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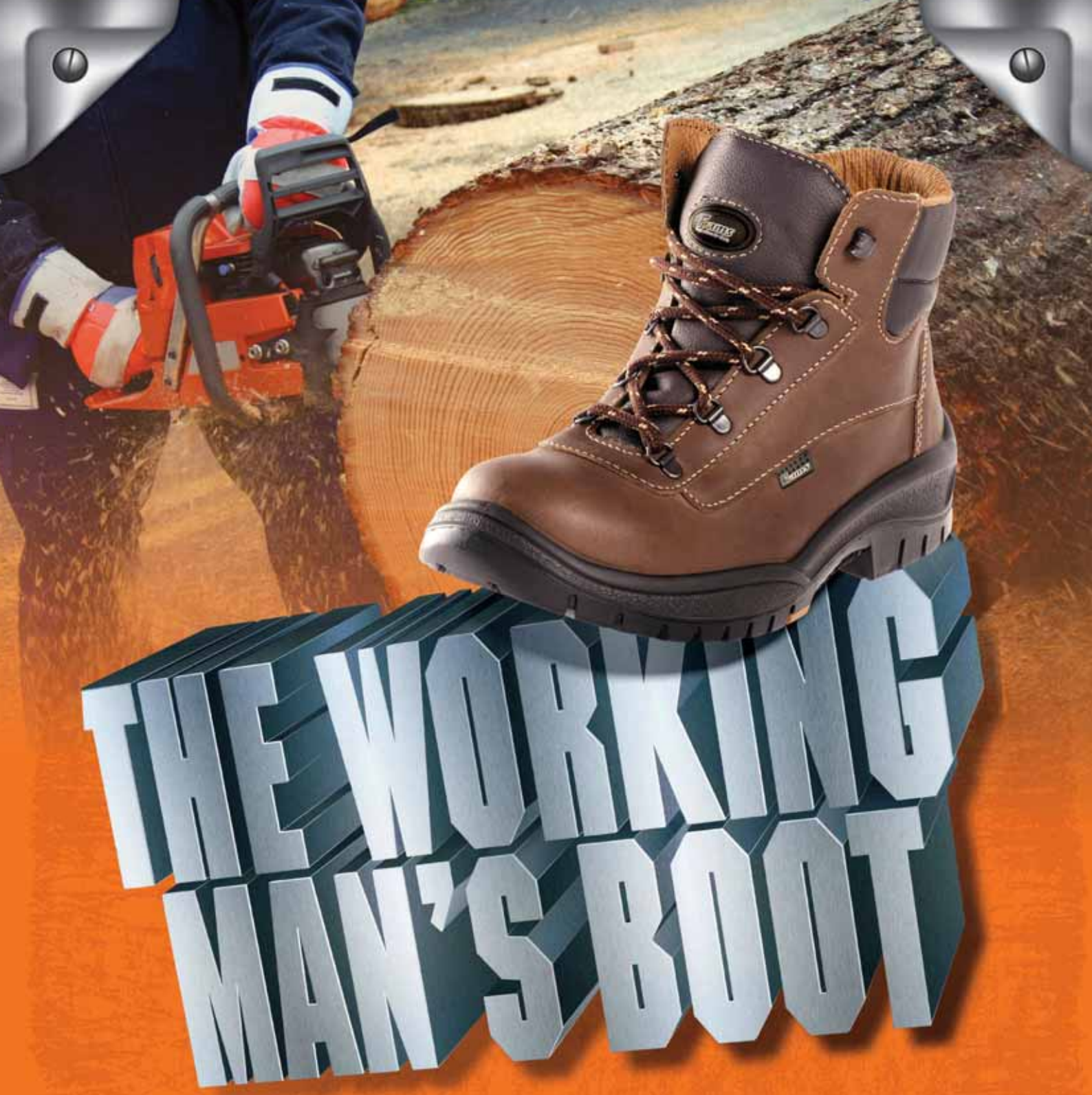
Needlestick injuries among nurses in a regional hospital in South Africa

Does ABET contribute to OHS in mining?

Worker exposure to silica dust in South African non-mining industries in Gauteng: An exploratory study

Official Journal of *The SA Society of Occupational Health Nursing Practitioners, The SA Society of Occupational Medicine, The Southern African Institute for Occupational Hygiene* and *The Mine Medical Professionals' Association.*



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From the Editor . . .

Linda Grainger, Editor

Healthcare workers are a group which is especially at risk of contracting occupationally-related infections. A significant cause of such infections arises from needlestick injuries, and nurses are particularly affected. A great concern, internationally, is that many of these injuries are unreported and it is difficult to accurately determine their incidence. Consequently, Kruger, Jimoh and Joubert's study conducted on nurses working in a regional hospital is useful and relevant. Their findings confirm the problem of under-reporting, and a lack of knowledge on protective measures. It also highlights the need for healthcare institutions to mount effective needlestick injury prevention programmes, including the creation of an environment which encourages reporting. Various resources for use in such programmes exist. For example, in 2005, the World Health Organization produced an excellent set of materials to facilitate the prevention of these injuries, entitled Protecting healthcare workers: Preventing needlestick injuries toolkit, and available at http://www.who.int/occupational_health/activities/pnitoolkit/en/index.html.

An important component in the prevention of occupational injuries and diseases is the education of workers regarding hazards and preventive measures. However, this can be more challenging for workers who have had little formal education, and are consequently more vulnerable. Tuchten and Nkomo present a Back to basics paper which questions the role of adult basic education and training (ABET) as a primary driver of mine OHS, with specific reference to elementary workers, machinery operators and drivers. It seems that despite the recognition of the need for ABET in the context of mine safety, efforts are inadequate. They argue the need for better provision OHS and other training for mineworkers.

Moving away from risks related to mining, our attention in the third article in this issue is focused on silicosis and the exposure to respirable crystalline silica in non-mining industries. Recognising the burden of silicosis in South Africa, the Department of Labour introduced the National Programme for the Elimination of Silicosis in 2004. An aspect of the programme was the commissioning of a research project to establish the extent of workers' exposure to silica dust in non-mining. Khoza, Grové and Schutte present the results of phase two of the project which aimed to quantify the workers' exposure levels to silica dust in six types of industries. Although this was an exploratory study, it yielded sufficient evidence to demonstrate the need for further and wider studies, as well as the improvement of preventive measures.

Since our last issue, the International Commission on Occupational Health (ICOH) held its 30th International Congress on Occupational Health in Cancún, Mexico, from the 18th to the 23rd of March 2012. Many of our members were privileged to attend and a good number presented papers and posters. We are pleased to feature comprehensive reports on the event from Claudina Nogueira and Louwna Pretorius (see pages 27 and 30) and urge you to read these. We are also very proud of Claudina Nogueira and Mary Ross, who were both elected as ICOH Board Members (Mary's second term), and Louwna who was elected for a second term as Chair of the Scientific Committee on Occupational Health Nursing. Visit the ICOH website http://www.icohweb.org/ to read the ICOH Cancún Charter on Occupation Health for All, which was produced as an outcome of the congress. It is an excellent document and we would do well to measure our efforts against it.

Linda Grainger

Call for papers for 2012

We are particularly keen to publish papers that present effective interventions relating to the disciplines of occupational hygiene, medicine and nursing. In addition to publishing papers on any relevant topic, we have planned a subtheme for the November/December 2012 issue.

We therefore invite you to submit original research, review, case study, or back to basics papers for consideration for publication in this issue. The authors' guidelines are available on the website, www.occhealth.co.za. Please ensure that we receive your submissions no later than the dates indicated alongside the topic. All papers are peer-reviewed before publication. Should you be interested in submitting a paper, please indicate this by e-mailing the Editor at occhealthsa@technews.co.za. Please provide some basic details about what you envisage would be included in the paper.

Issue	Theme	Submission date
November/December 2012	Chronc diseases and occupational health	13 September 2012

Upcoming events

HEALTH AWARENESS DAYS, WEEKS AND MONTHS

JULY

Mental Illness Awareness Month

11	World Population Day
28	World Hepatitis Day

AUGUST

National Women's Month
Organ Donor Month

1–7	World Breastfeeding Week
6–12	Polio Awareness Week
6–12	Rheumatic Fever Week
9	National Women's Day
12	International Youth Day
28–31	African Traditional Medicine Week
31	African Traditional Medicine Day

2012 SAIOH COUNCIL AND CERTIFICATION BOARD MEETINGS AND EXAMINATION DATES

Date	Time	Meeting	Assessment
20 July 2012	07h00	PCB	Oral
3 Aug 2012	07h00	Council	Written
12 Oct 2012	07h00	PCB	Oral
2 Nov 2012	07h00	Council	Written

INTERNATIONAL CONFERENCES

DATE	PLACE	TOPIC	MORE INFORMATION
16–20 Sept 2012	Kuala Lumpur, Malaysia	9th IOHA Scientific Conference	www.ioha2012.net
19–21 Sept 2012	Tarragona, Spain	5th Federation of Occupational Health Nurses within the EU (FOHNEU) Congress. Embracing the future – influencing change!	www.fohneutarragona2012.com
14–16 Nov 2012	Mahidol University, Bangkok, Thailand	ICOWHI 19th International Congress on "Women's Health 2012: Partnering for a Brighter Global Future"	www.icowhi.org/

LOCAL CONFERENCES

DATE	TOPIC	REGION	TARGET	COST	CONTACT NAME
27–28 July 2012	SASOM Annual Congress	Southern Sun OR Tambo Intl. Airport Hotel, Gauteng	Everyone interested in occ health	Members R2000-00 Non-members R2400-00 Day tariffs available	Jenny Acutt, E-mail: info@sasom.org Tel/fax: +27 (0)12 803 7418
23 Nov 2012	SASOM Conference and AGM	To be announced	Everyone interested in occ health	To be announced	Jenny Acutt, E-mail: info@sasom.org Tel/fax: +27 (0)12 803 7418

Needlestick injuries among nurses in a regional hospital in South Africa

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ABSTRACT

Needlestick injury in healthcare settings is a global issue, with the preponderance of these injuries among nursing staff being a common occurrence. A cross-sectional study was conducted on 202 nurses in a regional hospital using a 17-item anonymous self-administered questionnaire to describe the epidemiology of self-reported needlestick injury in a one-year period. Thirty-eight nurses (18.8%) indicated that they had had needlestick injuries in the previous 12 months. Most (78.3%) needlestick injuries occurred in wards with syringe needles being the most common causative device, while 28.9% occurred during recapping of needles. The majority of respondents (90.1%) were aware of the hospital policy on needlestick injury. Although needlestick injuries were prevalent at a low rate, only 50% were reported. It remains an important workplace hazard that needs on-going attention such as training, as it could be the cause for diseases, for example HIV and hepatitis B, among nurses.

Key words: self-reported needlestick injuries; nurses; regional hospital; prevention; training; knowledge

INTRODUCTION

Needlestick injuries remain a potentially life-threatening occurrence for healthcare workers (HCWs) globally and up to 16 billion healthcare injections administered annually are unnecessary.[1] These actions result in an increased risk for blood-borne infections making needlestick injuries the most common source of occupational exposure to blood and blood-borne infections globally.[2-4] A healthcare worker's risk of contracting HIV after an accidental needlestick injury from a HIV-positive source is 0.1-0.4% or 1 in 250, 5% for HBV and 3.5% for HCV.[5,6] The WHO reported in 2002 that an estimated 2.5% of HIV cases and 40% of hepatitis B and C cases among healthcare workers worldwide could be attributed to the occupational exposure to blood-borne infections.[7]

The preponderance of needlestick injuries occurring in nursing staff is a common feature of studies around the world.[2,3] This category of healthcare worker has presented the highest HIV seroconversion rates[8] with figures around two thirds of disease seroconversion following needlestick injury.[9] The majority of needlestick injury statistics and research globally used the data from officially reported incidents and such an approach may not accurately portray workplace events.[10] Not all needlestick injuries are reported and surveys suggest that between 60% and 80% of nurses do not officially report their needlestick injuries.[3] A study conducted in India found that only 37.4% of nurses reported their needlestick injuries to a supervisor.[11] In South Africa, 31-38% of nurses and doctors did not report their needlestick injury.[12] Anonymous self-report surveys have become increasingly common for establishing the epidemiology of needlestick injuries in hospital environments.[9] The majority of studies on needlestick injuries are conducted on healthcare workers in larger hospitals such as tertiary institutions.[6,8,9] Nursing staff have the highest risk

for sharps-related injuries in the workplace of any health professional group.[13] Few studies have been conducted on the safety climate towards the risk of needlestick injuries.[14] It was found that several aspects within the safety climate of an organisation contributed towards the risk of needlestick injuries.[15] Certain barriers to promote a safety climate could be found in smaller facilities.[16] It was therefore decided to use an anonymous self-administered questionnaire in a regional hospital, as it would provide a better reflection on the actual incidence.The purpose of the study was to describe the epidemiology of self-reported needlestick injury in a one-year period. The objectives were to:

- determine the demographics of nurses, frequency, circumstances, reporting as well as most common devices causing needlestick injuries among nursing personnel;
- assess the knowledge regarding diseases caused by needlestick injuries, measures to be taken following needlestick injuries and awareness about needleless safety devices, during a one-year period.

METHODOLOGY

A cross-sectional study was conducted. The study population consisted of 354 nursing personnel working in a regional hospital. The nursing personnel not involved in the direct management of the patients (e.g. nursing managers, tutorial staff) were excluded. A 17-item anonymous self-administered questionnaire was developed based on literature and was distributed among 330 nurses in 2008. The questions aimed to collect data on aspects such as demographic details of the participants, needlestick injuries in the previous 12 months, type of device and procedure associated with the injuries, reporting of the injury, and the work area where the needlestick injuries occurred. The research project was piloted among ten nursing staff of two local clinics and a few minor changes were made to the questionnaire.

Wards/departments with poor response rates were continuously motivated throughout the duration of the study. Data obtained were entered into an Excel spreadsheet and summarised using frequencies and percentages. Associations were investigated using chi-squared or Fisher's exact tests at 5% level of significance.

The study was approved by the Ethics Committee of the Faculty of Health Sciences, University of the Free State, and permission was obtained from the Department of Health and Social Services, Limpopo Province.

RESULTS

There were 202 completed questionnaires out of the targeted 330, giving a response rate of 61.2%. Table 1 shows the demographic profile of participants. Females comprised 89.1% (n=180) of the participants. The median age of the respondents was 34.5 years (range 21–65 years) and 40.6% were aged between 21 and 30 years. Work experience

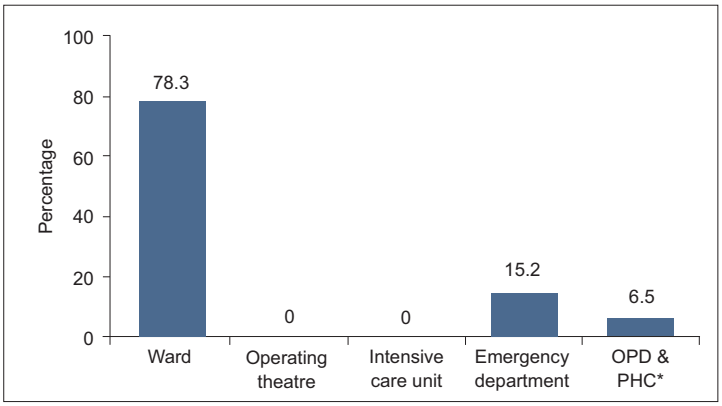
Table 1. Demographic characteristics of nursing personnel (participants) (N = 202)

Demographic characteristics		Number	Percentage
Gender			
Male		22	10.9
Female		180	89.1
	Total	202	100.0
Age (in years)			
21–30		82	40.6
31–40		46	22.8
41–50		48	23.8
51–60		23	11.4
≥ 60		3	1.4
	Total	202	100.0
Nursing experience (years)			
1–4		92	45.5
5–9		36	17.8
10–14		8	4.0
15–19		14	7.0
≥ 20		52	25.7
	Total	202	100.0
Nursing level			
Professional nurse		83	41.1
Enrolled nurse		47	23.3
Enrolled nursing assistant		72	35.6
	Total	202	202.0

"... surveys suggest that between 60% and 80% of nurses do not officially report their needlestick injuries."

among the participants ranged from one to 41 years, whilst 45.5% had 1 to 4 years' experience. Professional nurses accounted for 41.1% (n=83) of the respondents, followed by enrolled nursing assistants (35.6%; n=72). The target population consisted of 97 professional nurses (29.4%), 102 enrolled nurses (30.9%) and 131 enrolled nursing assistants (39.7%). A possible limitation of the study was not being able to obtain more demographic data on the staff establishment of the hospital.

