

SAIOH's history of serving the noble profession of occupational hygiene

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INTRODUCTION TO OCCUPATIONAL HYGIENE

Occupational hygiene (OH), also known as industrial hygiene (IH), is the 'science and art' that recognises, examines and evaluates the working environment by means of scientific observation and measurements, identifying health hazards, quantifying the risks, and applying preventive (control) measures, thus reducing the probability that hazards will culminate in risks. This allows the occupational hygienist to use findings and information, so obtained, to implement engineering and design techniques to control occupational exposures, i.e. through the 'hierarchy of controls', as graphically indicated below – elimination, substitution, engineering controls (including isolation), administrative controls (including training and some ergonomic interventions), and, as a last resort, personal protective equipment (PPE) – thereby protecting the worker (and, by extension, the community).

Occupational hygiene is still not really understood as a professional discipline and, therefore, not valued by the general population in South Africa or, in many instances, by employers and employees alike. Several terms are used interchangeably and not always correctly, namely OH, IH, occupational (industrial) health, and occupational (industrial) medicine.

One of the first attempts to define 'occupational health' came from a joint committee of the International Labour Organization (ILO) and the World Health Organization (WHO) in 1950:

The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing

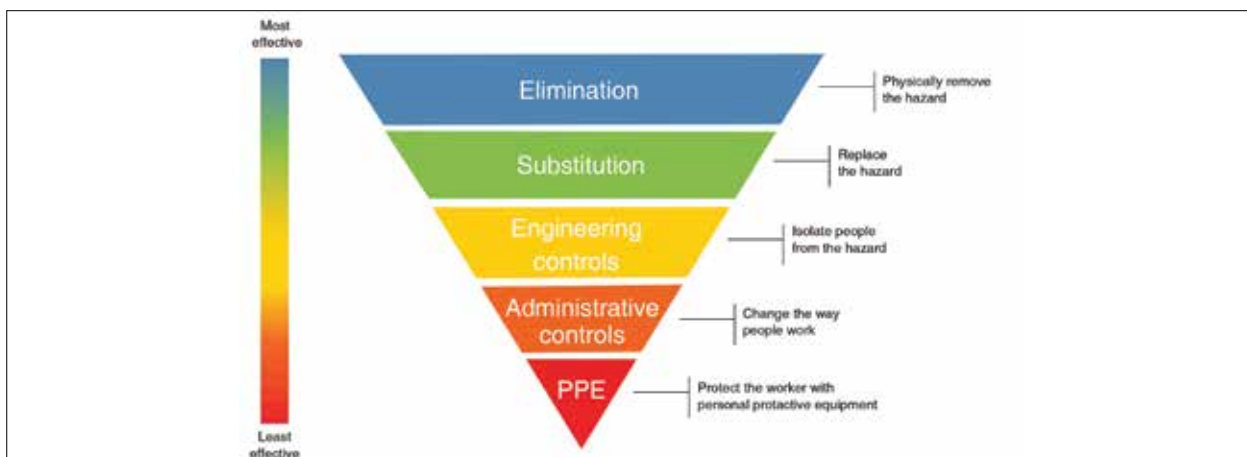


Figure 1. The hierarchy of controls applied by occupational hygienists

Graphic source: National Institute for Safety and Health, USA

and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment; and, to summarise: the adaptation of work to man and each man to his job.

The WHO further declares:

It is clear from this definition that occupational health covers a wide field. It calls for specialised knowledge from many disciplines – medicine, engineering, psychology, physiology, statistics, etc. – and close team-work among workers in these different spheres is essential.

Accordingly, 'occupational health' is the all-embracing concept, with the disciplines of OH and occupational medicine being the two main pillars. The occupational hygienist evaluates and controls health hazards in the workplace, whereas the occupational medical practitioner ensures that, through regular medical examinations and timely diagnoses, the work does not affect the worker's health or the safety and health of others and, when a worker is ill, the appropriate care and treatment will be administered. Occupational hygiene is therefore primarily preventive, while occupational medicine is primarily curative; these two separate aspects demand different qualifications, experience and competencies, even though they are two pillars of occupational health.

