people tend to accept as part of their day-to-day reality will also be investigated," said Fourie. While there was no indication of higher-than-normal levels of lung cancer in the Transvaal, this had not been ruled out and would form part of the study.

But ear, nose and throat specialists from the Vaal region believe the study, which will take two years to complete, is not necessary for immediate action to remedy the problem. At least three doctors said it was already blatantly clear that their patients suffered from much higher rates of chest diseases.

A doctor, who cannot be named for professional reasons, said a recent meeting of students at the Technikon in Vereeniging indicated that one in every four students who came from rural areas began to develop chest ailments after their arrival in the Vaal area. There was a great danger that repeated doses of sinusitis, blocked noses and sore throats could, if unchecked, develop into chronic cases of bronchitis and emphysema.

Another specialist noted that serious lung diseases in the area are so wide-spread that the five oxygen tents at the Sasolburg Hospital are always occupied and patients frequently transferred to Johannesburg and Pretoria for treatment.

The need for organisation and mobilisation

As in most parts of the world, indications are that little will be done to address this state of affairs until people organise themselves to put pressure on the government and its health authorities to deal with the problem. In South Africa, unlike Europe and North America which have powerful and growing ecology movements, the state has come under little pressure from the potential victims to do anything about air pollution.

Trade unions, active in dealing with health and safety issues on the factory floor, have a strong presence in all of the affected areas. But, thus far, they have not addressed the issue of air pollution - probably because it seems to be a natural part of the environment and is overshadowed by more pressing issues of racism and exploitation.

Community organisations in the black townships even before they were emasculated by the State of Emergency, have done little to create pressure for a cleaner environment and most extra-parliamentary organisations, including the African National Congress and the Pan Africanist Congress, do not touch on the ecology in any of their policy statements. Also, a survey of the candidates standing for parliament in the September elections showed that only seven percent of the country's candidates had responded and that many politicians have little awareness of conservation concerns.

Wildlife Society director Keith Cooper said that from the small number of replies that had come in, the level of awareness was generally poor. Most of those who did respond had no connection with any conservation or environmental organisation.

Current initiatives

There are three exceptions to this rather gloomy scenario. In the Vaal Triangle a group of white housewives have formed themselves into the Air Pollution Appeal Committee (APAC) and have campaigned vigorously to highlight the problem, holding photographic exhibitions, consistently reminding industry of their pollution record and petitioning the authorities for action to be taken. In a sense the group has already won



In many instances coal stoves, contributing to air pollution, are used because electricity is too expensive.

a small victory: the RIED study was commissioned as a direct result of pressure from APAC - although this clearly has a lot to do with the fact that Vereeniging is the constituency for State President FW De Klerk.

In Soweto there is also an organisation called the National Environment Awareness Campaign (NEAC) which highlights the fact that minimal government expenditure on houses - which do not have heaters, ceilings and insulation - causes people to rely on coal stoves which increase the levels of pollution. But while this group helps generate media publicity it appears not to have the kind of mass membership necessary for campaigns to create more direct pressure on the state.

Finally a small group of English newspapers - the *Star*, the *Natal Witness*, the *Sunday Tribune* and the *Weekly Mail* - have begun to cover air pollution and other ecological scandals with some effect. But it is plain that until this country develops a greens movement with the kind of mass clout that these parties have in Europe and America, the government and industry will have no strong inducement to clean up their act. It must be stressed, however, that the onus should be upon the industries producing the pollutants to prove that they are safe before they are allowed to operate, rather than on the public who suffer the effects.

By Eddie Koch

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