A total of 38 nurses (18.8%) reported 48 needlestick injury events in the 12 months preceding the study, accounting for a rate of approximately 0.24 needlestick injury events/nurse/year, while only 50% (n=24) of these needlestick injuries were officially reported. Nine (23.7%) of the 38 nurses had more than one needlestick injury in the previous year. The majority (n=36, 78.3%) of the needlestick injuries occurred in the wards with 15.2 % (n=7) occurring in the emergency department (Figure 1). The most common device involved in needlestick injuries was a syringe needle,



*OPD & PHC: outpatients department and primary healthcare

Figure 1. Hospital location where needlestick injury occurred (n=46; two participants did not mention the location on the questionnaire)

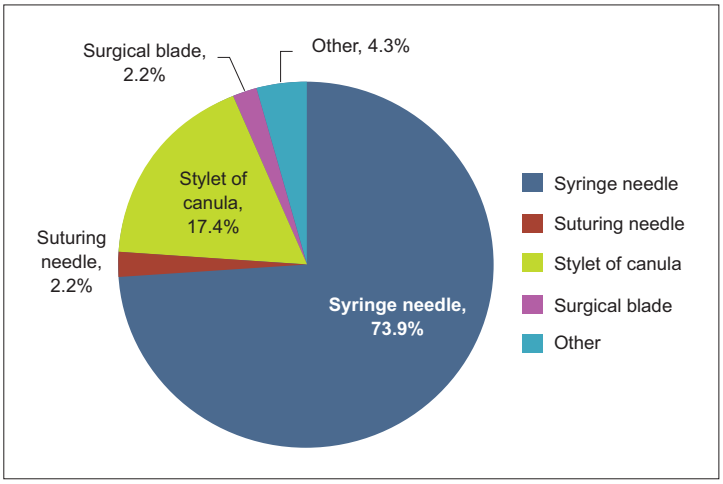


Figure 2. Device responsible for needlestick injury (n=46*) (*Two participants did not mention the device on the questionnaire)

Table 2. Procedure or incident related to needlestick injury (n=45*)

Procedure or incident	Number	Percentage
Recapping a needle	13	28.9
During surgery/suturing	0	0
Putting up IV line/administering injections	8	17.8
While managing a restless patient	10	22.2
Hidden sharp	2	4.4
Collision with a colleague	0	0
During disposal of used item	8	17.8
Cleaning up after a procedure.	1	2.2
Others	3	6.7

*Three participants did not mention the procedure on the questionnaire.

which accounted for 73.9% (n=34) of all needlestick injury events, followed by the stylet of a canula (17.4%; n=8). In two (4.3%) events, a blood glucose lancet was involved. Results with regard to causative devices involved in needlestick injuries are shown in Figure 2. Recapping a needle was the most common activity responsible for needlestick injury, accounting for 28.9% of needlestick injury events, and managing a restless patient accounted for 22.2%. Putting up an intravenous (IV) line or administering injections and disposal of the used item were responsible for 17.8% events, while 6.7% was caused by other activities which included drawing blood from a patient and monitoring a patient's blood glucose (Table 2).

Table 3 shows that 89.6% (n=181) of the participants had a history of receiving a vaccine against hepatitis B virus. Slightly more than 60% (n=109) of these 181 participants had received three vaccinations, 37% (n=67) less than three and 2.8% (n=5) had received more than three. Only 12.1% (22) went for laboratory tests to determine their antibody response after hepatitis B vaccination.

With regard to knowledge and practices and preventive measures by nurses (Table 4), 67.8% (n=135) of respondents knew about needleless safety devices and 90.1% (n=182) of participants stated that they were aware of the hospital's policy on needlestick injury. Most of the participants (70.3%; n=142) never recapped used needles. Concerning diseases transmitted by needlestick injuries, 82.2% (n=166) knew that hepatitis B could be transmitted by needlestick injury, while 97.0% (n=196) and 21.8% (n=44) indicated that HIV and hepatitis C respectively could be transmitted by needlestick injury. Table 4 shows the results with regard to measures that would be taken following a needlestick injury.

Professional nurses were significantly more likely to have been vaccinated against hepatitis B (95.2% compared to 89.4% and 83.3%, p=0.05), to never recap needles (83.1% compared to 66.0% and 58.3%, p=0.01) and to know about needleless devices (79.0% compared to 63.8% and 57.8% respectively, p=0.02) than enrolled nurses and enrolled nursing assistants, respectively. Significantly fewer enrolled

nursing assistants (66.7%) knew that hepatitis B could be transmitted by needlestick injuries than professional nurses (97.8%) and enrolled nurses (87.2%) ($p<0.01$).

DISCUSSION

The 18.8% of nurses in this study who had suffered at least one needlestick injury in the 12-month period preceding the investigation, is in line with a study in an Australian hospital.[4] Higher rates ranging between 50% and 90% were documented in a study among nurses in Turkey.[17] It must, however, be noted that the rate of needlestick injuries could vary from "high to epidemic"[1] among healthcare workers, depending on the availability of resources as well as the work environment.[17] In our study, the crude needlestick rate was 0.24 needlestick injury events/nurse/year, which was quite low when compared to a rate of 1.31 among Korean nurses[3] and 4.9 among nurses in Egypt.[18]

This study confirmed that syringe needles are the most common causative device as it accounted for 73.9% of all needlestick injury events at this regional hospital. A similar percentage (72%) was documented among healthcare workers in a tertiary hospital in Korea.[19] Another study showed that syringe needles were responsible for as high as 92% of needlestick injury events among nurses.[20] However, not all studies showed such high percentages of needlestick injuries associated with syringe needles. A study conducted in Singapore[21] indicated that syringe needles are responsible for about 23.2% among healthcare workers, compared to 52% among professional nurses in Korea,[3] as well as in Australia.[4] In our study, it was found that the knowledge of measures to be taken following a needlestick injury was inadequate.

The majority (78.3%) of needlestick injury events in this study occurred in the wards, which is similar to findings worldwide.[3,4,21] Needlestick injuries in operating rooms were found to be common in other studies,[5,20,21,22] although it accounted for no injury in this study. This could be explained by the hospital's policy of not allowing nurses to assist doctors in surgical procedures, except in emergencies.

International research has yielded conflicting results with regard to circumstances surrounding needlestick injuries; for example, an American hospital study has shown that the highest needlestick injury rate occurred "after use and before disposal".[4] In our study, 28.9% of needlestick injury events occurred while recapping a needle. Recapping needles is a high-risk activity regarding needlestick injury and the most common cause of needlestick injuries.[4] This result might not be surprising as 29.7% (n=60) of nurses in the current study sometimes or always recapped used needles. In the USA the recapping of needles has been prohibited under the Occupational Safety and Health Administration (OSHA) blood-borne pathogen standard.[23] However, the effect of the legislation has not been described.

Table 3. History of hepatitis B virus vaccination amongst participants

Hepatitis B vaccine history		Number	Percentage
Have you ever been vaccinated for hepatitis B in the past?			
Yes		181	89.6
No		21	10.4
	Total	202	100.0
Did you ever check antibodies to hepatitis B surface antigen?			
Yes		22	12.1
No		159	87.9
	Total	181	100.0
Number of hepatitis B vaccinations received			
1		22	12.1
2		45	24.9
3		109	60.2
4		3	1.7
5		2	1.1

"... 18.8% of nurses in this study ... had suffered at least one needlestick injury in the 12-month period."

Not all needlestick injuries are reported by healthcare workers, and some studies[1,17] found that reported needlestick injuries represented 8%–30.9% of all needlestick injuries. Half (50.0%) of the needlestick injuries were reported in this study. Although the low rate of reporting is an important finding of the study, it was lower than in other studies. This reporting behaviour among healthcare workers could be influenced by the fact that 90.1% of respondents were aware of the hospital's policy on needlestick injuries, which includes the need to report any such injuries. The study did not determine what the participants knew about the content of the policy and could therefore not be regarded a true reflection of the knowledge of the participants.

The hospital has a policy of offering employees hepatitis B vaccination at no cost, although only 60.2% of the participating nursing staff received the recommended minimum of three doses of the vaccine. It is advised to perform post-vaccination testing for certain categories of healthcare workers.[24] If such healthcare workers have a negative response after the initial immunisation schedule, a second three-dose vaccination schedule should be considered, as studies found that 44–100% of the initial non-responsive individuals did respond to a three-dose revaccination series. [25,26] The results of this study showed that only 12.2% had checked antibodies to hepatitis B surface antigen after the vaccination, although 2.8% of participants who received more than three vaccinations were not included in this group. It should be noted that the hospital does not make provision for post-vaccination antibody testing because of the financial implication based on the cost quotations received from the laboratory. The non-testing for antibodies of immunised employees found in this study is not unique to this hospital and has also been demonstrated in other studies.[27,28] However, it is recommended to test for antibodies after an immunised employee sustained a needlestick to ascertain the immune response of the injured healthcare worker[29] and to adhere to legislation requirements ensuring the safety of employees.

A positive aspect of the study was the fact that a high proportion of the participants knew that needlestick injury would transmit hepatitis B and HIV (82.2% and 97.0%, respectively). However, there was a lack of knowledge among participants regarding hepatitis C (21.8% being aware that needlestick injury could transmit this virus). This lack of knowledge could have a major impact on the behaviour of healthcare workers. The high level of knowledge regarding needleless safety devices (67.8%) was a positive outcome of this study. The use of a needleless safety device is not common in the hospital investigated in this study, but taking into consideration the high level of knowledge among nurses, it could be viewed as an alternative method to reduce needlestick injuries.[30]

A major limitation to this study was the low response rate especially from enrolled nurses and nursing assistants, and therefore the outcome of the study might not be a true reflection of the entire population of the nurses in this hospital. However, given the anonymity of the questionnaire, participants could have answered with no fear of being linked to their response and this might also have promoted the accuracy of the answers, hence recommendations could still be made based on the results obtained.

CONCLUSION AND RECOMMENDATIONS

Overall, the result of this study revealed that needlestick injury occurred at a lower rate when compared to other studies, and consequently the risk of blood-borne infection via needlestick injury might be lower. The high proportion of needlestick injury that was reported in comparison to other studies, was encouraging. The majority of the needlestick injury events occurred in the ward, with syringe needles being the most commonly involved causative device, and most events occurring during the recapping of used needles. The knowledge about needleless safety devices was high and should be used to the advantage of the hospital. Measures taken to prevent hepatitis B virus were inadequate and

also knowledge with regard to some aspects of diseases caused by needlestick injury. The recommendations from the study are:

- An on-going education programme on safe working practices including safe handling and disposal of sharp objects should be designed with periodic evaluation of such programme.
- An administrative policy prohibiting the recapping of needles must be instituted.
- Nurses should be involved in the evaluation and selection of an appropriate needleless safety device, training and on-going training in its appropriate use, as well as on-going evaluation of the usability and acceptability of such a device.
- Staff members should be involved in the planning of systems to improve the reporting of needlestick injuries so that appropriate protective measures can be taken.
- Measures should be put in place to ensure that the recommended course of hepatitis B vaccination is followed; this should include exploring how checking of antibody to hepatitis surface antigen could be made possible, and providing this at a subsidised rate should be considered, given the importance of the knowledge of one's immunity to the success of this immunisation.

Table 4. Knowledge, practices and preventive measures taken by nurses regarding needlestick injuries

Preventive measures	Number	Percentage
How often do you recap needles?		
Sometimes	48	23.8
Always	12	5.9
Never	142	70.3
Total	202	100.0
Which diseases are transmitted by needlestick injuries?		
Hepatitis B	166	82.2
Tuberculosis	5	2.5
Hepatitis C	44	21.8
AIDS/HIV	196	97.0
Meningitis	63	31.2
Ebola virus	63	31.2
Other	3	1.5
Hepatitis B & AIDS/HIV with no incorrect choices	97	48.0
Measures to be taken following needlestick injury		
Wash injury with soap and water	94	46.5
Allow injury to bleed	175	86.6
Notify infection control office	194	96.0
Apply antiseptic to injury	40	19.8
All of the above measures	25	12.4
Do you know about needleless safety devices?		
Yes	135	67.8
No	64	32.2
Total	199*	100.0
Do you know the hospital's policy on needlestick injury?		
Yes	182	90.1
No	20	9.9
Total	202	100.0

*Three participants did not answer the question.

• It might be beneficial in future to follow a group of nurses over a 12-month period in order to get a higher response rate and a less biased outcome.

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Dr. Daleen Struwig, medical writer, Faculty of Health Sciences, University of the Free State, for technical and editorial preparation of the manuscript for publication.

LESSONS LEARNED

- Needlestick injuries among healthcare workers in South Africa should not be ignored as unacceptable practices such as re-capping of syringe needles caused the majority of injuries in this study.
- A health promotion programme on the safe use and risks regarding needles should be presented to healthcare workers on a continuous basis as knowledge relating to the appropriate measures following a needlestick injury was poor.
- Hospitals should ensure that formal reporting procedures for needlestick injuries are in place and made known to all employees. Actions are required to encourage reporting as many nurses did not report their needlestick injuries.
- The hepatitis B vaccination programme for healthcare workers should be in line with evidence-based medicine and healthcare workers should be encouraged to complete the vaccination course.

REFERENCES

1. Askarian M, Shaghaghian S, McLaws ML. Needlestick injuries among nurses of Fars Province, Iran. Annals of Epidemiology. 2007;17(12):988-992.
2. Zafar A, Habib F, Hadwani R, Ejaz M, Khowaja K, Khowaja R, et al. Impact of infection control activities on the rate of needle stick injuries at a tertiary care hospital of Pakistan over a period of six years: an observational study. BMC Infectious Diseases. 2009;29(May 29):78-85.
3. Smith DR, Choe MA, Jeong JS, Jeon MY, Chae YR, An GJ. Epidemiology of needlestick and sharps injuries among professional Korean nurses. Journal of Professional Nursing. 2006;22(6): 359-366.
4. Smith DR, Smyth W, Leggat PA, Wang RS. Needlestick and sharps injuries among nurses in a tropical Australian hospital. International Journal of Nursing Practice. 2006;12(2):71-77.
5. Jahan S. Epidemiology of needlestick injuries among health care workers in a secondary care hospital in Saudi Arabia. Annals of Saudi Medicine. 2005;25(3):230-238.
6. Sharma R, Rasania SK, Verma A, Singh S. Study of prevalence and response to needle stick injuries among healthcare workers in a tertiary care hospital in Delhi, India. Indian Journal of Community Medicine. 2010;35(1):74-77.
7. Sadow WE, Fawole AO, Sadoh AE, Oladimeji AO, Sotiloye OS. Practice of universal precautions among healthcare workers. Journal of the National Medical Association. 2006;98(5):722-726.
8. Canini SR, Moraes SA, Gir E, Freitas IC. Percutaneous injuries correlate in the nursing team of a Brazilian tertiary-care university hospital. Revista Latino-Americana de Enfermagem. 2008;16(5): 818-823.
9. Smith DR, Mihashi M, Adachi Y, Nakashima Y, Ishitake T. Epidemiology of needlestick and sharps injuries among nurses in a Japanese teaching hospital. Journal of Hospital Infection. 2006;64(1):44-49.
10. Fletcher CE. Accurate data: an essential component in reducing needlestick injuries. Policy, Politics and Nursing Practice. 2000;1(4):316-324.
11. Salelkar S, Motghare DD, Kulkarni MS, Vaz FS. Study of needle stick injuries among health care workers at a tertiary care hospital. Indian Journal of Public Health. 2010;54(1):18-20.
12. Rabbitts JA. Occupational exposure to blood in medical students. South African Medical Journal. 2003;93(8):621-624.
13. Kable AK, Guest M, McLeod M. Organizational risk management and nurses' perceptions of workplace risk associated with sharps including needlestick injuries in nurses in New South Wales, Australia. Nursing and Health Sciences 2011;13(3):246-254.
14. Smith DR, Muto T, Sairenchi T, Ishikawa Y, Sayama S, Yoshida A, et al. Examining the dimensions of hospital safety climate and psychosocial risk factors among Japanese nurses. Journal of Transcultural Nursing 2011;22(3):257-264.
15. Smith DR, Muto T, Sairenchi T, Ishikawa Y, Sayama S, Yoshida A, et al. Hospital safety climate, psychosocial risk factors and needlestick injuries in Japan. Industrial Health 2010;48(1):85-95.
16. Gershon RR, Qureshi KA, Pogorzelska M, Rosen J, Gebbie KM, Brandt-Rauf PW, et al. Non-hospital based registered nurses and the risk of bloodborne pathogen exposure. Industrial Health 2007;45(5):695-704.
17. Ayranci U, Kosgeroglu N. Needlestick and sharps injuries among nurses in the healthcare sector in a city of western Turkey. Journal of Hospital infection. 2004;58(3):216-223.
18. Talaat M, Kandeel A, El-Shoubary W, Bodenschatz C, Khairy I, Oun S, et al. Occupational exposure to needlestick injuries and hepatitis B vaccination coverage among health care workers in Egypt. American Journal of Infection Control. 2003;31(8):469-474.
19. Park S, Jeong I, Huh J, Yoon Y, Lee S, Choi C. Needlestick and sharps injuries in a tertiary hospital in the Republic of Korea. American Journal of Infection Control. 2008;36(6):439-443.
20 Phipps W, Honghong W, Min Y, Burges J, Pellico L, Watkins C, Guoping H, et al. Risk of medical sharps injuries among Chinese nurses. American Journal of Infection Control. 2002;30(5):277-282.
21. Ng LN, Lim HL, Chan YH, Bin Bachok D. Analysis of sharps injury occurrences at a hospital in Singapore. International Journal of Nursing Practice. 2002;8(5):274-281.
22. Wicker S, Jung J, Allwinn R, Gottschalk R, Rabenau HF. Prevalence and prevention of needlestick injuries among health care workers in a Germany university Hospital. International Archives of Occupational and Environmental Health. 2008;81(3):347-354.
23. National Institute of Occupational Safety and Health (NIOSH). Preventing needlestick injuries in health care settings, November 1999. Accessed 25 April 2011. Available at: www.cdc.gov/niosh/docs/2000-108/pdfs/2000-108.pdf.
24. Mast EE, Weinbaum CM, Fiore AE, Alter MJ, Bell BP, Finelli L, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: immunization of adults. Morbidity and Mortality Weekly Report. 2006;55(RR16);1-33.
25. Kim MJ, Nafziger AN, Harro CD, Keyserling HL, Ramsey KM, Drusano GL, et al. Revaccination of healthy nonresponders with hepatitis B vaccine and prediction of seroprotection response. Vaccine. 2003;21(11-12):1174-1179.
26. Clemens R, Sänger R, Kruppenbacher J, Höbel W, Stanbury W, Bock HL, et al. Booster immunization of low- and non-responders after a standard three dose hepatitis B vaccine schedule – results of a post-marketing surveillance. Vaccine 1997;15(4):349-352.
27. Van Herck K, Leuridan E, Van Damme P. Schedules for hepatitis B vaccination of risk groups: balancing immunogenicity and compliance. Sexually Transmitted Infections. 2007;83(6):426-432.
28. Lin CS, Xie SB, Liu J, Zhao ZX, Chong YT, Gao ZL. Effect of revaccination using different schemes among adults with low or undetectable anti-HBs titers after hepatitis B virus vaccination. Clinical and Vaccine Immunology. 2010;17(10):1548-1551.
29. Puro V, De Carli G, Cicalini S, Soldani F, Balslev U, Begovac J, et al. European recommendations for the management of healthcare workers occupationally exposed to hepatitis B virus and hepatitis C virus. European Surveillance. 2005;10(10):260-264.
30. Beltrami EM, Williams IT, Shapiro CN, Chamberland ME. Risk and management of blood-borne infections in health care workers. Clinical Microbiology Reviews. 2000;13(3):385-407.