While the USA professionals prefer and use the term 'IH', the Southern African Institute for Occupational Hygiene (SAIOH) and the International Occupational Hygiene Association (IOHA) prefer to use the broader term 'OH'. The American Industrial Hygiene Association (AIHA) defines IH/OH as:

That science and art devoted to the anticipation, recognition, evaluation and control of those environmental factors and stresses arising in or from the workplace and which may cause sickness, impaired health and well-being or significant discomfort and inefficiency among workers or among the citizens of the community.

Both SAIOH and IOHA accept and use the AIHA definition of IH/OH.

HISTORICAL PERSPECTIVE ON OCCUPATIONAL HEALTH AND OCCUPATIONAL HYGIENE IN SOUTHERN AFRICA

In southern Africa, the history of occupational health (and OH) developed over many decades and is intrinsically linked with the history of mining and the associated occupational health issues. At the end of the 19th century, South Africa underwent a radical transformation from a pastoral country to an industrialised one; in the main, this was brought about by the discovery of gold on the Witwatersrand in 1886, which contributed a new 'hustle and bustle' in the country. This newly acquired 'mineral wealth' brought about key issues that needed to be addressed effectively to safeguard the health and safety of the mining workforce, e.g. ventilation, underground safety, and exposure to high dust concentrations. Sadly, this was not to be, as mine owners were driven by the desire to maximise productivity and profits.

The mining boom called for the introduction of appropriate infrastructure for the transportation of materials, minerals and machinery (roads, harbours, railways), and demanded an ongoing supply of water and energy resources. Mining required an immense workforce; the latter was drawn not only from the South African populace but also from the neighbouring territories of Basutoland (now Lesotho), Bechuanaland (now Botswana), Nyasaland (now Malawi), Swaziland (now eSwatini) and Mozambique. Gradually, other industries were introduced, most of these being complementary to mining, e.g. explosives, steel production from

iron ore, arms, agriculture, electrical power, fuel, telecommunications, and the motor industry.

With the new industrialisation in South Africa, several organisations were established and developed to support mining; examples are indicated below:

- The Chamber of Mines (CoM – 1887) was tasked with improving mine health and safety through its committees, occupational health and safety departments, research organisations, and training departments for mine rescue, ventilation, and health and safety. Over the decades, the CoM published and sponsored health and safety publications, codes of practice, and conference and congress proceedings. The CoM also fostered the development of several societies related to mining and housed them for many years. The CoM was eventually renamed the Minerals Council South Africa.
- The Mine Medical Officers' Association (MMOA – 1921) served as the representative organisation of medical practitioners who watched over the health and safety of the mining workforce; today, the Association is known as the Mine Medical Professionals Association (MMPA).
- The Mine Ventilation Society South Africa (MVS SA – 1944) was tasked with refining ventilation practices and techniques, as well as appointing and training dust inspectors who were the forerunners of the modern-day ventilation officers and environmental engineers.

Over the 20th and 21st centuries, a number of other associations and organisations have been established to contribute to the development of OH in South Africa. Most started out being heavily involved in the mining industry, but became more encompassing of all workplaces as time passed. Many continue to be active in occupational health today and have established successful working relationships with associations representing similar disciplines, and with other international organisations. Some examples are listed below:

- The South African Society of Occupational Medicine (SASOM – 1948), an affiliate member of the International Commission on Occupational Health (ICOH), was tasked with promoting, protecting and enhancing the quality of life and well-being of the working population of South Africa. Its members are medical practitioners registered with the Health Professions Council of South Africa (HPCSA). The SASOM guidelines cover areas where industry has needed guidance on occupational health matters. The initial set was completed in 1996 but the guidelines continue to be updated, with new additions being published as the need arises.



