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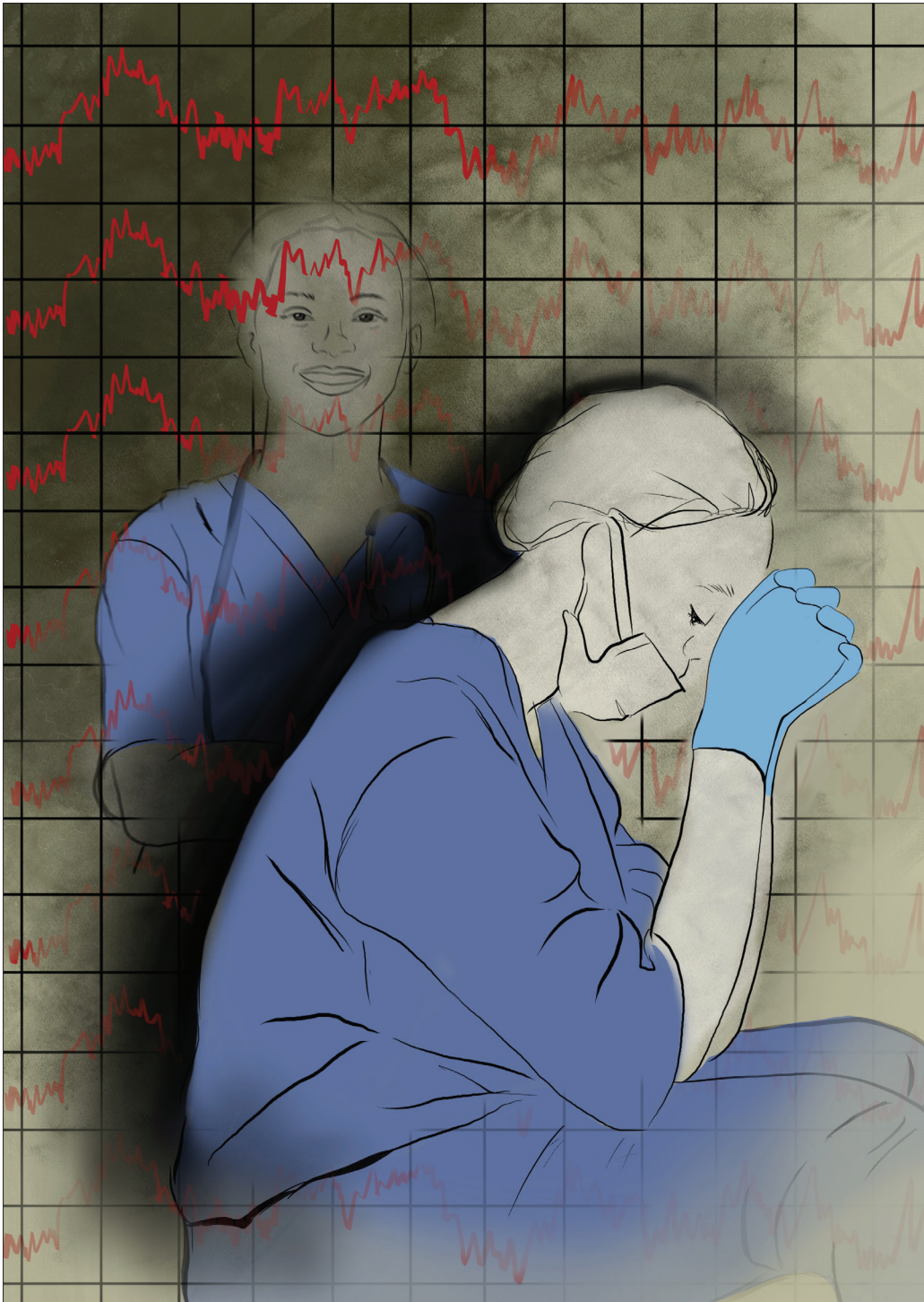
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SOUTHERN AFRICA

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OFFICIAL JOURNAL



SASOM
South African Society
of Occupational Medicine
FOUNDED IN 1948

South African Society of
Occupational Medicine (SASOM)



SAIOH

Southern African Institute for
Occupational Hygiene (SAIOH)



Mine Medical Professionals
Association (MMPA)

An accredited peer-reviewed journal of the Department of Higher Education and Training (DHET)

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OCCUPATIONALhealth

SOUTHERN AFRICA

Volume 30, Issue 2, 2024



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South African Society of Occupational Medicine

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Audit Bureau of Circulations of South Africa 2019

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Use your personal login details to access past issues. Should you have any queries, e-mail kevin@mettamedia.co.za.

Report foreword



Mike Teke
Masoyise Chair and CEO of Seriti Resources

The Masoyise Health Programme (Masoyise) which was launched for the first time in 2016, by the Board of the Minerals Council South Africa (Minerals Council), has been a game changer for tangible outcomes on tuberculosis (TB), human immunodeficiency virus (HIV), occupational lung diseases (OLDs) and non-communicable diseases (NCDs), including mental health. The key differences, introduced through Masoyise, were the multi-stakeholder approach, close monitoring and reporting on performance and promoting best practices from our member companies.

We have made considerable progress in reducing TB incidence rates in the industry. This progress was also sustained by milestone targets we set through the tripartite structures in the Mine Health and Safety Council (MHSC). In 2014, we set a milestone that our TB incidence rate should be at or below the South African TB incidence rate by 2024. We are pleased to state that, over the past few years, this milestone target has been achieved in all commodities, except in the gold sector.

Our target now is to eliminate TB in our industry and achieve the “healthy worker effect”, which states that those who are employed have better health than the unemployed.

The South African National AIDS Council’s (SANAC’s) National Strategic Plan (NSP) for HIV, TB and sexually transmitted infections (STIs) 2023-2028 included mental health screening, treatment, and psychosocial support for anxiety, depression and harmful drug use as part of the minimum package of care for the general population. It is against this background that we must track the impact of mental health on our employees.

2023 has been a groundbreaking year for all of us and more especially in the mining sector. For the first time, Masoyise added mental health to their targets, with primary targets being the sector-wide awareness of, and easy access to effective mental health services by 2030. A mental health seminar was held in October 2023 to raise awareness and to educate our health practitioners on identifying and managing mental health disorders in employees.

I am pleased with the support our members have shown in ensuring that they improve their health performance reporting and continue to implement robust programmes on TB, HIV, OLDs and NCDs. Reporting on Masoyise indicators improved to 80% in 2023, from 73% in 2022. There was a significant increase in the screening of employees in 2023 across the board except for the newly added targets for NCDs. The TB incidence rate for the industry continued to improve and was 223 per 100,000 population in 2023, from 236 per 100,000 population in 2022. We do not underestimate the efforts by our member companies that went into achieving these targets.

I believe that we need to share our good news stories, identify best practices, and learn from each other to improve the health of all our employees.

[Click here to read the full report](#)

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ANNUAL REPORT
June 2024



OCCUPATIONALhealth

SOUTHERN AFRICA

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From the Editor . . .

Happy 30th birthday to *Occupational Health Southern Africa*



**Gill Nelson,
Editor-in-Chief**

Just over four years ago, near the beginning of the COVID-19 pandemic, in April 2020, *Occupational Health Southern Africa* published an issue dedicated to the history of occupational health (<https://www.occhealth.co.za/index.php?p=issue&i=331>). This was to coincide with the International Commission on Occupational Health (ICOH) 7th International Conference on the History of Occupational and Environmental Health, which was planned to take place the following month at the University of KwaZulu-Natal in Durban. A write-up of the history of *Occupational Health Southern Africa* was included in that issue.¹

Prof. Rajen Naidoo, the main organiser and host of the conference, made the wise decision to postpone the event until 2022, rather than hold it virtually. At that time, no-one knew that the Pandemic and associated South African lockdown would continue for two years. Although the National State of Disaster ended on 4 April 2022, the country's COVID-19 law was only repealed in June 2022, and the conference was further delayed. It was eventually held in November 2023 and was a resounding success.²

Not to be left out, *Occupational Health Southern Africa* presented a poster, detailing the history of the Journal just short of its 30th birthday. This year, the Journal is celebrating that milestone, having published its first issue at the beginning of 1995 (<https://www.occhealth.co.za/pdf/journal/vol1no1.pdf>) – a respectable 36 pages of news, informative articles, and research.

Fundamentally, over the years, the Journal has remained true to its vision as described by the first Editor, Chris van Selm, in his editorial of the first issue of 1995 (<https://www.occhealth.co.za/pdf/journal/vol1no1.pdf>), i.e. to provide readers with “*information and articles which are of interest and use to them*”. This vision has since expanded to, amongst other things, create a platform for emerging researchers to publish their work, update readers about legislative changes related to occupational health, and publish abstracts from conferences, where appropriate.

The efforts by the authors who have submitted articles, comments, opinions etc to this issue are acknowledged with appreciation. The future of the journal depends on us providing our readers with information and articles which are of interest and use to them. Once again, we emphasise that the combined efforts of SASOH and SASOM have achieved a remarkable breakthrough in supporting the recognition and changes in the vital roles that occupational health practitioners play in the services provided.

There is a range of contributions available to authors from short reports to original and review articles, to letters to the editor. Each edition will have a case-study section intended to be educational and of interest, as well as a personality profile about people who have made a contribution to occupational health. It is hoped that occupational health workers will use this journal to air their views, and initiate some lively discussion.

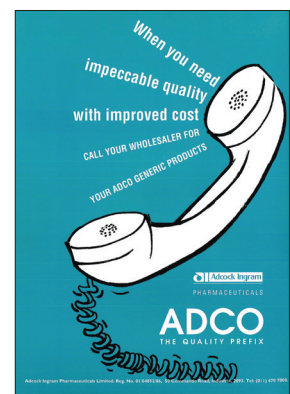
Excerpt from the editorial of Volume 1, Issue 1, 1995 of *Occupational Health Southern Africa* (Chris van Selm)

The “*personality profile about people who have made a contribution to occupational health*” that was envisaged from the genesis of the Journal, has continued, albeit sporadically. We have profiled Anja Franken, Pieter de Jager, Spo Kgalamono, Vanessa Govender, Muzimkhulu Zungu, Derk Brouwer, and others. In this issue, we profile Tumi Legobye, the Mine Medical Professionals Association (MMPA) President and Health and Wellness Executive at Harmony Mines. Please send us names of those persons you believe deserve to be featured in future issues.

Interestingly, some of those who published articles in the first issue are still active in occupational health research, including David Rees (Professor Emeritus, retired, and still an active researcher and regular contributor to the Journal), Renay Weiner (doctor, co-founder and Director of Research and Training for Health and Development), Mary Ross (Professor, retired; an Editorial Advisory Panel member of, and regular contributor to, *Occupational Health Southern Africa*), and Jill Murray (retired, and still an active researcher).

We have sadly lost occupational health colleagues along the way. REG Rendall published a case report on ‘Mesothelioma resulting from asbestos cement exposure’ in the 1st issue of the Journal, and later died from the disease. The first obituary was for Dr Gerard Sluis-Cremer, another prolific researcher of occupational diseases in the mining industry; in this issue, we write about two other noteworthy occupational health proponents who recently passed away– Schu Schutte and Tony Davies. Others who have passed away in the intervening years include Lee Baker, Anton Stoltz, Brenda Wortmann, Conrad Bosch, Neil White, Margot Becklake, Jock McCulloch, Danuta Kielkowski, Phiroshaw Camay, Brendan Girdler-Brown, Rosalie Lowe, Eric (Terry) Geddes, Sean Cheevers, Johan Mets, and Johann Beukes. Not all have been featured in *Occupational Health Southern Africa*, but all will be remembered for a long time for their contributions towards improving workers’ health.

For two and half decades, the Journal was published in print form and mailed to the many thousands of members of the contributing societies and subscribers, both within South Africa and across its borders. The Pandemic, however, changed the face of publishing and the Journal moved to an electronic platform, like many other scientific and non-scientific publications. This change both reduced costs and increased the reach of the journal. Something that has not changed is our reliance on advertising to build critical financial sustainability reserves. Advertising, too, has advanced with technology. Some other notable improvements over the years include recognition by the Department of Higher Education and Training in 2004, moving from a manual to an electronic submission and review system (Scholastica) in




Adcock Ingram advert from issue 1, 1995 – the first advertiser in OHSA

2018, development (2007) and upgrade (2022) of the website, and the introduction of the SASOM award for the best paper by a novice author in 2020. The winner of the SASOM Annual Author Award for 2023 will be announced in the next issue of the Journal.

For now, you can read three research papers in this issue about the difficulties that healthcare workers face, viz. the high prevalence of sharps injuries, factors associated with psychological resilience, and the consequences of performing repetitive tasks. In addition to other interesting news and articles, we celebrate Deon Jansen van Vuuren's well-deserved IOHA Lifetime Achievement Award, and recognise the importance and scope of the triennial ICOH2024 Congress that was held in Marrakesh, Morocco in April/May this year, and its Scientific Committees. South Africa was well represented in the congress.

We have just passed the winter solstice in the southern hemisphere, so can look forward to longer days. Keep warm – spring is only two months away!

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2. 7th International Conference on the History of Occupational and Environmental Health, 15–17 November 2023, Durban, South Africa. 2023; 29(4):189-210. Available from: https://www.occhealth.co.za/_assets/articles/351/2460.pdf (accessed 23 June 2024). 



South Africans at the recent ICOH2024 Congress in Marrakesh, Morocco. Front, L–R: Vanessa Govender, Thuthula Balfour, David Mamphita, Florence Magampa, Fatheela Brovko, Claudia Frost, Mary Ross, Goitsewang Keretsetse, Gill Nelson, Zodwa Ndlovu. Back, L–R: Daan Kocks and Dushendra Naidoo

Occupational Health Southern Africa – a brief history

Gill Nelson¹ and Kevin Beaumont²

¹ Editor-in-Chief: School of Public Health, University of the Witwatersrand, Johannesburg, South Africa, gill.nelson@wits.ac.za

² Publisher: Mettamedia, Tulbagh, South Africa, kevin@mettamedia.co.za

1994 **Launch of Occupational Health Southern Africa**
The first issue of the only occupational health journal in the region is subsidised by the South African Society of Occupational Medicine (SASOM) and the South African Society of Occupational Health Nursing Practitioners (SASOHN).

1998 **SAIOH joins**
OHASA (Occupational Hygiene Association of South Africa) and IOHSA (Institute of Occupational Hygienists of Southern Africa) merge to form SAIOH (Southern African Institute for Occupational Hygiene), which joins SASOM and SASOHN as partners on the journal.

2002 **MMPA joins**
The MMPA (Mine Medical Professionals Association) – previously the MMOA (The Mine Medical Officers' Association) – joins the journal as the 4th partner.

2004 **DHET accreditation**
The journal is officially accredited by the South African Department of Higher Education and Training (DHET).

2007 **Website launched**

2011 **Licensing agreement with Sabinet**
The journal is added to the Sabinet African Journals online journal platform. In 2012, African Index Medicus includes the journal in its online database.

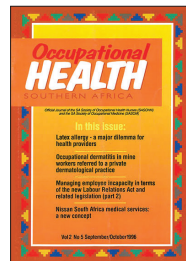
2018 **Online editorial management system implemented**
The journal moves from a manual to an online review management system (Scholastica).

2019 **Editorial Advisory Panel is formed**
Complementing the Editorial Board, the panel comprises local and international occupational health experts.

2020 **Move from print to digital format**

2022 **Website overhauled**

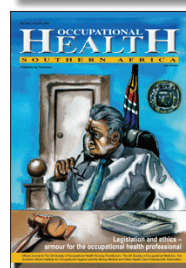
2023 **Publishing frequency changes**
The journal changes from publishing bimonthly to quarterly issues. SASOHN leaves due to financial constraints.



Chris van Selm
Editor
1995-1998



Mike Baker
Editor
1998-2000



Fiona Robinson
Editor
2001-2005



Linda Grainger
Editor
2006-2012



Andrew Swanepoel
Assistant Editor
2013-2016



Gill Nelson
Editor-in-Chief
2013-present



Ntombizodwa Ndlovu
Assistant Editor
2016-present



Special issue 2009

Prior to 1994, the South African Society of Occupational Medicine (SASOM) published a short newsletter for its members. Chris van Selm and Mike Baker proposed that the newsletter be developed into a journal.



Special issue 2009

Initially, the publication was in a hybrid 'journal-magazine' format. Over the years, it has developed into a respected scientific journal that is now published quarterly by a small team of two editors, a publisher, and a two-person production team.



Special issue 2020

The Editorial Board has always comprised representatives from the funding societies, and the publisher.



Special issue 2020

www.ochealth.co.za

Gill Nelson, Kevin Beaumont. Occupational Health Southern Africa – a brief history. Poster presented at the ICOH 7th International Conference on the History of Occupational and Environmental Health, Durban, November 2023. The major milestones over the years are depicted, together with the Editors, since the Journal was launched in 1994

Efficient Hygiene solution

Amtronix and **Stanyer Electroserve** now offer a comprehensive range of Bacterial/Viral filters for Pulmonary Function and Spirometry from **CHP**

CHP filters use a high-quality electrostatic filtration medium with filtration efficiency exceeding 99%, capable of trapping bacteria, viruses and other micro-organisms.

Designed for inspiratory and expiratory manoeuvres, single-use bacterial/viral filters provide an efficient hygiene solution, and protection that virtually eliminates cross-contamination, which keeps both the patient and operator safe without compromising system performance.

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- Colour-coded port sizes are tailored to fit a wide selection of equipment
- Unique filter design provides an airtight connection with equipment for accurate results
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- Excellent filtration efficiency of bacteria, viruses and micro-organisms
- Low resistance to airflow for accurate Spirometry and lung function results
- Exceeds ATS/ERS guidelines for all criteria

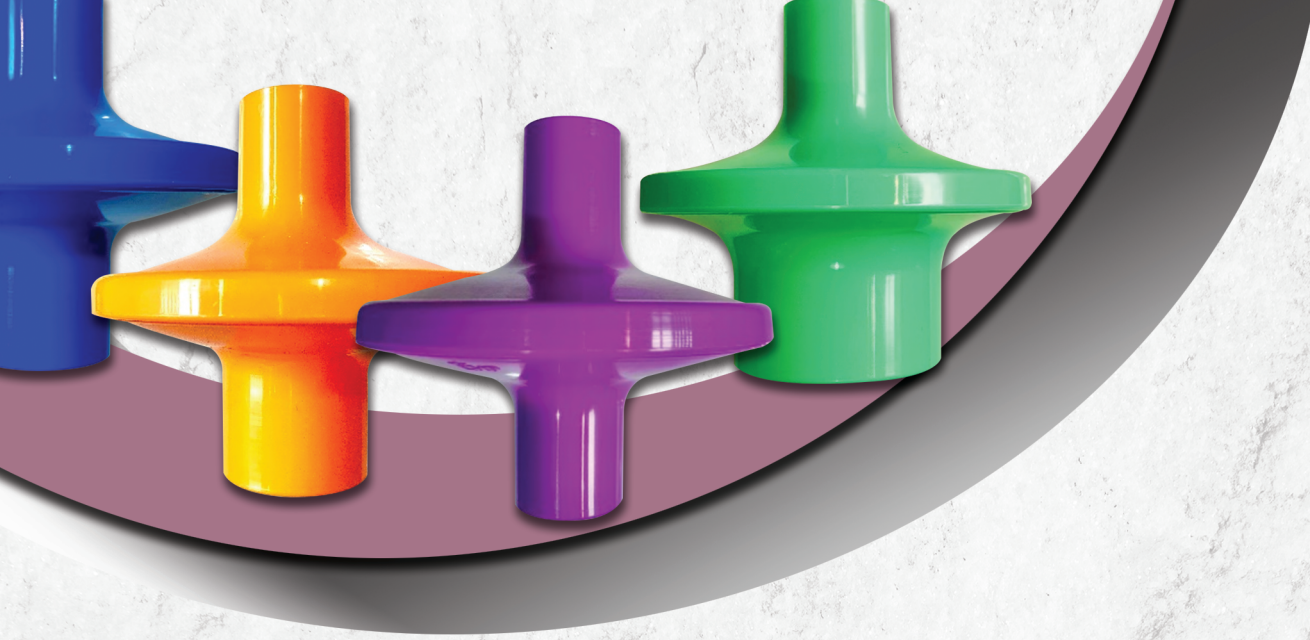
Specifications:

Filtration efficiency: > 99%

Differential pressure: < 1.5cm/H₂O/L/sec

Minimal deadspace: < 42 ml

*Specifications are filter dependant. For detailed specifications please contact us.



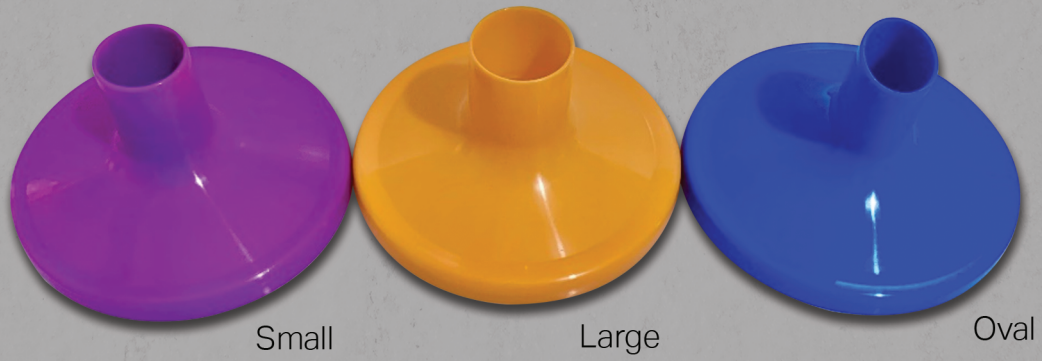
Product Code	Spirometer	Model
PFT-2025 (Standard) PFT-2225 (Oval)	ndd Medical Technologies	EasyOne Air Easy on-PC EasyOne Pro EasyOne Pro LAB
	Schiller	SpiroScout SPIROVIT SP-1 G2

Product Code	Spirometer	Model
PFT-2033 (Small) PFT-2533 (Standard) PFT-2233 (Oval)	Schiller	SP260 Flowscreen Pro
	Jaeger	MasterScope MasterScreen
		Flowmate Spiro Pro
	Vyaire	Vyntus SPIRO PC Vyntus ONE
		AME
	IQ TeQ	Short Adaptor
	ORCAwave	Short Adaptor
	MSG	Short Adaptor
	Thor/Spirosonic	All models

Product Code	Spirometer	Model	
PFT-2030 (Small) PFT-2530 (Standard) PFT-2230 (Oval)	MIR	All models	
	Vitalograph	ALPHA Touch ALPHA 6000 In2itive	
		Micro Medical	All models
		Schiller	SP-260
	MH	LA303	
	COSMED	microQuark Quark Spiro	
		Pony FX	
	CONTEC	All models	

Product Code	Spirometer	Model
PFT-2044 (Small) PFT-2544 (Standard) PFT-2244 (Oval)	nSpire	Digidoser KoKo
		HDcpet 6000 Sx 1000
		NHD4500

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Deon Jansen van Vuuren wins IOHA Lifetime Achievement Award 2024

TRIBUTE FROM SAIOH

Naadiya Mundy: SAIOH President

The Southern African Institute for Occupational Hygiene (SAIOH) is proud to announce that Deon Jansen van Vuuren, General Manager of SAIOH, has been awarded the prestigious Lifetime Achievement Award 2024 by the International Occupational Hygiene Association (IOHA).

Over the past few decades, occupational hygiene professionals and regulatory bodies around the globe have dedicated significant resources to improving methods and assisting with knowledge related to assessing workplace exposures. Within this realm, the IOHA bestows its most prestigious honour: the Lifetime Achievement Award. This accolade serves as a beacon, highlighting significant contributions of occupational hygiene (OH) professionals who have dedicated their careers to advancing OH practices and improving the lives of workers worldwide.

This award not only offers global acknowledgment, but also symbolises a tribute to dedication, expertise, and impactful service. To merit consideration for this honour, an individual must have devoted at least 15 years to the field of occupational hygiene, demonstrating unwavering commitment and ongoing involvement. Moreover, the recipient's endeavours must have significantly advanced the discipline, whether through pioneering research, the establishment of comprehensive hygiene programmes, advocacy for service quality enhancement, or contributions to the standardisation of best practices.