Does ABET contribute to OHS in mining?

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ABSTRACT

South African mines have an unacceptable occupational health and safety (OHS) record. Of particular concern are the categories of workers who are most vulnerable to accidents and disease and who generally have the least formal education or training, those termed elementary workers (unskilled) and machinery operators and drivers (semi-skilled). This article questions the role of adult basic education and training (ABET) as a primary driver of mine OHS, with specific reference to these categories of workers. The article concludes that ABET has positive and generalised effects in the workplace, that may include OHS awareness, but that the scale of ABET impact on mine OHS is negligible. Additional and alternative OHS training initiatives are required to provide the least educated workers with comprehensive preparation and training for the hazards and risks of underground mining.

Key words: Adult basic education and training (ABET), literacy, mining, occupational health and safety (OHS), training

INTRODUCTION

South African mines have a disturbing occupational health and safety (OHS) record. The incidence of fatalities and injuries following falls of ground, during transportation, with explosives or in general mining accidents has been reduced in recent years, but is still considered high.[1,2,3,4,5] Occupational diseases, especially lung diseases and noise-induced hearing loss, are pervasive.[5,6,7] The highest recorded rates of tuberculosis (TB) worldwide occur in South African gold miners.[6] Of particular concern are the categories of workers who are most vulnerable to accidents and disease and who generally have the least formal education or training, termed elementary workers (unskilled) and machinery operators and drivers (semi-skilled). Elementary workers often do heavy manual work in mine tunnels that are too narrow for machinery. This includes shovelling, moving and loading rock; barring down or breaking overhanging rocks; sweeping or vamping for ore particles; laying pipes and operating water hoses. The category 'machinery operators and drivers' includes drillers, crane, hoist and lift operators and locomotive drivers. Their particular vulnerability to accident and disease is underlined by the education and training authority for the mining and minerals sector, the Mining Qualifications Authority (MQA), which states that replacement demand for both of these categories of workers is "due to mortality related to occupational and other diseases, and accidents on duty" (p. 102).[8] Disregard for the admission may be due to a ready supply of migrant labour as hundreds of thousands of men from rural areas of South Africa and neighbouring countries seek work in the local mining sector each year.[9]

This article questions the role of adult basic education and training (ABET) as a primary driver of mine OHS, with specific reference to elementary workers, machinery operators and drivers. A connection between relatively higher levels of formal education and enhanced OHS in mining is universally assumed. Corresponding assumptions are made in local mining that poor OHS is related to the under education of workers.[1,10] The notion that raising workers' general level of education via participation in ABET will have a positive impact on mine OHS dates back to the Leon Commission of Inquiry into Mine Health and Safety and continues today.[8,11] However, the connections between ABET and the OHS of mineworkers have been over simplified. The impact of the various and subtle achievements of ABET on the positive and negative drivers of OHS behaviour of participating mineworkers has rarely been subject to rigorous qualitative or quantitative investigation.

The purpose of this article is to consider the available information in order to make a case for more realistic planning and provision of OHS and other training for mineworkers; to add to the understanding of the role of ABET; and in particular to advocate for additional approaches to mine OHS training. Searches were conducted of at least five academic databases, the websites of local mining and mine health and safety institutions and the indices of mining journals. Peer-reviewed literature on the connection between ABET and OHS in South African mining was simply not available, though there were articles in the mining press some of which made untested claims.

PREPARATION AND TRAINING OF UNDERGROUND MINEWORKERS

Local geological conditions require labour-intensive, deep underground mining.[12] Consequently, South African mines are relatively labour-intensive, when compared to operations

in countries like Australia and Canada. OHS challenges are exacerbated because high numbers of South African workers are exposed to health and safety risks at a given time, compared to other parts of the mining world,[1] and the large number of workers on a single mine presents significant organisational and logistical challenges.[5] Elementary workers, machinery operators and drivers together constitute 73% of the total mining workforce, estimated at 548 000 at the end of 2009 (p. 10, 59).[8] The two categories of workers are considered together here because both are "typically trained for their specific positions after entering into employment contracts and such training thus becomes the primary responsibility of employers…" (p. 74).[8]

Training on mines offers substantial business opportunities. For example, the MQA disbursed over R504 million to employers and other training consultants during the 2010/2011 financial year (p. 90).[18] Yet training offered to less educated workers is largely unregulated. Public evidence of such training, OHS and other, is difficult to access. The 2008 Presidential Audit on mine OHS found that: "on-the-job training was not done by most of the mines" (p. 63)[1] and other research suggests that "Far less training takes place than is anticipated by Section 10 of the MHSA" (p. 44).[2] Training statistics of the mining sector's training authority, the MQA, are not published in the annual report but available on a restricted access data base, the MQA-I-Share. No central or standardised guidelines are provided to employers regarding the preparation or induction of new recruits to mining or other underground workers, by the MQA.[13] Occupational health is especially neglected in terms of advocacy and training[14] as well as OHS as a subject or generic issue for mineworkers.[1,2]

There are countless registered mining qualifications and skills programmes offered in South Africa, but these are inevitably aligned to the national qualifications framework (NQF) and pitched at particular NQF or educational levels, the lowest of which is NQF level 1, approximately equivalent to Grade 9 or Standard 7 which equates to some assured secondary schooling. It is estimated that 48.9% of all mineworkers left school before a level equivalent to NQF 1 (Grade 9) and consequently lack the educational scaffolding for registered qualifications and skills programmes in mining or other employment sectors (p. 16).[8] Across the mining industry 15.4% of all mineworkers never attended school at all, 37% of mineworkers did not complete primary school and 71% of all employees did not complete their schooling (p. 16).[8] It is estimated that 80% of underground mineworkers did not complete their schooling (p. 35).[1] This provides an uncertain scaffolding of foundational skills, such as literacy, numeracy and English language use, for workplace training. Even if national or regional educational levels change, underground mine work continues to attract people who cannot find other occupations because of their lack of formal education. Some mining companies, especially the relatively more mechanised coal mines, employ only workers who have completed formal schooling (Grade 12). An alternative is to offer workers what is often termed 'second chance' education or ABET.

Table 1. ABET in the mining sector 2010–2011[18]

ABET Level	Workers enrolled
ABET 4 ≡ Grade 9/ Standard 7	1 770
ABET 3 ≡ Grade 5/ Standard 3	1 999
ABET 2 ≡ Grade 5/ Standard 3	2 299
ABET 1 ≡ Grade 3/ Standard 1	1 667
Total	7 735

ABET IN THE MINING SECTOR

The use of the designation ABET is uniquely South African. ABE or adult basic education is used in other parts of the English-speaking world to refer to an extended notion of adult literacy provision, including numeracy and English language skills. It is essentially compensatory adult education, i.e. intended to compensate those who were deprived of part or all of the education they would normally have received during the period of compulsory schooling. ABET emerged during policy initiatives of the early 1990s and reasons for adding the "T" showed a commitment to the integration of education and training into ABET.[15] Adult literacy provision and education for mineworkers in South Africa dates back to the late 19th century, when developments in diamond and gold mining centres led missionaries to increase educational and religious efforts in these locations, assisted by relatively more educated workers.[16] However, the role of literacy and ABET in OHS was first seriously promoted by the Leon Commission in its recommendation that all mining companies "move forward the national initiative in adult education with a view to improving communication in mines, which will in turn result in improved health and safety" (p. 168).[11] The logic has endured, as evidenced in the formal skills planning of the sector training authority: "The MQA was specifically tasked with the improvement of OHS skills capacity in the industry, by reducing the rate of illiteracy" (p. 31).[8]

Currently, the provision of compensatory ABET is a strategic programme of the MQA, but actual enrolment of mineworkers has declined from 20 339 workers in 2005 (p.59),[17] to 7735 in the 2010-2011 financial year (p. 55).[18] Recent enrolment in the different ABET levels is presented in Table 1.

The scale and consequent impact of provision is plainly negligible in an industry employing over half a million workers, many of them with inadequate formal education. ABET provision in the mining sector faces comparable challenges to other industrial sectors: mainly the logistical problems of releasing workers from the underground workplace at regular times as work shifts change; and low worker motivation due to no clear link between ABET achievement and workplace progression.[17]

IMPACT OF ABET

What are typical outcomes or effects of ABET in an industrial context? Assuming adequate quality and duration of provision, ABET can yield personal and organisational benefits. A study of individual and organisational outcomes of ABET in a laminate factory south of Johannesburg involved migrant workers, having a social and educational background comparable to mineworkers.[19] The findings suggested that there were some general trends in terms of ABET outcomes, but the way in which workers apply new skills varies according to their personal interests, the ABET subject or learning area, the ABET level and the demands of the context. Enhanced literacy naturally assists with the reading or writing demands of multiple contexts, English communication with verbal reporting and communication in the workplace, while numeracy had the most impact on better management of workers' own money. Workplace outcomes at different ABET levels were reported as:

- ABET Level 1 (Grade 2/ basic literacy in the mother-tongue of the learner): increased self-esteem of individuals, improved morale in company, lower absenteeism (p. 111, 135).[19]
- ABET Level 2 (Grade 5/ post-literacy and oral English communication): communication in company improves, reporting of reject products improves, machine down-time better (p. 112, 135).[19]
- ABET Level 3 (Grade 7/ reading and writing English and more complex numeracy): workers take on new tasks and machines as they can read English and understand basic numeric conventions (p. 135).[19]
- ABET Level 4 was not offered at the research site and is also not offered on many mines (p. 59).[17] Yet this ABET level is significant in career development terms as it provides access to the registered and unit-standard based qualifications and skills programmes, which are the primary offerings of the training authorities in all industrial sectors.

In 2006, the MQA attempted to investigate ABET in the mining sector, including its impact on OHS.[17] The report describes such impacts as positive, but with a qualification: "A common perception exists that ABET contributes to improved health and safety, but it is not possible to make this link

quantitatively through data" (p. 56).[17] The MQA study treats ABET as a single holistic process and does not analyse its component aspects. While the scale of ABET impact is negligible, it is possible to categorise the examples cited in the report into two sources of ABET impact on OHS, i.e. improved literacy and enhanced awareness of OHS issues. The only evidence presented in the study is in the form of observations of training staff, trade unionists and workers, presented hereafter. There was no input from line management on connections between ABET and OHS in the report.

Impact of improved literacy on OHS

Many reports mention that literacy improves safety in the workplace because employees can read and understand warning signs. … ABET helps learners to read and understand: safety warnings; instructions; company briefings; and to communicate better (p. 46).[17]

"The low uptake of ABET . . . indicates that it is necessary to facilitate OHS skills and awareness outside of ABET structures"

Impact of enhanced awareness of OHS

Almost all the mines commented that ABET employees are more aware of health and safety issues pertaining to the work place as well as the world in general… Employees are more aware of health issues, including HIV/AIDS, malaria and TB (p. 45).[17]

ABET practitioners generally aim to contextualise learning, so current safety, and especially health, issues would probably be discussed or read about in ABET classes, enhancing participants' awareness and mastery of these subjects. The achievements of adult literacy instruction or ABET, of adequate quality, can be multiple and varied according to the contexts in which an adult learner elects to apply such new skills. Consequently, any aspect of an adult's life that is difficult due to a lack of literacy, numeracy and English language skills, such as shopping, communication at work, organising children's education, even being called upon to read out loud in church, may be enhanced by ABET. Such positive effects of ABET can be generalised to OHS as well as many other aspects of workplace engagement, facilitating the connection reported by the MQA.

The low uptake of ABET across the mining sector indicates that it is necessary to facilitate OHS skills and awareness outside of ABET structures and to pursue and develop new ways of doing so. Lung health awareness of mineworkers provides an illustrative example because: "Many employees have little or no understanding of the processes that lead to occupational lung disease, their consequences, how to protect themselves from the conditions" (p. 26).[20] Research into silicosis awareness among mineworkers in quarries, gold mines and coal mines identified generalised and significant barriers to lung health efficacy.[21,22] These included:

- Confusion regarding responsibility for managing dust: Workers felt that no-one took responsibility for dust underground or for watering down, even when the matter was discussed at the meeting place at the start of a shift (p. 13).[22]
- Lack of accurate information about different diseases, their prevention and management (TB, silicosis, HIV/AIDS): There is much confusion about the diseases and their overlap. Lung diseases are sometimes grouped together as phtysis, and workers believe that one can change into another, or that milk can cleanse the lungs (p. 13 – 28).[22]
- Lack of knowledge about the actual utility of PPE (masks): Some workers felt the only reason they received masks was to protect management, while others used bandanas to protect themselves (p. 12).[22] The actual utility of PPE in relation to particle size was not clear to workers.

Many training modalities and methods can be used to address such barriers and enhance workers' efficacy in relation to lung disease, such as DVDs, discussions, pictures, role models, and pictures. The content would include accurate information about different lung diseases, their prevention and treatment; the relationship between specially designed masks and particle size; an understanding of the value and implementation of techniques such as wearing protective masks, watering down, extending ventilation columns, and changing out of dusty clothes immediately after a shift. What is essential is that OHS training programmes are fit for purpose. This means having a valid OHS focus, such as lung health; being suitable for the target group in terms of language and media used; being of acceptable educational and communicative quality; and offering follow-up interventions to facilitate transfer of new skills and attitudes into the workplace. Prior research is required in order to ascertain a thorough grasp of the target group; their knowledge, understanding of and attitudes to the topic in question and the barriers and facilitating factors relating to desired behaviour change (p. 5).[22] Although the Mine Health and Safety Council (MHSC) sponsored the production of a set of relevant materials,[21] these have not been disseminated by the MHSC, mining houses, or trade unions (p. s71).[14]

CONCLUSIONS AND RECOMMENDATIONS

ABET has tremendous potential for fast-tracking or promoting capable workers who lack formal education, or for responding to people who sincerely want a second chance at education, but relatively few workers may have the time or inclination to participate. The recommendation of the Leon Commission regarding adult education as a primary driver of mine OHS has not proven to be a feasible policy over the past 17 years. The limited evidence of both ABET and dedicated OHS training for underground mine workers compared with

unacceptably high rates of mining injuries and occupational diseases indicate that mine OHS training policy may require renewal. Alternative and additional OHS training initiatives are required for underground workers. The development of such initiatives requires an adequate base of research and accurate information. It is recommended that the highest authority for OHS training in the sector investigate the actual provision of training and preparation of underground mineworkers; and that such information be made freely available to the public, practitioners and researchers.

