

# Polluters should pay

**S**ilica dust is generated during the breaking up of rock in gold mining. Inhaling silica dust puts gold mineworkers at risk of developing a lung disease called silicosis. Silicosis is one of a family of dust diseases known as the pneumoconioses. In 1996, a random sample of ex-mineworkers in Libode district, Eastern Cape Province, underwent an occupational health medical examination. Compensation claims were submitted and followed up. Many of the Libode ex-mineworkers were found to be eligible for silicosis compensation but few had been previously compensated.

The failure to identify and compensate ex-mineworkers with occupational lung disease has had negative results for mineworkers, their families and their communities. The costs of caring for and supporting ex-mineworkers with occupational diseases has fallen on cash-strapped state health services and impoverished rural labour-sending communities.

Many of those with occupational lung disease are too ill to work. As a result, they are dependent on their families at a time in their lives when they might otherwise be breadwinners. There is a well-established ecological principle that the polluter should pay for the pollution caused. Mining employers comply with this principle in matters of environmental pollution (such as pollution of rivers).

*Anna Trapido and Richard Goode argue that the mine dust levy for lung disease should be increased in order to cover the unpaid liability owing to ex-mineworkers.*

Mining employers do not adequately comply with this principle with regard to lungs polluted by silica dust.

## **Compensation legislation**

The Occupational Diseases in Mines and Works Act (ODMWA) - Act 78 of 1973, amended, Act 205 of 1993 - makes provision for compensation for pneumoconiosis and other permanent diseases of the cardio-respiratory organs (heart and lungs) resulting from mining risk work.

- Compensation for lung disease in mineworkers and ex-mineworkers falls under the ODMWA.
- Under the ODMWA a dust levy is raised from mine employers.
- The money from this levy makes up the ODMWA Compensation Fund which is administered by the South African Department of Health.

This article focuses on compensation for silicosis because this is the most common occupational lung disease in South Africa. The ODMWA applies to all people who perform or who have performed risk work at a controlled mine (ie those governed in terms of the ODMWA). The majority of mines and works in South Africa are controlled by the ODMWA. All in-service and ex-mineworkers are covered by the ODMWA regardless of citizenship. Not all radiological disease (ie disease you can see on an X-ray) is severe enough to qualify for compensation. Compensation under ODMWA is wage based and also takes the severity of disease into account. Compensation awards under the ODMWA range from R10 000 to R70 000. The ODMWA establishes a Medical Certification Committee, made up of not less than five doctors who are appointed by the Minister of Health (one of whom has been nominated by the employer bodies and one by worker bodies). The director of the Medical Bureau for Occupational Diseases (MBOD) acts as ex-officio chair. The role of the Certification Committee is to determine if any person is suffering from a compensable disease.

Prior to the 1994 amendments, the ODMWA discriminated on a racial basis in terms of health service provision and compensation awards. There are currently very limited occupational health surveillance facilities in the rural mine labour-sending areas where the majority of black ex-mineworkers live.

### Full liability

Between 1973 and 1997, the MBOD certified 37 598 mineworkers as having pneumoconiosis. However, using data obtained from the Libode random sample of ex-mineworkers, we estimate that there are 520 000 cases of compensable pneumoconiosis in living ex-mineworkers. Many more have probably died without being compensated. We estimate that there is R9-billion owing to ex-mineworkers who are alive today. This estimate is based on the following figures:

- we estimate that two million people worked on South African gold mines between 1973 and 1997, of whom 60% are still alive;
- we know that 26% of the Libode random sample were eligible for compensation for pneumoconiosis and only 2,5% had been previously paid in full.

**Table 1: Estimated liability of current unpaid occupational lung disease compensation**

	- No of cases	Pn1 (R-m)	Pn2 new (R-m)	Pn2 upgrade (R-m)	Total (R-m)
Not eligible for further compensation	5 789				0
South African cases	198 557	1 814	2 018	2 472	6 304
Foreign cases	85 096	778	865	1 060	2 702
Total		2 592	2 882	3 532	9 006

*Pn1 is compensation for first degree pneumoconiosis, Pn2 new is compensation for second degree pneumoconiosis for men with no previous history of compensation, Pn2 upgrade is compensation for second degree pneumoconiosis for men with a previous history of compensation but who's disease has progressed.*

In Table 1 we use the Libode compensation data as a model, and we show that the estimated liability of unpaid compensation is R9 006-million.