One hallmark of the award is its alignment with the objectives outlined in the Association's Memorandum and Articles. Each recipient's accomplishments serve as a testament to these guiding principles, demonstrating a commitment to excellence, collaboration, and the advancement of occupational hygiene on a global scale. By honouring individuals whose work exemplifies these ideals, the IOHA underscores the importance of collective action in pursuit of safer and healthier workplaces.

Keeping these requirements in mind, we at SAIOH are proud to acknowledge that Deon Jansen van Vuuren (a proud South African) has been awarded this prestigious title. Deon has devoted nearly 43 years to the field of occupational hygiene. He is widely recognised within the international occupational hygiene community for his advocacy for worker health protection, especially in his early years, when he served in the military and developed various occupational health and safety (OHS) training courses and workshops throughout South Africa.

Deon has occupied high-level managerial roles with worldwide responsibilities in several multinational companies, prominently in the National Occupational Safety Association (NOSA), a local government council (Roodepoort City Council), Columbus Stainless, Gencor, Anglo American, and Gijima. Throughout his tenure at SAIOH, he led the professional advancement of his team, with approximately 45% registered as occupational hygiene assistants, 25% as occupational hygiene technologists, and an impressive 30% as registered occupational hygienists. When Deon retired at the age of 65, the occupational hygiene Business Unit (BU) boasted 85 individuals, making it the largest of its kind in South Africa, with numerous others passing through its ranks.

Letter from the IOHA

The IOHA Lifetime Achievement Award honours individuals who have made significant contributions to the promotion and development of occupational hygiene practices that improve the health and welfare of working men and women. Special consideration is given to candidates from regions without an established tradition in occupational hygiene.

This year, four strong applications were received by the Lifetime Achievement Award Committee, which is comprised of the last three IOHA Presidents. After reviewing each of the candidate submission materials and documenting the results on the IOHA Nomination Evaluation Scoring Tool, the Committee determined that one candidate in particular excelled at meeting and surpassing the ranking criterion.



Deon Jansen van Vuuren

Photograph: courtesy of SAIOH

Deon Jansen van Vuuren was selected as the Lifetime Achievement Award recipient for 2024. His rousing nomination from the Southern African Institute for Occupational Hygiene (SAIOH) can perhaps be best described by a quote from their letter of recommendation:

"It is truly difficult to overemphasize Deon's worthiness for a "lifetime" achievement award in Occupational Hygiene. His consistent and enduring contributions have left an indelible mark on the field, impacting the lives and well-being of countless individuals. Deon's legacy is one of selflessness, expertise, and a profound passion for the improvement of occupational hygiene standards."

In addition to a long career in occupational safety, risk management, and occupational hygiene, Deon has been on the SAIOH Executive Committee or Board for more than 21 years. Active in the SAIOH Professional Certification Committee (PCC), Deon was an early participant in the IOHA National Accreditation Recognition Committee (NARC) and was the NARC Chair for four years from 2011 to 2015. In addition to teaching numerous seminars and courses on occupational hygiene, Deon has been an active member of the American Industrial Hygiene Association and the British Occupational Hygiene Society.

Congratulations to Deon for his latest award and "Thank You" for your lifelong leadership and commitment to worker safety and our profession!

**Lifetime Achievement Award Committee:
Thomas P Fuller, Maharshi Mehta, and Norhazlina Mydin**



Samantha Connell (IOHA President) handing the IOHA Lifetime Achievement Award to Deon Jansen van Vuuren at the IOHA 2024 Conference in Dublin, Ireland

Photograph: courtesy of SAIOH

"Deon has been an integral part of SAIOH, spanning many years, and his leadership stands out by the nature of his commitment and the integrity of his character."

The period under Deon's leadership has left a lasting, positive influence on occupational hygiene in South Africa. He became proactive in the professional occupational hygiene field and initially joined the Occupational Hygiene Association of South Africa (OHASA) in 1980, where he was voted onto their Council. He also joined the Institute of Occupational Hygienists of Southern Africa (IOHSA) in 1993, where he soon joined the Examination Board. SAIOH was formed in 2001 when OHASA and IOHSA joined ranks. On the international front, Deon became the IOHA National Accreditation Recognition Committee (NARC) Chair, a position he held for four years. Although retired, Deon participates as the General Manager for SAIOH, where he contributes significantly to the promotion of occupational hygiene.

Thus, this award is not just a certificate; it acknowledges the profound impact of its recipients on the promotion and development of occupational hygiene. These individuals are not merely practitioners; they are trailblazers who have left an indelible mark on their profession and the broader community. Moreover, it fosters a sense of community and camaraderie among practitioners, reinforcing the importance of collaboration and shared purpose in achieving common goals. The IOHA Lifetime Achievement Award stands as a symbol of excellence in occupational hygiene – a tribute to those whose contributions have elevated the practice and advanced the wellbeing of workers worldwide.

"Earlier this evening, I was marking SAIOH exam papers and whilst looking at the quality of the papers it occurred to me that SAIOH has come a long way since the OHASA days. We as an Institute are operating within the international arena and our members, including yourself, have featured in leadership roles in IOHA. Since the dawn of occupational hygiene as we know it in South Africa, you played a key role in the navigation of our Institute to where we are today. Congratulations – your award is a token of local and international recognition of your lifelong dedication in establishing and honing our profession."

Hennie van der Westhuizen, Past SAIOH President

The prestigious award was conferred on Deon during the 13th IOHA International Scientific Conference (IOHA 2024), in association with the Occupational Hygiene Society of Ireland (OHSI) and the British Occupational Hygiene Society (BOHS).

IOHA COLLABORATION AWARD WINNER

The Collaboration Award Chair and Jury

The 2024 IOHA Collaboration Award is a recognition bestowed upon groups and projects that exemplify exceptional collaboration within the occupational hygiene community. There were four submissions of exceptional quality and, after thorough evaluation by the jury, the Occupational Hygiene Training Association (OHTA) was chosen for its outstanding achievement.

The submitted projects were scored on the following criteria:

- Size of the population directly involved and reached/impacted by the project
- Originality of the topic and methodologies used within the project to enhance collaboration
- Level of inspiration for other occupational hygienists worldwide
- Direct impact on working conditions in the country where the project was carried out
- Level of collaboration between the parties
- Level of continuity for the future; can the project be promoted as a good practice for cooperation; did the cooperation lead to sustainable improvement(s)?
- How well is the project in line with IOHA's mission to "Enhance the international network of occupational hygiene organisations that promote, develop, and improve occupational hygiene worldwide, providing a safe and healthy working environment for all"?
- Quality of three-minute video which tells the story of the collaboration

The jury was chaired by Samantha Connell (IOHA President, and Swiss Society for Occupational Hygiene, SSOH) and three IOHA Board members: Mariella Carrieri (Italian Industrial Hygiene Association, AIDII), Ellen Jensen (Norsk Yrkeshygienisk Forening, NYF), and Kerry Cheung (New Zealand Occupational Hygiene Society, NZOHS). The Chair abstained from voting.

The OHTA impressed the jury with the remarkable impact of its project, which scored high across all evaluation criteria. The project, which focused on improving worker health protection in the developing and developed world, through training in the basic rubrics of occupational hygiene, demonstrated a profound commitment to enhancing collaboration and promoting occupational hygiene on a global scale.

From the size of the population directly impacted to the level of inspiration it offers to occupational hygienists, worldwide, OHTA's project excelled in every aspect. Moreover, the Association's long-term collaboration efforts and dedication to sustainable improvement truly align with the mission of the IOHA to provide a safe and healthy working environment for all. [👉](#)

Dr Tumi Legobye, Harmony Health and Wellness Executive

Dr Boitumelo Legobye, also known as Dr Tumi, is an occupational health practitioner, registered with the Health Professions Council of South Africa. She serves as an executive member of Harmony Gold Mining Company Limited ('Harmony'), overseeing the health and wellness portfolio for the company.

With extensive experience at Harmony, Dr Tumi has demonstrated significant expertise in her field. Her journey at Harmony began in 2008 as an occupational medical practitioner, a role she held until 2011 when she was promoted to Hospital Manager. Subsequently, she served as a Regional Manager from 2011 to 2013, before assuming the position of Group Health Risk Manager from 2013 to 2015. Her career progression continued, culminating in her appointment as Head of Health in 2015 and, later, as an executive responsible for Health and Wellness in 2017.

Dr Tumi's career advancements align with her academic background and wealth of experience. She obtained her medical degree from the University of KwaZulu-Natal in 1996, after which she furthered her academic pursuits by obtaining a Postgraduate Diploma



Dr Tumi Legobye
 Photograph: courtesy of Tumi Legobye

in Occupational Health from the University of the Witwatersrand in 2001. Currently, she is engaged in studies focusing on management and leadership.

With more than 24 years of experience in occupational health, of which more than 20 have been in the mining industry, Dr Tumi has made significant contributions to Harmony. Under her leadership, the company received recognition for the Best Healthcare Model for the Mining Industry in 2016 at the Mine Safe Conference. She has represented Harmony at various forums, including the HIV International Conference in Sydney in 2014.

Dr Tumi's involvement in occupational health extends beyond Harmony. She has served on various committees of the Minerals Council South Africa, and currently holds board positions in a number of organisations, including BestMed Medical Scheme, Rand Mutual Assurance, and Rand Mutual Holdings. She is the current President of the Mine Medical Professionals Association.

Dr Tumi's dedication to advancing health and wellness in the mining industry highlights her commitment to promoting a safe and healthy work environment for all employees. [📄](#)

MASTER OF SCIENCE IN MEDICINE (EXPOSURE SCIENCE)

Short Courses 2024



MASTER OF SCIENCE IN MEDICINE (EXPOSURE SCIENCE) SHORT COURSES FOR 2024					
Course Name	Course Code	Certificate Type	Cost	Dates	Application Deadline
Exposure Assessment Methods II	SPUH0154	Attendance	R6 500	22 - 26 Apr 2024	8 Apr 2024
Exposure Assessment Methods II	SPUH0155	Competence	R7 500	22 - 26 Apr 2024	8 Apr 2024
Computational Exposure Assessment	SPUH0152	Attendance	R6 500	19 - 23 Aug 2024	5 Aug 2024
Computational Exposure Assessment	SPUH0153	Competence	R7 500	19 - 23 Aug 2024	5 Aug 2024

EXPOSURE ASSESSMENT METHODS II

The short course aims to acquaint participants with data analytics and data analysis skills and address data exploitation and processing. The course covers statistical methods for exposure data analysis, efficacy testing, and compliance testing.

THE COURSE COVERS THE FOLLOWING TOPICS:

- Integration of high quality and low-quality data in measurements strategies
- Analysis of real-time data; time series and auto correlation
- Exposure variance (within-between worker)
- Introduction to Bayesian statistics and decision-making support
- Compliance testing & tools

COMPUTATIONAL EXPOSURE ASSESSMENT

The short course aims to introduce participants to concepts and domains of exposure (and risk) modelling, to understand and explore their strengths and weaknesses. This knowledge is important in selecting and applying appropriate models and tools. The strengths and limitations of different exposure models, in general, will be explored with practical exercises as well as their application in evaluating different exposure scenarios.


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Prevalence of needle stick and sharps injuries and associated factors among nursing students in Gauteng province, South Africa

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Keywords

occupational injuries, healthcare workers, university students, occupational hazard

How to cite this paper

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ABSTRACT

Background: The occurrence of needle stick and sharps injuries (NSSIs) in healthcare settings remains a global concern. Nursing students are at a high risk of being exposed to NSSIs, mainly due to their lack of clinical skills and experience.

Objective: The objective of the study was to estimate the prevalence of NSSIs, and associated risk factors among nursing students.

Methods: This cross-sectional study was conducted in 2022 among 142 nursing students from two hospitals in Gauteng province, South Africa. Data were collected using a structured questionnaire. Chi-square tests and binary univariate and multivariable logistic regression were used to examine associations between NSSIs and various factors. Statistical significance was set at $p < 0.05$.

Results: Sixty-one (43.0%) of the study participants had experienced an NSSI. The majority reported that they had received training on injections and handling of needles ($n = 117$, 82.4%), but nearly half of these trained students experienced NSSIs ($n = 53$, 45.3%). Instruments most prone to causing NSSIs were needles ($n = 48$, 75.0%), medication vials ($n = 10$, 15.6%), and surgical equipment ($n = 5$, 7.8%). The procedure most commonly implicated in NSSIs was the administration of injections ($n = 19$, 29.2%). Most of the NSSIs occurred in the surgical ($n = 17$, 25.8%), medical ($n = 14$, 21.2%), and maternity ($n = 13$, 19.7%) wards. Most were superficial ($n = 44$, 72.1%) and 47.5% ($n = 29$) of the exposed participants received post-exposure prophylaxis. Study participants who worked for 40 and more than 40 hours per week were 2.59 (95% CI 1.07–6.29, $p = 0.036$) and 4.52 (95% CI 1.59–12.93, $p = 0.005$) times more likely to have an NSSI than those who worked less than 40 hours per week, respectively.

Conclusion: There was a high prevalence of NSSIs among the nursing students in this study. Needles, medication vials, and injection procedures contributed to NSSIs. Working for 40 or more hours a week was associated with experiencing an NSSI. Current training procedures for administering injections and handling needles may be ineffective in preventing NSSIs, necessitating re-evaluation of training programmes.

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Determinants of psychological resilience among healthcare workers in low- and middle-income countries, using the Connor-Davidson Resilience Scale: a narrative literature review

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Keywords

resilience, CD-RISC, coping mechanism, COVID-19

How to cite this paper

Mcizana T, Adams S, Ntamatamala I. Determinants of psychological resilience among healthcare workers in low- and middle-income countries, using the Connor-Davidson Resilience Scale: a narrative literature review. *Occup Health Southern Afr*. 2024; 30(2):63-71. doi: 10.62380/ohsa.2024.30.2.2

ABSTRACT

Background: Psychological resilience has been described as a means of facilitating adaptation in stressful environments. Little is known about the factors that predict psychological resilience of healthcare workers in low- and middle-income countries (LMICs).

Objectives: The aim of this review was to identify factors associated with the psychological resilience of healthcare workers (excluding nurses) practising in LMIC settings, using the Connor-Davidson Resilience Scale (CD-RISC).

Methods: A narrative literature search was conducted, using four public databases to investigate determinants of psychological resilience among healthcare workers in LMICs using the CD-RISC. Studies considering only nurses or nursing students were excluded.

Results: The review included 22 journal papers, published from 2013 to 2023. The factors associated with resilience amongst healthcare workers in LMIC settings were categorised as personal, social, and lifestyle; work-related and organisational support; and policy level factors.

Conclusion: Research on psychological resilience for non-nursing healthcare workers operating in LMICs is limited and contradictory in some instances, and has been conducted mainly in China. Further evidence-based research is needed in LMICs to better characterise factors associated with psychological resilience of healthcare workers to enable improved support of this important occupational group.

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Work-related upper limb disorders in health workers: a case of de Quervain's tenosynovitis with ongoing hand pain

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Keywords

work-related musculoskeletal disorders, WRULDS, healthcare workers, work-related risk factors, ergonomics

How to cite this paper

Williams Y, Ntamatama I, Adams S. Work-related upper limb disorders in health workers: a case of de Quervain's tenosynovitis with ongoing hand pain. *Occup Health Southern Afr*. 2024; 30(2):72-79. doi: 10.62380/ohsa.2024.30.2.3

ABSTRACT

Purpose: Work-related upper limb disorders (WRULDs) refer to soft tissue disorders or injuries of the tendons, ligaments, muscles, nerves, and vasculature of the upper limb caused by, or contributed to, by occupational exposures or injuries. This can result in significant functional incapacity of workers and suboptimal functionality in the workplace. Work-related upper limb disorders can incur substantial financial burdens through absenteeism, and work replacement, medical, and compensation costs. The suboptimal management of WRULDs can worsen the health and financial burdens they create. This case study highlights the consequences of the suboptimal management of de Quervain's tenosynovitis (DQT) in a healthcare worker (HCW). It illustrates that timeous management through a graduated return-to-work programme, using a multidisciplinary team, yields better outcomes for the worker and workplace.

Findings: A 42-year-old HCW employed as a hospital steriliser operator was diagnosed with DQT. She experienced ongoing right-hand pain despite initial conservative treatment with local anaesthetic and steroid injections, followed by the surgical release of the affected tendons. She had resumed normal work duties five days after the surgery, with no clear post-operative management plan. In particular, there was no referral to allied health professionals for assistance with rehabilitation and no referral to occupational health professionals to manage the return-to-work process. Workplace risk factors were not assessed or addressed.

Conclusions: The HCW was successfully re-integrated into the workforce with full functionality, following the introduction of a graduated return-to-work process, rehabilitative support from allied health professionals, and after addressing workplace risk factors.

Recommendations: The case highlights the importance of avoiding small, repetitive hand movements that trigger symptoms of DQT; surgical intervention to provide symptomatic relief where conservative and medical management of DQT has failed; conducting health risk assessments; making the correct diagnosis and referring promptly and appropriately; engaging allied health professionals to assist with treatment and rehabilitation, and occupational health professionals to implement graduated return-to-work programmes; submitting compensation claims; educating and training employees about workplace ergonomic factors; and implementing workplace control measures and medical surveillance programmes to mitigate risk and improve health outcomes.

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Petrus Cornelius Schutte:

8 December 1950–28 September 2023

Deon Jansen van Vuuren: SAIOH General Manager

Petrus Schutte (Schu) was a prominent figure in the occupational hygiene and scientific communities. Sadly, he passed away in 2023. In this obituary, we acknowledge the huge contributions that he made to the occupational hygiene profession in southern Africa.

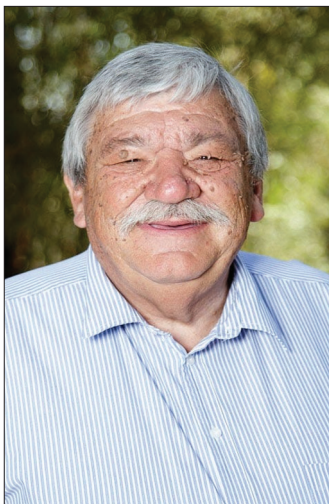
Schu was a giant of a man, not just in size, but also in his work and family life – a true gentleman. I first met Schu at an Intervarsity rugby match in Bloemfontein, where he was playing prop for the PUKKE (University of Potchefstroom) first rugby team. A few years later, when I was enrolled in a BSc Honours degree in industrial physiology, I met him again at the Chamber of Mines Research Organisation (COMRO), where I did my practical work. Our paths continued to cross intermittently and met up again at the (then) Occupational Hygiene Association of South Africa (OHASA), which, 20 odd years later, is now the Southern African Institute for Occupational Hygiene (SAIOH).

Schu was a popular figure in the field of occupational hygiene, and known for his willingness to assist, whether in brainstorming or giving presentations at workshops and annual conferences. He was your 'go-to' man.

While at COMRO, Schu conducted internationally recognised, groundbreaking research on various topics in the mining industry, including heat stress, occupational hygiene, and acclimatisation of workers in deep gold mines. This led to quite a few sessions in the hot and steamy acclimatisation chambers, and exposure to illumination, noise, and self-rescuers (self-contained breathing systems). Schu's career was ever-evolving, and he became an expert in ergonomics and fatigue management. At one stage he even worked for Columbus Stainless in Middelburg as an occupational hygienist, saying "I need some exposure to industry also".

In mid-2023, shortly before his death, Schu facilitated a SAIOH workshop on heat stress management at the Council for Scientific and Industrial Research (CSIR). He had the ability to break down complex technical facts and equations into comprehensible information. In true Schu style, he spent time before, during, and after lunch with the young occupational hygiene practitioners to answer their questions and chat.

It was an immense shock when his wife, Manda, advised that he was seriously ill and in ICU, and even more so when she called to tell me of his death. At his memorial service, everyone had stories to tell of how Father Petrus, later Grandfather Petrus, watched their rugby games, sitting next to the field, even when it was raining, seldom missing a game and always ready with support and good advice.



Schu Schutte

Photograph: courtesy of the Schutte family

With Schu's passing, messages of condolence came flooding in – a testament of how much he was loved and admired. This is what some had to say about him:

Dr Johan Kielblock, boss, and colleague at COMRO, and the first SAIOH fellow:

"I met Schu Schutte in 1980 when I joined the Chamber of Mines Research Organisation ('COMRO'). We both had a fondness for heat physiology, and the applied research that came from it. Schu was an extremely capable practical researcher and we, as a team, produced excellent work, in my humble opinion. The best example was the creation of a heat screening test, or rather, 'heat tolerance screening' (HTS). With this method, the existing climate chamber acclimatisation process, which was extremely unpopular and even discriminatory, was done away with. After more than 30 years, this

method is still the mainstay of physical screening for working in hot underground mines and is recognised as such by the Department of Mineral Resources and Energy in its official guidance to mines. Schu Schutte made an undeniable contribution in this field."

Cecilia Pretorius, long-time colleague of Schu at CSIR Miningtek, and now with CPRAS (Cecilia Pretorius Research and Advisory Services (Pty) Ltd):

"Schu Schutte was a well-known researcher in the field of occupational hygiene and ergonomics in South Africa and abroad. For more than 40 years he was at the forefront of research on topics such as heat stress, ergonomics, fatigue management, human factors, and accident analysis in the mining industry. He was a humble man with a kind heart, who cared about people, especially mining people. He leaves a gap in industry and very few people will be able to fill his shoes! He was always willing to assist and continued to 'help out' even after his retirement. His friends and colleagues in industry will miss his advice and guidance. Above all, they will miss him as a person."

Jodi Pelders, Researcher, CSIR:

"Schu Schutte was my manager when I joined the Human Factors research group at the Centre for Mining Innovation at the CSIR in 2011. He was always kind and supportive and enabled me to contribute to and lead work relating to ergonomics in the southern African mining sector. He was also a co-supervisor of my PhD research at the School of Public Health at the University of the Witwatersrand. He was knowledgeable and a leader in the field of ergonomics and occupational health. His formal qualifications included industrial physiology, and he was a

registered occupational hygienist with the Southern African Institute for Occupational Hygiene (SAIOH). Schu's experience in mining-related occupational health and safety research and application activities spanned decades (1974 to 2023). These activities included the implementation of heat stress management procedures, the assessment of physiological strain and workplace stress, the development of an operator fatigue management programme, and an ergonomics strategy and programmes for the South African mining industry. He was author or co-author of at least 110 research reports, 12 chapters in handbooks, and 22 papers in scientific or technical publications. Even when retired from the CSIR, Schu was available to assist us with projects. Most recently, was one relating to the use of body cooling garments by rescue team members, completed in 2023. He was committed and willing to give beyond what was required. As far as I am aware, he was content to continue with research until his departure from earth. He made a big impact in the mining industry, and his inputs have a lasting influence on improving the lives of people in the mining industry. He was a loving and caring husband, father, and grandfather. I would like to offer my prayers and condolences to his family and all who knew him."

Vuyo Tsotsotso, Researcher CSIR Environmental Engineering Mining:

"Schu was my mentor, and I got the privilege of working very closely with him on the heat tolerance screening service for the last 3–4 years. I learnt a lot from him to say the least. He was able to impart an immense amount of knowledge to me while conducting occupational health and safety projects and on our long drives across the South African landscape to provide the mines with the heat tolerance screening service. He was an exceedingly kind, accommodating and understanding man whose presence was felt in every room he walked in. He was immensely respected and trusted in the occupational hygiene space and the quality of his work was second to none. I will inherently use his teachings for the rest my career. It is not an exaggeration to say his contributions to the advancement and understanding of heat stress in the mining industry are irreplaceable."

Directors of the occupational hygiene AIA Association forwarded this to their members:

"Morning members. Very sad news. We were informed this morning that Schu Schutte passed away early this morning. Our deepest sympathy goes to his family and friends. Let us keep them in our prayers and thoughts."