LESSONS LEARNED

- Most underground mineworkers did not complete their schooling.
- The uptake and scale of ABET on mines and possible consequent effects on OHS are negligible.
- ABET yields mainly personal benefits to those workers who participate, which may include enhanced OHS awareness.
- All underground mineworkers require adequate preparation and training for the workplace, but most are relatively uneducated and do not qualify for registered programmes.
- Alternative and additional OHS training initiatives are required to provide underground workers with comprehensive preparation and training for the hazards and risks of mining.

REFERENCES

1. Department of Minerals and Energy. Presidential Mine Health and Safety Audit. Pretoria: Department of Minerals and Energy; 2008.
2. Frankel P. Falling ground: Human approaches to mine safety in South Africa. Johannesburg: Agency for Social Reconstruction; 2010.
3. Department of Minerals and Energy: Annual Report 2009/2010. Pretoria: DME; 2010.
4. Chamber of Mines of South Africa: Chamber Stats 2010. Johannesburg: COM; 2010.
5. Hermanus M. Occupational health and safety in mining - status, new developments, and concerns. The Journal of the Southern African Institute of Mining and Metallurgy 2007; 107: 531-538.
6. Rees D, Murray J, Grainger L. Considerations when designing medical monitoring of silica-exposed miners in southern Africa. African Newsletter on Occupational Health and Safety. 2011; 21(1): 13-15.
7. Guild R, Ehrlich R, Johnston J, Ross M. (Eds.) Handbook of occupational health practice in the South African mining industry. Johannesburg: The Safety in Mines Research Advisory Committee (SIMRAC); 2001.
8. Mining Qualifications Authority: Sector Skills Plan for the Mining and Minerals Sector. Submitted by the Mining Qualifications Authority (MQA) to the Department of Higher Education and Training. Johannesburg: MQA. Accessed on 16 February 2011. Available from http://www.mqa.org.za/siteimgs/SSP%20for%20the%20Mining%20and%20Minerals%20Sector%20(Final%202011).
9. Rees D, Murray J, Nelson G, Sonnenberg P. Oscillating migration and the epidemics of silicosis, tuberculosis, and HIV infection in South African Gold Miners. American Journal of Industrial Medicine. 2009; 53(4): 398-404.
10. Reichardt M. Mine fatalities in South Africa: The quest for zero harm. Mining 2010 (September Edition). Johannesburg: Chamber of Mines; 2010: 59-65.
11. Leon R, Davies A, Salamon M, Davies J. Commission of Inquiry into Safety and Health in the Mining Industry. Published under Government Notice R.889 of 6 May 1994: Braamfontein; 1995.
12. Hargrove J. Migration, mines and mores: the HIV epidemic in southern Africa. South African Journal of Science. 2008; 104: 53-61.
13. de Leeuw J. Mining Qualifications Authority: Skills Development. Johannesburg. Personal communication: 15 July 2011.
14. Murray J, Davies T, Rees D. Occupational lung disease in the South African mining industry: Research and policy implementation. Journal of Public Health Policy. 2011; 32: S65–S79. Available from www.palgrave-journals.com/jphp/
15. South Africa. Parliamentary Monitoring Group. Downloaded from www.pmg.org.za 31 March 2011.
16. Prinsloo M. Literacy in South Africa. In Wagner D, Street B & Venezky R. (Eds.) Literacy: An international handbook. Boulder: Westview Press; 1999: 418-423.
17. Mining Qualifications Authority: Research into the state of Adult Basic Education and Training (ABET) in the Mining and Minerals sector. Final draft: 15 August 2006. Johannesburg: MQA; 2006.
18. Mining Qualifications Authority: Annual Report of the Mining Qualifications Authority (MQA) for the financial year 1 April 2010 to 31 March 2011. Johannesburg: Department Higher Education and Training and MQA; 2011. Accessed 7 May 2012. Available from http://www.mqa.org.za/siteimgs/MQA%20AR%202011_Final%20HQ.pdf.
19. Tuchten G. Outcomes of adult literacy and basic education (ABE): An inquiry in an industrial context. M.Ed.Research report. Johannesburg: University of the Witwatersrand; 1997.
20. Calver A. Miners' compensation: Who cares? SA Labour Bulletin. 2008; 32(4): 26-28.
21. Rees D, Murray J, Ingham F. Silicosis Elimination Programme (Track C). Silicosis elimination awareness for persons affected by mining operations in South Africa (SIM 03 06 03). Johannesburg: MHSC; 2009.
22. Goldstein S. Formative research with mineworkers on silicosis elimination: What does silicosis elimination mean to mineworkers? Final Draft Report. SIMRAC 030603 Track C: Awareness for Persons Affected by Mining Operations in South Africa. Johannesburg: Mine Health and Safety Council; 27 March 2007.

Biological monitoring – pitfalls

Back to basics – Part 1

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Introduction

In 2013 we will be celebrating 20 years of hazardous chemical substance regulation in South Africa and the formal advent of biological monitoring (BM). It's been quite a journey and our case book at the laboratory reads like a storybook, so many lessons, changes, characters and each chapter with its own pitfalls. Looking back over the nearly 20 years of experience and the complexities of exposures in the workplace I am reminded to go back to basics, which will be presented in a two-part series.

BEI guidelines

Herewith then an extract from the BEI guidelines by the ACGIH US[1] in italics (in bold find my emphasis for practitioners):

Biological monitoring provides a means to assess chemical exposure and health risk to workers. It entails measurement of the concentration of a chemical determinant in the biological media of those exposed and is an indicator of the uptake of a substance. Biological Exposure Indices (BEIs®) are guidance values for assessing biological monitoring results. ***BEIs generally represent the levels of determinants that are most likely to be observed in specimens collected from healthy workers who have been exposed to chemicals to the same extent as workers with inhalation exposure at the Threshold Limit Value (TLV®).*** *Exceptions include the BEIs for chemicals for which the TLVs are based on protection against non-systemic effects (e.g., irritation or respiratory impairment) where biological monitoring is desirable because of the potential for significant absorption via an additional route of entry (usually the skin). Biological monitoring indirectly reflects the dose to a worker from exposure to the chemical of interest. The BEI generally indicates a concentration below which nearly all workers should not experience adverse health effects. The BEI determinant can be the chemical itself; one or more metabolite(s); or a characteristic, reversible biochemical change induced by the chemical. In most cases, the specimen used for biological monitoring is urine, blood, or exhaled air.*

The BEIs are not intended for use as measures of adverse effects or for diagnosis of occupational illness.

Biological monitoring can help the occupational health professional to detect and determine absorption via the skin or gastrointestinal system, in addition to that by inhalation; to assess body burden; reconstruct past exposure in the absence of other exposure measurements; detect nonoccupational exposure among workers; test the efficacy of personal protective equipment and engineering controls; and monitor work practices.

Biological monitoring serves as a complement to exposure assessment by air sampling. ***The existence of a BEI does not indicate a need to conduct biological monitoring. Conducting, designing, and interpreting biological monitoring protocols and the application of the BEI require professional experience in occupational health and reference to the current edition of the Documentation of the Threshold Limit Values and Biological Exposure Indices.***[2]

Documentation

BEI recommendations are developed by Committee consensus and ACGIH® Board of Directors ratification through an analysis and evaluation process. The detailed scientific criteria and justification for each BEI can be found in the Documentation of the Biological Exposure Indices. The principal material evaluated by the BEI Committee includes peer-reviewed, published data taken from the workplace (i.e., field studies), data from controlled exposure studies, and from appropriate pharmacokinetic modelling when available. The results of animal research are also considered when relevant. The Documentation provides essential background information and the scientific reasoning used in establishing each BEI. Other information given includes the analytical methods, possible potential for confounding exposures, specimen collection recommendations, limitations, and other pertinent information.

In recommending a BEI to the ACGIH® Board of Directors, the Committee considers whether published data are of reasonable quality and quantity and may also consider unpublished data if verified. There are numerous instances when analytical techniques are available for the measurement of a biological determinant, but published information is unavailable or unsuitable for determining a BEI. In those instances, occupational health professionals are encouraged to accumulate and report biological monitoring data together with exposure and health data.

There is limited data for SA populations and we should always consider this when bizarre or different to predicted results are found.

Relationship of BEIs to TLVs

Each BEI determinant is an index of an individual's "uptake" of a chemical or chemicals. Air monitoring to determine the TLV indicates the potential inhalation "exposure" of an individual or group. The uptake within a workgroup may be different for each individual for a variety of reasons, some of which are indicated below. ***Most BEIs are based on a direct correlation with the TLV-TWA: the concentration of the determinant which can be expected when the airborne exposure is at the TLV-TWA.*** *Some of the BEIs (e.g., lead) are not derived from the TLV but directly relate to the development of an adverse health effect. The basis of each BEI is provided in the Documentation.*

Inconsistencies may be observed *between the information obtained from air monitoring and biological monitoring for a variety of reasons, including, but not limited to, work-related and methodological factors. Examples are listed below:*

- ***Physiological makeup and health status of the worker such as body build, diet (water and fat intake), metabolism, body fluid composition, age, gender, pregnancy, medication, and disease state.***
- ***Occupational exposure factors, such as the work rate intensity and duration, skin exposure, temperature and humidity, co-exposure to other chemicals, and other work habits.***
- ***Nonoccupational exposure factors, such as community and home air pollutants, water and food components, personal hygiene, smoking, alcohol and drug intake, exposure to household products, or exposure to chemicals from hobbies or from another workplace.***
- ***Methodological factors, such as specimen contamination or deterioration during collection and storage and bias of the selected analytical method.***
- ***Location of the air monitoring device in relation to the worker's breathing zone.***
- ***Particle size distribution and bioavailability.***
- ***Variable effectiveness of personal protective devices.***

Table 1. Sources of pharmacokinetic variability[1]

Absorption
• *Exposure concentration*
• *Exposure duration*
• *Physical form*
• *Physical workload*
• *Route*
• *Skin characteristics*
• *Solubility*
Distribution
• *Body composition*
• *Body size*
• *Exposure concentration*
• *Exposure duration*
• *Physical workload*
• *Protein binding*
Metabolism
• *Age and sex*
• *Chemical intake*
° *alcohol*
° *medication*
• *Environment*
° *pollution*
° *diet*
• *Exposure level*
• *Genetic factors*
• *Life style*
° *smoking*
• *Physical activity*
° *pulmonary ventilation*
° *blood flow*
• *Protein binding*
Excretion
• *Hydration*
• *Kidney function*
• *Age, sex, pregnancy, disease*

See also Table 1 which can be used as a checklist in case of strange/unpredicted findings.

There is limited data for SA populations (we rarely see the effort put into acquiring this dataset) and we should always consider this when bizarre or different to predicted results are found.

Conclusion

As occupational health practitioners, we are the custodians of employee health, medical surveillance and biological monitoring. It is our responsibility to better understand the underlying premise for a medical surveillance programme and in particular the potential limitations of elements within, most notably BM. In the next issue, I will continue to examine the basics of biological monitoring.

References

1. American Conference of Governmental Industrial Hygienists. TLVs® and BEIs®. Guide to occupational exposure values. Documentation of the threshold limit values and biological exposure indices. 7th ed. Cincinnati, Ohio: ACGIH; 2012.
2. American Conference of Governmental Industrial Hygienists. Documentation of the threshold limit values and biological exposure indices. 7th ed. Cincinnati, Ohio: ACGIH; 2011.

Worker exposure to silica dust in South African non-mining industries in Gauteng: an exploratory study

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ABSTRACT

Background: **Silicosis has long been associated with non-mining industries; however, there has been a paucity of studies regarding silica dust exposure in these industries. Silicosis is an incurable and non-reversible disease, but is highly preventable. This study aimed to quantify exposure levels of workers to silica dust per industry.**

The objective: **To determine workers' exposure to silica dust in non-mining industries.**

Methods: An exploratory study of six non-mining industries was conducted, with 306 breathing-zone personal samples measured using MDHS14/3.

Results and discussion: **The silica dust exposure percentages that exceeded the South African Occupational Exposure Limit were foundries 64.8%, sandstone factories 56%, ceramics/potteries 53%, refractories 35%, and sandblasting 2.4%. The overall maximum and minimum exposures were 5.772 and 0.009 mg/m^3, respectively.**

Conclusion: **Workers are potentially at high risk of contracting silicosis and other diseases associated with respirable silica dust. Dust control and monitoring were inadequate in the industries visited. It is recommended that an in-depth study be conducted and that airborne dust-control programmes be implemented.**

Key words: **non-mining industries, silica dust, respirable crystalline silica dust, silicosis, South Africa**

1. INTRODUCTION

Silicosis, a type of pneumoconiosis caused by exposure to respirable crystalline silica dust, is an incurable and non-reversible disease, but it is highly preventable.[1] It is one of the most important health problems in the world, because of its potential to cause physical disability.[2] Silicosis has a long latency period and can occur ten to 20 years after exposure has stopped.[3] However, high exposure to silica dust is associated with short latency and fast progression of the disease.[1-3] The extent of the disease depends on the nature and concentration of the dust, duration of exposure, and individual's susceptibility to the disease.[2,5] The global approach to the elimination of silicosis is focused on the control of exposure to silica dust.[2,5]

Blasting hood (Sandblasting)

Respirable crystalline silica (quartz) is a common mineral in the earth's crust, abundant in most rocks, sands and soils and extremely resistant to weathering.[6,7,8] The International Agency for Research on Cancer (IARC)[9] links the potential exposure to quartz for workers in many industries directly to the extensive natural occurrence of quartz in sand, stone and soil and also to the wide uses of materials that contain quartz. Exposures occur during disturbance of silica and the use of products containing silica.[3,6,7,9] Potentially hazardous exposures can occur when the surface of the earth is disturbed in

any manner (mining, farming or construction) or when sand, stones or rocks are drilled, moved, crushed or processed. For example, a study on Tanzanian stone crushers found that the mean area of respirable dust was 1.2 mg/m^3.[10]

In terms of global exposure trends 12% of foundry workers in the USA with 30 years or more of work service had chest radiographs consistent with silicosis.[11] In the USA, from 1985 to 1990, about 11% of the workplace deaths were caused by silicosis, where silicosis was identified on the death certificates.[12,13] In 2003 about 3 030 foundry workers were reported to be exposed to silica dust and at risk of developing silicosis in Vietnam.[14]

Inadequate dust control and high disease rates in traditional "silica industries" in South Africa cause a serious silicosis problem.[15,16] The elimination of silicosis is an important public health issue for South Africa because of the strong association between silicosis and TB, combined with the HIV epidemic.[16,17] Silicosis is common in industrial workers and gold miners, with an attendant high TB risk.[17] Silicosis has long been associated with non-mining industries in other countries; however, there has been a paucity of studies regarding silica dust exposure in South Africa. The South African Department of Labour's (DoL) endeavour to cap the scourge of silicosis resulted in the introduction of the National Programme for the Elimination of Silicosis in 2004,[15] the reduction of South Africa's Occupational Exposure Limit (RSA-OEL) for silica dust from 0.4 mg/m^3 to 0.1 mg/m^3 in 2008,[18] and the commissioning of a research project to establish the extent of workers' exposure to silica dust in non-mining. This report contains the results of phase two of this project. A strategic plan was developed for 2010 to 2015 to reduce 20% of employees' exposure to silica dust by establishing provincial silicosis working groups, conducting awareness-raising road shows on the dangers of silica dust, assisting companies to develop silicosis-prevention programmes, and conducting regular inspections and enforcing compliance.[19]

The main aim of the study was to quantify the workers' exposure levels to silica dust in their respective occupations, as there is a paucity of such information for non-mining industries in South Africa.

2. METHODOLOGY

An exploratory study was conducted in six non-mining industries (foundry, sandstone, sandblasting, ceramics/pottery, construction and refractory) in Gauteng province of South Africa. Two companies from each industry were conveniently selected from a list of non-mining industries obtained from the DoL by phone calls to ask their permission to participate in the study. Companies that did not make use of silica sand for blasting in sandblasting or exposed to silica dust in construction were excluded. The "maximum risk employees", who were identified after discussion with the supervisor or owner of each company, were sampled. Data was collected in May, June and July 2010. Permission to publish the study was obtained from the Department of Labour, who commissioned the study.