### Feasible compensation liability

In order to claim compensation ex-mineworkers must be aware of their rights under the ODMWA. They must also be able to gain access to a medical examination. Given the large number of ex-mineworkers and the poor health facilities in the rural areas in which they live, it is unlikely that all those who are currently living with silicosis will receive this medical examination before they die. Therefore, the R9-billion is theoretical rather than an estimate of the actual amount that could practically be claimed by workers with occupational disease.

Clearly, it is important to assess how

many diseased workers can be reached before they die. In Table 2 we set out a viable schedule for benefit examinations on the surviving workers employed between 1973 and 1997. The model assumes that:

- a substantial proportion of workers will die waiting for a medical benefit examination;
- the MBOD Certification Committee will increase the number of benefit examinations it does by 15% per year until it is able to conduct 50 000 per year.

Table 2 shows that the liability relating to claimants who stand a chance of accessing a benefit examination before they die is lower than the full liability presented in Table 1. Table 2 shows that within 11 years, all surviving workers who were employed between 1973 and 1997 can have had one medical examination and

**Table 2: Estimate of time period necessary to provide a benefit examination to all living gold mineworkers employed 1973-97 and actual compensation liability incurred**

Category	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Total pop ex-mw <sup>1</sup>	1200	1068	930	791	652	516	387	272	175	96	37
Death rate ex-mw <sup>2</sup>	10%	11,5%	13,2%	15,2%	17,4%	20,1%	23,1%	26,6%	30,5%	35,1%	40,4%
Ex-mw deaths	120	123	123	120	114	104	89	72	53	34	15
Target pop benefits	1080	945	807	671	538	412	297	200	121	62	22
Benefits on ex-mw <sup>3</sup>	25	29	33	38	44	50	50	50	50	50	50
Benefits ex-gold mw <sup>4</sup>	13	14	17	19	22	25	25	25	25	25	25
Shortfall ex-gold mw	1068	930	791	652	516	387	272	175	96	37	-3
Compensation <sup>5</sup> (R-m)	113 750	130 813	150 434	173 000	198 949	228 792	228 792	228 792	228 792	228 792	228 792

**Assumptions:** (1) 2 million gold mineworkers 1973-1997 60% living; (2) 10% death rate, escalating at 15% per annum; (3) 25 000 benefits per annum on ex-mineworkers; (4) Half of all benefits on ex-workers are on ex-gold workers; (5) 26% eligible for compensation @ R35 000 each

that the actual liability becomes R2,14-billion. All references to rand values in this article are adjusted to remove the effects of inflation. This is useful to compare money over a period of time.

Even though there is a difference between the feasible estimate of ex-mineworkers who can be reached and the full liability, there is still a need to increase the ODMWA dust levy in order to pay the increased claims for compensation.

### Impact on gold mining

There are 47 000 tons of gold still underground in the gold fields of the Witwatersrand. Of this, 20 000 tons are below 4 000 meters and the mining industry cannot extract it using current technology. The amount of gold that can be extracted economically from this resource base depends on the cost of extraction (referred to as working costs), and the gold price.

If working costs or the gold price change, the proportion of the ore body that can be mined economically will change. If working costs rise without a rise in the price of gold, the pay limit (the cut off between economic and uneconomic ore grades) will rise and the proportion of the ore body that can be mined economically will fall.

The average cut off grade (below which it is uneconomic to extract the gold) is determined by the rand gold price per gram and the average working costs per ton of ore milled.

In 1998, the average rand price of gold per gram was R52,29 and the average working cost per ton of ore milled was R236. This gave an average cut off grade of 4,51 grams per ton. This means that the South African gold mining industry had to mine ore of an average grade of at least 4,51 grams per ton to break even with working costs.