Prof. Gill Nelson, Wits School of Public Health, and Editor-in-Chief of *Occupational Health Southern Africa*, wrote this letter to Schu while he was in hospital:

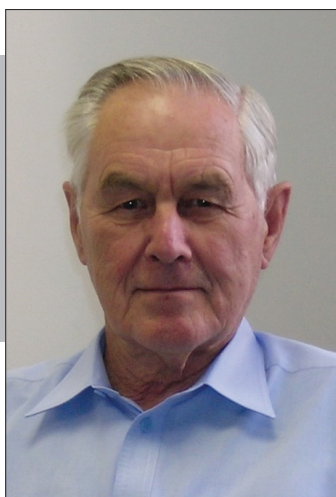
"Dear Schu, I and many of your other colleagues who have happily worked with you for so many years are very distressed to hear about your recent health challenges. On behalf of the Editorial Board and Advisory Panel of Occupational Health Southern Africa, we wish you a speedy recovery. We will keep you and your family in our thoughts and prayers."

The **SAIOH** e-mail notification read:

"Dear SAIOH member, it is with deep sadness and heavy hearts that we at SAIOH inform you of the death of Schu Schutte, who passed away on Thursday 28 September 2023. Schu passed away suddenly after a recent prognosis. Schu was not just our colleague but a good friend as well to many of our SAIOH members. His contribution to occupational hygiene is a huge loss to SAIOH and South Africa."

I would like to end Schu's obituary with these words:

"I was very privileged to know and have worked with Schu. He was such a compassionate person, with big empathy for everyone and I will always remember him as a true gentleman whose love for his wife, Manda, and his family was sacrosanct. I cannot begin to imagine how much we will miss Schu." 📌



John Carol Anthony (Tony) Davies:

28 August 1931–3 March 2024

Professor Emeritus, School of Public Health, University of the Witwatersrand; past Director, National Centre for Occupational Health, Johannesburg, South Africa

Compiled by **Gill Nelson**: Editor-in-Chief, *Occupational Health Southern Africa*

In the previous issue of *Occupational Health Southern Africa*, we announced the passing of Professor Emeritus Tony Davies after a short illness. Although Tony officially retired in 2015, he continued to be a protagonist of workers' health, and he and his wife, Deirdre, were instrumental in assisting many people to claim compensation for asbestos-related diseases. He spent the last years of his life in Kenton-on-Sea in the Eastern Cape province, working on a book about these and his other experiences as an occupational medicine doctor. Less than six weeks after Tony's passing, Deirdre also passed away – testament to their close bond that was undoubtedly strengthened during the time they spent together, helping those so much less fortunate than themselves.

I was privileged to be among the early group of doctors mentored by Tony at the National Centre for Occupational Health (NCOH) in the mid-1980s. Although I left the Centre in 1987, the lessons I learned and the colleagues and friends I made have lasted me my whole career. This experience was, in large part, due to the ethos created by Tony during a very troubled time in our country's history. He encouraged our endeavours, took pride in our achievements, and protected us from Pretoria.

In an unfashionable discipline, the commitment he showed to recompense and justice, for the miners who had given their health to dig the wealth of this country, embodied social medicine in a clear form. His manner was courteous but his impatience and anger for what passed as business as usual in government and industry were righteous. These characteristics, as much as the technical skills that were learned, were, for me, the markers of a fulfilled career and a contribution to society.

Those of us who stayed in the unfashionable discipline are Tony's professional offspring and are grateful for it. We honour his life and mourn his passing.

Rodney Ehrlich

Professor Emeritus, University of Cape Town

In 1991, Tony and Deirdre examined thousands of ex-asbestos miners – they stayed in simple quarters at two hospitals on numerous occasions for six years. It cumulated in a six-month sojourn at HC Boshoff Hospital in Maandag's Hoek in Limpopo province. Together, they published a paper about the 770 women they examined, who were eligible for compensation because of their work in asbestos mines. It is the first paper to be published about women cobblers. In addition to the women, they helped more than 2 000 ex-asbestos miners receive compensation. The two of them endured tough working conditions to leave a formidable legacy.

Marianne Felix

CEO: Stretch Education SA

It was with a heavy heart that the South African Society of Occupational Medicine (SASOM) and its members offered deepest condolences to the family, friends, and colleagues of Professor Emeritus Tony Davies, a long-time friend of SASOM, promoter and ambassador of the occupational health and medicine disciplines in southern Africa, and a stalwart protector of workers. Ever the inspiration and a guiding light to generations of OSH professionals and occupational medical practitioners, Prof. Davies' legacy lives on. He will be sorely missed by all of us!

Claudina Nogueira

University of Pretoria, on behalf of SASOM



Adler Museum function, 2008. L-R: Rochelle Keene, Tony Davies, Sharon Fonn

Photograph: Rochelle Keene



Tony and Deirdre Davies, 2015

Photograph: Gill Nelson

I remember Tony as a regular attendee at the Wits School of Public Health (SPH) academic meetings every Friday, when these were still a vibrant part of the academic life of the School. Notwithstanding Tony's vast knowledge of public health, he always treated junior or emerging researchers as if they knew a whole lot more than him. He asked gentle questions and made insightful comments.

The Wits SPH has a strong focus on occupational health, given the long history of mining in South Africa. In 2011, Tony contributed to the Special Issue that celebrated the Centre for Health Policy with enthusiasm and excitement.¹ Together with Jill Murray and David Rees, Tony highlighted the disjuncture between progressive health policies and implementation. Despite extensive research on silicosis, tuberculosis, HIV and AIDS, and compensation for occupational disease, there has been limited policy implementation, reflected in high levels of occupational diseases.² I enjoyed Tony's support when I became Head of School in 2012, and our light banter about split infinitives (which both of us disliked). Above all, I remember Tony's dry sense of humour. Rest in peace Tony Davies.

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Laetitia Rispel

*SARChI Chair: Research on the Health Workforce for Equity and Quality
University of the Witwatersrand*

Along with many others in public and occupational health, both practitioners and beneficiaries, I have a lot to thank Prof. Tony Davies for. Tony was a truly effective mentor – in some ways, before his time – because he supported the development of people, both professionally and personally. At Prof. Jill Murray's suggestion, I have written a short account about some of Tony's work on asbestos, because it tells us a lot about him professionally.

With Tony's guidance and support, Marianne Felix did her PhD in the Mafefe area in Limpopo province. Mafefe is home to numerous asbestos deposits and also Penge – then a big asbestos mine. Marianne's was the first South African community-based study of asbestos exposure and asbestos disease. She uncovered high rates of previously unreported disease in a rural community.

Evaluating patients and submitting claims for workers' compensation can be drudgery, but Tony did this for many months over several years with the strong support of his wife, Deirdre. They published a paper in the *South African Journal of Science* in 2001¹ in which they reported that 96% of the 770 women miners they examined had asbestos-related disease. Again, this was done in a vulnerable rural community. Their work was valuable, scientifically, but more importantly, Tony's and Deirdre's work resulted in a much-needed flow of money into this poor community.

We have two Trusts in South Africa that compensate people with asbestos diseases – the Asbestos Relief Trust and the Kgalagadi Relief Trust. Both have been very successful, and thousands of people have benefited. Tony was instrumental in the early days of these Trusts. Richard Meiring of Leigh Day, the lead lawyer in the matter for beneficiaries, had high praise for Tony.

Brian Gibson the 'issue manager' for Everite – the big asbestocement company – and Tony became friends, in part because of Brian's admiration for Tony. Brian told me that Tony had resolved several deadlocks in the negotiations around the setting up of medical evaluations of former Everite workers.

Tony was an activist, a philosopher in some respects, and an academic who stimulated and supported important research, often in marginalised communities, but also a pragmatist who was able to get things done.

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David Rees

*Professor Emeritus, University of the Witwatersrand
Former Director, NIOH*

Tony Davies was a critical pillar in academic occupational health in South Africa, an architect who, along with other leaders, established the foundation of our discipline. Tony played a role in moving occupational health in KwaZulu-Natal, when he seconded a short-term post from the National Centre for Occupational Health to the (then) University of Natal around 1995. This was a critical resource in our early days in trying to establish academic occupational medicine/health in the province. Similarly, I have no doubt, Tony's quiet but purposeful manner extended occupational health to the far reaches of our country during his tenure at the NCOH/NIOH, Wits, and the Department of Health.

Rajen Naidoo

University of KwaZulu-Natal

"From 2005 to 2014 Professor JCA (Tony) Davies became the co-editor [of the Adler Museum Bulletin]. The Curator of the Museum, Ms Rochelle Keene, served as co-editor of the Bulletin from 2004 to 2014. Professor Davies' first editorial in 2005 marked the 30-year anniversary of the Bulletin. From the time he became co-editor, until his retirement in February 2015, he wrote 18 editorials, 5 articles and 3 book reviews." (Extract from the editorial of the June 2015 issue of the *Adler Museum Bulletin*, by Prof. Jim Phillips.)

Tony also made an invaluable contribution to the Museum's Board of Control on which he served from 2005 to 2014. He visited the Museum frequently, being invested in its progress. We talked endlessly about all sorts of subjects, including, occasionally, his choir practice the previous night. We shared many hours pouring over manuscripts and, if accepted, days and days of editing them and producing many volumes, which gave us great satisfaction. We agreed that the *Bulletin* did not get a wide enough recognition or distribution.

His 18 editorials were unusual, topical, sometimes historical, sometimes philosophical, but always extremely interesting. They were frequently about his primary interest: occupational health. He also did not shy away from criticising the failing public health system in this country in editorials, which included:

- 'A lifetime of service, looking critically at the role of mission hospitals in South Africa and asking, in the failing health system in this country, if they should not be brought back' (June 2008)
- 'South Africa's health service: time for a re-think?' in which he wrote, *"Apart from two disastrous epidemics of communicable disease [since 1994], we have watched the steady decline of the health service to the point at which much of it can justifiably be described as dysfunctional"* (December 2009)
- 'Jobs half done, or just begun', in which he stated, *"It is clear that the present development failure in this country includes at least three important health science related elements: the failure to control chronic communicable diseases; the mounting burden of non-communicable (lifestyle) conditions requiring continuing care; and the decline of the health system ..."* (December 2010)
- 'Wanted – a launch pad', where he criticised the proposal, in principle, to establish a National Health Insurance Service (NHIS) in South Africa, which had become *"trapped in uncertainty and discussions of complex issues of marginal significance"* (December 2014)

Several editorials delved deeply into the topics of the annual AJ Orenstein Memorial Lectures, giving readers additional insights. These included:

- 'What did Sydney Brenner say?' (June 2006), related to the lecture, 'Human biology: health and disease'
- 'Disease knows no boundaries – and will find the chinks in our armour' (December 2011), related to the 2011 lecture delivered by Prof. WD Francois Venter ('HIV transmission and sex in Africa: Why can't we get it right?'), in which he emphasised that occupational health services and public health services should be expert in recognising and ranking risks to health, prioritising them, and taking action to increase the size of the non-risk fraction of the workforce or the population in question
- 'Going backwards to make progress' (December 2012), related to the lecture delivered by Professor Karl von Holdt, 'Towards the clinician-led management team: a strategy for fixing hospitals?'
- 'A place in the sun?' (June 2013), related to the lecture delivered by Prof. Jock McCulloch titled, 'Dust, Disease and Politics on South Africa's Gold Mines'

His articles for the *Bulletin*, as one would expect, all related to occupational health, mines, and mining history. Given Tony's deep interest in occupational disease, it is no surprise that his first article

for the *Bulletin* related to an historical moment which he felt was important to record for posterity; about the first recipient of a Wits postgraduate degree titled, 'A set of firsts: a brief appreciation of Dr George Frederick Mills Slade (1898–1976)' (December 2005). Slade was a member of the first class to study medicine at Wits and became the first medical graduate to receive a doctorate. He was the first medical officer to be employed by a South African chrysotile mining company. His MD thesis describes the first systematic study of the health effects of chrysotile asbestos dust on exposed miners. Tony, interestingly, noted that only one bound copy of Slade's thesis, titled, 'The incidence of respiratory disability in workers employed in asbestos mining, with special reference to the type of disability caused by the inhalation of asbestos dust', is in the AJ Orenstein Library for Industrial Health at the National Institute for Occupational Health (NIOH), donated by the late Prof. Ian Webster in 1981. Copies lodged with Wits and the documents relating to the examination of the thesis and the conferring of the degree are thought to have been destroyed in a fire.

Other articles that Tony wrote for the *Bulletin* were:

- 'Dust and fibre levels at Penge amosite mine 1970–1971', where he cited Roderick Edward George (REG) Rendall as his co-author (June 2007). Rendall was a mining engineer by training, who worked for the greater part of his life in the Occupational Hygiene Section of the National Centre for Occupational Health (NCOH). He was responsible for milling the standard preparations of asbestos used in research studies all over the world, and pioneered the methods of dust sampling and fibre counting in South Africa. The article written by Tony acknowledged one of his major unpublished pieces of work.
- 'Enquiries into health and safety in South African mines in the 20th century: what did they have to say about occupational lung disease?' (June 2010): he wrote that the future of the working man or woman was bleaker and more uncertain than ever. *"In the hands of the captains of industry, the rich and powerful, dust levels and the prevalence of work-related disease and injury do not decline without tough state intervention"*, he wrote in an introduction to the proposed amendments to the South African Mine Health and Safety Act.
- 'What was known about miners' phthisis in South African Gold mines by 1930?' (June 2014). He compiled the article from archival material at the NIOH.

Tony wrote reviews of several books: *Yes, Health Minister. 40 years Inside the NHS Working for Children* by Dr Sonya Leff (June 2007) (reviewed with Rochelle Keene); *Adventure of Life. Reminiscences of Pauline Podlashuk* (December 2010); *An Uneasy Story: The Nationalising of South African Mission Hospitals 1960–1976: A Personal Account* by Dr Ronald Ingle (June 2011); and *South Africa's Gold Mines and the Politics of Silicosis* by Professor Jock McCulloch (June 2013). He also paid tribute to Prof. PV Tobias in an editorial titled, 'A deliberate scholar' (June 2012).

I know that Tony was writing a book when he passed away. He wrote to me: *"I quote from Archie Cochrane and have called my book 'Another Man's Medicine'. It is about medical practice in Rhodesia and Zimbabwe and I am trying to keep me-me-me out of the book. I am collecting electronic copies of everything published with my name on it as an author or co-author. When collected, as in the case of editorials in the Adler Bulletin, [they are] surprisingly interesting and polished and ignored."*

It was so like Tony to be modest about his considerable contributions in so many ways.

Rochelle Keene

*Former Curator, Adler Museum of Medicine, Faculty of Health Sciences
University of the Witwatersrand*

I worked at the NCOH from 1983 to 1986 when Tony Davies, a senior ex-‘Rhodesian’ public health officer took up the directorship. This was not long after Zimbabwean independence and was the last decade of the increasingly brutal apartheid system, in the face of popular resistance.

Tony Davies went out of his way to support our cohort: progressive young doctors, health workers, and researchers with a public health vision and belief in equity and social justice. He aided us in upgrading the NCOH workers’ health clinic and promoted our engagement with workers facing health threats at work. He encouraged us to talk and take time to learn about and record working conditions, liaise with their trade union representatives and advocates, and act to secure better health and working conditions. He recognised the value of careful history-taking and precise documentation. He encouraged and facilitated follow-up visits to workplaces, measurement of toxins and particulates, and firm engagement with employers who sacrificed health for profit.

Tony Davies was especially concerned about workers who had spent their working lives in hazardous jobs being discarded to the ‘Bantustans’, where health, medical care, and compensation for work-related ill-health and injuries were rare. He sought to ensure that those exposed to asbestos in the community received justice.

He wanted occupational health and the associated ethical considerations to be mainstreamed for medical students, public health and general practitioners, and specialists.

Tony encouraged us to research and teach, to write and pursue our specific interests. He enabled our work with trade unions and progressive organisations – National Medical and Dental Association (NAMDA), Health Information Centre (HIC), Technical Advisory Group (TAG), Critical Health, and others. He greatly respected the research and analyses of thoughtful colleagues in Cape Town and Natal, and facilitated our collaboration.

He was always energetic and would, at times, literally jump up with enthusiasm. Yet he took a long-term and considered view; I remember him saying, more than once, “*slowly slowly... catch the monkey...*”. Rushing into things was neither wise nor strategic.

Alongside other mentors and teachers, I owe him a debt of gratitude. He impressed upon me the importance of using my privileged education and professional opportunities to do something concrete, however small, to address the inadequacies, inequities, and injustices of health in South Africa.

I remember Tony Davies with fondness and appreciation.

Anthony Zwi

UNSW Sydney, Australia



L–R: Deirdre Davies, Jim Phillips, Laetitia Rispel, Tony Davies, Karl von Holdt, Joyce Mogale, Sophie Kisting, David Rees

Photograph: Sophie Kisting

I have fond memories of Tony making all the effort to accompany doctors of the Industrial Health Research Group on our occupational health audits of asbestos mines in Kuruman in the Northern Cape, as the mines closed down in the 1990s. There were many workers with mesothelioma in the little hospital and lots more with other asbestos-related diseases. Tony, with his white coat and stethoscope in hand, demonstrated the “*fine late inspiratory crepitations in the axillary area*”, which he emphasised was pathognomonic of clinical asbestosis. Our audits of many

asbestos mines highlighted the suboptimal medical surveillance and compensation of these miners. These audits formed the basis of our submission to the Leon Commission of Inquiry into Safety and Health in the Mining Industry in 1994, of which Tony was a panel member. The Inquiry was a key milestone for occupational health and safety in South Africa and formed the basis for the Mine Health and Safety Act promulgated in 1996.

Mohamed Jeebhay

Head of Occupational Medicine, University of Cape Town

Tony hired me in the National Centre for Occupational Health's epidemiology team in 1984 on account of reading a paper I wrote about the epidemiology of cholera, but with no formal training on the topic. Margo Becklake started the department while on sabbatical from Montreal and Anthony Zwi took over as head soon thereafter, and we just got on with our various projects. These included work on asbestos, silica dust, the poultry industry, chest radiographs of workers, occupational health services and the like. Others who joined around that time were Gill Nelson, Danuta Kielkowski, David Rees, Clifford Goldsmith, Eric Buch, Umesh Laloo, and Rodney Erlich, all of whom still have illustrious careers in South Africa and abroad. Tony protected us from a very stiff bureaucracy, managed by Pretoria. Being based in Johannesburg may have had certain benefits, being slightly out of arms' reach from the top bureaucrats in Pretoria. Being in the research side, I was labelled "amper 'n amptenaar" [almost an official] by one of the administrators, which probably reflected Pretoria's view of all of us.

Freddy Sitas
UNSW Sydney, Australia

Tony had an enormous impact on occupational health and safety – nationally, regionally and internationally. Similarly, he quietly had a major impact on my own journey in occupational health and I wish to share some of that. I first met Tony while doing a Master's degree at Wits University in the early 1990s. He provided input on occupational health in classes in Soweto and introduced the postgraduate class of medical doctors to the importance of the regular use of the ILO International Classification of Radiographs of Pneumoconioses. This set of X-rays, subsequently obtained from the ILO, became a mainstay in my future occupational medicine work.

As the Executive Director of the NCOH, subsequently the NIOH, for more than a decade, he steered it into a well-known and trusted centre of excellence for occupational health and safety, for research and for service provision to workers sick with occupational diseases. He almost unconditionally supported efforts to improve occupational health. On many occasions Tony readily agreed to personally



Wits Faculty of Health Sciences function, 2007. L-R: Alan Rothberg, Rochelle Keene, Tony Davies

Photograph: Rochelle Keene



Adler Museum Christmas lunch, 2012. Back, L-R: David Sekgwele, Gilbert Singo. Front, L-R: Tony Davies, Rochelle Keene, Cheryl-Anne Cromie

Photograph: Rochelle Keene

join a group of us from the Industrial Health Research Group at UCT, at the request of the very active trade unions at the time, to visit various distant rural workplaces to audit medical surveillance programmes. In this context, we visited asbestos mines where we read the chest X-rays of workers, using the ILO international classification, even at night by the light of generators, to complete the work within a working week. Similarly, Tony joined us for the reading of chest X-rays of hundreds of asbestos cement workers, as per the ILO classification. He provided the full support of the NIOH to us to collaborate with a group of occupational hygienists from Sweden, who were running workshops for workers in southern Africa to explore international methods to protect workers from exposure to silica dust.

In his public health lectures, he emphasised the great importance of dedicated support for PATHAUT, the database established in 1973 at the NIOH, which contains details of autopsies of deceased mineworkers. The annual reports are available in the public domain. The database provides surveillance data as well as information for teaching, training, and research.

Through his engagement in the Leon Commission, he – perhaps unknowingly – inspired many colleagues in the occupational health and safety sphere to commit to the importance of contributing to a better occupational and legislative environment in mining.

When I became the Executive Director at the NIOH, he was a regular and trusted visitor, an inspirational mentor and a father-figure. Always ready with great advice, copies of the latest interesting occupational health and safety publications, which he marked-up for easy reference, and some snippet of news which invariably made one laugh.

We will fondly remember his inspirational spirit, his inclusive approach to occupational health and safety, his conviction that a better world of work is possible, and his beautiful collaboration with Deirdre amongst the men, women, and families in asbestos mining.

Hamba Kahle, Tony and Deirdre.

Sophie Kisting
Former NIOH Executive Director

I first met Tony in 1994, when he was Director of the NIOH. I had been pointed in his direction by the National Union of Mineworkers to learn about the epidemic of asbestos-related disease in South Africa. The case against Cape plc lasted nine years and was fraught and unpleasant, with Tony also being subjected to unfair personal criticism by Cape’s lawyers for his passionate commitment to the rights and health of workers. His expertise, encouragement, and unwavering support was crucial to the case and remained steadfast throughout.

His advice and efforts throughout the gold miners’ silicosis litigation from 2004 to 2016 were equally invaluable. He was patient and generous, spending a huge amount of his time at the NIOH and through written notes, explaining medical and technical concepts to me and my colleagues, and drawing our attention to important historical evidence.

He was highly principled and fearless in standing up for justice and redress for workers, and for irresponsible companies to be held accountable. I witnessed first-hand his kindness in his treatment of workers – he and Deidre spending months of their own time, annually, in Limpopo, examining and helping sick miners secure desperately needed compensation. On one occasion when I stayed there with them in the early days, I had started tucking into supper and had to abruptly put down my fork when I noticed Tony saying grace. I realised from then that his commitment to people was motivated by his deep, discreetly held, faith, which I did not share but greatly respected. Tony was a dedicated doctor and friend – and a truly inspirational man.

Richard Meeran

*Partner, Joint Head of International & Group Litigation,
Leigh Day*

I have a lot to thank Tony for. If it wasn’t for him, I would not have been an occupational health epidemiologist. He hired me, fresh out of my Honours degree, to work with Margot Becklake in the Epidemiology Unit of the NCOH, together with several others in the mid-1980s. He called us “*bright young things*” and watched with pride as we flourished in our individual careers over the next decades. Many of those people are still my colleagues today and I know that they, too, remember the early NCOH days with some nostalgia. Tony

was kind, generous, supportive, and totally committed to improving workers’ health, way beyond his retirement in 2015. I visited him and Deirdre in late 2023, just a few months before he passed away. His mind was still sharp, his laugh was still loud, and his interest in what was happening in my and others’ lives was genuine. My last sight of him was walking down the long driveway towards his house – a proud and deeply good man.

Gill Nelson

Wits School of Public Health 



Tony Davies retirement function, 2015. L–R: David Rees, Charles Feldman, Steve Tollman, Tony Davies, Gill Nelson, Haroon Saloojee
Photograph: Gill Nelson

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Unlocking the transformative potential of ISO 23875 for mine site culture and operator air quality

Part 2

Jeffrey L Moredock: Project Lead: ISO 23875, Sy-Klone International, e-mail: Jeff.Moredock@sy-klone.com

ABSTRACT

The mining industry is characterised by its multifaceted challenges. Ensuring regulatory compliant air quality within operator enclosures has been a longstanding concern. In response to this critical need, the International Standards Organisation (ISO) Technical Committee- (TC-) 82 Mining developed ISO 23875:2021, which provides a comprehensive framework for air quality control system integration that prioritises simplicity, practicality, and stakeholder involvement. This article explores the technical intricacies of ISO 23875, shedding light on its benefits, strategies for stakeholder education, and the transformative potential it holds for mine site culture.