Respirable dust was measured using gravimetric sampling pumps, with Higgens-Dewell cyclones, pre-calibrated at a flow rate of 2.2 l/min and post-calibrated. Measurements were taken in accordance with the Health and Safety Executive laboratory method for the determination of hazardous substances: "MDHS 14/3: General methods for sampling and gravimetric analysis of respirable and inhalable dust". Analysis of respirable quartz concentration was undertaken using "MDHS 101: Crystalline silica in respirable airborne dusts: Direct-on-filter analysis by infrared spectroscopy and X-ray diffraction". Analysis took place at the CSIR SANAS-accredited (ISO 17025) laboratory for both these methods.[20,21]

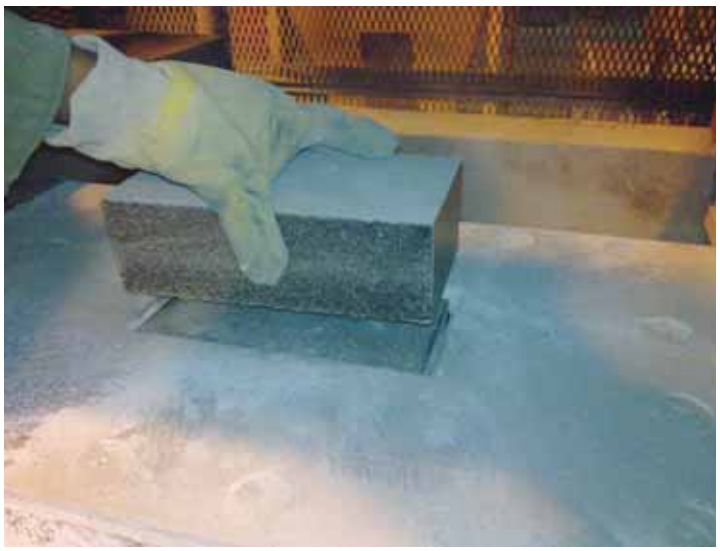
A total of 306 breathing zone personal samples were measured for approximately eight hours in duration (mean 507 min) over the course of three consecutive days for individual occupations. Data was analysed by SPSS version 18 and M Excel® spreadsheet. The results are discussed as maximum, minimum, mean, median exposure, and percentage equal to or greater than the RSA-OEL.

3. RESULTS

Three-hundred-and-six (n=306) personal sampling measurements taken over a period of approximately eight hours (mean 507 minutes, maximum 920 minutes, minimum 268 minutes and median 503 minutes) were collected in six non-mining industries. The distribution of these samples across the six industries is shown in Table 7.

3.1 Occupational exposure to respirable silica dust and respirable dust in two foundries

The overall mean, median and maximum time-weighted average (TWA) concentrations of respirable silica dust were



Refractory break (Refractory)

Table 1. Personal respirable dust and silica dust (mg/m^3) exposure in foundries

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
Sand mixing operator	12	4.571	0.662	0.157	0.032	1.455 ±1.142	0.206 ±0.174	1.245	0.213	00	58
Shake-out operator	4	2.22	0.322	1.207	0.089	1.582 ±0.460	0.243 ±0.109	1.451	0.281	00	75
Shot-blast operator	8	1.994	0.271	0.291	0.056	0.979 ±0.587	0.140 ±0.084	0.808	0.117	00	75
Furnace operator	6	2.448	0.392	0.282	0.023	1.214 ±0.951	0.147 ±0.134	0.971	0.128	00	67
Casting operator	3	1.656	0.228	0.976	0.107	1.364 ±0.350	0.186 ±0.068	1.461	0.223	00	100
Loco sand filler and remover	8	0.297	0.082	0.058	0.01	0.184 ±0.082	0.025 ±0.024	0.175	0.015	00	00
Moulder	4	2.134	0.468	0.358	0.077	1.420 ±0.755	0.271 ±0.180	1.594	0.269	00	75
Grinder	4	9.294	0.309	0.668	0.120	4.664 ±3.838	0.212 ±0.079	4.348	0.210	50	100
Closer	5	3.014	0.261	0.104	0.050	1.597 ±1.209	0.171 ±0.084	1.504	0.184	00	80
Total	54	9.294	0.662	0.058	0.010	1.422 ±1.553	0.170 ±0.131	1.139	0.154	4	64.8

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

0.170 mg/m^3, 0.662 mg/m^3 and 0.154 mg/m^3, respectively. Of all occupations measured 64.8% were exposed to a silica dust level of above the RSA-OEL of 0.1 mg/m^3.[18] Occupations with the highest exposure were casting operator and grinder, with the minimum, mean, median and maximum levels of exposure for both occupations exceeding the RSA-OEL (Table 1).

The overall mean, median and maximum TWA respirable dust exposure levels for all occupations were 1.422 mg/m^3, 1.139 mg/m^3 and 9.294 mg/m^3, respectively. Only 4% of the overall occupations had exposure to respirable dust of above the RSA-OEL[22] of 5 mg/m^3 (Table 1).

Table 2. Personal respirable dust and silica dust (mg/m^3) exposure in sandstone industries

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
Sandstone carver	6	26.08	5.772	3.419	2.337	9.527 ±8.359	3.638 ±1.335	7.493	3.427	67	100
Stone mason	3	0.648	0.113	0.473	0.07	0.569 ±0.089	0.095 ±0.022	0.585	0.101	00	67
Saw operator	18	9.265	3.607	0.1	0.024	1.255 ±2.110	0.482 ±0.878	0.538	0.086	6	44
General labourer	6	1.219	0.464	0.11	0.023	0.503 ±0.394	0.159 ±0.172	0.450	0.086	00	50
Polisher	6	3.768	0.735	0.161	0.077	1.292 ±1.292	0.328 ±0.241	0.947	0.312	00	83
Tractor operator	3	0.341	0.066	0.179	0.031	0.276 ±0.085	0.050 ±0.018	0.307	0.053	00	00
Forklift operator	3	0.982	0.204	0.59	0.082	0.840 ±0.217	0.130 ±0.065	0.947	0.105	00	67
Packer	3	0.583	0.191	0.331	0.061	0.497 ±0.144	0.122 ±0.065	0.576	0.115	00	67
Technician	3	0.414	0.046	0.247	0.02	0.343 ±0.086	0.036 ±0.014	0.367	0.043	00	00
Plant manager	3	0.909	0.355	0.34	0.056	0.707 ±0.318	0.233 ±0.157	0.872	0.287	00	00
Total	54	26.080	5.772	0.100	0.020	1.857 ±3.942	0.656 ±1.247	0.58	0.106	9	56

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

3.2 Occupational exposure to respirable silica dust and respirable dust in two sandstone companies

The overall mean, median and maximum TWA respirable silica dust levels from sandstone companies were 0.656 mg/m^3, 0.106 mg/m^3 and 5.772 mg/m^3, respectively. Of the overall measured occupations, 56% were exposed to respirable silica dust levels of above the RSA-OEL. All the stone carvers were over-exposed to silica dust at above the RSA-OEL, with minimum, maximum, mean and median levels at 2.337 mg/m^3, 5.772 mg/m^3, 3.638 mg/m^3 and 3.247 mg/m^3, respectively. The majority of stone polishers, stone masons, forklift drivers and packers had maximum measurements that exceeded the RSA-OEL.[18]

Only 9% of the overall occupations were exposed to respirable dust levels above the RSA-OEL. The overall mean, median and maximum TWA respirable dust concentrations were 1.857 mg/m^3, 0.58 mg/m^3 and 26.080 mg/m^3, respectively (Table 2).

3.3 Occupational exposure to respirable silica dust and respirable dust in two sandblasting companies

The overall mean, median and maximum TWA respirable silica dust concentrations from the sandblasting companies were 0.022 mg/m^3, 0.012 mg/m^3 and 0.119 mg/m^3, respectively. Only 2.4% of all occupations measured were exposed to silica dust at above the RSA-OEL and only the blaster had

Table 3. Personal respirable dust and silica dust (mg/m^3) exposure in sandblasting companies

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
General labourer	5	1.888	0.037	0.428	0.009	0.929 ±0.666	0.018 ±0.012	0.519	0.011	00	00
Pots worker	4	2.099	0.03	0.145	0.009	0.847 ±0.870	0.018 ±0.010	0.571	0.016	00	00
Blaster	19	10.835	0.119	0.128	0.009	2.433 ±0.833	0.027 ±0.028	0.833	0.013	16	5
Painter and assistant painter	4	1.037	0.045	0.41	0.009	0.603 ±0.294	0.024 ±0.017	0.483	0.021	00	00
Forklift driver	3	1.017	0.035	0.216	0.009	0.530 ±0.428	0.020 ±0.014	0.357	0.015	00	00
Supervisor	3	0.132	0.01	0.06	0.009	0.107 ±0.041	0.009 ±0.001	0.129	0.009	00	00
Maintenance officer	3	1.362	0.036	0.073	0.009	0.574 ±0.691	0.022 ±0.014	0.286	0.020	00	00
Total	41	10.835	0.119	0.06	0.009	1.471 ±2.388	0.022 ±0.021	0.527	0.012	7	2.4

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

Table 4. Personal respirable dust and silica dust (mg/m^3) exposure in construction companies

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
General labourer	14	0.333	0.062	0.01	0.009	0.073 ±0.079	0.013 ±0.014	0.064	0.009	00	00
Bobcat operator	2	0.326	0.03	0.233	0.018	0.280 ±0.066	0.024 ±0.008	0.280	0.024	00	00
Concrete hand	14	0.418	0.048	0.039	0.009	0.146 ±0.107	0.021 ±0.014	0.126	0.014	00	00
Carpenter	9	0.488	0.046	0.046	0.009	0.156 ±0.162	0.019 ±0.013	0.064	0.013	00	00
Safety officer	2	0.155	0.015	0.028	0.014	0.092 ±0.090	0.015 ±0.001	0.092	0.015	00	00
Steel fixer	5	0.246	0.041	0.016	0.009	0.142 ±0.089	0.018 ±0.014	0.169	0.011	00	00
Shutter hand	3	0.102	0.021	0.031	0.009	0.074 ±0.038	0.013 ±0.007	0.088	0.010	00	00
Total	49	0.488	0.062	0.01	0.009	0.126 ±0.112	0.017 ±0.013	0.073	0.010	00	00

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

an exposure of above the RSA-OEL.[18] The total occupation mean, median and maximum TWA respirable dust concentrations in sandblasting were 1.471 mg/m^3, 0.527 mg/m^3 and 10.835 mg/m^3, respectively. Only 7% of dust measured exceeded the respirable dust RSA-OEL[18,22] (Table 3).

3.4 Occupational exposure to respirable silica dust and respirable dust in two construction companies

The entire overall mean, median and maximum TWA occupational exposure concentrations measured in the construction industry companies sampled were below the OEL for both respirable silica dust and respirable dust (Table 4).

3.5 Occupational exposure to respirable silica dust and respirable dust in two ceramic/pottery industries

The overall occupational mean, median and maximum TWA respirable silica dust exposures in the ceramic/pottery industry were 0.269 mg/m^3, 0.105 mg/m^3 and 2.900 mg/m^3, respectively. Of the occupations measured, 53% were exposed to silica dust at above the RSA-OEL.[18] The clay worker and dispatch clerk occupations were exposed to silica dust where mean, median and maximum levels exceeded the RSA-OEL of silica dust. Only 2% of occupations exposed to respirable dust were exposed to levels above the RSA-OEL[22] for respirable dust (Table 5).

3.6 Occupational exposure to respirable silica dust and respirable dust in two refractories

The overall mean, median and maximum TWA respirable silica dust concentrations for refractories were 0.084 mg/m^3, 0.042 mg/m^3 and 0.355 mg/m^3, respectively. A total of 35% of occupations measured exceeded the RSA-OEL for silica dust.[18] The chemical batcher, operator bagger, chemical additioner and control room operator had median, mean and maximum concentrations of above the RSA-OEL.

The overall mean and maximum TWA respirable dust concentrations for refractories were 3.483 mg/m^3 and 15.210 mg/m^3, respectively. Of the respirable dust concentrations measured, 28% were above the RSA-OEL (Table 6). They were using refractory material to manufacture breaks.

4. DISCUSSION

4.1 Foundries

Occupational exposures to respirable silica dust in the foundries measured were mainly from the silica sand used in making moulds and cores, and during sand preparations, knock-out, grinding or blasting. The mean TWA respirable silica dust exposures were the highest in the moulder, shake-out operator, grinder, and sand mixing operator, where the exposures were two times higher than the RSA-OEL[18]; and exposures were high in the casting operator, closer and furnace operator (Table 1). The results were similar to the results of studies done in Korea and the USA where they reported almost the same occupations but differed in terms of the order of the highest exposed occupations.[23,24]

A total of 4% and 64.8% (n=54) of occupations overall were exposed to respirable dust and silica dust at above the RSA-OEL[18,22] respectively. This high exposure could well be attributed to poor dust control and lack of awareness of the dangers and effects of occupational dust, which although not specifically studied were observed during sampling.[15,16] However, the results were lower than the study done in the

Table 5. Personal respirable dust and silica dust exposure (mg/m³) in ceramic/pottery industries

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
Labourer	6	1.161	0.118	0.107	0.01	0.495 ±0.456	0.054 ±0.045	0.266	0.041	00	17
Clay worker	12	4.789	0.913	0.377	0.054	2.181 ±1.501	0.409 ±0.296	1.717	0.370	00	92
Casting worker	3	1.389	0.479	0.199	0.013	0.616 ±0.670	0.186 ±0.255	0.259	0.066	00	33
Glaze worker	12	3.188	1.513	0.28	0.009	1.083 ±0.935	0.253 ±0.480	0.696	0.070	00	17
Supervisor	6	0.972	0.209	0.103	0.009	0.609 ±0.365	0.098 ±0.078	0.709	0.103	00	67
Mould worker	3	0.832	0.201	0.353	0.057	0.590 ±0.240	0.131 ±0.072	0.585	0.135	00	67
Dispatch clerk	6	10.664	2.900	0.193	0.009	2.720 ±3.955	0.589 ±1.136	1.321	0.186	17	67
Forklift operator	3	0.838	0.144	0.32	0.083	0.627 ±0.272	0.119 ±0.032	0.722	0.129	00	67
Total	51	10.664	2.900	0.103	0.009	1.326 ±1.706	0.269 ±0.477	0.737	0.105	2	53

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

Packing silica bags while wearing sampling pump (Ceramic)

USA where they found that 40.6% of samples exceeded OSHA TWA 0.1 mg/m^3 of respirable silica dust as a point of reference.[23]

4.2 Sandstone companies

Occupational exposure to respirable silica dust in sandstone operations emanates from cutting and carving stones that contain 8% to 99% silica content.[25]

Of the samples measured (n=54) for respirable silica dust, 56% had exposures above the RSA-OEL and according to a study done in a similar setting, this places workers at a higher risk of contracting silicosis.[25] The results were similar to a study done in the same industry which reported 5 and 48 times the RSA-OEL of 0.1 mg/m^3.[25] A worker was observed using compressed air to blow dust from his clothes; this could be attributed to poor awareness of the dangers

Table 6. Personal respirable dust and silica dust (mg/m³) exposure in refractory companies

		Maximum		Minimum		Mean/SD		Median		%≥OEL[a]	
Occupations	**n**	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Silica dust	Dust	Quartz
Chemical batcher	2	6.876	0.275	1.802	0.053	4.339 ±3.588	0.164 ±0.157	4.339	0.164	50	50
Operator shuttle conveyor	3	5.378	0.162	2.617	0.056	3.664 ±1.497	0.100 ±0.055	2.996	0.083	33	100
Packer	4	10.27	0.215	0.619	0.009	4.981 ±5.040	0.102 ±0.104	4.517	0.093	50	50
Operator bagger	6	11.028	0.355	0.712	0.014	5.575 ±3.430	0.171 ±0.113	5.003	0.168	50	83
Operator weigh larry	3	15.21	0.24	6.68	0.042	10.250 ±4.431	0.152 ±0.101	8.861	0.175	100	67
Forklift driver	6	14.668	0.152	0.429	0.016	3.969 ±5.408	0.077 ±0.053	1.589	0.074	17	33
Chemical additioner	6	11.825	0.276	1.488	0.044	5.085 ±3.902	0.144 ±0.093	4.260	0.126	50	67
Boyd press operator	3	0.787	0.038	0.031	0.01	0.435 ±0.381	0.020 ±0.016	0.487	0.012	00	00
LAEIS press operator	6	1.063	0.04	0.122	0.009	0.670 ±0.337	0.026 ±0.011	0.682	0.026	00	00
Control room operator	6	7.734	0.18	1.7	0.027	3.858 ±2.594	0.102 ±0.064	2.484	0.105	33	50
Berry press operator	9	4.663	0.035	0.081	0.009	1.197 ±1.578	0.012 ±0.009	0.236	0.009	00	00
Crusher operator	3	0.791	0.009	0.16	0.009	0.390 ±0.349	0.009 ±0.000	0.219	0.009	00	00
Total	57	15.210	0.355	0.031	0.009	3.483 ±3.773	0.084 ±0.086	1.928	0.042	28	35

[a] South African occupational exposure limit for respirable silica dust (0.1 mg/m^3)[18] and respirable dust (5 mg/m^3)[22]
SD=Standard deviation

of occupational dust. The wet method used to control dust in both companies was ineffective as dust was visibly seen rising into the atmosphere.