### Employers' arguments

Baxter, in a document produced by the Chamber of Mines for the Gold Crisis Committee, discussed the effects of taxes on working costs.<sup>1</sup>

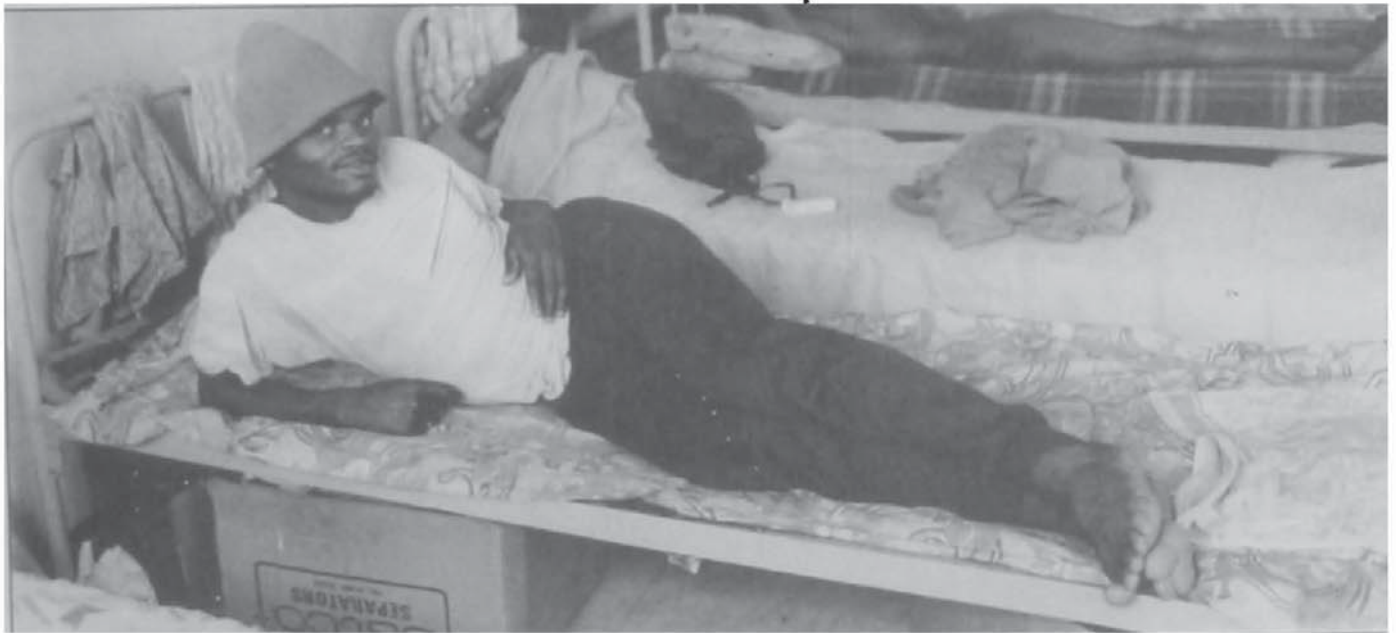
He pointed out that:

- large amounts of gold bearing ore are not being mined because taxes and levies raise the cost of extraction beyond that which is economic;
- therefore any levy, including the ODMWA compensation levy, will have implications for the amount of gold that can be recovered from underground on an economic basis.

Baxter argues that if government were to excuse the gold mining industry from all levies and indirect taxes, working costs could be reduced by 3% and the average pay limit would fall to 4,5 grams per ton. Baxter states that 'mines should be allowed to create wealth in a safe and sustainable manner. The state should not diminish the industry's ability to create wealth by taxing input costs, [but] rather taxation should be derived from profits'.

How will occupational disease compensation impact on the sustainability and profitability of gold mining? The analysis undertaken below will show that the proposed increase in the ODMWA levy will not have a significant effect in terms of raising working costs or cut off grades. Furthermore, the increase in the levy will not significantly reduce the amount of gold that can be economically mined.