INTRODUCTION

Part 1 of this three-part series explored the genesis of ISO 23875, support by research, and critical milestones on the path to its development. In this second article, we explore ISO 23875's rationale and structure as a life-cycle standard, designed to promote continuous compliant air quality in operator enclosures. We demonstrate how its unified approach is designed to permanently change mine site culture to ensure better operator air quality.

Understanding operator enclosure air quality

Understanding operator enclosures and their impact on air quality has required extensive research and exploration. The broader ecosystem of operator enclosure air quality management includes the heating, ventilation and air conditioning (HVAC) system, cab seal integrity, intake air, recirculation air filtration, pressurisation, and real-time monitoring – all of which are indispensable for complying with legislated air quality standards.¹

Striking a balance: encouraging innovation without compromising standards

The imposition of strict engineering controls risks stifling innovation and deterring market participation. Therefore, ISO 23875 adopts a balanced approach of fostering innovation while ensuring adherence to critical specifications.² Embedding performance requirements³ into the Standard not only encourages stakeholder engagement, but also catalyses the evolution of effective solutions.

Validation and certification

Validation of system design is of paramount importance and necessitates accurate and easily understandable performance tests.⁴ These tests, designed to be conducted in field conditions, evaluate crucial factors such as carbon dioxide (CO₂) concentration, pressurisation capability, dust removal efficacy, and seal integrity. Self-certification under ISO 17050⁵ – the normative reference in ISO 23875 – empowers equipment manufacturers and retrofitters to validate cab air quality performance for the end user, thereby establishing a baseline for comparison and maintenance.

Driving maintenance through performance metrics

The robust documentation process required by the Standard,⁶ complemented by accurate installation records and performance metrics, facilitates informed decision-making regarding maintenance

activities. Objective verification of work ensures compliance with best practices, thereby enhancing the longevity and effectiveness of air quality systems.

Integrating ISO 23875 into auditable processes

Incorporating ISO 23875 into ISO 9001⁷ auditable processes enhances accountability and transparency within mining operations. Regular audits not only reinforce compliance but also foster behavioural change, aligning organisational practices with industry best practices.

The role of stakeholder education

Comprehensive stakeholder education is central to the success of ISO 23875 because it fosters a deep appreciation for the importance of air quality, beyond mere compliance to the Standard. The International Society of Environmental Enclosure Engineers (ISEEE)⁸ develops technical content and standardised stakeholder education materials in collaboration with mining stakeholders. These materials are accessible to, and implemented at, mining sites and can be made part of the site occupational health and safety management system.⁹ Materials include tailored educational resources for operators, maintenance technicians, and management. These resources seek to change mine site culture through the adoption and implementation of the Standard.

The ISEEE provides the Advanced Cab Theory Workshop (ACTW)¹⁰ for site professionals and technicians who desire to be subject matter experts on operator enclosure air quality systems. A 2023 ACTW graduate and site occupational hygienist had the following to say about the impact of the course:

"We have started doing ISO 23875 performance testing and got the protocol dialled in. The maintenance and operations staff are coming to me to test cabs . . . Maintenance leadership trusts my word and recommendations and we are getting this gear up to snuff, everyone is talking ISO 23875 as the Gospel, the standard to meet as the right thing to do, no questions asked . . . You would be impressed with the assessments we are doing and the technical level of detail coming out . . . I am so glad I went to the ISEEE ACTW. I am figuring these systems out and it all makes sense, once you start doing it in practice, the whole picture comes together, rather than just looking at data or saying HEPA and cab pressure are the only answer."

The ACTW will be offered for Professional Development Credit (PDC) prior to the start of the Southern African Institute for Occupational Hygiene (SAIOH) conference in Botswana later this year. Those interested in attending the ACTW should note their interest on the conference registration form.

Economic benefits of compliance

Beyond regulatory obligations, adherence to ISO 23875 yields tangible economic benefits. Enhanced worker productivity, reduced machine warranties, and reduced maintenance costs¹¹ underscore the financial incentives of prioritising air quality. Compliance also influences human resource recruitment and retention, with organisations that embrace compliant air quality being likely to have lower staff turnover and improved recruitment through positive social media influence.¹²

Addressing legal and moral imperatives

Recent class action suits¹³⁻¹⁵ underscore the urgency of promoting worker health and documenting air quality improvement efforts. ISO 23875 provides a structured pathway for mine operators to demonstrate compliance, mitigate risks, and fulfil their ethical responsibilities towards worker wellbeing.

CONCLUSION

ISO 23875 epitomises collaborative industry efforts to enhance operator enclosure air quality. With its emphasis on simplicity, stakeholder involvement, and practicality, it offers a transformative framework that transcends regulatory compliance to deliver tangible benefits for all stakeholders. Embracing ISO 23875 can propel the mining industry towards a safer, healthier, and more sustainable future.

In the third and final article of this series, we will examine what a successful ISO 23875 implementation looks like from the perspective of the various stakeholders in operator enclosure air quality.

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Rand Mutual Assurance putting a spotlight on safety and prevention in the workplace

The inaugural Prevention Awards, presented by Rand Mutual Assurance (RMA) with pride, recently honoured innovation, hard effort, and success in worker health, safety, and wellness in the metals industry. This esteemed occasion demonstrated RMA's and its Metals clients' persistent dedication to establishing safer and better work conditions for nearly 700 000 workers across organisations.

Prominent individuals graced the occasion, including the Chief Inspector of the Department of Employment and Labour, the Acting Commissioner of the Compensation Fund, our Metals sector stakeholders, and representatives from numerous labour and employer unions. Their presence served as a reminder of the need for cooperation and shared accountability in promoting workplace safety, health, and wellness.

The awards honoured outstanding companies, employees, and initiatives that have shown originality and calibre in preventative efforts. The success of last year's Prevention Conference was followed by this year's awards, underscoring RMA's dedication to cooperation and ongoing development.


Since its launch in 2022, RMA's Prevention Programme has expanded rapidly, involving over 50 companies across approximately 135 sites, and having a positive influence on about 24 000 lives. Notable accomplishments include companies who have demonstrated a reduction in their disabling injury frequency rates (DIFRs) in less than a year.

"Our objective has always been clear: a 30% decrease in the incidence rate within the Metals industry by 2030", said Mandla Shezi, Group Chief Executive Officer (CEO) of RMA. *"With the dedication and collaborative spirit of everyone involved, we are confident in achieving this target."*

The RMA Top Prevention Award, the Best Prevention Campaign Award, and the Rising Star of the Year Award were among the seven distinct categories whose recipients were honoured during the evening. Every award emphasised the value of persistent work and dedication to workplace safety.

The CEO stressed, *"Collaboration is the cornerstone of our success as RMA looks to the future. We all have a responsibility to work together to create a safer workplace. Let's make an effort to be more and do more to make sure that every worker gets home safely."*

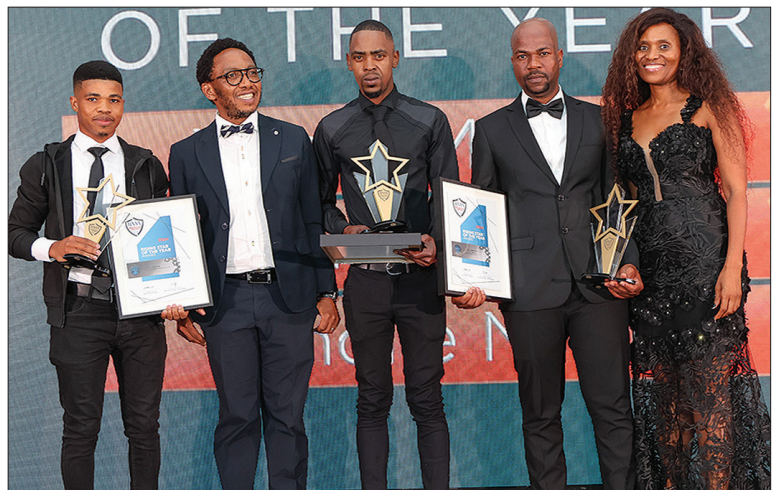
A moving message was delivered as the event came to an end: *"Nobody goes to work to die. Workplaces that are safer for both employees and managers are more effective and productive. It benefits everyone equally."*

For more information on the RMA Prevention Programme, please contact rmaprevention@randmutual.co.za. 



Prevention Champion Award

Photograph: courtesy of RMA



Rising Star Award

Photograph: courtesy of RMA



Top Prevention Award

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Understanding z-scores in spirometry using the Vitalograph Spirotrac 6 software and ViBAC[®] Bacterial Viral Filter: a South African occupational health perspective

Matsobane Andries Shiburi: National Product Manager, Cardiac and Respiratory Diagnostic Devices, SSEM Mthembu Medical (Pty)Ltd
e-mail: andriess@ssemthembu.co.za

INTRODUCTION

Spirometry is a critical tool in occupational health (OH) for assessing lung function and diagnosing respiratory conditions. The American Thoracic Society (ATS) and the European Respiratory Society (ERS) have established guidelines for interpreting spirometry results, with the latest updates emphasising the use of z-scores. In South Africa, utilising these standards, along with tools like the Vitalograph Spirotrac 6 software used with the Vitalograph Pneumotrac 6800 Spirometer, can enhance the accuracy and relevance of spirometry in OH clinics.

WHAT ARE Z-SCORES IN SPIROMETRY?

A z-score, also known as a standard score, indicates how many standard deviations a measurement is from the mean of a reference population. In spirometry, z-scores provide a more nuanced interpretation of lung function compared to traditional percent predicted values.

LATEST ATS/ERS SPIROMETRY UPDATE

The ATS/ERS 2019 update introduced the use of the Global Lung Initiative (GLI) reference equations, which provide age, sex, height, and ethnicity-specific reference values. This is particularly relevant in South Africa, where a diverse population requires tailored reference standards for accurate spirometry interpretation.

HOW TO INTERPRET Z-SCORES

Figure 1 shows the results of a spirometry test. z-scores are interpreted as follows:

- z-score of 0: represents the mean or average lung function for the reference population
- Negative z-scores: indicate values below the mean. For example, a z-score of -1.0 means the lung function is one standard deviation below the average
- Positive z-scores: indicate values above the mean. For example, a z-score of 1.0 means the lung function is one standard deviation above the average



Matsobane Andries Shiburi and Xolani Marcus Mthabela demonstrating the equipment

Photograph: Lebogang Maseko

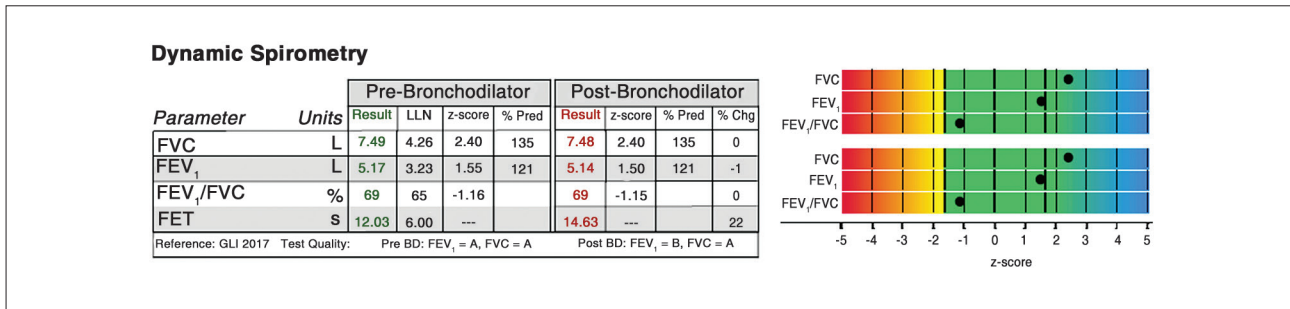


Figure 1. Spirometry results with pre- and post-bronchodilator z-scores

Clinical interpretation

- Z-score between -1.64 and +1.64: considered within normal limits
- Z-score below -1.64: suggests below-average lung function, potentially indicating a restrictive or obstructive pattern, depending on other spirometry parameters
- Z-score above +1.64: suggests above-average lung function, though less common and often of less clinical concern

USING VITALOGRAPH SPIROTRAC 6 SOFTWARE

The Vitalograph Spirotrac 6 software simplifies the collection and interpretation of spirometry data. Here’s how it integrates z-scores:

1. Data collection

- Spirotrac 6 captures spirometry data through various tests such as forced vital capacity (FVC) and forced expiratory volume in one second (FEV₁).
- Forced vital capacity measures the total volume of air a person can forcibly exhale after taking the deepest breath possible.
- Forced expiratory volume in one second measures the volume of air exhaled in the first second of the FVC manoeuvre.
- Other tests include peak expiratory flow (PEF) and forced expiratory flow (FEF) 25–75%. There are over 60 parameters on Spirotrac 6, which can be customised on both the software view and report based on your preference.

2. Setting up

- Calibration: Ensure the spirometer is calibrated according to the manufacturer’s guidelines. In this example, the spirometer calibration was within a 2.5% tolerance.
- Patient data entry: Enter the patient information including age, sex, height, and ethnicity to utilise the correct reference values.

3. Performing the test

- Preparation: Ensure the patient is seated comfortably and understands the procedure. Instruct him/her to use a nose clip to prevent air from escaping through the nose. Use a ViBAC Bacterial Viral Filter with a bacterial filtration efficiency of 99.992%, manufactured by SSEMBU for SSEMBU Mthembu Medical (Pty) Ltd, to ensure patient safety, end user safety, and infection control within the clinic, which reduces cross contamination.
- Environmental conditions: Conduct the test in an air-conditioned, well-ventilated room with a temperature of 21 °C, humidity of 38%, and barometric pressure of 861 hPa, as per spirometry standards.
- Execution: The patient performs the FVC manoeuvre, exhaling forcefully into the spirometer as coached by the end user. Repeat the test at a minimum of three efforts and a maximum of eight efforts to ensure reproducibility. In the example in Figure 2, the patient performed four efforts, with one effort invalidated and deleted by the end user due to a detected cough, due to usability error.

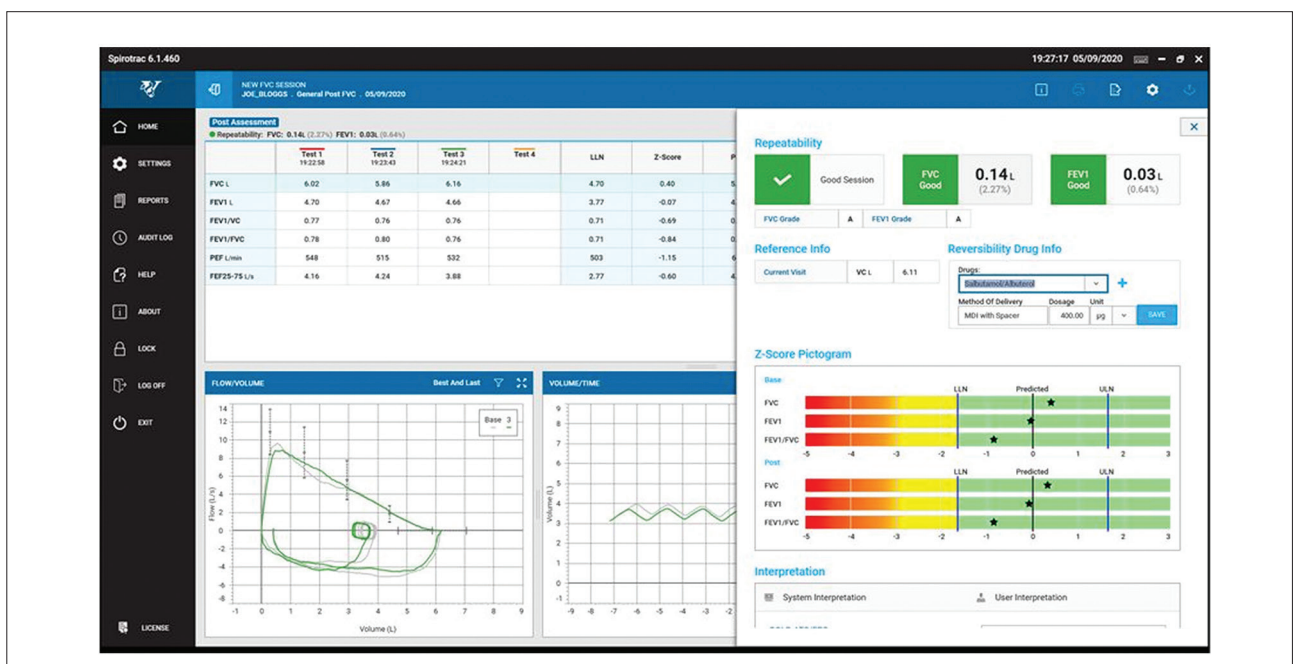


Figure 2. Spirotrac 6 software testing and results window

4. Data capture and analysis

- Recording: Spirotrac 6 captures and records the test results, displaying real-time flow-volume and volume-time curves.
- Automated calculations: The software automatically calculates key parameters like FVC, FEV₁, PEF, FEF 25–75%, and more.

5. Interpreting z-scores

- GLI reference equations: Spirotrac 6 uses GLI reference values, which are tailored for diverse populations, including those in South Africa.
- Z-score calculation: The software provides z-scores for each parameter, indicating how the patient's results compare to the reference population.

6. Generating reports

As shown in Figure 3, Spirotrac 6 generates comprehensive and detailed reports that include spirometry results, z-scores, and interpretive comments. The reports can be customised to highlight critical findings and recommendations for follow-up or further testing.

PRACTICAL APPLICATION IN SOUTH AFRICAN OH CLINICS

Using Spirotrac 6 in a South African OH setting involves the following steps:

1. Baseline or pre-testing: Establish baseline lung function for new employees to identify pre-existing conditions and ensure they are fit for their roles.
2. Periodic monitoring: Conduct regular spirometry tests to monitor any changes in lung function, particularly for workers exposed to respiratory hazards.
3. Interpreting results: Use z-scores to detect early signs of occupational lung diseases, enabling timely interventions.
4. Documentation and follow-up: Maintain detailed records of all spirometry tests and follow up with any workers showing abnormal results, for further evaluation and management.

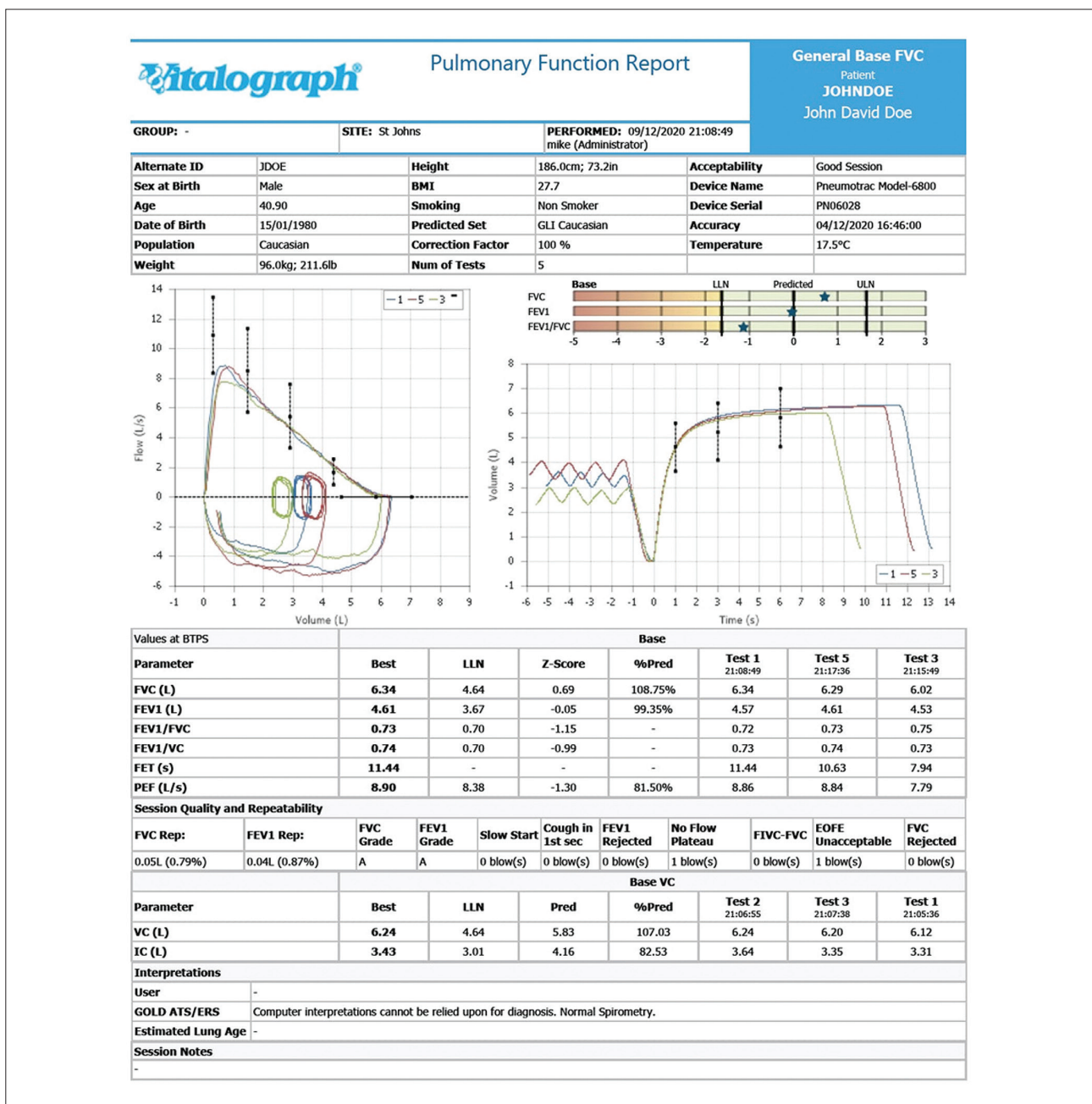


Figure 3. Spirometry final report generated by Spirotrac 6 software

EXAMPLE CASE STUDY

Patient profile

- Age: 35 years
- Sex: Male
- Ethnicity: Non-Caucasian
- Height: 170 cm
- Weight: 69 kg
- Occupation: Miner in Rustenburg
- Test: Pre-bronchodilator spirometry

Environmental conditions

- Room Temperature: 21 °C
- Humidity: 38%
- Barometric Pressure: 861 hPa
- Filter used: ViBAC Bacterial Viral Filter with 99.992% bacterial filtration efficiency (BFE)

Spirometry results

- FVC: 3.5 L (predicted: 4.0 L)
- FEV₁: 2.8 L (predicted: 3.6 L)
- FEV₁/FVC ratio: 0.8 (predicted: 0.9)
- Efforts: 4 (one effort deleted due to cough detection by Spirotrac 6)

Interpretation using z-scores

1. FVC z-score:

- Reference FVC for a non-Caucasian male of height 170 cm: 4.0 L
- Measured FVC: 3.5 L
- Standard deviation (SD) for FVC: 0.5 L
- z-score calculation: $(3.5 - 4.0) / 0.5 = -1.0$

2. FEV₁ z-score:

- Reference FEV₁ for a non-Caucasian male of height 170 cm: 3.6 L
- Measured FEV₁: 2.8 L
- Standard deviation (SD) for FEV₁: 0.4 L
- z-score calculation: $(2.8 - 3.6) / 0.4 = -2.0$

3. FEV₁/FVC ratio:

- Reference FEV₁/FVC ratio: 0.9
- Measured ratio: 0.8
- Interpretation: ratio is within the lower limit of normal, indicating a mild obstruction

Clinical interpretation

- The FVC z-score of -1.0 is within normal limits.
- The FEV₁ z-score of -2.0 indicates below-average lung function, suggesting mild obstruction.
- The FEV₁/FVC ratio further supports the presence of an obstructive pattern.

Recommendations


- The patient shows mild pulmonary obstruction, which may affect his ability to work in the underground mining environment.
- A detailed pulmonary evaluation and consideration of occupational adjustments to prevent further respiratory compromise is recommended.
- Regular spirometry monitoring is advised to track any changes in lung function.