4.3 Sandblasting companies

Occupational exposure to respirable silica dust in sandblasting arises from the silica sand used for abrasive sand blasting and sometimes from blasted material if made from dust that contains silica content. The process involves forcefully projecting a stream of silica sand particles onto a surface.

"Of all occupations measured [in the foundries] 64.8% were exposed to a silica dust level of above the RSA-OEL of 0.1 mg/m^3."

Only a sand blasting operator was exposed to TWA total respirable dust with a mean of 2.433 mg/m^3. The overall mean TWA respirable silica dust level was 0.119 mg/m^3 (Table 3). This was far lower than what is reported in other countries.[26] This could be due to the fact that one company was operating in an open space, where natural ventilation diluted the dust, and there was occasional use of steel grit and glass beads.

Only 2.4% of the overall occupations measured (n=41) were exposed to respirable silica dust above the RSA-OEL.[18] Approximately 7% of all measured occupations were exposed to total respirable dust at above the RSA-OEL of 5 mg/m^3.[22] No significant exposure was found in this industry; however, this cannot be generalised to all sandblasting companies in the country, because of the companies measured, one was operating in an open space and the other was using steel grit, glass beads and silica sand most of the time during sampling instead of silica sand.

4.4 Construction companies

There were no significant worker exposures to respirable dust or silica dust in the construction companies sampled. This could be due to the fact that measurements were taken in two construction warehouses in an open space with natural ventilation. Workers were erecting columns and foundations at the time of sampling; had the measurements been taken during the initial earth-moving stage the exposure could have been different. This study did not include road, tunnel, earth-moving, blasting, and paving activities, where exposure is reported to be high (Table 4). The exclusion of the above was due to time constraints as companies involved refused to take part in the study. It is therefore recommended that an extensive study be done in this industry to evaluate the true extent of silica dust exposure, as this is one of the major industries reported in literature.

4.5 Ceramics/potteries

Handling clay or sand that contains silica is the main source of worker exposure to respirable silica in the ceramics/pottery working environment. Occupations with the highest exposure levels were the dispatch clerk, clay worker and glaze worker, and occupations with high levels of exposure were the casting worker, mould worker, and forklift operator.

Of the overall occupations sampled, 53% were exposed to respirable silica dust at levels of above the RSA-OEL,[18] and 2% were exposed to total respirable dust at levels of above the RSA-OEL[22] (Table 5). Workers were over-exposed to silica dust, mainly because they were working in enclosed factories without natural or artificial ventilation in place. There were no mechanical ventilation systems observed during sampling and while employees had FFP2 respiratory protective equipment, these were not frequently used. Poor dust control was probably the main instigator of the above mentioned results, as was previously observed

Table 7. Summarised respirable dust and silica dust (mg/m^3) exposure in non-mining industries

Non-mining Industries		Respirable Dust (mg/m^3)					Respirable Silica Dust (Quartz) (mg/m^3)				
	n	Max	Min	Mean/SD	Median	%≥OEL[b]	Max	Min	Mean/SD	Median	%≥OEL[a]
Foundries	54	9.294	0.058	1.422 ±1.553	1.139	4	0.662	0.010	0.170 ±0.131	0.154	64.8
Sandstone	54	26.080	0.100	1.857 ±3.942	0.58	9	5.772	0.020	0.656 ±1.247	0.106	56
Sandblasting	41	10.835	0.06	1.471 ±2.388	0.527	7	0.119	0.009	0.022 ±0.021	0.012	2.4
Construction	49	0.488	0.01	0.126 ±0.112	0.073	00	0.062	0.009	0.017 ±0.013	0.010	00
Ceramics/ Potteries	51	10.664	0.103	1.326 ±1.706	0.737	2	2.900	0.009	0.269 ±0.477	0.105	53
Refractories	57	15.210	0.031	3.483 ±3.773	1.928	28	0.355	0.009	0.084 ±0.086	0.042	35

[a] 0.1 mg/m^3 South African occupational exposure limit for respirable silica dust (quartz)[18]
[b] 5 mg/m^3 South African occupational exposure limit for respirable dust[22]
SD=Standard deviation

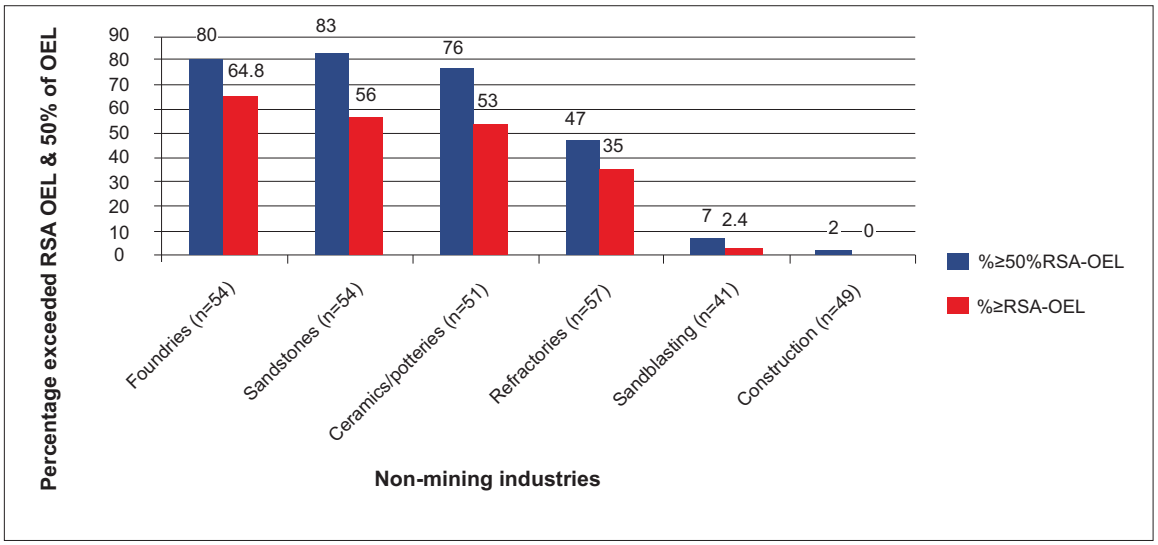


Figure 1. Percentage of silica dust (mg/m³) exposures equal to or above the RSA OEL[18] and 50% of the RSA OEL

and predicted in a study done in similar and different settings.[13,15]

4.6 Refractories

Workers were overexposed to silica dust in the refractories. Of the overall occupations measured, 35% were exposed to silica dust above RSA-OEL.[18] The refractories had extraction fans installed in control rooms and other strategic areas, but seemingly that was not enough to reduce exposure levels. Occupations with high exposure levels were the operator bagger, chemical batcher, operator weigh larry, chemical additioner, packer and control room operator, and operator shuttle conveyer (Table 6). This is similar to a study done in Indian refractories which found the presence of silica dust in excess of the threshold limit values and the presence of silicosis and other silica-associated abnormalities in the workers.[27]

5. CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This study has clearly shown that some workers were overexposed to both respirable dust and silica dust. Respirable silica dust exposure percentages that exceeded the RSA-OEL[18] of 0.1 mg/m^3 were found in foundries (64.8%), sandstone factories (56%), ceramics/potteries (53%), refractories (35%), and sandblasting (2.4%). These findings accord with an earlier study done in southern Africa.[6] Workers in these industries are potentially at high risk of contracting silicosis, silico-tuberculosis, lung cancer and other occupational respiratory diseases associated with exposure to silica dust. This is similar to a previous study of silicosis in non-mining industries, where foundries were found to have the highest cases of silicosis, followed by ceramics, refractories, stone or ore crushing and abrasive blasting companies.[28] Though this is an exploratory study, the findings in most of the non-mining industries have clearly indicated the high level of workers exposure to crystalline silica dust and the urgency needed to address the problem.

Through observation, it was clear that not enough effort has been made to reduce workers' exposure to respirable silica dust in non-mining industries. Inadequate dust control and dust monitoring were prevalent in the non-mining industries. It is, therefore, recommended that silica dust prevention and controls should be the genesis of all silicosis control measures to be implemented in these industries.[29] This can be achieved through improving dust monitoring, application of best methods to reduce and control dust and lastly implementation of hierarchy of control. For reporting purposes the silica exposure compliance tool developed by the Department of Labour should be used for reporting presence of silica dust in workplaces.[18]

The major limitations of this study were that it was an exploratory study with a small sample size that cannot be extrapolated to represent the general population of non-mining industries in South Africa. It used convenience sampling where companies were asked to participate in the study via telephone. Another limitation of the study was that data collected in the warehouse construction company was not reliable. If it was done during road, demolition, earthmoving and tunnel construction it could have given a different picture. However, the study has revealed to some extent the silica dust exposure levels in South African non-mining industries.

It is strongly recommended that an in-depth nationwide study (baseline) be conducted to determine the true extent of silica dust exposures in the non-mining industry in South Africa, to enable the DoL to track progress made by the National Programme for the Elimination of Silicosis. The sandblasting and construction industries had activities that exposed workers to respirable silica dust at lower levels, but further investigations are recommended.

Sand weighing in a mixing department (Refractory)

LESSONS LEARNED

1. Results of this exploratory study indicate that certain workers were overexposed to silica dust in South African non-mining industries.
2. Workers in non-mining industries are, therefore, potentially at high risk of developing silicosis and other occupational respiratory diseases associated with exposure to silica dust.
3. Inadequate dust control and monitoring were prevalent in non-mining industries.
4. Approximate averages of 35% of non-mining workers were exposed to silica dust above the RSA-OEL of 0.1 mg/m^3.

REFERENCES

1. Department of Labour. Silica exposure and its effects on the physiology of workers. Pretoria, South Africa: Department of Labour; 2007a: p1-9.
2. Swanepoel A, Rees D, Renton K, Kromhout H. Exposure to respirable crystalline silica in South African farm workers. Journal of Physics. 2009; Conference Series 151(012005): p1-4.
3. Tse LA, It Y, Au JSK, Qiu H, Wang X. Silica dust, diesel exhaust, and painting work are the significant occupational risk factors for lung cancer in non-smoking Chinese men. British Journal of Cancer. 2011; 104(1):208-213.
4. Rees D, Murray J. Silica, silicosis and tuberculosis. The International Journal of Tuberculosis and Lung Disease: the Official Journal of the International Union against Tuberculosis and Lung Disease. 2007; 11(5):474-484.
5. Fedotov I. Global elimination of silicosis: the ILO/WHO International Programme. Asian-Pacific Newsletter on Occupational Health and Safety. 1997; 4(2):1-3.
6. Nogueira C, Rees D, Murray J. Action on silica, silicosis and tuberculosis – the WAHSA experience in southern Africa. Occupational Health Southern Africa. 2009; 15(special issue):27-33.
7. Ministry of Labour. Guideline Silica on Construction Project; Occupational Health and Safety Guidelines. Ontario; Published 2004, revised April 2011. ISBN 978-4435-6227-0 (PDF). 2011. P1-23. [Online]. Accessed in November 2011. Available from: http://www.labour.gov.on.ca/english/hs/pdf/gl_silica.pdf
8. Agnello VN. The silica industry in the Republic of South Africa. R44/2004. South Africa: The Director: Mineral Economics, Mineralia Centre; 2004.
9. International Agency for Research on Cancer (IARC). Monographs on the evaluation of carcinogenic risks to humans. Silica, some silicates, coal dust and para-aramid fibrils. Lyon, France: International Agency for Research on Cancer; 1997. p. 68.
10. Naidoo RJ, Kessy F, Mlingi L. Respiratory health of stonecrushers from the informal sector in Tanzania. Occupational Health Southern Africa. 2009; 15(6):6-13.
11. Rosenman KD, Reilly MJ, Rice C, Hertzberg V, Tseng T, Anderson HA. Silicosis among foundry workers: Implication for the need to revise the OSHA standards. Am J Epidemiology. 1996; 144(9): 890-900.
12. Roznowski EI. Crystalline Exposure in Construction. US: OSHA; 2008. Accessed 12 June 2009. Available at: http://www.osha.gov/SLCT/ silicacrustalline/roznowskiei/exposure.html.
13. Alazab RA. Work-related diseases and occupational injuries among workers in the construction industry. Afr Newslett on Occup Health and Safety. 2004; 14(2):37-42.
14. Lan TN, Son PH, Trung LV, Tu N, Keifer M, Barnhart S. Distribution of silica-exposed workers by province and industry in Vietnam. Int J Occup Environmental Health. 2003; 9(2):128-133.
15. Rees D. Silicosis elimination in South Africa. Occupational Health Southern Africa. IOHA 2005. 2006; Paper S 1-2: 1-4.
16. Rees D, Cronje R, Du Toit RS. Dust exposure and pneumoconiosis in a South African pottery. British Medical Journal. 1992; 49(7):459-464.
17. Motshelanoka LM. National programme for the elimination of silicosis in South Africa. Occupational Health Southern Africa. IOHA 2005 PILANESBURG Paper S1-3. [Online]. 2006. Accessed on 12 April 2009. Available from: http://www.aspasa.co.za/HealthSafety/General/EliminationofSilicosis/Resources/IOHA2005/LMotshelanokaPaper.pdf.
18. Department of Labour. Government Notice 66: Occupational Health Safety (85/1993): Amendment Occupational Exposure Control Limit for Silica in Table 1 of the Hazardous Chemical Substances Regulations. Government Gazette. 2010b Feb 5; 32939.
19. Department of Labour. Annual Report of the Compensation Fund for the year ended 31 March 2010b. Pretoria: DoL; 2010.
20. Health and Safety Executive. MDHS 14/3: General methods for sampling and gravimetric analysis of respirable and inhalable dust. HSE; [Online] 2000. Accessed on 02 May 2010. Available from: http://www.hse.gov.uk/pubns/mdhs/pdfs/mdhs14-3.pdf.
21. Health and Safety Executive. MDHS 101: Crystalline silica in respirable airborne dusts: direct on filter analysis by infrared spectroscopy and X-ray diffraction. UK: HSE; [Online] 2005. Accessed on 02 May 2010. Available from: http://www.hse.gov.uk/pubns/mdhs/pdfs/mdhs101.pdf.
22. Department of Labour. Occupational Health and Safety Act (Act No 85 of 1993, as amended)-Hazardous Chemical Substances Regulations. 1995; GN R1179 in GG 16596 of 25 August 1995. [Online]. 2012. Accessed on 22 May 2012. Available from: http://www.labour.gov.za/legislation/regulations/occupational-health-and-safety/regulation-ohs-hazardous-chemical-substances
23. International Agency for Research on Cancer (IARC). 1997. Monographs on the evaluation of carcinogenic risks to humans. Vol. 68. Silica, some silicates, coal dust and para-aramid fibrils. Lyon, France: International Agency for Research on Cancer.
24. Koo, JW, Chung, CK, Park, CY, Lee, SH, Lee KS, Roh, YM, Yim, HW. The effects of silica dust on ventilatory function of foundry workers. J Occup Health; 2000; 42:251-257.
25. Renton K. Respirable crystalline silica exposure and noise at a sandstone processing factory. NIOH Report 01/08; OH2/08. Johannesburg: NIOH; 2000. p1-12.
26. Sevinc C, Cimrin AH, Manisali M, Yalcin E, Alkan Y. Sandblasting under uncontrolled and primitive conditions in Turkey. J Occup Health. 2003; 45(1):66-69.
27. Nair PK, Sinha JK. Dust Problem in silica Refractories. Indian Journal of Environmental Protection. 1988; 8 (2). pp. 96-99. ISSN 0253-7141
28. Ehrlich RI, Rees D, Zwi AB. Silicosis in non-mining industry on the Witwatersrand. South African Medical Journal. 1988; 73(18): 704-708.
29. Linch KD, Miller WE, Althouse RB, Groce DW, Hale JM. Surveillance of respirable crystalline silica dust using OSHA compliance data (1979-1995). American Journal of Industrial Medicine. 1998; 34(6):547-558.