Niek Genis, OHASA president 1989 (left), hands the first print copy of the Afrikaans occupational hygiene handbook, *Inleiding tot Beroepshigiëne*, to Dr DH Wiid, Wits Technikon rector, while Dr Johan J Schoeman (right), looks on with pride Photograph: courtesy of SAIOH

- The South African Society of Occupational Health Nursing Practitioners (SASOHN – 1980) was tasked with promoting occupational health nursing through accredited standards of practice, education and training, and co-operation with national and international organisations. Over the years, SASOHN has published a range of guidelines covering a variety of areas within occupational health nursing.
- Ergonomics Society of South Africa (ESSA – 1985) is a federated society with the International Ergonomics Association (IEA), and represents predominantly ergonomists and human factor specialists. The Society actively aims to promote an awareness of ergonomics in South Africa and of both the health and safety and productivity benefits that can be derived from the implementation of sound ergonomic principles.
- South African Institute of Occupational Safety and Health (Saiosh – 2010) is a professional body accredited to register occupational health and safety professionals in South Africa, and is committed to the prevention and reduction of workplace incidents and accidents in South Africa.

Achievements in the development of occupational health, as well as the introduction and implementation of legislation and the holding of commissions of inquiry, paved the way for various sister organisations in occupational health, including SAIOH and its predecessors, to become established entities in their own rights; many continue to be active today.

Dr David W Stanton's contribution, in the chapter on South Africa, in the ICOH 2003 book, *Origins of Occupational Health Associations in the World*, incisively documents this history.

SAIOH TODAY

SAIOH is the officially recognised and accredited professional organisation responsible for the certification and registration of OH professionals in southern Africa.

The objectives of SAIOH are:

- To advance the OH discipline
- To promote the activities of the Institute
- To nurture the interest and status of the Institute's members
- To promote education and training in the OH discipline.

SAIOH's mission is to 'establish and provide for sustainable support systems in ensuring excellence in OH in the African context', and its vision is to 'ensure healthy working environments in Africa through excellence in occupational hygiene'.

SAIOH serves a noble profession and prides itself in having the following values:

- Respect – SAIOH believes that all people are entitled to a healthy workplace and a healthy work life, and to retire free from workplace-related illness or disease
- Caring – SAIOH is committed to serving its members with empathy and compassion
- Teamwork – SAIOH is committed to effective partnerships between volunteers and members and seeks opportunities to form alliances with sister organisations locally, and from developing countries and across the globe
- Integrity – SAIOH is committed to act in an ethical, honest and transparent manner
- Quality – through the creation and maintenance of systems, SAIOH strives to ensure that all practising occupational hygienists perform their duties in line with world-class standards

SAIOH's strategic objectives for its most recent five-year plan (2015–2019) were as follows:

- To establish and provide for sustainable support systems, ensuring excellence in OH in the African context (2015)

- To build SAIOH capacity at all levels (2016)
- To entrench excellence, professionalism and competence in the OH profession (2017)
- To promote the OH profession (2018)
- To grow SAIOH membership within southern Africa across various sectors (2019).

SAIOH is dependent on sponsorship and membership fees to sustain itself and to provide quality service to its members. Today, SAIOH has close to 1 000 members across two categories, namely individual (certified, non-certified, student) and organisational. SAIOH membership benefits include: (i) members subscribe to and abide by the SAIOH code of ethics; (ii) members enjoy international recognition of their qualifications and expertise; (iii) members have access to mentoring opportunities; (iv) members have access to an active website and a web-based platform for professional development and record keeping; (v) members have access to ongoing learning opportunities through their participation in the annual conferences (with local and international presenters and training courses), branch meetings and workshops; and (vi) SAIOH is a professional organisation with the required systems and structures to support its members.

SAIOH has an annual budget of approximately one million Rands which is applied to expenses incurred by its head office in Greater Johannesburg, Gauteng and various regional branches/discussion groups.