CONCLUSION

The Vitalograph Spirotrac 6 software, integrated with z-scores and aligned with the latest ATS/ERS guidelines and GLI reference values, emerges as an indispensable asset for OH professionals in South Africa. This advanced tool not only ensures precise and standardised spirometry testing, but also empowers clinicians to detect early signs of respiratory issues, guide targeted interventions, and ultimately safeguard the respiratory health of workers in diverse occupational environments. Its contribution extends beyond diagnostics, serving as a cornerstone in promoting a culture of proactive respiratory care within the workplace.

Disclaimer: The information provided in this article is intended for informational purposes only. It is not a substitute for professional medical advice, diagnosis, or treatment. Readers are advised to consult qualified healthcare professionals.

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The Pulse of Technology

The Southern African Tuberculosis and Health Systems Support (SATBHSS) project achievements

Norman Khoza: Senior OHS specialist: African Union Development Agency (AUDA-NEPAD); SAIOH Regional Coordinator, 2024
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Background

The African Union Development Agency - New Partnership for Africa's Development (AUDA-NEPAD) regional Implementation Completion Report (ICR) provides a comprehensive evaluation of the Southern African Tuberculosis and Health Systems Support (SATBHSS) project, covering all aspects in the main ICR, which will be published in a special issue of *Occupational Health Southern Africa* in August this year. This summary highlights key achievements, challenges, and lessons from the project.

The SATBHSS project supported innovative and progressive interventions over the seven years of implementation across Lesotho, Malawi, Mozambique, and Zambia. Regional leadership was provided by the AUDA-NEPAD and the East, Central and Southern Africa Health Community (ECSA-HC), with the AUDA-NEPAD taking leadership on occupational health and safety (OHS) interventions. The project development objectives (PDOs) were to i) improve coverage and quality of tuberculosis (TB) control and occupational lung disease services in targeted geographic areas of the participating countries, ii) strengthen regional capacity to manage the burden of TB and occupational diseases, and iii) strengthen country-level and cross-border preparedness and responses to disease outbreaks (this PDO was added during the 2020 financing meeting). The PDO was technically sound and highly relevant for the project.

Achievements

Several achievements have been registered across the region, challenges have been documented, and lessons have been learned during the implementation of the project. Summaries are presented in the report from the huge amount of data generated. The voices of the countries and partners highlight the achievements made towards ending TB and occupational lung diseases, using regional and country approaches.

The project has strongly and successfully supported countries with regard to reviews of OHS legislation/regulations, and human capacity development to bring issues of OHS to the top of public health intervention agendas in the region. The SATBHSS project has improved occupational and public health systems in project countries. Improvements include equipment, infrastructure, policies, and skills, such as the constructed and renovated OHS clinics in Lesotho, Malawi, Mozambique, and Zambia; procurement of GeneXpert machines, digital X-ray machines, occupational health and hygiene sampling equipment, and occupational hygiene and microbiology analysis equipment; the Centre of Excellence in Occupational Health and Safety (CoE-OHS); the OHS baseline study; reviewed OHS policies; and capacity development of several government officials. The project has been a success in the four project countries and needs to be scaled up to include the entire continent. The few project achievements listed below, and Figures 1–4, provide more information.

Key project achievements

- Regional occupational health and hygiene monitoring equipment guidelines that list all OHS, environmental, and hygiene monitoring equipment were compiled.
- An OHS train-the-trainer manual was produced (a regional tailor-made training manual for government inspectors and other government officials).
- Use of the International Labour Organization International Classification of Radiographs of Pneumoconioses (ILO-ICRP) to aid in the training of occupational medical doctors and radiologists in the correct diagnosis of occupational lung diseases such as silicosis, TB, etc. was implemented.
- Under the project's technical support, one OHS Act was passed in Lesotho, and one Mines and Minerals Act in Malawi was reviewed and passed into law, with a notable inclusion of artisanal small-scale mining.



Figure 1. Solwezi Occupational Health Services Centre (OHSC), Zambia
 Photograph: Norman Khoza



Figure 2. OHS and TB mobile truck, Zambia
 Photograph: Norman Khoza



Figure 3. Children's Drug-Resistant Tuberculosis (DR-TB) Centre of Excellence in Matola, Mozambique

Photograph: Norman Khoza

- COVID-19 regional interventions led to the publication of six workplace-specific guidelines, which were widely used by member states to develop their own national guidelines.
- Local and regional training in OHS was provided for occupational health nurses, medical doctors, hygienists, and health and safety inspectors.
- Several occupational health and safety laws, regulations, guidelines, and standard operating procedures have been developed and reviewed, and are waiting for in-country approval processes so that they can be passed into law.

Challenges

Like all projects, the SATBHSS project had challenges that impeded implementation, including i) procurement-related difficulties that resulted in delays in completion of civil works and equipment installation; ii) inefficiencies in government procedures in some countries, which resulted in delays in staff recruitment, release of funds, and legislative approvals; iii) inadequate sustainability plans and underfunding of national programmes; and iv) exogenous factors (e.g. the COVID-19 pandemic, cyclones, and disease outbreaks).

Lessons and recommendations

The SATBHSS project has been instrumental in ensuring that learning can be applied to future regional health projects. Countries adopting and finalising the remaining OHS country legislations




Figure 4. Occupational noise sound booth, Ressano Garcia OHSC, Mozambique

Photograph: Norman Khoza

and policies will accelerate institutionalisation and financing of OHS interventions. Continuous mentorship is needed to provide technical support in OHS implementation and management. Countries need to develop means of funding the maintenance of equipment. Drafting and reviewing of occupational health and safety policies, laws, regulations, and guidelines need to continue to sustain OHS interventions. There is also a need for continuous collaborations between the African Union, the AUDA-NEPAD, member states, and development partners to sustain the project interventions.

ACKNOWLEDGEMENTS

The World Bank funds the SATBHSS project: P155658 and P173228. For more information, visit www.satbhss.org and www.nepad.org. AUDA-NEPAD acknowledges the World Bank, project countries (Lesotho, Malawi, Mozambique, and Zambia), and partners. 

American Industrial Hygiene Association Emerging Economies Microgrant Advisory Group

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INTRODUCTION

In 2018, the American Industrial Hygiene Association (AIHA) International Affairs Committee (IAC) created the Emerging Economies Microgrant Subcommittee as a means to provide financial support for occupational hygiene research and training projects to improve worker health and safety in developing parts of the world. The goals of the subcommittee were to improve the transparency and fairness regarding the evaluation and funding of international projects by AIHA. The subcommittee also provided a clear process for proposal submission and descriptions of criteria used in selecting projects to support. Its mission was to build occupational hygiene capacity worldwide, at the grassroots level.

In 2018, the subcommittee developed operating procedures, proposal selection criteria, ranking methods, and project reporting and tracking requirements. Subcommittee members were comprised of willing volunteers from the IAC, who had international experience with philanthropic research and training groups.

In 2022, the AIHA Board formed the opinion that the efforts of this group warranted an advisory structure – the Emerging Economies Microgrant Advisory Group (EEMAG) – to solidify the programme and establish a permanent fund to build upon over time. The creation of the EEMAG provided greater stability, visibility, and oversight than is typically undertaken by a technical committee subcommittee. The EEMAG facilitates networking

and information exchange among members, contributes to public policy debate, and assists with collaboration among allied organisations. The commitment to the EEMAG programme is reflected in the AIHA Strategic Plan 2022–2024: Advancement and Dissemination of Knowledge (<https://www.aiha.org/about-aiha/aiha-strategic-plan>).

AIHA EMERGING ECONOMIES MICROGRANT ADVISORY GROUP CHARTER

Mission

The mission of the AIHA Emerging Economies Microgrant Advisory Group is to provide a fair, structured, transparent, and consistent mechanism for funding educational and research projects that promote occupational hygiene in economically developing nations.

Vision

The vision of the group is to expand occupational hygiene awareness and capacity, globally, in order to reduce the risk of injury, illness, and fatality to workers in nations with the fewest resources.

PROJECTS FUNDED TO DATE

Since 2018, the subcommittee and, subsequently, the EEMAG has funded 52 projects to the value of USD148 550. Table 1 provides a full accounting of projects, funding provided, and countries, by year, since the programme's inception.

Table 1. Microgrant projects funded, 2018–2023

Year/Country	Project title	Amount (USD)
2018		
Lebanon, India, Nepal	DWOI Block Grant for three proposals: exposure assessment training in Beirut, Lebanon; environmental monitoring for asbestos, Environics, India; training on OHS in Nepal. Developing and implementing training, performing asbestos sampling	3 000
Various	DWOI: Technical Projects and Training Block Grant	5 000
Various	Belgian Centre for Occupational Hygiene: training video of air sampling process for sampling silica during brick production in developing countries	1 500
Vietnam	Centre for Development and Integration (CDI)	5 000
	OHS capacity building on chemical hazards in the electronics industry	
Nepal	WHWH: establishing a Centre for Environmental and Occupational Health (related to Brick Kiln) at Kathmandu University	2 500
Mexico	Training and workshops (under the leadership of US Maquiladora Health and Safety Support Network)	3 000
	Total	20 000
2019		
Various	DWOI: 2019–2020 Technical Project and Training Workshop Block Grant Request	5 000
Various	DWOI: Block Grant Request for three proposals	3 258
Bangladesh	Maquiladora Health and Safety Support Network OHS Initiative for Workers and Community, Dhaka	5 000
Various	Training video of air sampling process for sampling silica during brick production in developing countries	2 242
Nepal	Establishment of the Centre for Environmental and Occupational Health	4 500
	Total	20 000

Continued on page 98

Continued from page 97

Year/Country	Project title	Amount (USD)
2020		
Cameroon	Air monitoring of safer artisanal mining practices, eastern Cameroon	4 190
Various	DWOI Block Grant for 2021 Technical Projects and Training Workshops	7 500
India	Health and safety education to promote wellbeing at work for women informal workers	2 500
Various	Strengthening productivity and improving working conditions for small to mid-sized enterprises by applying OSH methods	2 535
Vietnam	Improving the ability to identify the OEH hazards of e-waste for employers and workers	2 535
Vietnam	One-day training workshop on OHS for the OSH officers working at healthcare facilities	500
Mozambique	Occupational risk assessment at Eduardo Mondlane University (UEM)	1 000
Peru	Peruvian Cooperation for Elimination of Silicosis	3 000
	Total	23 760
2021		
Various	DWOI Block Grant for 2022 Technical Projects and Training Workshops	5 050
Malaysia	In the new norm of COVID-19 pandemic: industrial hygiene practices guideline for Malaysian small and medium-sized enterprise workers	2 200
Various	Intervention of occupational injury through applying occupational safety practice in large-scale textile industries	2 000
Vietnam	Evaluation of airborne silica dust using video exposure monitoring (VEM) to pinpoint high exposure processes	4 000
Bangladesh	OHS initiative for workers and community	2 250
Guyana	Promoting occupational health and safety in artisanal and small-scale gold mining	2 000
Various	Capacity building and skills improvement training for African OSH and labour inspectors	1 500
Malaysia	Building capacity of an effective management of occupational health hazards in the plantation industry	3 500
India	Respiratory protection training for waste pickers	2 500
	Total	25 000
2022		
Philippines	A descriptive exploration on the OHS risks for Filipino jeepney drivers in the time of COVID-19 for the promotion of OHS committee and policy building	2 000
Bangladesh	A study on OSH practices in the stone crushing sector	2 000
Vietnam	Addressing the mental health impacts among healthcare workers during the COVID-19 pandemic	3 500
Cameroon	Air monitoring of safer artisanal mining practices, eastern Cameroon	644
Ethiopia	Ethiopia Initiative – OHS and industrial hygiene capacity building collaboration, WHWB-US Branch and Wolaita Sodo University	1 000
Malaysia	Evaluating occupational health for Malaysian army personnel working in a World War II-era warehouse	3 450
Tanzania	Introduction of safer mining practices to artisanal miners, southern Tanzania	2 500
Sri Lanka	Mitigating the COVID-19 pandemic in the apparel sector and empowering women/factory workers to face day-to-day challengers along with the Pandemic	1 100
Bangladesh	OHS initiative for workers and community, Dhaka	3 500
Vietnam	One-day training workshop on risk assessment, prevention, and control measures of COVID-19 infection in workplace settings	900
Kenya	Prevention of hearing damage from exposure to high noise	2 250
DRC	Risk assessment and occupational hazards prevention in artisanal mines: a training programme, Kolwezi	3 500
Uganda	Study of the impact of mercury use by artisanal gold miners	2 000
India	Study of the hazardous effects of silicosis among mineworkers and improving their quality of life while increasing their lifespan	2 500
Mongolia	Welding fume exposure assessment	3 480
	Total	34 324
2023		
Ghana	Informal sector: roadside mechanic shop activities	3 500
Kenya	OSH in the informal sector	3 500
Uganda	Status of chemical exposure among workers in textile industries: a case study of industries along the shores of Lake Victoria at Walukuba-Masese, Jinja	2 000
Uganda	Training farmers on the safe use of pesticides, central Uganda	3 500
Bangladesh	A study on OHS conditions of sanitation workers, Dhaka	3 226
Malaysia	OSH pocket book as a simple yet practical guide for small-medium enterprises	2 800
Uganda	Enhancement of protective workplace practices in small-scale mining	3 440
Tanzania	Prevention of respiratory health problems caused by welding fumes exposure	3 500
Vietnam	Conference support grant for hazardous substances in manufacturing and construction sectors	3 500
	Total	25 466
	Grand Total	148 550

DRC: Democratic Republic of the Congo, DWOI: Developing World Outreach Initiative, OEH: occupational and environmental health, OHS: occupational health and safety, OSH: occupational safety and health, WHWB: Workplace Health Without Borders, US: United States

Funding has been provided each year since 2018, with the full support of the AIHA Board. In 2022 and 2023, projects were supported with additional funding from Amazon, with donations of USD25 000 each year. Amazon has pledged an additional USD25 000 for the Microgrants Programme for 2024. Amazon employee, Jake Ward, is a valued volunteer member of the EEMAG.

PROJECT PROPOSAL SUBMISSION PROCESS

Educational and research project proposals can be submitted on the AIHA Emerging Economies Microgrant Group project proposal webpage portal (<https://www.aiha.org/get-involved/volunteer-groups/emerging-economy-micro-grants-program>) at any time throughout the year. Proposals are distributed to Advisory Group members for review, ranking, and decisions about funding and the amount, if approved.

Proposal selection criteria

The Advisory Group will review project proposals and recommend the allocation of funds, according to the following criteria. Higher scores are awarded to those projects that reflect these parameters.

1. *Organisation eligibility*: preference for projects led by non-profit entities, such as charities, and non-government, academic, and philanthropic organisations. Corporations and individuals are not excluded from applying, but the benefits to the project recipients should clearly outweigh the benefits to the individual or the company providing the services.
2. *Stand-alone project addressing primary prevention consistent with the AIHA's mission and strategic priorities*: project promotes occupational hygiene through education, research, training, and development.
3. *Development and promotion of the occupational and environmental health and safety (OEHS) profession*: project supports research and development efforts necessary to solve occupational health problems and improve working conditions/environment. Capacity building is evident through education, research, training, and outreach.
4. *Projects addressing known or potential worker health issues*: project demonstrates research on hazardous workplace exposures, outcomes, and emerging issues of control methods to minimise associated workplace risks. It may address any emerging or ongoing concerns related to occupational health and safety (OHS).
5. *Requested support does not exceed USD3 500 per project*: project can achieve its goals with a smaller overall budget, and still make significant impacts in regions of greatest need.
6. *Adequately describes needs to make project viable and successful*: project has a high likelihood of achieving its stated objectives within the required project timeframe (one year from funding).
7. *Sources of proposal support, technical assistance, and collaboration*: project describes how it may fit into a larger picture of regional or host country development through other support and organisations.
8. *Ability to improve public and environmental health, achieve results, feasibility, practicality*: whether through prior AIHA microgrant projects or other means, a project or sponsoring organisation can show past experience and success in goal-oriented projects.

AWARD NOTIFICATION, PROPOSAL PROJECT TRACKING, AND REPORTING

Once a determination regarding funding support is made by the Advisory Group, a letter is sent to the affected parties and monies are sent to the designated project manager. Stipulations are reiterated, upon award notification, that recipients are expected to provide quarterly reports regarding the status of their projects to the AIHA and the Advisory Group. Updates are to include documents such as written descriptions of activities completed to date, timelines, photographs of events or activities, and results of research activities. At the end of the project, a final report, summarising the activities and results of the project, must be provided. Copies of relevant videos,

photographs, or published reports should also be sent to the AIHA. These documents are then shared with the AIHA Board of Directors, microgrant sponsors, and the occupational hygiene community, to highlight successes of the programme in building worldwide occupational hygiene capacity at the grassroots level.

ADVANCEMENT AND DISSEMINATION OF KNOWLEDGE

In 2023, the EEMAG contributed to the AIHA's ability to explore, develop, and disseminate cutting-edge educational, technical, and career enrichment resources to advance the OEHS profession and professionals, by providing small-scale funding to several projects in emerging economy countries including Uganda, Bangladesh, Malaysia, Kenya, Tanzania, and Vietnam. Academic organisations and NGOs were, thus, enabled to purchase equipment, laboratory support, and other necessary materials to conduct meaningful and effective research on workplace hazards and exposures in developing nation workplaces. Results of these projects are disseminated in publications and at national and international conferences. Many EEMAG-funded projects are directly linked to training programme development and training provided to workers, managers, and regulatory agents. In parts of the world where occupational hazards are unknown and undocumented, the EEMAG programme provides an important platform for understanding occupational hazards, and for spreading awareness of the AIHA and its capabilities and resources.


INTEGRITY OF PROFESSIONAL PRACTICE

In 2023, the EEMAG Microgrant Programme solicited proposals and funded projects in Uganda, Bangladesh, Malaysia, Kenya, Tanzania, and Vietnam that facilitated the development of leading metrics, and best practices, for worker and community health and safety in those countries. The opportunity to expand research and training provides a rich opportunity to influence how workers, managers, educators, and society in general approach and view worker health and safety. Building the integrity of occupational hygiene practice is perhaps the most important benefit of the EEMAG grants.

ADVOCACY

In 2023, the EEMAG added to the AIHA's ability to influence the actions of the public and organisations to advance worker and community health and safety, by actively advocating OHS in regions of the world where it is in short supply. In developed countries, there are many well-educated and experienced industrial hygienists using modern technologies to evaluate and control hazardous exposures and conditions. But, in many parts of the world, millions of workers are not protected from workplace hazards. The EEMAG's 2023 promotion of the Microgrant Programme to facilitate small research projects and training programmes in Uganda, Bangladesh, Malaysia, Kenya, Tanzania, and Vietnam, using and developing local professionals, will help to address this problem. Beginning with small projects and training programmes, the AIHA can make a huge impact through outreach to dozens of nations and workers in need around the world.

CONCLUSION

Microgrants have been shown to be an effective and efficient means of allocating funds for humanitarian projects in developing regions of the globe. By allocating smaller packages of funds, broadly and transparently, distribution is equitable and impacts a larger number of workers. Microgrant benefits are maximised through the use of volunteers to oversee project proposal reviews, funding, and tracking of project completion. The AIHA Emerging Economies Microgrant Advisory Group has been successful in its implementing of this model. The AIHA, by creating an ongoing project proposal and acceptance review and funding process, has made a positive impact in the lives of thousands of workers in numerous developing regions of the world. 

SASOM report on the ICOH2024 Congress and the Scientific Committee for Biohazards and Occupational Health

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Prof. Mary Ross is an Honorary Life Member of SASOM and MMPA

BACKGROUND

This report covers aspects of the 2024 Congress of the International Commission for Occupational Health (ICOH2024) held in Marrakesh, Morocco from 28 April to 3 May 2024. The main focus for the authors was on the newly created ICOH Scientific Committee for Biohazards and Occupational Health (SCBOH), for which they were Chair (Prof. Mary Ross) and Secretary (Prof. Tanusha Singh) from the inception in 2022 until ICOH2024.¹ Nine of the 17 members of the SCBOH attended the congress, providing an opportunity for personal interaction and group discussion at the sessions organised by the authors (Special, Free paper and Poster sessions) and the first SCBOH Business Meeting.

Following the previous congress, ICOH2022, which was affected by the coronavirus disease 2019 (COVID-19) pandemic, ICOH2024 continued to have an emphasis on COVID-19 in a number of different scientific committees and presentations, particularly the long-term effects on physical and mental health. The COVID-19 pandemic is particularly relevant to the SCBOH since its far-reaching health, economic, and social effects in the workplace underly recognition by ICOH of the need to transition from the Working Group on Occupational Infectious Agents (WGOIA) to the SCBOH. The in-person congress afforded the opportunity not only for attendance at the organised sessions, but also for personal interactions on particular areas of interest applicable to occupational health.

SCBOH SPECIAL SESSION, FREE PAPER SESSION AND POSTER SESSION

The congress served as a pivotal platform for the SCBOH to unite experts, researchers, and practitioners from around the world to delve into the latest trends, challenges, and advancements in biohazards and occupational health. The diverse array of topics discussed across the special session, free sessions, and poster presentations highlighted the complex nature of biohazards and the multifaceted strategies needed to tackle them effectively. With 22 presenters hailing from 11 countries, including Argentina, Belgium, Brazil, Denmark, France, Germany, Italy, Japan, Pakistan, South Africa, Taiwan, and Tunisia, the congress truly encapsulated a global perspective. The special session, "Emerging and Continuing Biohazards in the Workplace", chaired by Prof. Mary Ross from South Africa, provided a deep dive into the ever-evolving landscape of occupational biohazards. She stressed the imperative of addressing

workplace biohazards and implementing robust risk management strategies. The presentations within the special session offered valuable historical insights and illuminated current challenges, especially amid the COVID-19 pandemic. Prof. Ross highlighted the necessity of global and national commitment to tackle emerging biohazard threats. Prof. Stefano Porru delved into pertinent queries about COVID-19 and its ramifications on occupational health, drawing from the extensive data of the European ORCHESTRA study. The significance of vaccination and risk assessment in safeguarding health workers was underscored. Prof. Albert Nienhaus shed light



Front row, L–R: Prof. Albert Nienhaus, Ms Claudina Nogueira (non-member), Dr Bill Buchta; Middle row L–R: Dr Itumeleng Ntatamala, Dr Marcella Mauro, Prof. Tanusha Singh; Back row L–R: Prof. Toru Yoshikawa, Ms Dikeledi Mutaka (non-member), Prof. Stefano Porru, Prof. Mary Ross

Photograph: courtesy of Tanusha Singh

on the occupational health risks encountered by hairdressers during the Pandemic, emphasising the pivotal role of effective workplace regulations. Prof. Singh presented findings from a compelling case series, exploring mould exposure across diverse occupational settings and highlighting the importance of preventive measures.

The free sessions explored a myriad of research topics, including rubella immunity among the working generation; the role of anti-S IgG against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during the Omicron variant wave among healthcare workers; influenza vaccination among workers during the COVID-19 pandemic; surface disinfection against ESKAPE organisms; latent tuberculosis infection among healthcare students in a low-incidence country; long COVID-19 syndrome; bioaerosol exposure among recycling workers; and the risk of sexually transmitted infections among hotel workers. Presenters from various corners of the globe shared their insights, enriching our understanding of occupational health challenges and interventions.

The poster presentations showcased an array of research endeavours, spanning chikungunya disease, histoplasmosis to hepatitis B vaccinations, SARS-CoV-2 infection, drug-resistant bacteria, immune responses to vaccination, COVID-19 vaccine acceptance, and the antimicrobial effects of automobile screen washer on *Legionella pneumophila*. These diverse studies encapsulated the breadth of occupational health research on a global scale.