Report on ICOH2012 Congress

THE MAIN EVENT

The International Commission on Occupational Health (ICOH) held its 30th International Congress on Occupational Health (ICOH2012) in Cancún, Mexico, 18–23 March 2012. ICOH is an NGO in official partnership with the World Health Organization (WHO) and the International Labour Organization (ILO), as well as three other sister organisations: the International Occupational Hygiene Association (IOHA), the International Ergonomics Association (IEA), and the International Social Security Association (ISSA).

A total of 1745 participants from 91 countries contributed to the success of the scientific meeting and it was gratifying to see that a number of developing countries were represented at this prestigious international forum on occupational health. African delegates represented the following countries: Benin, Botswana, Cameroon, Côte d'Ivoire, Egypt, Ghana, Kenya, Morocco, Nigeria, Senegal, South Africa, Tanzania, Togo, Uganda and Zimbabwe.

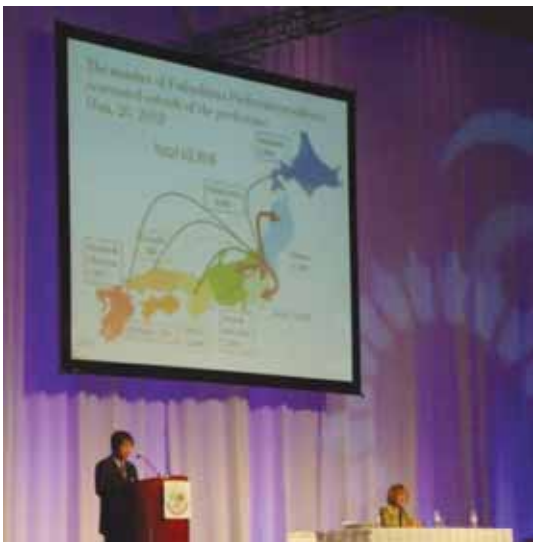
The theme of ICOH2012, 'Occupational Health for All: from Research to Practice', is based on the precept that all workers across the globe require comprehensive health protection to prevent occupational disease or injury, as part of their basic human and labour rights.

Dr Jorge Morales-Camino, ICOH2012 Congress President, reiterated: "To achieve such an important goal [of occupational health for all] we need to take advantage of new scientific information to develop innovative guidelines, new approaches and procedures, training courses, etc. to be applied to workers' health protection. Over 90% of scientific papers on occupational health are written in industrialised countries; yet it is in developing countries where the most compelling needs in the field of occupational health are a part of everyday reality. The Mexico Congress aims to build a bridge between research and practice in order to help industrialised and developing countries improve the level of health protection for workers, and help prevent occupational injuries and diseases."

In his Welcome Address, Dr Kazutaka Kogi, ICOH President, stated: "Since the first Congress held in Milan in 1906, our triennial congresses have always played a frontline role in protecting and promoting the health of workers. This role is particularly vital throughout a time of rapid changes in employment structures, working life and work environments caused by the globalising economy. These changes bring about complex health and safety risks to workers in all sectors. It is timely to focus on workplace improvement actions applicable to managing complex risks in increasingly diversifying work situations."

The Congress, which consisted of more than 200 Special and Free Paper Sessions with close to 1450 presentations, and in excess of 450 poster sessions, was the ideal platform to communicate information on topical issues such as occupational health as a human right; nanotechnologies and their impact on human health; evidence base in occupational health; health services research and evaluation in occupational health; rural health; occupational health for health care workers; education and training in occupational health; climate change and occupational health; and work organisation and psychosocial factors, among others. The Congress emphasised proactive risk management and innovative solution-based approaches, and lived up to the overarching theme of 'building bridges between research and practice'. The Cancún Charter on Occupational Health was a key deliverable of the meeting; it was prepared during the Congress in consultation with numerous stakeholders, and approved and launched at the Closing Ceremony. The Charter aims to enhance the priority of occupational health within political agendas.

An important milestone was achieved at the ICOH2012: the first ICOH Life Achievement Award was bestowed on Dr Jorma Rantanen – former ICOH President, former Director General of the Finnish Institute of Occupational Health (FIOH) – in recognition of his invaluable, life-long contribution to research impact on prevention and policies in the field of occupational health and safety, and his excellent support to ICOH revitalisation and impetus, at international level. Dr Rantanen delivered the opening keynote address, titled 'Occupational Health as a Human Right' which focused on the objective of occupational health for all still needing much effort, at national



Dr Fukushima delivered a keynote address on the Japanese nuclear power plant accident

and international levels, for successful and sustainable implementation.

The remaining 10 keynote addresses, delivered throughout the Congress (two per day), were very topical and thought-provoking, spanning many facets of occupational health:

- Delivery of occupational health to all workers, by Dr Maria Neira – Director of Public Health and Environment, WHO, Geneva, Switzerland;
- Strategic approach to occupational safety and health, by Dr Seiji Machida – Director of SafeWork, ILO, Geneva, Switzerland;
- Radiation exposure issues in the aftermath of the Fukushima Daiichi nuclear power plant accident and the role of occupational health, by Dr Tetsuhito Fukushima, Fukushima Medical University, Japan;
- Learning from the past to prepare for the future of work, by Dr John Howard, Director of the National Institute of Occupational Safety and Health (NIOSH), USA;
- How to go from applied research to prevention solutions for company employees? The example of INRS in France, by Dr Stephane Pimbert – General Director of the National Institute of Research and Safety, Paris France;
- Let's find out what works in occupational health, by Dr Jos Verbeek – FIOH, Kuopio, Finland;
- Fundamental moral values, cultural diversity and ethics regulation within the health professions, by Godfrey Tangwa - Professor of Philosophy, University of Yaounde, Cameroon;
- Improving psychosocial factors at work: behavioural medicine meets occupational health, by Prof. Norito Kawakami – President of the International Society of Behavioural Medicine, University of Tokyo, Japan;
- Risk management of nanoparticles in the workplace, by Dr Claude Ostiguy – Robert-Sauvé International Research Institute of Occupational Health and Safety, Montreal, Canada; and
- Occupational health aspects of climate change, by Dr Tord Kjellstrom – National Centre for Epidemiology and Population Health, Australian National University, and Wellington School of Medicine, New Zealand.

There were 30 semi-plenary sessions (six per day), and two that stood out as having high impact with widespread application, and were well attended by congress participants, were:

Construction safety and health: origin in Europe, advancement in North America, and adoption in India, by Dr Knut Ringen – Senior Science Advisor: Centre for Construction Research and Training, Seattle, USA. The presentation focused on the safety and health problems evident in the construction industry, which are mostly linked to the work structure. Unless there is an organisation with an industry-wide focus dedicated to construction safety and health, high rates of injury and disease will prevail in the sector, worldwide.

International approaches to asbestos, by Prof. Ken Takahashi – Professor of Environmental Epidemiology, University of Occupational and Environmental Health, Kitakyushu, Japan. The main thrust of the presentation was making the case for international collaboration in the occupational health arena for the promotion of a worldwide ban on asbestos, firstly, but also the prevention of exposure, in combination with the effective recognition, reporting and recording of asbestos-related diseases (ARDs) in the respective countries. The current Asian Asbestos Initiative was presented as a good example of the international efforts in eradicating asbestos manufacture and use, as well as ARDs.

The Special Sessions were numerous and in a wide range of disciplines within the broad occupational health field. Of interest to African audiences is the fact that one Special Session was titled 'Occupational safety and health culture in the African continent'. The Session was organised by the ICOH Scientific Committee on Occupational Health and Development, and invited presentations covered topics such as the current occupational health and safety culture in Africa; transformation on occupational health and safety to attain 'Zero Harm' in the South African mining industry; change safety culture in Egypt; an assessment of fire safety measures in the Nairobi commercial sector; safety and health monitoring tools to ensure compliance with the national guidelines within the Ugandan health sector; and gender and occupational health culture in the construction sector in Uganda.

A special vote of thanks and appreciation is extended to Dr Jorge Morales-Camino and Dr Elia Enriquez as the Local Organisers of ICOH2012, for making the Congress such a successful and well attended event. Dr Enriquez and Prof. Bonnie Rogers (ICOH Vice President) were the Co-Chairs of the Scientific Programme and developed the science content in close collaboration with ICOH Scientific Committees and Work Groups, the National Organising Committee, the International Scientific Committee, and many other significant contributors. A special mention goes to Ms Suvi Lehtinen from FIOH who headed the fundraising initiative to develop the support grants that were awarded to participants from developing countries.

MEETINGS ASSOCIATED WITH ICOH2012

The ICOH2012 Congress was the ideal platform to hold numerous meetings of international organisations, ICOH Scientific Committees and Working Groups, as well as meeting of interest groups, as the Congress brought together many occupational health practitioners from around the world.

The 9th Meeting of the WHO Global Network of Collaborating Centres (CCs) for Occupational Health was held in Cancún, 15-16 March 2012, prior to ICOH2012. The Planning Committee of the Network met on 14 March to discuss and confirm the identified priority action areas. The meeting was attended by approximately 120 representatives from the CCs, including three WHO Regional Advisors and the WHO Headquarters secretariat. Representatives of the ILO, ICOH, IEA and IOHA also attended. The main outcome of the meeting was the fine tuning of many months of commitment and effort, into seven defined priority areas for the new Global Network Plan (2012-2017), based on the Global Plan of Action for Workers' Health.

One of the Business Meetings within the ICOH2012 was that of the African Regional Association of Occupational Health (ARAOH), convened by Prof. Daan Kocks, Chairman of the South African Society of Occupational Medicine (SASOM). Prof. Kocks is to be commended on his tireless efforts to convene an ARAOH meeting at the ICOH2012, particularly since he injured himself in a bad fall on the first day of the Congress, and had to be hospitalised in Cancún, with a fractured arm. Around 30 delegates from Africa attended the ARAOH meeting which was held on the evening of Tuesday 20 March, and chaired by Prof. Kocks, following his hospital discharge. The winners of the competition for the design of the ARAOH logo were announced at the meeting, and the prize was handed over to the deserving winners who were from Senegal. The meeting provided an overview of the main objectives of the newly revitalised ARAOH and outlined activities planned for the near future, including an ARAOH conference proposed to be held in Kenya in 2014.

Another informal meeting was held during ICOH2012, for parties interested in establishing a Mining Network within the scope of ICOH. The meeting was attended by Congress participants who were from the formal and informal mining sectors in various countries (Australia, Denmark, Ghana, Germany, Indonesia, Italy, South Africa). The meeting was proposed as an outcome of a workshop for high risk sectors, which was held at the 9th Meeting of the WHO Global Network of CCs for Occupational Health. A suggestion was made to establish a mining network outside of the WHO CC in Occupational Health, which would focus on developing resources for small scale and informal mining. Gaps identified as priorities for the proposed Mining Network include the expansion of training for radiography and diagnosis of mining related respiratory diseases; focus on infectious diseases in oil and gas industries; and reduction of HIV and TB incidence. Three main themes emerged as potential areas of focus, should the Mining Network become active: small scale gold mining and the elimination of mercury use; capacity building for the management of pneumoconioses; and development of toolkits for good practices in mining.

ACCOLADES AND AWARDS

The ICOH2009 held in Cape Town in March 2009 pioneered the Special Session for Students, as part of the Scientific Programme of the Congress. This practice was successfully implemented again, at ICOH2012, and the announcement for a dedicated Student Poster Session drew much interest and applications from across the globe. Three winners and three runners-up were announced at the Closing Ceremony of ICOH2012.

Two of the runners-up were PhD Students from South Africa; both were awarded ICOH memberships for 2012-2015 as their prize:

- Ms Gill Nelson (University of the Witwatersrand, SA) – poster titled "Silicosis at autopsy in platinum mine workers".
- Ms Ntombizodwa Ndlovu (National Institute for Occupational Health, SA) – poster titled 'Clinico-pathological correlation of asbestos-related disease in ex-miners'.

It is worthwhile to note that Ms Nelson was the successful recipient of a student scholarship from SASOM, to attend ICOH2012. The award from SASOM covered congress registration fees, economy class airfare and accommodation costs for the duration of ICOH2012.

During the Congress, ICOH announced newly elected Officers and Board members who will serve for the 2012-2015 triennium. Two South Africans were elected as Board members – Prof. Mary Ross (University of the Witwatersrand and medical consultant to De Beers) for a second term, and Ms Claudina Nogueira (Senior Health and Safety Advisor, Anglo American's Technical Solutions). Both are members of the SASOM Executive Committee.

The other newly elected ICOH Board members are: Dr Marilyn Fingerhut (USA), Prof. Giovanni Costa (Italy), Prof. Peter Westerholm (Sweden), Prof. Harri Vainio (Finland), Dr Timo Leino (Finland), Prof. Malcolm Sim (Australia), Prof. Yves Roquelaure (France), Dr Elia Enriquez (Mexico), Prof. Norito Kawakami (Japan), Prof. Monique Frings-Dresen (Netherlands), Dr Andrew Curran (UK), Dr Edoardo Santino (Brazil), Dr Seong-Kyu Kang (Republic of Korea), and Dr Patabendi Abeytunga (Canada).

The ICOH Officers are: President – Dr Kazutaka Kogi, Secretary General – Dr Sergio Iavicoli, Vice President – Ms Suvi Lehtinen, Vice President – Prof. Bonnie Rogers, Past President – Prof. Jorma Rantanen.

ICOH's 32nd International Congress will be held in 2018 in Dublin, Ireland, as a result of the vote held in Cancún, at the 30th ICOH Congress.

Claudina Nogueira
8 May 2012

ICOH/SCOHN News, Cancún, Mexico, March 2012

The 2009 – 2012 triennium has been a productive period for ICOH. At the 2009 Congress in Cape Town, ICOH confirmed the need for strengthening international collaboration in improving the conditions of work, health and safety and well-being at work, and to provide basic occupational health services, especially in developing regions. ICOH has been active in all the elements of research, information, and training and reinforcing best practices in the field of occupational health and safety. The AGM in 2009 approved four priority areas namely:

1) advancing pro-active risk assessment and control of work procedures to emerging issues;
2) expanding occupational health (OH) services to all workers through the implementation of basic occupational health services (BOHS) programmes;
3) developing action-orientated ICOH toolkits (for basic occupational health services implementation); and
4) strengthening the ICOH network for action through scientific committees, National Secretaries, Board committees, task groups and joint working groups.

Aspects which have been addressed for each priority area are outlined below.

1. Advancing risk assessment and control measures

- Scientific Committee (SC) and related conferences have discussed recent developments in work-related health and safety risks. Assessment of new risks like psychosocial risks, linked to practical control measures has been highlighted, published in some scientific journals, and some SCs are developing guidelines or guidance materials in this regard.
- The Working groups on Occupational Infectious Agents, Participatory Approaches to OH, the Elimination of Asbestos Related Disease, and the Young Child and Child Labour are currently in the process of preparing guidance material for action-orientated risk management by OH services.
- A renewed emphasis has been placed on the prevention of serious health risks at work, including the global ban of asbestos and the elimination of asbestos related disease. The SC on Respiratory Disorders has called for prevention of new asbestos cases as well as a compilation of national profiles on secondary/tertiary prevention. The working group on Occupational Infectious Agents developed an ICOH model policy for HIV for small and medium enterprises. A new SC was formed from the work group on Nanotechnology. ICOH contributed to the adoption of the new ILO list of Occupational Disease in 2010.
- Notable progress in research has been made in developing workplace measures for enhancing the mental health of workers and the prevention of work stress in different settings.
- The SC on Education and Training was revitalised as the need for up to date education and training materials, including website facilities was recognised.

2. Extending OH Services

- Extensive reviews have taken place amongst SCs on how to develop and disseminate effective health services to various industries. The working group on Professional Curricula has made online training material available at www.workershealtheducation.org.
- ICOH in collaboration with WHO and ILO have conducted joint efforts on the prevention of occupational- and work-related disease and injuries for BOHS services.
- In collaboration with WHO, ICOH has developed guidelines, training of trainers and supporting pilot projects for BOHS. Country-wide programmes for BOHS have been supported through policy advice, guidance materials, and implementation in China, Thailand, Vietnam and the Balkan areas.

3. Development of ICOH – toolkits

- ICOH and the International Ergonomics Association jointly publish Ergonomic Guidelines for developing countries in 2010.
- Through ILO projects and the WHO Collaborating Centre network, ICOH has contributed to the development and guidance and training tools for BOHS in small and medium enterprises.

4. Review of Code of Ethics

- Following discussions at the midterm meeting in (Milan, 9 Feb 2011), a special effort was made to review the ICOH Code of Ethics. The review of the existing Code of Ethics for Occupational Healthcare Professionals was initiated by the Ethics and Transparency Committee and referred to the ICOH board for consideration
- The United Nations Medical Directors work group agreed to align itself with the ICOH Code of Ethics in 2010.
- The suggested changes in the text of the Code were relatively extensive, increasing the total length considerably. Currently the editing of the Code text is continuing to be amended and will be presented as a final draft to the Board in the next triennium.