The purpose of the SAIOH branches/discussion groups is to provide focus for local meetings and events for members and non-members with an interest in OH, and to facilitate communication with regional members and potential members. Branches/discussion groups try to involve as many members and non-members as possible and are a point of contact to gain participation as well as to contribute to the continuing professional development (CPD) of members. SAIOH branches also offer the opportunity for SAIOH members and non-members to meet the SAIOH president and management board, raise issues related to the discipline, and address any questions that they may have.

Over the past decade, SAIOH has initiated and maintained memoranda of understanding (MoUs) and informal working agreements and with recognised occupational health entities, at national and international levels, and with both public and private sector entities. These agreements are for the benefit of its members in terms of providing them with opportunities to enhance OH knowledge, expertise and skills sets that are required for the profession.

SAIOH and three sister organisations in occupational health, namely SASOM, SASOHN and MMPA, share a common official journal, *Occupational Health Southern Africa*. SAIOH also makes regular contributions in the form of communications or more in-depth articles to the *National Safety Magazine* (now the *African Occupational Safety and Health Magazine*).

THE ORIGINS OF SAIOH

The early years of occupational hygiene

The 1975 Erasmus Commission of Inquiry on Occupational Health in Industry (not mining *per se*) in South Africa, culminated in the publication of the famous Erasmus Report in 1976. This report highlighted the lack of awareness of OH in South Africa and identified that there were very few practitioners of the discipline, with many of them employed at that time at Iscor Ltd (now Arcelor Mittal SA) which was a parastatal steel company.

Some interesting facts, events and timelines of these early developments are eloquently recounted by Dr John R Johnston, retired occupational hygienist and the first SAIOH fellow:

In 1976, I joined the Industrial Hygiene Unit (under Derick Rendall) at the (then) National Research Institute for Occupational Diseases (NRIOD), now known as the National Institute for Occupational Health (NIOH). The NRIOD was an evolutionary step from the previous Pneumoconiosis Research Unit (PRU) under the directorship of Prof. Ian Webster but, when I joined, it fell under the Medical Research Council (MRC) which was fixated on research only. I rapidly rebelled against this and started (without approval and until I got caught!) to take instrumentation out into the field to get a feeling for the workplace conditions 'out there'. I was frankly horrified and, although Derick Rendall turned a bit of a blind eye, I was eventually instructed from 'on high' to desist ...

At the NRIOD, one of my duties was to lecture on OH to the medics studying for their post-graduate Diploma in Occupational Health (DOH) and I was offered a position at Haggie Rand's Medical Department to establish, from scratch, the OH unit for the Haggie Rand Group. This was a great opportunity for networking and for doing practical work throughout the country. The main points arising from this were that I perceived a real need for OH in industry (as per the Erasmus Report) and the overall awareness of this was starting to grow, albeit slowly. I still have the letter from Prof. Ian Webster, warning me that I was making a mistake leaving the NRIOD and joining the Haggie Rand Group, as industry 'wasn't ready for this'!

When I was at the NRIOD, I contacted Rudi du Toit (whom I had met at the Institute of Occupational Medicine (IOM) in 1975), who was then at the (then) South African Department of Minerals and Energy (DME), and the South African editor of the *Annals of Occupational Hygiene*. I said that there was a real need for some sort of OH body in the country and he came back to say that such a body existed! He was under the impression that the Association of Societies for Occupational Safety and Health (ASOSH) served this purpose, but this was only an umbrella body. It was at about this time that I started to meet people like Willem Barwise, Alex Holmes, Dr Johan J Schoeman, etc. who were in the process of setting up the Occupational Hygiene Association of Southern Africa (OHASA), specifically for professionals practising OH.

In 1983, I was privileged to be part of Technical Committee No.1 (TC1) of the (then) Department of Manpower, tasked with reporting on 'An investigation into safe working conditions regarding thermal requirements, ventilation and lighting in workplaces'. TC1 was chaired by Manie Mulder (Department of Manpower) and the three other members were Dr Dawie Pretorius from the South African National Defence Force (SANDF), John Senior from the Council for Scientific and Industrial Research (CSIR) and yours truly, seconded from the African Explosives and Chemical Industries (AECI) which I had joined in 1982, as the first Group Occupational Hygienist. TC1 had a very hard task as it had to balance rigorous theoretical knowledge with what was practicable at the workplace, considering the lack of technical expertise generally available. The 'Environmental Regulations for Workplaces' were created from TC1's work and they are still in the occupational health and safety (OHS) legislation today. The Machinery and Occupational Safety Act had been promulgated in 1983 and there was an urgent need for regulations to 'back it up'.