SCIENTIFIC COMMITTEE FOR BIOHAZARDS AND OCCUPATIONAL HEALTH BUSINESS MEETING

The SCBOH Business Meeting agenda and the triennium report to ICOH were circulated to members prior to ICOH2024. The meeting was attended by eight members, the ICOH Vice President for Scientific Committees, and four visitors, two of whom expressed an interest in joining the SCBOH. The scope, covering both infectious and non-infectious biohazards, and the strategy of the SCBOH were discussed as an introduction to the achievements of the SCBOH and its predecessor, the WGOIA, since ICOH2022. Contributions towards the goal of increasing awareness about biohazards in the workplace included input to the International Labour Organization (ILO) Biohazards Guide adopted by the ILO in November 2022.²

COVID-19 contributed to the increased attention to biohazards at work, resulting in great interest in a potential focus of the SCBOH on research into post-Pandemic health and safety measures in workplaces. Research on post-COVID-19 was proposed, particularly across various non-healthcare occupational settings as studies have mainly covered health workers.³ This started a discussion on how the SCBOH should set priorities in view of the scope covering infectious and non-infectious biohazards in diverse workplaces. The well-established One Health approach offers an ideal strategy to identify both types of biohazards and relevant preventive measures to complement research on the diseases. The interaction between public health and occupational health is another dimension for the SCBOH to consider, for issues such as pandemic preparedness and workplace immunisation.

After serving as Chair of the WGOIA for four triennia and the SCBOH for its first triennium, Prof. Ross handed the Chair to Prof. Albert Nienhaus, an occupational physician and epidemiologist from Germany, who works at the University Clinics of Hamburg-Eppendorf (UKE) and the compensation board for healthcare workers. He will be supported by Prof. Singh, who serves as Secretary. He outlined plans for the administration of the SCBOH, emphasising institutional support and strategies for increasing visibility. This includes

the SCBOH conducting a post-Pandemic survey of ICOH members on various aspects of surveillance, identification, mitigation, reporting, and compensation of occupational diseases from exposure to biohazards. Such research could be compared with the pre-Pandemic 2017 WGOIA survey and will complement the ILO's current activities. The ILO is exploring the adoption of an instrument or instruments to measure biological hazards in the working environment, following a questionnaire distributed to member states to ascertain what is already in place regarding occupational biohazards, and views on the scope and content of the possible future instrument or instruments.⁴

The SCBOH will follow relevant developments within the World Health Organization (WHO), particularly those related to pandemics and the workplace. During the COVID-19 pandemic, shortcomings in the implementation of the International Health Regulations (2005) (IHR), adopted after the severe acute respiratory syndrome (SARS) outbreak, had repercussions for public health and workers involved in cross-border work. The IHR were deemed inadequate for dealing with the global spread of pandemics and the WHO is reviewing amendments to them. In addition, WHO member countries are engaged in drafting a comprehensive pandemic accord to make sure that signatories are better prepared for future pandemics, and have access to the necessary means to prevent potential outbreaks.

Recently, the WHO released a report from a global technical collaboration between public health agencies, clarifying a consensus on terminology for transmission of pathogens through the air.⁵ This followed the initial confusion about SARS-CoV-2 transmission that hampered not only relevant COVID-19 public health preventive measures, but also in challenged employers, workers, and occupational health practitioners in workplaces. The confusing terms used interchangeably included: 'airborne', 'airborne transmission', and 'aerosol transmission', with 'aerosols' implying generally smaller particles and 'droplets' implying generally larger particles. New terminology is based on 'infectious respirable particles' (IRPs), which exist on a spectrum of sizes. The mode of transmission of IRPs through the air is by 'airborne transmission/inhalation' or 'direct deposition' on mucosal surfaces (mouth, nose or eyes), so entering the respiratory tract and potentially causing infection.

OTHER HIGHLIGHTS FROM ICOH2024 OF RELEVANCE FOR THE SCBOH

The Business Meeting of members of the Partnership for European Research in Occupational Safety and Health (PEROSH) welcomed the SCBOH Chair as a visitor. The attendees discussed joint research programmes of the consortium of 14 European research institutes in 13 countries, including a clearing house for systematic reviews and the impact of artificial intelligence (AI) systems. Also discussed were the ethics of sharing information, given the increasing scrutiny of data sharing and the protection of personal information, particularly between countries, and secondments of researchers among its members to stimulate the exchange of researchers between the PEROSH members. It would benefit the SCBOH to emulate the model of the PEROSH collaboration between members and national research teams investigating biohazards. Two of the completed PEROSH projects of interest to the SCBOH and the readers of *Occupational Health Southern Africa* are:

- **The biological working environment of waste collection workers**

This is a study of occupational exposure to microorganisms related to new waste sorting instructions and the associated reduced frequency rate of waste collection.

[PEROSH fact sheet waste workers exposure](#)

• OSH evidence – clearinghouse of systematic reviews 2009–2015

The aims of the project were to collect systematic reviews on occupational health topics and to exchange experiences on any aspect of systematic reviews. It resulted in training material for researchers on conducting occupational health systematic reviews, and an accessible database of the 27 reviews conducted. [OSH Evidence – Clearinghouse of Systematic Reviews 2009-2015 - PEROSH](#)

Another session of interest to the SCBOH was the presentation, by Halim Hamzaoui (Switzerland), on biological hazards, which offered a foundational exploration of the ramifications of biohazards in work settings and underscored the importance of preventive measures. He referred to the ILO’s technical guidelines on Biological Hazards in the Working Environment,² which emphasised the substantial contribution of the committee as three members contributed to the technical report that informed the development of this guideline.

The final fascinating and insightful plenary presentation at ICOH2024 was given by Prof. Malcolm Sim – ‘From Ramazzini to robots: the impact of new technologies on occupational health’. A brief history of the development of occupational health research, evidence, and quality of information led to interviews with robots on whether or not they would replace humans. The tantalising video clips left the audience apprehensive and uncertain of the conclusion! As AI is both an asset and a challenge to occupational health in the future, this was a fitting end to a very successful ICOH congress.

ACKNOWLEDGEMENTS

The authors wish to thank the South African Society of Occupational Medicine (SASOM) for funding TS and partially funding MR to attend ICOH2024, and ICOH for waiving the registration fee for TS for furthering the SCBOH and its future activities for ICOH. Thanks

also go to the Editor-in-Chief of *Occupational Health Southern Africa*, Prof. Gill Nelson, for assisting with the arrangements to attend the congress.

DECLARATION

The authors declare that they are Past Chair and Secretary (past and current) of the Scientific Committee for Biohazards and Occupational Health; all sources used in this report have been duly acknowledged, and there are no conflicts of interest.

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UPCOMING EVENTS



SOUTH AFRICA

SASOM Roadshow Session 1 - Occupational medicine as a peer-based discipline

Hybrid, Gqeberha

3 July 2024

Website: <https://www.occhealth.co.za/pdf/events/SASOM%20Roadshow%20Circulation.pdf>

INTERNATIONAL

OEESC 2024

Hyatt Regency Dulles, Herndon VA

23-25 September 2024

Website: <https://www.aiha.org/our-events/oeesc/oeesc-about-us>

Go to

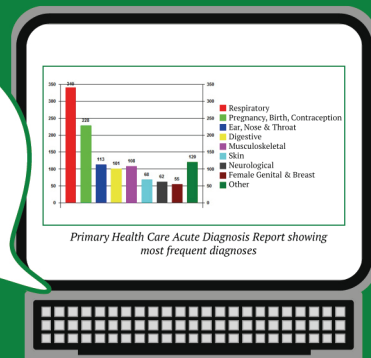
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34th International Congress on Occupational Health (ICOH2024): the Marrakesh Express arrives at its final destination

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Marrakesh meander: a never-to-be-forgotten experience

The essence of Marrakesh – the ‘Ochre City, in Morocco’ – is a blend of vibrant colours, bustling souks (markets), rich history, and diverse cultures. It is a city where ancient traditions meet modern influences, creating a unique tapestry of experiences for leisure and business travellers alike.

One of the defining features of Marrakesh is its medina – a maze-like ancient city filled with narrow alleyways, humming bazaars, and treasure troves of hidden gems, waiting to be discovered. The sounds of hawkers, the aroma of spices, and the dazzling colours of textiles create a sensory overload that is both exhilarating and enchanting. The Jemaa el-Fnaa square in the heart of the medina is a UNESCO World Heritage site. By day, it is filled with colourful stalls selling everything under the sun (literally). By night, it transforms into a lively open-air spectacle, with storytellers, musicians, snake charmers, and food vendors creating an electric atmosphere. From artisan workshops and souks to hammams (traditional Moroccan bath houses) and centuries-old riads (traditional Moroccan homes or guesthouses built around a central courtyard or garden), the medina is a feast for the senses at every turn.

The architecture of Marrakesh is another key aspect of its essence. From the intricate tilework of the Ben Youssef Madrasa and the grandeur of the Bahia Palace, to the historic landmarks of the Koutoubia Mosque – the largest and most iconic in the city – and the Saadian Tombs dating back to the 16th century, the city’s buildings are a testament to its rich past and cultural heritage.

Marrakesh cuisine is as diverse and appetising as the city itself – a tantalising fusion of flavours, drawing influence from Berber, Arab, Moorish, and Andalusian culinary traditions. The iconic tagine (a slow-cooked stew of meat and vegetables), couscous (steamed semolina grain), pastilla (sweet-savoury pastry), mechoui (succulent, slow-roasted lamb), and harira (a hearty soup) entice the taste buds, whether you are sampling street food in the souks and cafés or dining in a riad or a fine restaurant. No meal in Marrakesh is complete without a glass of traditional mint tea. Made with green tea, fresh mint leaves, and a generous amount of sugar, this sweet and refreshing beverage is a staple of Moroccan hospitality and is enjoyed throughout the day; there is an art and science to pouring and serving the mint tea!

Peaceful oases like the Majorelle Garden – a haven of exotic plants, serene ponds, and vibrant blue buildings, all set against the backdrop of the Atlas Mountains, and the Menara Garden, dating back to the 12th century and originally used as an orchard and olive grove by the rulers of Marrakesh – provide escapes from the hustle and bustle of the medina, and opportunities to soak up the tranquillity of nature.

However, the true essence of Marrakesh lies in its people. The warmth and hospitality of the locals, known as ‘Marrakchis’, are legendary. Whether you’re sipping mint tea in a riad or bargaining for handmade crafts and jewellery in the souks, you’ll find yourself welcomed with open arms and treated like family.



The Marrakesh medina – In the labyrinthian ancient part of the city, the clamour of vendors, the fragrance of spices, and the vivid hues of fabrics combine to overwhelm the senses in a way that is thrilling and captivating

Photograph: Claudia Frost (South Africa)

Marrakesh is a vibrant blend of history, culture, and hospitality that captivates the senses and leaves a lasting impression on all who visit. A leisurely stroll or ride in a horse-drawn carriage through the winding streets and lively markets of the city, taking in the sights, sounds, and aromas that make Marrakesh so enchanting, was proof positive that the 'Ochre City' was the perfect venue to host the ICOH2024 Congress!



Moroccan craftsmanship in the heart of Marrakesh – Visiting the Bahia Palace is a popular tourist activity, offering a chance to admire its exquisite architecture, learn about Moroccan history, and experience the beauty of its gardens

Photograph: Claudia Frost (South Africa)

Introduction to the ICOH2024 Congress

ICOH2024 – the 34th International Congress on Occupational Health of the International Commission on Occupational Health (ICOH) – themed *Enhancing Occupational Health Research and Practices: Closing the Gaps!*, was held from 28 April to 3 May 2024, at the *Palais de Congrès* in Marrakesh, Morocco. ICOH is grateful to its scientific committees (SCs), working groups (WGs) and members for their valuable contributions and ongoing commitment and dedication to occupational health, which ensure the sustainability and continuity of the ICOH congress. The congress organisers (ICOH, supported by the Moroccan Organising and Scientific Committee members, the Moroccan Occupational Health Association (MOHA), the Faculty of Medicine and Pharmacy of the University Hassan II of Casablanca, and working in close collaboration with the professional congress organiser, 'We Mice You') endeavoured to reinstate the flavour of the traditional ICOH triennial congresses, in post-pandemic times, by returning to an in-presence format.

During the condensed past triennium (two years: 2022–2024) instead of three, as a direct result of the impact of the Pandemic and an extended previous triennium of four years (2018–2022) instead of three, the SCs, WGs and Board members of ICOH and the National Scientific Committee (Morocco) contributed extensively and enthusiastically to the development of the scientific content of the congress in various ways, e.g. by recommending plenary and semi-plenary speakers, sourcing presenters, organising 73 special sessions, and providing reviewers for the abstracts submitted to free paper session topics as oral or e-poster presentations.

Fast facts on the ICOH2024 Congress

- Approximately 1 300 participants (occupational health experts, researchers, practitioners, trainers, and educators)
- 93 countries from six continents
- Approximately 900 presentations delivered across all oral sessions
- Registration fee waivers granted to 99 presenters (ICOH members in good standing) from low- and middle-income countries (LMICs)

- One opening keynote address
- 10 plenary presentations
- 32 semi-plenary presentations
- Global Policy Forum – 'Strategies to improve occupational health and safety policies and implementation in low- and middle-income countries'
- 73 special sessions with close to 300 presentations
- 78 free paper sessions with 1 394 presentations (513 oral communications and 881 e-posters) across the 51 free paper session topics (see Tables 1 to 6)
- Scientific content – 350 hours across all sessions
- ICOH2024 was accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) for a maximum of 28 European CME credits (ECMEC®s)
- Accepted abstracts are in the process of being published as open access ICOH2024 Congress Proceedings in an online supplement of *Occupational Medicine*, one of the key international journals in its field and part of the Oxford Academic, Oxford University Press (OUP) platform, with an impact factor of 5.1
- 34 of the 66 applications received for the International Labour Organization (ILO) Master Fellowship in OSH Award (open to ICOH members from LMICs with a scientific contribution at the congress) met the basic requirements; 14 applicants submitted the additional requested documents to be admitted to the selection process. Two winners were identified:
 - Dr Anissa Thattil (India)
 - Dr Cheng Lim Yin (Malaysia)
- Eight winners in the student poster competition and two winners of the Moroccan best poster award (see Table 7)

ICOH2024 Congress special sessions

The congress organisers endeavoured to grant at least one special session to all SCs and WGs that submitted proposals. Preference was given to special sessions organised, collaboratively, by more than one SC and/or WG and/or other entity.

Several special sessions were organised and presented by external (non-ICOH) organisations, in some cases in collaboration with ICOH SCs, e.g. Barcelona Institute for Global Health (ISGlobal), Spain; Cochrane Thematic Group 'Work and Health and Social Security'; European Academy of Allergy and Clinical Immunology (EAACI) Taskforce on Work-related Asthma Questionnaires and Algorithms for Screening and Surveillance (WAQASS); European Association of Schools of Occupational Medicine (EASOM); European Union of Medical Specialists (UEMS); European Agency for Safety and Health at Work (EU-OSHA); French Society of Occupational Health; Global Network for Evidence Synthesis in OSH; Human Factors and Ergonomics Society (HFES); International Agency for Research on Cancer (IARC); International Association of Labour Inspection (IALI); International Centre for Rural Health, Milan, Italy; International Ergonomics Association (IEA); International Organization of Migration (IOM); International Social Security Association (ISSA) – Research and Construction Sections; ISO TC283 OHS Management Systems; Kuwait University; MEDICHEM; Migration Health and Development Research Initiative (MHADRI); Nordic Labour Inspections (Nordic Future of Work Group for OSH Practice); OSHAfrica; Partnership for European Research on Occupational Safety and Health (PEROSH); Workplace Health Without Borders (WHWB); Women in Informal Employment: Globalising and Organising (WIEGO); the ILO; and the World Health Organization (WHO).



Publish or perish – The special session on publishing research on workers' health brought together Editors-in-Chief of a sample of international journals. L-R: Won-Jun Choi, *ICOH Newsletter* (Republic of Korea); Seong-Kyu Kang, *Safety and Health at Work* (Republic of Korea); Hans Kromhout, *Occupational and Environmental Medicine* (The Netherlands); Gill Nelson, *Occupational Health Southern Africa* (South Africa); Ingrid Siversind Mehlum, *Scandinavian Journal of Work Environmental Health* (Finland); Paul Blanc, *Journal of Occupational Medicine and Toxicology* (USA); Alexis Descatha (France) and Jacqueline Moline (USA), *Archives of Occupational and Environmental Diseases*; and Hyoung-Ryoul Kim, Chair of the session and Associate Editor of *Safety and Health at Work* (Republic of Korea)

Photograph: courtesy of Prof. Seong-Kyu Kang (Republic of Korea)

One ICOH sustaining member and two affiliate members, respectively, organised/co-organised one special session each:

- Institution of Occupational Safety and Health (IOSH, UK) – 'Proactive approach to accident prevention through risk management', in collaboration with the ICOH SC on Accident Prevention. The session explored the risks associated with vulnerable and high-risk sectors, e.g. high-risk industries such as oil and gas, as well as small- and medium-sized enterprises, and provided insights into how injury and disease prevention, and safe and healthy work for all, can be achieved.
- Colombian Society of Occupational Medicine – 'Psychosocial risks and mental health promotion in Colombia', which included the following presentations: i) futuristic vision: mental health in Colombia; ii) mental health management in companies: the importance and impact of health promotion strategies; and iii) impact and assessment of mental health issues/consequences as occupational diseases.
- Society of Occupational Medicine of the Province of Buenos Aires, Argentina (SMTBA) – 'Occupational health in Latin America: postgraduate student presentations'. The presentations, in Spanish, were on the following topics: i) factors associated with daytime sleepiness in public transportation drivers in Lima, Peru; ii) validation of the Computer Vision Syndrome Questionnaire (CVS-Q) instrument among administrative workers in Lima, Peru; iii) toluene

use and exposure and its implications for the visual health of restorers of works of art; and iv) potential nano-toxicological risks of carbon nanotubes in workers' health.

The special session 'How to publish your work on workers' health: insights from the Editors-in-Chief of several OSH journals', organised by the ICOH President, Prof. Seong-Kyu Kang, was very well attended. Scientists usually seek to publish their work in renowned international journals, primarily indexed in Web of Science (WoS) or Scopus. However, young scientists often face challenges in publishing their manuscripts due to a lack of submission strategy, despite the adequate quality of their work. In this session, Editors-in-Chief of major OSH journals provided insights into the status of their journals and offered strategies for successful submission. The seven OSH journals represented in this session, and their respective Editors-in-Chief (or their representatives), were: *Journal of Occupational Health*, Japan – Narufumi Suganuma; *Occupational and Environmental Medicine*, UK – Hans Kromhout; *Safety and Health at Work*, Republic of Korea – Seong-Kyu Kang; *Scandinavian Journal of Work Environmental Health*, Finland – Ingrid Sivesind Mehlum; *Archives of Occupational and Environmental Diseases*, France – Alexis Descatha; *Journal of Occupational Medicine and Toxicology*, USA – Paul Blanc; and *Occupational Health Southern Africa*, South Africa – Gill Nelson.

The National Scientific Committee and other Moroccan entities also contributed to the special session organisation, viz. the Association of Occupational Medicine and Ergonomics of the Northern Region of Morocco; the Association of Occupational Medicine of the Eastern Region of Morocco (AMETRO); the Interprofessional Group for Prevention and Industrial Safety (GIPSI); the Moroccan Federation of Insurance and Reinsurance Companies (FMSAR); Moroccan Society of Maritime Medicine (SMMM); and the Professional Association of Cement Manufacturers (APC).

The special session titled 'The organisation of Moroccan crafts and government policy in the artistic crafts sector', was delivered in French. The four presentations delved into common risks faced by artisans, such as exposure to toxic chemicals, and poor working conditions; explored how addressing these risks aligns with the UN's Sustainable Development Goals; tackled the issue of persistent child labour in the handicraft sector despite the ratification of international conventions; focused on the socio-economic and demographic characteristics of craft production; and discussed the organisation of Moroccan crafts and government policies in the artistic crafts sector.



From a region full of diversity, culture, traditions, and joy of life – Presenters, Chair and commentator of the Special Session 'Occupational health in Latin America: Postgraduate student presentations', delivered in Spanish. L-R: Jonh Astete Cornejo (session commentator) and Yessenia Huapaya (Peru); Graciela Molina, Claudio Taboadela (session organiser and Chair), and Santiago Aldaz (Argentina)

Photograph: courtesy of Dr Claudio Taboadela (Argentina)



The special sessions spanned a diverse range of topics, with some recurring themes across different sessions, such as vulnerable workers, OSH in LMICs, risk prevention, climate change; and the inclusion of various sectors and industries. Some examples of the special sessions are:

- Adverse human health and safety impacts of chemical use among small-scale miners, and their households and community, and interventions
- Bottlenecks and solutions in starting and progressing basic occupational health services
- Building global consensus for occupational health and safety management through ISO standardisation
- Building knowledge capacities for the future of work in the chemical industry
- Climate change and occupational safety and health
- Combating occupational heat stress: moving towards a global approach
- Core values at work: everyday tools for the workplace
- Effective delivery of occupational health services: promoting safety and health as a universal fundamental right at work
- Electronic waste (E-waste) and informal work in LMICs
- Emerging and continuing biohazards in the workplace
- Ergonomics and musculoskeletal disorders in health workers and healthcare settings
- Guidelines for emergency preparedness and management: learnings from situations like the 9/11 disaster and the COVID-19 pandemic
- IARC Monographs update: opportunities and challenges in occupational epidemiology and exposure characterisation
- New developments in pesticides: enhancing occupational health and safety
- Nordic and global collaborations for OSH impact: integrating 'Vision Zero', climate change, and non-communicable disease prevention to create safe, sustainable, and healthy workplaces for all
- Occupational and environmental medicine in Africa
- Occupational cancer: what are we missing?
- Occupational disease coverage system in Morocco and international market perspectives (session in French)
- Occupational health for indigenous and migrant workers: challenges and opportunities

Table 1. Geographical origin of ICOH2024 Congress free paper (oral and e-poster) presentations

Continent	No.
Africa	325
Asia	384
Europe	470
North America	113
Oceania	28
South America	74
Total	1 394

Table 2. Accepted oral and e-poster presentation abstracts by continent

Continent	No. oral abstracts	No. e-poster abstracts
Europe	194	276
Asia	119	265
Africa	105	220
North America	60	53
South America	20	54
Oceania	15	13
Total	513	881

- Occupational health in the automotive industry in Tangiers, Northern Morocco (session in French)
- Occupational health of the fisherman
- Occupational health training and education in LMICs: overcoming challenges and developing solutions
- Occupational safety and health and decent work
- Off-job experiences and wellbeing
- Prevention of exposure to radiation risks: current updates and implications for workers' health
- Road safety programme in the Moroccan cement industry (session in French)
- SDG 8 Decent Work: healthy workplaces for vulnerable workers
- Screening and surveillance for work-related asthma
- Shiftwork, health, and the individual: challenges and opportunities for research and prevention
- The future of work after the COVID-19 pandemic: ethical issues and proposed solutions
- The history of occupational health on the African continent
- The jigsaw of job insecurity
- 'Vision Zero' for promoting a culture of prevention in construction: role of leadership, stakeholders, and technology
- Women, health, and work in post-pandemic times

ICOH2024 free paper communications (orals and e-posters)

Details regarding geographical origin, the most popular topics for abstract submission, the 10 countries with the highest numbers of accepted abstracts, and the poster awards, are provided in Tables 1–7.

Since the ICOH2009 Congress in Cape Town, the student poster competition has been a main event at ICOH congresses. Free membership for the 2024–2027 triennium was awarded to all eight winners; monetary prizes were awarded to the top three winners (see Table 7).

Various ICOH SCs and WGs and other organisations used the congress as an opportunity to hold business meetings, and two 'meet and greet' sessions were held for 'old' and 'new' SC leadership (outgoing and incoming Chairs and/or Secretaries) and the ICOH National Secretaries. The non-profit international organisation, WHWB, held a meeting to discuss the proposal for the launch of an African branch of WHWB.