5. Strengthening of ICOH network activities

- The activities undertaken by ICOH and SC committees reconfirmed the vital importance of the networking functions, which include the constant exchange of research results, and good OH practice, education and training, and information conducted at various levels of ICOH.

- The Activities of National Secretaries were discussed, especially their role in administrative support, which amongst others includes the membership campaigns, the provision of news to their regions, and the facilitation of nominations and election processes.
- The ICOH Secretariat has provided a template for SCs to advertise activities and a number of SCs have developed their own website. The SC Virtual Office includes all the documents relevant to SC activities and scheduled outcomes.
- The Task Group on Information acted as the Editorial Board of the Newsletter, which is available in hard copy, online and now on Twitter.
- All forms and guidelines for SCs have been revised over the past three years and are available on the website for easy access. The rationale was to provide clear guidance to SCs, and to newly appointed Chairs and Secretaries.
- The next ICOH Congress in Seoul is to take place between 31 May – 5 June 2015. Dublin in Ireland won the bid for the 2018 ICOH congress.

Report on ICOH Scientific Committees

- The SCs have worked diligently, collaboratively generating high quality scientific work and products, which is reflected in the final report. Nearly all SCs have arranged at least one conference resulting in over a 100 conferences over the past three years. The number of publications including scientific proceedings for SCs were approximately 115. SCs were engaged in choosing the recommended keynotes and semi-plenary sessions for ICOH 2012. Ten keynote addresses, 30 semi-plenaries, and 120 special sessions were organised, in addition to 500 poster presentations being displayed at the ICOH 2012 conference. The mid-term and final reports of SCs are available from http//www.icohweb.org/scvo/index.asp.
- The sessions organised by the SCs during the past three years demonstrated both depth in content as well as emerging ideas for the future.

Report on SCOHN (SC on Occupational Health Nursing) activities during ICOH 2012

The ICOH congress started on a high note with the welcoming and opening of the ICOH Board and SC meeting on Saturday 17, by Prof. Kogi. The main objectives as outlined earlier were discussed in more detail. This was followed by a breakaway session where the interaction and integration amongst SCs, the current status, progress reports as well as future developments were discussed. The following actions were recommended:

1) Mentoring between SCs through which the more active SCs provide advice and support to those who are less active;
2) The organisation of contacts to become more formalised – currently collaboration occurs on a friendly, informal basis;
3) Better use of the website;

Prof. Keiko Kono, (Yukikko Award winner) with Prof. Kazuka Nishida (SCOHN treasurer)

4) Joint sessions of old and new SC officers to be held on 22 March to meet and share information; and
5) Discussion on joint workshops/conferences between different SCs.

The proceedings closed around 15h30.

The joint meeting of the four SCs (Health Care Workers/ Occupational Health and Development/Occupational Health Nursing/ Occupational Infectious Agents) took place on Monday during the lunch break and it was agreed that the SC Joint Congress will take place in Sao Paulo (Brazil) from 23–26 September 2013. Presentations on the venue, accommodation, preliminary costs and the required content of the congress/special sessions/grants/funds and sponsorship were discussed. The Organising Committee is lobbying to co-ordinate the congress with the ICOH 2013 mid-term meeting – a decision is awaited.

We attended the Business Meeting of the SC on Education and Training in OHon Monday afternoon after it was dormant for the past 3 years. Prof. Frank van Dijk was elected as chairperson, with Linda Grainger (now in the UK) as secretary with the hope to see a revitalisation of the committee and its contribution to the larger population of OH professionals.

The South African contingent consisted of SASOHN and SASOM members as well as members from the Chamber of Mines, NIOH, tertiary institutions and the public sector (about 30 people). Most of these delegates contributed either through poster or paper presentations to the ICOH congress and made South Africans proud participants. .

SCOHN held two oral sessions on the topic 'Emerging strategies for OH practice' which included presentations from Japan, Thailand, South Africa, and South America (Brazil). This was followed by the SCOHN EXCO meeting for discussions on the Business Meeting. SCOHN EXCO also met with a delegation of AAOHN (Catherine Pepler (President), Jeannie Hanna (Secretary), and Kay Campbell (Past President), regarding an invitation to SCOHN to attend the 3–5 May 2014 AAOHN Global Congress in Texas, America. The delegation was requested to put their proposal to the SCOHN Business Meeting, for a decision, which was to be held the next day.

Continued on page 33

SASOM news

SASOM mourns the untimely passing of two members. Dr Herman Fourie passed away on 5 March 2012 and his cousin Dr Mich Swanepoel on 23 April 2012. SASOM extends heartfelt condolences to Mrs Marthie Fourie and to Mrs Lizette Swanepoel and their families.

30TH INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH IN CANCÚN MEXICO, 18–23 MARCH 2012

SASOM members have returned from Cancún, with reports on interesting research that was presented and thought-provoking opinions that were voiced. Please see a full report by Ms Claudina Nogueira on the ICOH2012 Congress in Cancún, on page 27 of this issue of the journal.

SASOM members, Prof. Mary Ross and Ms Claudina Nogueira were elected to the ICOH Board at the Annual General Meeting during the congress. We congratulate them and wish to express our gratitude for the work that they do towards occupational health for all. We also congratulate two South African PhD students, Ms Gill Nelson, and Ms Ntombizodwa Ndlovu, who were each awarded a second prize for their poster presentations on silicosis and asbestos-related disease respectively. Ms Nelson was sponsored by SASOM. Prof. Daan Kocks, who fell on the first day of the conference, is recovering well from reconstructive surgery to his right shoulder and would like to express his gratitude to the many persons who expressed concern and wished him a speedy recovery.

CANCÚN CHARTER ON OCCUPATIONAL HEALTH FOR ALL – 23 MARCH 2012

With reference to the United Nations 'Declaration of Human Rights', 'Covenant on Economic, Social and Cultural Rights' and Millenium Development Goal 3, the International Labour Office Constitution and Fundamental Conventions No 155 on Occupational Safety and Health and No 161 on Occupational Health Services, as well as the World Health Organization Constitution, the organisers and participants of ICOH2012 evaluated the current situation in the world of work and issued the Cancún Charter on Occupational Health for All. All attendees pledged to call on international organisations, governments and national bodies to give higher priority to occupational health on all policy agendas for programmes

Prof. Daan Kocks hands over the prize for the best ARAOH logo to designers Dr Khalifa Cisse (ARAOH Chairman) and Dr Kader Toure (ARAOH Board member) from Senegal

in the development, training, education and research for occupational health services. They also pledged to work together to improve and extend the implementation of international instruments, strategies and programmes on occupational health with the aim of providing every worker with healthy work in a safe working environment, as is their right. The Charter can be found on the ICOH website – www.icohweb.org

ICOH NATIONAL SECRETARY FOR SOUTH AFRICA

The candidate whom SASOM forwarded to the ICOH Secretary General for the position of South Africa's National Secretary has been elected to the ICOH Board and is therefore no longer eligible to serve as National Secretary. At the time of writing a call for nominations has gone out to ICOH members in South Africa and we will make an announcement in the next issue of the journal.

SASOM BRANCHES

To date SASOM has the three Chapters, Inland, KwaZulu-Natal and Western Cape, and Branches in East London,

FINAL PROGRAMME (as at 31 May 2012) **SESSION 3 – ICOH track Friday 27 July 2012**		**CHAIR: Prof. M Ross (ICOH Board member)**
14:00 – 14.40	Beyond Ramazzini: Challenges and opportunities of modern work-related diseases	Prof. Malcolm Sim (ICOH Board member)
14:40 – 15.10	Managing the provision of occupational health in a global mining company	Dr Frank Fox (ICOH Member & Chair ICMM Health Committee)
10 minute comfort and informal discussion break		
15.20 – 15:40	Re-emergence of noise-induced hearing loss in Australia	Prof. Malcolm Sim
15:40 – 16.00	ICOH2012 Outcomes and emerging global issues	Ms Claudina Nogueira (ICOH Board member)
16.00 – 16.30	Where should occupational medicine be going?	Round-table discussion with ICOH panel on ICOH focus and priorities
17.00 – 18.30	SASOM Executive Committee Meeting	

Kimberley, Klerksdorp, Mpumalanga, Polokwane, Port Elizabeth, Richards Bay and Witbank, each with their own chairperson and annual programme to host a seminar or plant visit, worthy of Continuing Education Units, two or three times a year. The meetings are open to anyone with an interest in occupational health. Contact the SASOM National Office for more information.

SASOM ANNUAL CONGRESS – 27–28 JULY 2012

The Congress programme was published in the previous journal, with the exception of the 'ICOH Tract' on Friday 27 July 2012. We can now confirm that the tract is as reflected in the table on page 32.

See the full programme and registration form on the SASOM website at www.sasom.org or contact Jenny Acutt in the SASOM National Office – e-mail: info@sasom.org Tel: +27 (0)12 803 7418.

The view from the Conference Centre in Cancún

ICOH/SCOHN News

Continued from page 31

On Wednesday, the SCOHN Special Session took place with two keynote speakers addressing innovative roles, practice and policies in OH, namely Mrs Kay Campbell who addressed the audience on the new role of the OH practitioner in counselling on employee well-being/wellness. Prof. K Kono of Japan addressed the issues around nursing competencies as part of her research project.

The SCOHN Business Meeting was on Wednesday afternoon. Various agenda items of importance were addressed:

- The consolidation of the SCOHN banking accounts into one international account, currently in Denmark. SCOHN agreed to the use of the rest of the funding to be utilised: 1) in setting up the SCOHN website, 2) linked with ILO/ WHO with specific reference to competencies in occupational health nursing, training and education.
- The invitation to attend AAOHN in 2014 and SCOHN to conduct a special session was presented to the SCOHN business meeting. The invitation was supported by both the SCOHN EXCO and the Business Meeting.
- The first recipient of the Yukiko Okui Award for the best paper/poster presentation was awarded to Prof. Keiko Kono of Japan.
- The SCOHN reports and history project were completed by Finland and will be archived on DVD.
- The final findings of Dr B Rogers research project to be published, and possibly printed as SCOHN report No 11.
- The status quo in terms of election of office bearers remained for the next three years, all elected for a second term – Louwna Pretorius (Chair), Susan Randolph (Secretary), Maria Ratio (Vice-Chair), Kazuka Nishida (Treasurer), with Dr Bonnie Rogers as ex-officio officer (ICOH Board – SC and Vice President).

On Thursday we attended the function for old and new SC members and enjoyed the gala dinner which signalled the end of the congress with the election of the ICOH board on Friday. Congratulations to Prof. Mary Ross (re-elected) and Claudina Noguira who was elected to the ICOH Board.

Article compiled by Louwna Pretorius (ICOH/SCOHN Portfolio)

0861 SASOHN

Yes, that is the new telephone number for the SASOHN National Office. Linda Stokes who has diligently manned the office since its inception in 2003 will no longer be the voice that answers your calls. SASOHN wishes to thank Linda for all her hard work in establishing the office. Her contribution has made a significant difference to SASOHN's visibility. We will all miss her and wish her well in her future endeavours. The office was relocated in April 2012 and it was decided to source a telephone number that would be both easy to remember and would follow us wherever we go. Jenny Pitout, the new office coordinator, will man the office from 09H00 to 14H00 Monday to Friday. Other contact details for the office are:

Postal address: Lion House, 20 Roberts Ave, Kensington, 2094
Physical Address: Lion House, 20 Roberts Ave, Kensington, 2094
Fax: 086 2638757
e-mail: sasohnoffice@mweb.co.za
Website: www.sasohn.co.za

SAIOH news

For the last few months the SAIOH Council has not touched sides with all the activities on the go. These included our annual conference and the arrangements that needed to be attended to, and here we must say a big thank you to the administration staff, Melinda Venter, Delmarie Kruger and all the others working behind the scenes. Without dedicated members like this it would be difficult to achieve all this. Members are again reminded to make every effort to attend our conference on 19th and 20th June 2012, as the speakers we have invited to address us are of high quality and will benefit all our members.

Ms Claudina Nogueira attended her first SAIOH Council Meeting since being nominated as the SAIOH International Liaison Officer. Claudina is experienced in this field and will make a huge contribution in this regard. Welcome Claudina – hope you enjoy your stay with SAIOH!

Claudina presented a draft proposal for SAIOH International Liaison by focusing on the over-arching aims of international and regional occupational health bodies (e.g. ICOH – International Commission on Occupational Health; IOHA – International Occupational Hygiene Association; ARAOH – African Regional Association of Occupational Health; and SASOM – South African Society of Occupational Medicine), and how many of their objectives are in line with SAIOH's objectives. Hence, a reasonable approach to building SAIOH links at global and regional levels will be to work in close collaboration with other established organisations and to endeavour to create exchange programmes to build capacity within occupational health generally, and within the occupational hygiene discipline specifically. A further development that will positively impact on SAIOH's global outreach is the fact that South Africa is now a member of the BRICS nations (Brazil, Russia, India, China, and South Africa). This will facilitate collaboration and "twinning arrangements" between the individual nations regarding strengthening of ties and the development of occupational hygiene awareness and capacity.

Deon van Jansen Vuuren was awarded the status of "Fellow member" of SAIOH at our last Council meeting – an award long overdue taking into account his dedicated contributions over all the years in SAIOH. Deon became a member of the former OHASA during 1984, and was later elected to serve on the management team during 1989. In 1995 he joined IOHSA management committee.

Deon Jansen van Vuuren receiving his certificate from SAIOH President, Johann Beukes

During 2003 Deon was elected to serve on the newly established SAIOH and served as Vice Chairperson of Council and as Head Assessor on the Certification board. He is still serving on Council as well as the Certification Board, now called the Professionals Certification Board. During 2004 Deon was elected Vice President of SAIOH, and before the IOHSA conference in 2005 was elected President of SAIOH. In 2006 Deon replaced Rob Ferrie at the International Occupational Hygiene Association's National Accreditation Recognition Committee and took over the reins in 2007. He was elected Chairperson of IOHA NARC in 2011 and his term of office will run until 2013. As SAIOH's representative on IOHA, Deon was also elected to serve as one of the directors on IOHA Board after it was registered in the UK as a company. During 2010 Deon was also nominated to serve as SAIOH's representative on the Occupational Hygiene Training Association Quality Group. Over the past two years Deon negotiated a Memorandum of Understanding between OHTA and SAIOH which will be of an advantage to all our members in southern Africa. Deon serves our Society with a passion and is an active member who has made a substantial contribution promoting SAIOH's endeavours in the field of occupational hygiene in southern Africa.

Due to all the activities Council has to deal with during meetings, it was decided to hold separate meetings with all other stakeholders in an endeavour to save time and effort and a more productive input.

After long and complex negotiations SAIOH has

reached consensus with OHTA for the roll-out and co-ordination of the IOHA-supported international occupational hygiene training courses in southern Africa. SAIOH has long recognised the need in southern Africa for:

- high quality training in occupational hygiene practice;
- international recognition of the standard of this training and the resulting qualifications; and
- a sustainable model for training delivery.

OHTA and SAIOH have now signed an agreement to implement the OHTA training and qualifications scheme as detailed on www.OHlearning.com in South Africa, and in those countries of southern Africa that do not have an IOHA registered National Occupational Hygiene organisation.

The OHTA promotional advert which will be distributed to members, (as adapted by SAIOH) gives more information on the training courses available. This announcement and documents will be available on the SAIOH website: www.saioh.co.za.

Some of the key elements of the agreement include:

- SAIOH will, on behalf of OHTA, co-ordinate and manage the process for approving training providers based in South Africa or in neighbouring countries that have no IOHA member National Occupational Hygiene Organisations. SAIOH will notify the OHTA Chief Examiner of all decisions and details of training providers approved, so they can be listed on www.OHlearning.com
- Only students who have passed OHTA courses run by Approved Training Providers (ATPs) will be recognised by SAIOH and OHTA.
- All examination papers will be provided and marked by an OHTA approved examining board, currently the BOHS Faculty of Occupational Hygiene, in accordance with their procedures.
- SAIOH will arrange and supervise the examinations by arrangement with BOHS.
- SAIOH will also co-ordinate all examinations for candidates from ATPs in neighbouring countries.

More information in this regard will be placed on our website.

Johann Beukes,
SAIOH: President

Delegates that were present at the Liaison Committee Meeting were from the Department of Labour, Department of Mineral Resources, Department of Health, and SAIOH. From left to right: Marguerite Pullen; Claudina Nogueira; Johann Beukes (SAIOH) Joseph Legadima (DMR) and Milly Ruiters (DoL)

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