In terms of the model set out in Table 2, the ODMWA dust levy will have to rise in order to fund an estimated annual pay-out ceiling of R228-million per annum. Gold mining employers are currently paying R38-million per annum into the ODMWA dust levy. Hence an extra R190-million per annum will be needed in order to pay the increased demand on the fund. This represents a 500% increase in the levy.



*Many people with occupational lung disease are too ill to work.*

To assess the impact of the increase on the economic viability of gold mines, one needs to look at the impact it will have on the economic ore reserves. We need to assess what share of working costs the extra R190-million per annum would represent. In 1998, working costs were R19,5-billion. One hundred and ninety million rand represents an additional 0,97% of the 1998 working costs. This means that the average working costs per ton of ore milled would rise from R236 per ton to R238,29 per ton. This would result in a rise in the pay limit from 4,51 to 4,56 grams of gold per ton.

Will this rise in the cost of gold per ton make a significant impact on the economic viability and longevity of the South African gold mines? Applying this data to the values of the segregated gold ore reserves for the South African gold mines we have made a regression plot. This regression plot estimates the relationship between the grams per ton and the amount of ore containing that concentration of gold. This calculation shows that, were the dust levy to increase, the amount of the ore body above the cut off grade decreases from 58,04% to 57,31%. The higher cut off grade

represents 0,73% of the ore body, or some 198 tons of economically recoverable gold.

## Discussion

It is important to note that the methodology of this article is determined by the available information. In an industrialised country it would not be considered good practice to extrapolate from surveys undertaken in only one district to the whole industry. In South Africa, basic occupational health databases are unavailable and hence the study on which this article is based represents the only South African data available.

We estimate that the dust levy needs to be raised R38-million to R228-million in order to pay for the unpaid compensation liability for those ex-mineworkers that can be reached before they die. The increase in the levy represents an additional 0,97% of the industry's 1998 working costs. This increase in working costs is marginal.

Applying the effects of the higher working costs to gold resource base we find that the pay limit rises from 4,51 to 4,56 grams of gold per ton, or a 0,73% reduction in the size of the ore body that is economically recoverable. Again, we conclude that this is marginal.



*Employers argue against increasing the ODMWA dust levy.*

In the face of the dramatic fall in the price of gold to mid-1999 the financial viability of many gold mines has been weakened resulting in job losses and mine closure. Is it appropriate to argue for any increase in the working costs of gold mines, under such circumstances? The ability to pay an increased cost is ultimately a matter of setting priorities and selecting from amongst the competing claims of shareholders, workers, and reinvestment. Should mines be excused from costs pertaining to health and safety and environmental rehabilitation? The modern South African mining industry has made a commitment to meeting environmental and health and safety standards. Occupational lung disease, as a cost of production, and silica as a source of pollution, are liabilities that fall within this commitment. Given this finding, it is reasonable to argue that the ODMWA dust levy should be raised immediately and that provision should be made for the unpaid liability.

### **Conclusion**

The increase in the levy would be an important step towards internalising

compensation costs (ie making companies pay for the damage they cause). Redressing the unpaid compensation liability would also redistribute income (by legal entitlement) to one of the poorest sectors of the population and this would reduce societal inequalities. ★.

### **Footnotes**

*1 Baxter, R. 'The impact of taxes on input costs on the economic health of the gold mining industry' Chamber of Mines, 1998.*

### **Acknowledgements**

*The Libode project would not have been possible without the contributions of Professor Tony Davies, Ms Nokuzola Mqoqi, Mr Richmond Zide, Mrs Isabel Nompuku, Professor Brian Williams, Dr Nava, Mr Les Burmeister, Mr Oliver Sokbanyile, Mr Sizo Ngaloshe, Mr Cecil Macheke, Mrs Yoliswa Mzimba, Mr Elijah Motsami, the traditional leaders and SANCO structures of Libode and the ex-mineworkers of Libode and their families.*

*Anna Trapido is a PhD student at the Department of Community Health, University of the Witwatersrand. Richard Goode is a financial analyst at Boutek, CSIR.*