Table 3. Accepted oral presentation abstracts for the 11 most popular free paper sessions

Free paper session	No.
Occupational safety and health (OSH) in Morocco	34
Epidemiology in occupational health	34
Positive mental health, work engagement, and wellbeing	31
Occupational medicine	28
Occupational health for health workers	27
OSH in low- and middle-income countries (LMICs): sharing good practices	26
Women, health, and work	20
Education and training in occupational health	18
Psychosocial risks: regulation and policies from an international comparative perspective	14
Evidence-based prevention in occupational health	14
Occupational health in small-scale enterprises	14
Total	260

Table 4. Accepted oral presentation abstracts by the top 10 countries

Country	No.
Morocco	49
Italy	36
India	29
Canada	27
United States	27
Belgium	23
Germany	23
China	21
France	20
Sweden	16
Total	271

Table 5. Accepted e-poster presentation abstracts for the 10 most popular free paper sessions

Free paper session	No.
Occupational health for health workers	85
Epidemiology in occupational health	63
Occupational medicine	56
Occupational toxicology, human biomonitoring, and neurotoxicology	45
Positive mental health, work engagement, and wellbeing	44
Education and training in occupational health	38
Work-related musculoskeletal disorders: the new ways of working and prevention among informal workers	31
Shiftwork and working time	28
Evidence-based prevention in occupational health	28
Occupational safety and health (OSH) in Morocco	26
Total	444

Table 6. Accepted e-poster presentation abstracts by the top 10 countries

Country	No.
Tunisia	89
Morocco	67
India	53
Italy	51
Japan	50
Germany	31
China	30
Brazil	29
France	27
Belgium	26
Total	453

Table 7. Winners of poster competitions

Student winners	Name	Country	Title of poster
First	Adam Moskowitz	USA	Occupational injury from patient handling and workplace violence at residential disability and mental health facilities
Second	Shinhyeong Kim	Korea	The impact of long working hours (LWH) and the use of work-related communication devices outside regular working hours (WDOW) on computer vision syndrome (CVS) among workers intensively utilising visual display terminals (VDTs)
Third	Kian Kiong Yap	Malaysia	Predictors of noise-related hearing disorder among vector control workers in Kuala Lumpur
Runner-up	Marieme Tah	Tunisia	Work-related factors affecting life and job satisfaction among medical residents
Runner-up	Aicha Haddar	Tunisia	Assessment of radiological risk in the operating rooms of a university hospital in Sfax, Tunisia
Runner-up	Chayma Sridi	Tunisia	Extremely low frequency electro-magnetic fields and quality of sleep: a cross-sectional study in a power plant in Tunisia
Runner-up	Moustafa Sherif	UAE	Genotoxicity of occupational pesticide exposures among agricultural workers in Arab countries
Runner-up	Amanda Voss	Germany	Evaluation of secondary aspects of online teaching by medical students
Jaouad El Jaï	Nadia Manar	Morocco	Prevalence of respiratory symptoms, diseases and ventilatory disorders among dental technicians
Prize – best Moroccan poster	Imane Zerrad	Morocco	Child labour in Moroccan legislation: view of an occupational physician



'Empowering people to change their working conditions' – Workplace Health Without Borders (www.whwb.org) leadership, members, OSHAfrica representatives, and friends of occupational safety and health met at the ICOH2024 Congress to start discussing a proposal to launch an African branch of WHWB

Photograph: courtesy of Ehi Iden (Nigeria)

First ICOH General Assembly

The First ICOH General Assembly, held on Sunday 28 April 2024, was attended by ICOH members in good standing only; it comprised the following presentations and topics of discussion:

- Opening address – Prof. Seong-Kyu Kang, ICOH President
- Approval of the minutes of the previous General Assembly (ICOH2022 Rome-Melbourne Digital Congress, held virtually in February 2022)
- President's Report – Prof. Seong-Kyu Kang
- Report on ICOH Scientific Committees – Claudina Nogueira, ICOH Vice President
- Report on ICOH National Secretaries – Dr Martin Hogan, ICOH Vice President
- Secretary General's Report – Dr Diana Gagliardi
- The ICOH Triennium Report (2022–2024) – available on the ICOH website (<https://www.icohweb.org/site/news-detail.asp?id=254>)
- *ICOH Newsletter* – Prof. Won-Jun Choi, Editor-in-Chief of the *ICOH Newsletter*
- Auditor and Vice Auditor election
- Amendments to the ICOH Constitution
- Honorary ICOH membership was bestowed on Prof. Bonnie Rogers – Past ICOH Vice President (USA), and Prof. Toshiaki Higashi (Japan), in recognition of their distinguished contributions to global occupational health
- Venue for the ICOH2030 Congress – presentations by bid committees from the two candidate cities – Medellín (Colombia) and Rome (Italy) – and explanation of the voting procedure during the congress week

ICOH2024 Congress opening ceremony

The opening ceremony followed the First General Assembly. Ms Rim El Kholti (ICOH National Secretary for Morocco) was the master of ceremonies. Welcome addresses were delivered by two Presidents, viz. Prof. Abdeljalil El Kholti (ICOH2024 Congress President) and Prof. Seong-Kyu Kang (ICOH President). Congratulatory addresses were delivered by national authorities, United Nations agencies and sister organisations, represented by various invited dignitaries:

- Wafaa Asri – Secretary General of the Ministry of Economic Inclusion, Small Business, Employment and Skills, representing Younes Sekkouri – Minister of Economic Inclusion, Small Business, Employment and Skills, Rabat, Morocco
- Fanfan Rwanyindo Kayirangwa – Regional Director for Africa and Assistant Director General, ILO
- Maria Neira – Director, Department of Public Health and Environment, WHO, representing Tedros Adhanom Ghebreyesus, Director General, WHO
- Karim Cheikh – President of the General Confederation of Enterprises of Morocco (CGEM), Human Capital Commission
- Ana Ercoreca de la Cruz – Secretary General, IALI
- Samantha Connell – President, International Occupational Hygiene Association (IOHA)

The opening keynote address was delivered by Dr Elisabete Weiderpass, Director of the IARC in Lyon, France, who presented a paper on global cancer burden due to occupational exposures.

Dr Diana Gagliardi, ICOH Secretary General, introduced Dr Marilyn Fingerhut (USA), who was honoured with the ICOH Lifetime Achievement Award in recognition of her longstanding commitment, dedication, and support to the ICOH community, and invaluable contribution to global occupational health. Dr Fingerhut, an ICOH member for more than two decades,

participated remotely in the ceremony and expressed her thanks to the audience, which responded with a standing ovation. Dr Fingerhut, PhD and a molecular biologist by qualification, is retired from the National Institute for Occupational Safety and Health (NIOSH, USA), where she worked for 25 years. She also worked for NIOSH at the WHO in Geneva, Switzerland. She served as an ICOH Board member for two triennia (2009–2015) and as ICOH vice president for two non-consecutive triennia (2006–2009 and 2015–2018). She contributed to the ICOH leadership, organising several congresses, and assisted in the founding of the SCs on Women, Health and Work (SC WHW) and Mining Occupational Safety and Health (SC MinOSH).



Dr Marilyn Fingerhut

Photograph: courtesy of ICOH

The welcome cocktail followed the opening ceremony, and was held in the pool area of the Mövenpick Hotel Mansour Eddahbi, a haven of lush greenery, tranquillity, and luxury, located adjacent to the *Palais de Congrès*. It was an animated event of Moroccan hospitality, sumptuous cuisine, and world music, very conducive to socialising under the Marrakesh evening sky. Friends and colleagues in occupational health from across the globe were offered the perfect opportunity to meet again, face-to-face, and to catch up after the long hiatus brought about by the global Pandemic.

ICOH2024 Congress Global Policy Forum

The Global Policy Forum, titled 'Strategies to improve occupational health and safety policies and implementation in low- and middle-income countries', a highlight of the congress, was held on Tuesday, 30 April 2024. The main focus of the forum was the practical implementation of research findings to improve workers' health, in the era of globalisation. The forum also explored the lessons learned from high-income countries and the realities facing LMICs, with the main aim of formulating strategies for priority actions and programmes that can help to create a more harmonised world of work in the future. The forum addressed pressing occupational

risk issues on each continent, particularly in LMICs, the current status of practices for managing these risks, and gaps between research and practice.

Leading experts in the fields of research and practice in occupational health from international and national policy-making organisations, public institutes, and professional associations were invited to engage in interactive discussions with congress participants. Speakers were selected with the aim of achieving representation from different regions of the world, including the host country, and professional organisations from various disciplines.

The moderator was Prof. Seong-Kyu Kang (ICOH President), Gachon University Gil Medical Center, Incheon, Republic of Korea. The invited panel participants, representing various sectors, were as follows:

- International organisations
 - WHO – Dr Tedros Adhanom Ghebreyesus, Director General (video recorded message), Geneva, Switzerland
 - WHO – Dr Ivan Ivanov, Cross-cutting Lead, Occupational and Workplace Health, ECH Directors' Office, HQ/HEP/ECH, Geneva, Switzerland
 - ILO – Joaquim Pintado Nunes, Chief of Labour Administration, Labour Inspection and Occupational Safety and Health, Geneva, Switzerland
- Enforcement authority
 - Africa – Younes Sekkouri, Minister of Economic Inclusion, Small Business, Employment and Skills, Rabat, Morocco
- Regional organisation
 - Europe – William Cockburn, Executive Director, EU-OSHA, Bilbao, Spain
- Research
 - North America – Dr Lyne Sauvageau, President and CEO, Robert-Sauvé Research Institute on Health and Safety at Work (IRSST – *Institut de Recherche Robert-Sauvé en Santé et en Sécurité du Travail*), Montreal, Canada
- Academia
 - South America – Prof. Marcia Bandini, Latin American Association of Occupational Health (ALSO – *Asociación Latinoamericana de Salud Ocupacional*), University of Campinas, São Paulo, Brazil
- Practice
 - Asia – Teresita S Cucueco, Consultant, Philippines College of Occupational Medicine (PCOM), Former Executive Director, Occupational Safety and Health Centre, Department of Labour and Employment (DOLE-OSHC), Manilla, Philippines

The deliberations arising from the forum and the scientific programme throughout the congress week served as the foundation for the 'Marrakesh Declaration on Occupational Health', which was adopted by the ICOH2024 Congress on 3 May 2024. The Declaration expresses the commitment of ICOH to take action for the development of occupational health, wellbeing, work ability, and decent work and life for all workers of the world, in collaboration with other relevant international actors. More specifically, ICOH calls for support from the ILO and WHO, through: (i) the revitalisation of the Joint ILO/WHO Committee on Occupational Health, (ii) a request from the ILO to its member states to ratify the ILO Convention 161, and (iii) a request for the WHO to revitalise and expand its global and regional networks of Collaborating Centres in Occupational Health. The Declaration was signed by Prof. Abdeljalil El Kholti, ICOH2024 Congress President, and Prof. Seong-Kyu Kang, ICOH President, and has been published in *Safety and Health at Work* (<https://doi.org/10.1016/j.shaw.2024.05.006>).



The dotted line uniting two Presidents – ICOH President, Prof. Seong-Kyu Kang (left) and ICOH2024 Congress President, Prof. Abdeljalil El Kholti, sign the 'Marrakesh Declaration on Occupational Health'

Photograph: courtesy of ICOH

During the congress, three international organisations in occupational health – the ICOH, International Ergonomics Association (IEA), and IOHA – renewed their Memorandum of Understanding (MoU) for ongoing closer collaboration.



United we stand (and sit) – Signing of the MoU between the ICOH, IOHA and IEA. Standing, L–R: ICOH Vice Presidents Martin Hogan (Ireland) and Claudina Nogueira (South Africa); Diana Gagliardi, ICOH Secretary General (Italy); Paulo António Barros Oliveira (Brazilian Ergonomics Association); Frida Marina Fischer, ICOH Board member (Brazil). Seated, L–R: Samantha Connell, IOHA President (Switzerland); Seong-Kyu Kang, ICOH President (Republic of Korea); José Orlando Gomes, IEA President (Brazil)

Photograph: courtesy of Prof. Frida Marina Fischer (Brazil)



ICOH2024 Congress plenary and semi-plenary presentations

The following plenary and semi-plenary presentations were delivered from 29 April to 3 May 2024 (in alphabetical order of presenter surnames):

Plenary presentations

- Nicola Cherry (Canada) – Department of Public Health, University of Alberta: ‘Occupational health epidemiology in the face of disasters’
- Titilola Hameed (Nigeria) – Legal Professor, Nigerian Law School: ‘Occupational safety and health: probing the legislative affairs within the African continent’
- Bobby Joseph (India) – Head, Department of Community Health, St. John’s Medical College, Bangalore: ‘Development of occupational health services in a medical college setting in India: looking back over 25 years to inform the future’
- Maria Neira (Spain) – Director, Department of Public Health and Environment, WHO, Geneva, Switzerland: ‘Healthy, safe, and resilient workplaces for all’
- Stéphane Pimbert (France) – General Director, French National Institute for Research and Safety (INRS): ‘Occupational health and public policies’
- Kathy A Seabrook (USA) – CEO, Global Solutions, Inc.: ‘Connecting the dots: the value of people at work and their health, safety and wellbeing’
- João Silvestre Silva-Junior (Brazil) – Professor, University of São Paulo Medical School and São Camilo University Centre: ‘Mental health of frontline healthcare workers during the COVID-19 pandemic’
- Malcolm Sim (Australia) – Professor Emeritus, School of Public Health and Preventive Medicine, Monash University, Melbourne: ‘From Ramazzini to robots: the impact of new technologies on occupational health’
- Loubna Tahri (Morocco) – Assistant Professor, Faculty of Medicine and Pharmacy, Hassan II University of Casablanca: ‘Most wanted OSH actions in Morocco: current state, lessons learned and the way forward’
- Ken Takahashi (Japan) – Professor Emeritus, Advisor for International Centre, University of Occupational and Environmental Health: ‘Global spread of asbestos-related diseases: still seriously under-recognised’

Semi-plenary presentations

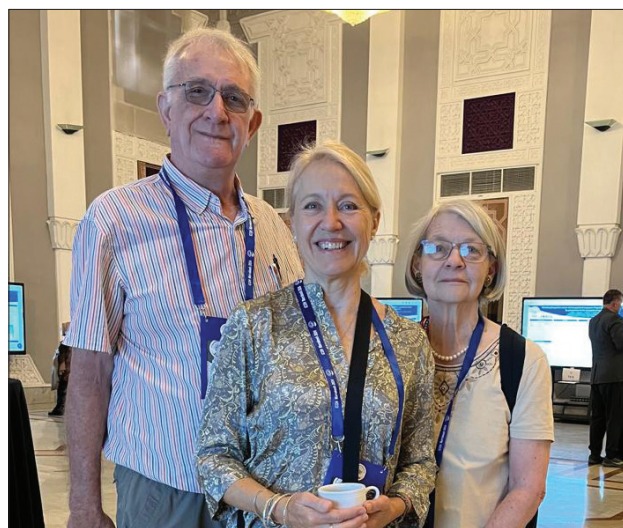
- Ken Addley (Ireland) – ‘Health inequality in work: advocating for occupational health in Ireland’
- Salima Admi (Morocco) – ‘Impact of international regulatory standards in the implementation of public occupational safety and health policies’
- Houssine Azeddoug (Morocco) – ‘Leading innovation for excellence in occupational health in Moroccan universities on the eve of major world-class projects’
- Ana Bakic (Montenegro) – ‘Heavy physical work and fatigue in healthcare workers’
- Thuthula Balfour (South Africa) – ‘Prevention culture in the mining industry: a female perspective from the African region’
- Amy Behrman (USA) – ‘Vaccine recommendations, and mandates for adults and specific worker populations’
- Mohammed Ali Benmakhlof (Morocco) – ‘Ethical issues of global health’

- Jorge Morales Camino (Mexico) – ‘Long COVID impact on workers and its monitoring in occupational health’
- Jiabin Chen (People’s Republic of China) – ‘Post-pandemic occupational health services in Guangdong Province, China’
- San Daniel Choi (USA) – ‘Prevention through design (PTD) and research to practice to research (RTPTR) in the ageing US construction workforce: bridging the gap between academia and practitioners’
- Cecilia Colautti (Argentina) – ‘Risks and challenges in the ferro-port work of the General Ports Administration (AGP), Port of Buenos Aires, Argentina’
- Martin Cottam (UK) – ‘Building global consensus for occupational health and safety management through ISO standardisation’
- Andrew Curran (UK) – ‘Transmission of SARS-CoV-2: findings from a national core study’
- Tiaan de Jager (South Africa) – ‘Endocrine disrupting chemicals: impact on the environment and human health’
- Marie-Agnès Denis (France) – ‘Mental health and occupational health’
- Alexis Descatha (France) – ‘Job exposure matrices: past, present, and future’
- Jorge Barroso Dias (Portugal) – ‘Promoting longevity by means of ‘ATOS’ – alcohol, tobacco, obesity, and sleep: measuring, intervening, and controlling major risk factors in the workplace’
- Marie Diallo (Senegal) – ‘The culture of workplace improvement in Senegal: the social security strategies’
- Maria Claudia Borda Gallon (Colombia) – ‘Lifestyle medicine as a strategy for health and productivity in the workplace’
- Fabriziomaria Gobba (Italy) – ‘Occupational health surveillance of workers exposed to non-ionizing radiation: lessons learned and new challenges’
- Halim Hamzaoui (Switzerland) – ‘Biological hazards’
- Chakib El Houssine Laraoui Hossini (Morocco) – ‘Occupational health and safety of coastal fishermen: a gap to fill in developing countries’
- Jan Hoving (The Netherlands) – ‘Development and validation of a core outcome set for work participation’
- Louis Laurent (France) – ‘Research and occupational health’
- Koji Mori (Japan) – ‘Development, success factors and challenges of health and productivity management initiatives in Japan’
- Suvarna Moti (India) – ‘Basic occupational health services: challenges and opportunities for universal occupational healthcare’
- Ade Mutiara (Indonesia) – ‘Digitalisation in occupational health programmes: the new challenges’
- Dorothy Ngajilo (Tanzania) – ‘Caring for those who care: safeguarding health, safety and wellbeing of health workers’
- Noriko Nishikido (Japan) – ‘Support for balancing medical treatment and work in small- and medium-sized enterprises: the role and function of occupational health nurses’
- Diane Rohlman (USA) – ‘Health effects of organophosphorus pesticides on children working in the agricultural industry’
- Evgeny Shigan (Russian Federation) – ‘Modern requirements for occupational physician professional competencies’
- Jin-Ha Yoon (Republic of Korea) – ‘Platform workers: social inequity in occupational safety and health’

ICOH2024 Congress gala dinner

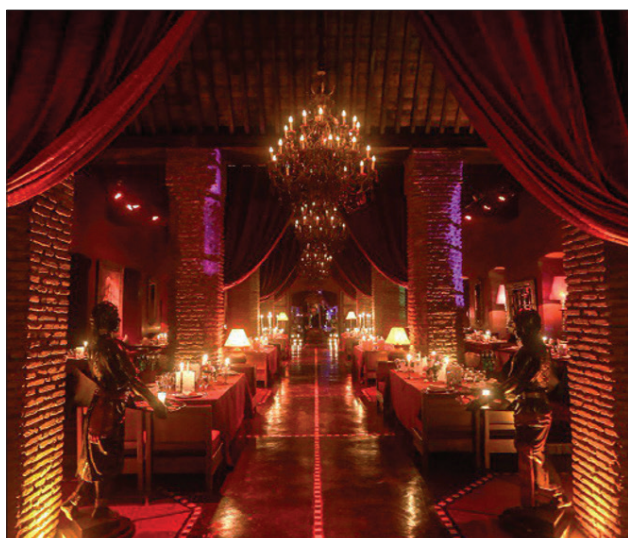
The congress gala dinner was held on Thursday 2 May 2024, at the *Palais Dar Soukkar* (‘Sugar Palace’, in Arabic), a stunning historic mansion located in the heart of Marrakech, renowned for its intricate and

elegant design, and rich history. Built during the late 19th century by a wealthy Moroccan family as a residence, one of its most notable features is its Moorish architecture, characterised by elaborate tilework, ornate plaster carvings, and intricately carved wooden ceilings. The interior is adorned with colourful mosaics, marble columns, and luxurious furnishings, showcasing the craftsmanship and artistic flair of Moroccan artisans. In 2004, the *Palais* was renovated into a boutique hotel, to host prestigious private events such as the Marrakesh International Film Festival, the *Marrakesh Du Rire* (comedy festival), and the Dior evenings. In 2016, *Dar Soukkar* launched its charming and unmissable dinner and entertainment show to the wider global community. Diners were treated to an unforgettable night – unique ambience, delectable cuisine (a fusion of Moroccan, Asian and Mediterranean flavours and culinary traditions), and spectacular entertainment (musicians, fire eaters, dancers... in essence, cultural magicians!). The *Palais Dar Soukkar* stands as a testament to Morocco's rich architectural heritage and serves as a captivating destination for travellers seeking to immerse themselves in the beauty, splendour, and tradition of Marrakesh. The décor is exquisite and authentic, the dimmed lights and lanterns create the illusion of a mystical arch, the water features are illuminated, and the gardens are lush – well worth a return visit!



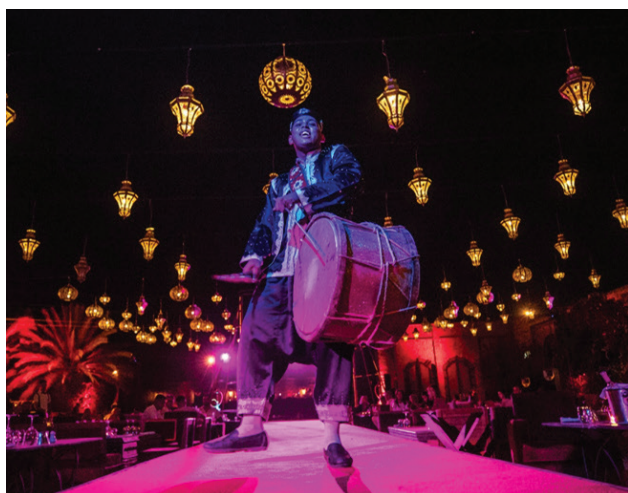
Occupational health doyens from the South – L–R: Profs Daan Kocks (SASOM Chair and ICOH National Secretary for South Africa, 2018–2024), Gill Nelson (OHS Editor-in-Chief and University of the Witwatersrand) and Mary Ross (Chair: SC on Biohazards and Occupational Health, 2022–2024 and University of the Witwatersrand) flew the South African flag high at the ICOH2024 Congress

Photograph: courtesy of Prof. Gill Nelson (South Africa)



The gala dinner was held in the sumptuous *Palais Dar Soukkar*

Source of graphics: <https://www.darsoukkar.com/>



Entertainers at the gala dinner

Source of graphics: <https://www.darsoukkar.com/>

ICOH2024 Congress closing ceremony

The closing ceremony was held on Friday 3 May 2024. The Congress President, Prof. Abdeljalil El Kholti, presented overall highlights and a short report on the congress. The ICOH President, Prof. Seong-Kyu Kang, presented highlights and take-home messages from the Global Policy Forum. This was followed by a summary of the scientific programme and statistics for free paper and special sessions, presented by the two congress scientific co-chairs: Prof. Kamal Wifaq (Chair of the National Scientific Committee and University Hassan II of Casablanca, Morocco) and Claudina Nogueira (ICOH Vice President for SCs and Chair of the International Scientific Advisory Committee, and SASOM ExCo member, South Africa). The awards for the winners of the student poster competition, the ILO Master Fellowships in OSH, and the best poster presentation by a Moroccan delegate (the Jaouad El Jaï Prize) were announced by Claudina Nogueira, Dr Diana Gagliardi, and Prof. Kamal Wifaq, respectively.

The ICOH flag was passed from Prof. Abdeljalil El Kholti, President of the Congress, to the Organising Committee members of the ICOH2027 Congress, themed *Occupational Health – Growth and Sustainability in Changing Times*, to be held in Mumbai, India, 14–19 February 2027. The handover of the flag followed video presentations about the next congress, and highlights of ICOH2024. The congress was declared officially closed by the ICOH President, Prof. Seong-Kyu Kang, after his vote of thanks to all individuals and teams involved, especially the participants, in making the ICOH2024 Congress a resounding success.

