

# Safety In Mines Research Advisory Committee

## Project Summary: SIM 030802

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| <b>Project Title:</b> | Development of sensitive tools for active case finding of tuberculosis (Phase I) ( 1 volume, total pages = 86) |                          |                                                    |
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| <b>Report Date:</b>   | 10 September 2004                                                                                              | <b>Related Projects:</b> | Health 705; Health 611                             |
| <b>Category:</b>      | Occupational Diseases                                                                                          | <b>Applied Research</b>  | Medicine                                           |

### Summary

This literature review and workshop were arranged in order to determine a research agenda for mass workforce-wide active case-finding for pulmonary tuberculosis in South African mines. The review has focused on mass screening methods rather than other methods of active case finding such as contact tracing. Over 400 articles were obtained as well as unpublished data from South African researchers. The articles were divided into categories according to themes and these were read by the research team members who then presented their findings at a 2-day workshop. The attendees at the workshop debated the relative merits of the screening methods available and came to a number of conclusions that have been incorporated into this report. The literature review found that there was very little published research into methods of mass screening for TB. There was a great deal of published research, however, into diagnostic tests that might be used for mass screening purposes, and this body of literature has been reviewed. Symptoms questionnaires have not been standardised or formally evaluated. Chest X-rays were not, in general, recommended for mass screening purposes, although the possibility that an increased frequency of chest X-ray screening might lead to a reduced case fatality rate was believed to be worth further investigation. Skin tests were not useful for screening for active disease. Sputum smears might have potential as a screening method in spite of low sensitivity, but not as a mass screening method. Among the novel methods, those that were based on detection

of three antigens specific to *Mycobacterium tuberculosis* showed most promise for the future. These tests are either in the form of an interferon-gamma production system or a patch test that is applied to the skin. The interferon-gamma systems are probably too impractical (and expensive) for mass screening purposes. The skin patch test, however, may prove to be useful. The patch test is currently undergoing rigorous evaluation in this country (as a possible definitive diagnostic test rather than as a screening test) and the results will be available at the end of 2005. It was recommended that the question of using the patch test as a screening tool be re-visited once those results are known. The main recommendation at this stage is that, before mass screening methods for active disease are researched further, mines should work to improve the standard of delivery of the tried and proven methods for case detection and management. Thereafter, it might be worth carrying out research into new mass screening case-finding methods. Towards this end, the recommendation was made that further research is carried out into the status of current practice in the mines and the nature of the decision-making and policy-making processes as far as TB is concerned. In addition, the methods whereby such decisions are implemented and the attitudes and practices of health care workers should also be investigated. There are also two second level priorities that were identified. The first is that consideration be given to repeating the chest X-ray screening study, with randomisation of mines or shafts, rather than randomisation of miners, in order to see whether the

observed benefit of a lower case fatality rate can be duplicated. The other is that a study be conducted with a view to improving the quality of sputum bacteriology services in the mines.