It was during 1983's deliberations at TC1 that the concept of

'Approved Inspection Authorities' (AIAs) was put forward. The reason for this is that the Department of Manpower did not have the capacity (or knowledge) at that time to know whether a workplace complied with the legislation or needed expert OH input to support its endeavours.

During the 1980s and 1990s, ASOSH started to grow and it became important to put some formal professionalism into the discipline. Anybody could join ASOSH (if I recall) but that didn't make them occupational hygienists. The time for the professional society (which I raised concerns about in 1976) had come, and the work done by those in practice during the intervening years was coming to fruition.

It was also during this time that OHASA recognised a serious need for training in OH, and especially a lack of South African study material in this field. OHASA then commissioned a handbook in Afrikaans, *Inleiding tot Beroepshigiëne*. Drs Harald HE Schröder and Johan J Schoeman compiled and edited it, with the help of several reputable OHASA members and subject specialists. This historic handbook was first published in 1989 and launched at an OHASA Conference at the Elangeni Hotel in Durban that year. Not long after the launch, Dr Johan J Schoeman was tasked by OHASA to not only update the handbook, but to publish an English version. The OHASA handbook, *An Introduction to Occupational Hygiene*, was published in 1994. These handbooks became prescribed study material for most universities and technikons (now known as universities of technology), for many years.

Formation of the Occupational Hygiene Association of South Africa (OHASA)

Several meetings and discussions followed the release of the Erasmus Report, with the aim of forming an OH Society. This led to the establishment of OHASA in 1983, to create awareness and enhance OH as a discipline.

On 28 March 1983, at Eskom Megawatt Park Club, with 15 persons present, including Willem Barwise, Piet Marais, Alex Holmes, Frikkie Sauer, Drs Johan J Schoeman and John R Johnston, OHASA was officially launched. Willem Barwise was the first president, Alex Holmes the vice president, and Dr Johan J Schoeman the secretary.

In no particular order, the OHASA presidents were: Willem Barwise (first), Dr Harald HE Schröder (second), Alex Holmes, Dr Phil Piek, Nic Genis, Piet Marais, Hein Hughes-Treherne, Roelie Cronjé, Jo-Ann Bradley (later Jo-Ann Benjamin), Willem Lombaard, and Johan Jacobs, among others. The secretaries for most of these years were Deon Jansen van Vuuren and Cathy van der Vyver, with OHASA 'going professional' in 1993 by appointing Brenda Webster (from Brenor) as its part-time secretary.

OHASA held several meetings and workshops whenever the need arose, and eventually also started organising annual conferences. To enable all members to be reached and be served better, the concept of 'OHASA branches' was rolled out in the (then) provinces of South Africa: Transvaal, Orange Free State, Natal, and the Cape.

Several annual national conferences followed, usually with the associated social events ensuring their success. Most conferences were held in Gauteng, at the CSIR Conference Centre, Eskom Training College, Witwatersrand Technikon, etc., but some were held in (then) Natal (Karridene Hotel, Elangeni Hotel, Itala Game Reserve), Port Elizabeth (Port Elizabeth Technikon) and in Cape Town (Cape Technikon). OHASA even had its own conference logo at one time, an elephant called 'Ockie OHliphant', and its own OHASA tie.

Although these events were always successful, especially on a social level, it became clear that much more would be required to grow the Association and improve the competencies of the OH practitioners. All agreed and, as ASOSH evolved, it became a priority to have a mechanism in place to ensure that OH practitioners were properly trained to a level in line with international standards. Over several years, interested and affected parties held several informal/impromptu discussions, especially in OHASA council and branch meetings.