Second ICOH General Assembly

The closing ceremony was followed by the Second ICOH General Assembly, which was attended by ICOH members in good standing only; it included the following presentations and events:

- Opening address – Prof. Seong-Kyu Kang, ICOH President
- Farewell to ICOH Officers and Board members of the previous triennium 2022–2024, and respective service awards – Dr Diana Gagliardi, ICOH Secretary General



Reunited for the last time – ICOH Officers and Board members of the 2022–2024 triennium. Standing, L–R: Akizumi Tsutsumi (Japan), Sandeep Sharma (India), Maureen Dollard (Australia), Alexis Descatha (France), Riitta Sauni (Finland), Olivier Lo (Singapore), Stavroula Leka (UK), Sergio Iavicoli (Italy), Dingani Moyo (Zimbabwe), Shyam Pingle (India), Paul Schulte (USA). Seated, L–R: Jukka Takala (Finland), Claudina Nogueira (South Africa), Seong-Kyu Kang (Republic of Korea), Diana Gagliardi (Italy), Martin Hogan (Ireland), Frida Marina Fischer (Brazil)

Photograph: courtesy of ICOH

- Report from the scrutineers’ committee of the elections of the ICOH Officers and Board members for the new triennium (2024–2027)
 - Dr Jorge Camino Morales, President of the ICOH2012 Congress, Cancún, Mexico
- Results of the elections of ICOH Officers and Board members for the new triennium (2024–2027)
 - ICOH Officers:
 - President – Prof. Seong-Kyu Kang (Republic of Korea)
 - Secretary General – Dr Diana Gagliardi (Italy)
 - Vice President for Scientific Committees – Dr Martin Hogan (Ireland)
 - Vice President for National Secretaries – Dr Shyam Pingle (India)
 - Past President – Dr Jukka Takala (Finland)
 - ICOH Board members:
 - Naesinee Chaiear (Thailand), Alexis Descatha (France), Quentin Durand-Moreau (Canada), Rim El Kholti (Morocco), Stefan Esser (Germany), Dongmug Kang (Republic of Korea), Ashish Mishra (India), Aida Fajardo Montiel (Mexico), R Rajesh (India), Rosylane Rocha (Brazil), Riitta Sauni (Finland), Mahinda Seneviratne (Australia), Giovanna Spatari (Italy), Akizumi Tsutsumi (Japan), Kamal Wifaq (Morocco), and Charles Yarborough (USA)
 - President’s address and strategy for 2024–2027
 - Bid results of the vote for the venue of the ICOH2030 Congress: Congratulations to Rome, Italy, for winning the bid to host the ICOH Congress in 2030!



From traditional craftsmanship to modern marvel – The production of argan oil in Morocco is an art form that combines tradition, dedication, and innovation. From the painstaking labour carried out by Berber women to the incorporation of modern techniques, the result is a pure and exquisite oil that captures the essence of Moroccan heritage, and is highly prized in the cosmetics industry

Photograph: Claudia Frost (South Africa)



Lights, camera, action – The congress social programme included a Moroccan cultural evening showcasing traditional music and lively dance

Photograph: Claudia Frost (South Africa)

ICOH Board and other meetings associated with the ICOH2024 Congress

The meetings of the ICOH Officers and Board members from the previous triennium (2022–2024) were held prior to the ICOH2024 Congress – on 27 and 28 April 2024. The newly appointed Officers and Board members met for the first time after the congress, on 4 May 2024, in Marrakesh, Morocco.

The 13th Meeting of the Global Network of WHO Collaborating Centres for Occupational Health was held in hybrid format before the congress, from 25 to 26 April 2024, at the Grand Mogador Menara Hotel, Marrakesh, Morocco.

Photographs, congress statistics, and approval for the use of the ICOH and ICOH2024 Congress logos: courtesy of ICOH and the ICOH2024 Congress Organisers (Morocco), unless stated otherwise.

ICOH Statements at the ILO's 112th International Labour Conference


Source: International Labour Organization (ILO)

The ICOH Officers, Prof. Seong-Kyu Kang (President), Dr Diana Gagliardi (Secretary General), and Dr Jukka Takala (Past President) represented ICOH at the ILO's 112th International Labour

Conference, held in Geneva, Switzerland, from 3 to 14 June 2024. Delegates representing worker, employer and government sectors from the ILO's 187 member states addressed a wide range of issues, including (i) a standard-setting discussion on protection against biological hazards, (ii) a recurring discussion on the strategic objective of fundamental principles and rights at work, and (iii) a general discussion on decent work and the care economy. The ILO Conference also elected members of the Governing Body for the 2024–2027 term of office.

On this occasion, two ICOH statements were presented, verbally:

- 'The road for decent work together with healthy workers' at a conference plenary session: <https://www.ichoweb.org/site/multimedia/news/pdf/The%20Road%20for%20Decent%20Work.pdf>
- 'The importance of successful prevention of biological hazards' at the Biological Hazards Committee session: <https://www.ichoweb.org/site/multimedia/news/pdf/Biorisks%20ILC%20112%20June%202024.pdf>

The recording of the plenary address on decent work delivered by the ICOH President can be accessed at: <https://live.ilo.org/events/plenary-debates-afternoon-sitting-2024-06-04?segmentid=89a3b3f4-4a77-435c-b6e0-14819d8563ef> 



'To get to know, to discover, to publish; this is the destiny of a scientist' – François Arago

The ICOH2024 Congress scientific programme comprised 73 special sessions (including 'How to publish your work on workers' health: insights from the Editors-in-Chief of several OSH journals', pictured) and 78 free paper sessions on a wide range of topics

Photograph: Prof. Seong-Kyu Kang (Republic of Korea)

SAIOH news

As part of our service to members, in this newsletter we provide feedback on the latest developments within the Southern African Institute for Occupational Hygiene (SAIOH). SAIOH exists for its members and is reliant on them to continue to serve this noble profession, ethically. Therefore, we invite your inputs and feedback on any matters communicated below.

SAIOH PRESIDENT'S ADDRESS

Naadiya Mundy: SAIOH President
e-mail: president@saioh.co.za



Naadiya Mundy

Photograph: courtesy of SAIOH

As Occupational Health Southern Africa celebrates its 30th anniversary, it is essential to acknowledge the symbiotic relationship with the Southern African Institute for Occupational Hygiene (SAIOH) in advancing workplace health and safety. It is a true testament to the hard work and dedication of the team, authors, and readers. SAIOH's tireless efforts in research, education, and collaboration have undoubtedly enriched the content and discussions within the Journal's pages over the years.

By providing a platform for disseminating groundbreaking research, sharing best practices, and fostering dialogue among professionals, the Journal has been instrumental in amplifying SAIOH's contributions to the field of occupational hygiene. As we applaud the accomplishments of SAIOH, let us also recognise the pivotal role the Journal has played in shaping the discourse and driving progress in occupational health and safety over the past three decades.

The speed with which SAIOH has achieved success is a testament to the hard work and commitment of our volunteers, who have been determined to see our Institute succeed. We thank you for your dedication.

Keeping cool: can use of PPE contribute to the heat burden?

Heat stress is a significant concern in occupational hygiene, especially when workers are required to wear personal protective equipment (PPE) that can contribute to heat build-up. 'Hot' working environments include foundries, construction sites, mines, etc. Personal protective equipment such as protective clothing, gloves, and respirators can impede the body's ability to regulate temperature, leading to increased heat retention. This is particularly problematic in hot and humid environments where sweat evaporation – a key mechanism for cooling the body – is compromised. Workers wearing PPE are more susceptible to heat stress, which can manifest as heat exhaustion, heat stroke, or other heat-related illnesses.

Thermal comfort has emerged as a significant concern in advancing Sustainable Development Goals (SDGs) 3, 7, and 11, which target "good health and well-being", "affordable and clean energy", and "sustainable cities and communities". Thermal comfort is defined as an individual's perception of satisfaction with the thermal environment.¹ Air temperature, radiant temperature, relative humidity, air velocity, metabolic rate, and clothing insulation are all intricately linked to thermal comfort. Consequently, alterations in these factors can affect human thermal comfort.²

The human body's thermal physiology is intricate, operating as a thermodynamic system that manages heat to keep the internal body temperature close to 37 °C.³ Thermal comfort is, thus, linked to the challenge of either dissipating or retaining heat to sustain an optimal body temperature. While essential for numerous work tasks, the use of PPE can disrupt this thermal equilibrium, by impeding the body's ability to dissipate excess heat through convection, radiation, and evaporation. Heat retention occurs whenever the body cannot sufficiently shed heat due to the thermal insulation provided by PPE, leading to a rise in body temperature.⁴ Body temperature is regulated through perspiration, where heat is transferred from the body through convection of heat from the skin and the evaporation of sweat. A reduced rate of evaporation slows down the body's cooling process, leading to an increased sense of heat and discomfort.

High-temperature environments, combined with impaired heat dissipation due to PPE usage, can pose significant thermal physiological risks. Severe heat stress reactions in such conditions can be detrimental to human health and may even be fatal. Psychological stress and anxiety, along with the thermal stress induced by high temperatures when wearing PPE, are important risk factors that impact individuals' health and wellbeing.⁵ The inability to dissipate heat while wearing PPE in high-temperature environments can lead to heat stress, increasing physical strain, stress, and anxiety. Studies have shown that heat stress raises the likelihood of heat-related disorders, such as headaches, palpitations, breathing difficulties, and dermatitis.⁴ Exposure to heat can also impact normal behaviour and cognitive processes. In various occupations, increased heat can reduce productivity and raise the risk of errors, heightening the danger of the job.⁶ High humidity intensifies thermal stress in hot environments, rendering the work environment intolerable. The combination of increased skin moisture and inhalation of hot, humid air can greatly discomfort individuals wearing PPE. The combination of wearing PPE and exposure to high temperatures can be harmful to workers, particularly if they are unacclimatised to hot work environments, immune-compromised, and /or taking prescription medication. Although we make use of indicators to measure and assess heat stress, such as the wet bulb globe temperature (WBGT) index, and associated guidelines, e.g. the American Conference of Governmental Industrial Hygienists' (ACGIH's) threshold limit values (TLVs), and the US National Institute for Occupational Safety and Health's (NIOSH's) recommended exposure limits (RELs) to protect workers, adjustment factors should be applied to clothing in high-risk environments.

To address heat burden, it is important for occupational hygienists to consider heat stress within their risk assessments, as well as to encourage employers to implement strategies to mitigate heat

stress, such as providing adequate ventilation, rest breaks in cool areas, hydration, and using PPE designed to minimise heat build-up. Using technology, such as wearable sensors, to monitor workers' physiological responses to heat stress, and adjust workloads accordingly, could potentially reduce risks for thermal discomfort and heat stress. Training workers to recognise the signs of heat stress and encouraging them to monitor their own conditions can further help to prevent serious health issues.

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NATIONAL COUNCIL FEEDBACK

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SAIOH held its first Council meeting on 18 March 2024 and welcomed the newly elected Council members. SAIOH Council members have had a busy four months with numerous meetings taking place with the Department of Employment and Labour, Occupational Hygiene Approved Training Providers, and the Occupational Hygiene Training Association (OHTA).

Strategic plan

The SAIOH Council continues to review the 2023–2027 strategy and ensure that targets are being met, and to explore further strategic developments for the Institute and its members.

Ethics

SAIOH's ethics policy and procedure(s) remain with NGO Law, our legal advisors, who are in the process of reviewing and reworking the document for comment and approval by Council. SAIOH and North-West University (NWU) are in talks to develop SAIOH's own Ethics course, focusing on ethics in occupational hygiene, and hope to have the NWU team present the course at the 2024 SAIOH Annual Conference in Botswana in October.

SAIOH branch activities

The Western Cape branch had its first meeting of the year on 8 March 2024. Presentations included SAIOH's Asbestos Bulk Analysis

course, using polarised light microscopy, and U-Masks' presentation on protective face masks. This was the first meeting chaired by the newly elected Western Cape branch Chair, Vuyiseka Zikolo.

The Gauteng branch hosted its first meeting on Friday 1 December 2023, with presentations on radiation and ultra-violet and infrared safety lenses. The new Gauteng branch Chair is Cecil-Roux Steyn.

The Zululand branch had a re-launch meeting on 19 February, during which a new committee was elected. Their newly elected Chair is Alott Baloyi. The Zululand branch is organising the Noise Masterclass that will be held in Richards Bay on 24 April 2024.

The Botswana Association for Occupational Hygiene (BAOH) meets regularly and is fully committed to organising the SAIOH 2024 Conference to be held Gaborone on from 21 to 24 October 2024.

International Occupational Hygiene Association and Occupational Hygiene Training Association feedback

The Occupational Hygiene Training Association (OHTA) examination system recently underwent a complete revision and OHTA will now manage the process internally. SAIOH's service, as the administering body of the OHTA201 assessments, has been rescinded, effective 30 April 2024. As from 1 May 2024, OHTA will be the only awarding body for all its modules; all training material and assessments must be done via OHTA.

The 2024 IOHA Lifetime Achiever Award has been conferred on Deon Jansen van Vuuren

This award honours individuals who have made significant contributions to the promotion and development of occupational hygiene practice that improve the health and welfare of working men and women.

The International Occupational Hygiene Association (IOHA) has relaunched its *Global Exposure Manager* (GEM) newsletter, which is available on the IOHA website. The IOHA National Accreditation Recognition (NAR) Committee is revising the accreditation evaluation matrix for all new and reaccredited associations. The IOHA Governance Committee is updating its management system, quality procedures, and document management system. The IOHA 2024 Annual Scientific Conference was held in the AVIVA Stadium in Dublin, Ireland, from 9 to 13 June 2024.

SAIOH Technical Committee feedback

SAIOH, in conjunction with Sedulitas, is organising a series of Noise Masterclasses. Internationally recognised noise specialists will present the Masterclasses.

The Department of Employment and Labour requested comments on the new Lead Regulations by the end of May 2024. Comments by SAIOH and other associations were submitted.

Note: There is no change to the occupational exposure limit (OEL) for lead. Risk assessments must now be conducted every 24 months. Exposure monitoring is more technical; exit medicals must be done, etc.

Annual SAIOH Scientific Conference

The Botswana branch will host the SAIOH-BAOH Annual 2024 Conference in Gaborone with the theme, *Sustainable occupational hygiene in changing work environments and emerging economies*. The dates for the conference have been finalised as 21–24 October 2024; the venue is Phakalane Golf Estate and Convention Centre, just outside Gaborone.

Table 1. SAIOH PCC certification assessment results (March–May 2024)

Certification category	Written assessments				Oral assessments			
	Assessed	Passed	Failed	Pass rate	Assessed	Passed	Failed	Pass rate
	n	n	n	%	n	n	n	%
OH assistant	41	41	0	100	0	0	0	-
OH technologist	31	24	7	77.4	31	17	14	54.8
Occupational hygienist	14	8	6	57.2	8	7	1	87.5
Total	86	73	13	84.9	39	24	15	61.5

Communications

SAIOH publishes its newsletter/Presidents' page in two electronic media formats, namely *Occupational Health Southern Africa* and the *African OS&H* magazine (A-OS&H).

FROM THE PROFESSIONAL CERTIFICATION COMMITTEE (PCC)

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Certification assessments

A summary of results for the written assessments that took place in March to May 2024 is provided in Table 1.

PCC assessment improvements

The PCC technical team have revised the skillset and is in the process of developing scenario questions in line with the requirements for oral assessments.


Occupational Hygiene Skills Forum (OHSF)

One of the functions of the OHSF is to evaluate applications from tertiary institutions for recognition of their occupational hygiene-related qualifications. The OHSF is progressing well with these accreditations and is currently evaluating the Cape Peninsula

University of Technology's (CPUT) occupational health qualification. All tertiary institutions that offer occupational hygiene qualifications are encouraged to contact the PCC Administrator for information regarding application for recognition: lee@saioh.co.za.

Dr Ivan Naranjan attended the annual Universities of Technologies' Curriculum workshop. This workshop falls within the scope of the OHSF, which noted that many tertiary qualifications were mentioned on application forms. With no understanding of the curricula covered by these qualifications, the alignment thereof with the required occupational hygiene-related content could not be accurately evaluated.

By recognising a programme, the SAIOH PCC declares that, to its knowledge, the programme contains at least 50% occupational hygiene-related content as defined by the IOHA National Accreditation Recognition (NAR) Committee, or includes the content covered in the OHTA modules, plus sufficient information regarding the skillsets defined in the SAIOH self-assessment tool. The objective is to ensure that a member applying to upgrade his/her occupational hygiene qualifications has completed an academic qualification that covered all topics that may be addressed in assessments, thereby improving knowledge and competency in the occupational hygiene field.

Asbestos Bulk Analysis training (SAIOH AP102), presented by Julie Hills, took place in Cape Town on 15 April 2024. The module comprises a practical and written examination, which include the introduction to types of asbestos, asbestos-containing materials and health effects, an overview of South African legal requirements, sample preparation, initial evaluation of sample type using stereo microscopy, set up and use of a polarised light microscope, quality control, and reporting and communication. 

Finding missing TB cases post the COVID-19 epidemic at Doornkop operation, Harmony Gold Mine: lessons learnt

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BACKGROUND

Tuberculosis (TB) is a preventable and, usually, curable disease. According to the World Health Organization (WHO), TB was the world's second leading cause of death from a single infectious agent in 2022, after coronavirus disease.¹ Tuberculosis was also reported to have caused almost twice as many deaths as HIV/AIDS.¹ Globally, more than 10 million people are infected with TB every year.¹ Country member states of the United Nations and the WHO are committed to ending the TB epidemic, globally, by 2030.^{1,2}

The WHO has taken great strides to upscale TB case finding, globally, post-COVID-19 and has provided recommendations on measures that countries should take to find missing TB cases. This includes systematic screening for TB disease in the general population and among people at risk, household and close contacts, inmates, people living with HIV (PLHIV), and people exposed to silica in workplaces with a high TB prevalence.¹

South Africa, with less than 0.8% of the global population, contributes 3.6% of all TB cases worldwide, making it one of the countries with the highest burdens of TB.¹ South Africa remains one of eight countries that collectively account for two-thirds of the world's TB burden.³ The country also has the world's largest HIV epidemic, leading to a high TB/HIV co-infection rate of 54%.^{1,4} People living with HIV are 18 times more likely to develop TB than HIV-negative individuals, particularly when not on antiretroviral therapy (ART).⁵ In South Africa, TB remains a leading cause of death among PLHIV.^{5,6} Stigma and socio-economic factors contribute to poor treatment adherence and outcomes, including high mortality, among TB/HIV co-infected individuals.⁷ Poor nutritional status also increases the risk of mortality in people with HIV/TB co-infection.⁶

South Africa adopted the WHO recommendations for finding missing TB cases and, thus, developed a TB recovery plan, comprising four critical pillars:⁸

1. Find people with undiagnosed TB
2. Strengthen linkage of people diagnosed with TB to treatment
3. Strengthen retention in TB care
4. Strengthen TB prevention

The emphasis is on finding missing TB cases in high-risk populations, including PLHIV. It is through this recovery plan that the country developed a TB screening standard operational procedure (SOP) in 2022.³ The purpose of this SOP is to scale up TB case finding at health facility level and community level, using evidence-based scientific tools such as Xpert MTB/RIF (GXP-TB), one of the WHO-recommended molecular rapid diagnostic tests, digital X-rays, and lateral flow urine lipoarabinomannan (LF lam).

Harmony Gold

Harmony is a global, sustainable gold mining and exploration company. It is also the largest producer of gold from the retreatment of old tailings dams, making it a major player in the circular economy of gold.⁸

Harmony operates in three provinces in South Africa:

- 1) Gauteng, where it has three operations (Doornkop, Kusasaletu, and Mponeng mines); North West (Moab Khotsong operation); and
- 3) Free State (Masimong, Joel, Target, Tshepong, Target 1, and Joel mines).

Doornkop is one of the deep-level single-shaft operations in Gauteng province, about 30 km west of Johannesburg, on the northern rim of the Witwatersrand basin. While it is a mature operation, it still has 15 remaining 'life-of-mine' years.⁹ In 2022 and 2023, the size of the workforce at Doornkop operation was 4 444 and 4 543, respectively.⁹

In 2022, Doornkop reported 28 new cases of TB to both the Department of Health and the Department of Mineral Resources and Energy (DMRE), compared to 33 cases in 2023; incidence rates were approximately 630/100 000 and 726/100 000 in 2022 and 2023, respectively.

TB CASE-FINDING PROJECT

In March 2022, during TB awareness month, Harmony embarked on a project to strengthen TB case-finding in high-risk populations at Doornkop mine to: 1) find missing TB cases in high-risk populations, using the health facility TB screening algorithm at Doornkop medical hub; 2) scale up dust control measures/controls to prevent the spread of TB in high-risk populations; and 3) scale up TB prevention therapy to all identified high-risk groups at the Doornkop operation.

A desktop review was conducted at Doornkop medical hub. Tuberculosis data were collated for the period 2022–2023, post COVID-19. The following TB cascade indicators were reviewed for all reported TB cases:

1. TB screening
2. Suspect TB cases identified
3. Mode of TB diagnosis and TB/HIV integration component by looking at TB/HIV co-infection rate
4. Contact tracing of index TB cases was reviewed to assess TB cases identified using the TB screening tool

Socio-demographic data such as age, sex, occupation, record of service at Harmony Gold mine, and living occupancy were also collected.

Results

TB case finding cascade

More than 4 000 employees were screened for TB in both 2022 and in 2023 (Figure 1). Twice the number of presumptive TB cases were identified in 2023 than in 2022, viz. 390 (8.6%) and 196 (4.5%), respectively. Of these, 28 (14.3%) were diagnosed with TB disease in 2022, and 33 (8.5%) in 2023. All were male employees.

Mode of TB diagnosis

Seventeen of the cases were diagnosed in 2022 using the GXP-TB sputum test (60.7%) and nine (32.1%) were diagnosed on chest X-ray.

Table 1. Socio-demographic characteristics of employees diagnosed with TB, 2022 and 2023

Year of diagnosis	n	No. HIV-positive	Age range (years)	Work area	Place of residence		
					Within mine premises	Outside mine premises	Unknown
2022	28	20	25–59	Underground	12	16	0
2023	33	24	29–59	Surface/ underground	10	20	3

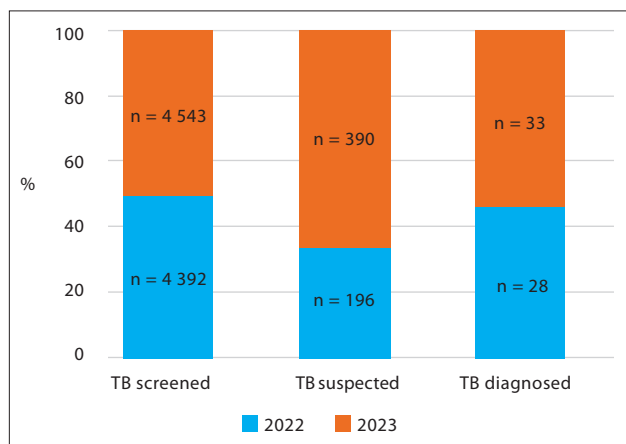


Figure 1. TB case-finding cascade

In 2023, 17 cases (51.5%) were diagnosed using the GXP-TB sputum test, 13 (39.4%) were diagnosed on chest X ray, and three (9.1%) were diagnosed using LF lam.

Demographic characteristics

Employees diagnosed with TB were aged from 25 to 59 years and worked both on-surface and underground (Table 1). More (almost 60%) lived outside the mining premises than within. Twenty (71.4%) and 24 (72.7%) of the TB cases were HIV-positive in 2022 and 2023, respectively.

The occupation of TB cases diagnosed in 2022 and 2023 varied widely. Those who worked underground were mainly from the production workforce.

Exposure to dust

In 2022, 17 of the TB cases were in homogeneous exposure group (HEG) A dust exposure category, four were in HEG B and seven were in HEG C. In 2023, only one case was in HEG A, while 24 and seven were in HEGs B and C, respectively (Table 2).

Table 2. TB cases by exposure category, 2022 and 2023

Exposure category/ HEG	RCS dust concentration (mg/m ³)	No. TB cases		
		2022	2023	All
C	< 0.05	7	7	14
B	0.05–0.1	4	24	24
A	> 0.1	17	1	18

Conclusion

The WHO continues to support countries with high TB burdens in their efforts to find missing TB cases, as a commitment to the goal of ending TB by 2030. South Africa is one of the countries with a high proportion of undiagnosed TB cases, and it has made great strides in its endeavours to find missing cases. The SOP for screening and testing for TB was implemented at Doornkop operations in 2022 and provides evidence that this is an effective strategy to find TB cases.

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