The (then) Department of Manpower, which later became the DoL and is now the Department of Employment and Labour, requested a meeting to discuss the possibility of establishing an organisation for occupational hygienists. This meeting took place at the Witwatersrand Technikon on 5 October 1990. Dr Johan J Schoeman chaired the meeting, and Susan Burke (later Susan Cronjé) recorded the minutes.

The prime objectives were to determine the need for an organisation to promote and protect the professional status of occupational hygienists. To this end, a sub-committee was formed to:

- Investigate and define an 'occupational hygienist'
- Define the responsibilities of OHASA and the new organisation
- Aim for the establishment and maintenance of international recognition
- Register occupational hygienists according to certain criteria
- Ensure a good working relationship between this organisation and OHASA.

Fourteen persons were present: Richard Truter, Rob Ferrie, Roelie Cronjé, Piet Marais, E Ellis, Edgar Waller, SN Middel, Dr Johan J Schoeman, Hein Hughes-Treherne, Sandy Nicoll, Willem Lombaard, Deon Jansen van Vuuren, Dr John R Johnston and Susan Cronjé.

Formation of the Institute of Occupational Hygienists of Southern Africa (IOHSA)

In February 1992, nominations were made for the transitional committee of the newly formed Institute of Occupational Hygienists of Southern Africa (IOHSA). Representatives were elected from those nominations at a meeting at the CSIR Conference Centre. The committee consisted of elected representatives from the following sectors (with the names of elected and co-opted persons indicated in brackets):

- Education (Dr Johan J Schoeman, Pierre Wepener and Leon Harmse)
- Practising consultants (Harold Gaze, Julie Brailsford (later Julie Hills), Piet Marais, Roelie Cronjé and Willem Lombaard)
- General industry (SN Middel, Jo-Ann Benjamin, Dave McDowell and Rob Ferrie)
- Trade unions (Jace Naidoo)
- Mining industry (Sandy Nicoll and Dr Johan Kielblock)
- Government agencies (Dr Retief Kok and Deon Joubert [Department of Manpower], JMO van Sittert and Trevor Muntingh (Governmental Mining Engineer [GME])
- Local government (Richard Truter) and other members (Faizel Salie, H Gordhan).



Dr David W Stanton – first SAIOH president (2000–2001)

Members of this transitional committee, especially Rob Ferrie and Richard Truter, worked tirelessly for several years, establishing an examination committee, professional categories, evaluation standards, and a constitution.

On 10 February 1993, the first IOHSA council meeting was held. IOHSA was officially launched at an inaugural dinner at Eskom Megawatt Park Club, on 19 February 1993, with the following office bearers: president: Richard Truter, vice president: SN Middel, honorary secretary and treasurer: Dr Retief Kok, council members: Dr Johan Kielblock, Dave McDowell, Dr Johan J Schoeman, Sandy Nicoll, Jace Naidoo and Deon Joubert.

Dr John R Johnston was asked to chair the embryonic examining board, to give structure and formal standing to the discipline going forward but, as were no examinations yet prepared, this was a dilemma. To quote Dr John R Johnston:

We did not wish to have a clique of people getting into professional categories (that classification no longer exists; you are either an occupational hygienist or not), or having the contentious 'granny clause' (for many years thereafter, also known as the 'grandfather clause' i.e. equating two years of practical OH work in the field to one year of a tertiary qualification), forever. People could argue about this but, in hindsight, the members of the board all acted in the best interests of the profession and were exemplary in their conduct. Eventually, the suggestions of the examining board were implemented (with the necessary tweaking) and I feel happy that the discipline has evolved to a true professional level, although not without a lot of effort all round.

International standards were previously highlighted as a priority. IOHA was an established entity and growing its global footprint, and essentially open to countries, worldwide, with functioning OH professions. IOHSA made the decision to apply to become an IOHA member. Reminiscing, Dr John R Johnston said:

In 1989, as I would be at a British Occupational Hygiene Society (BOHS) conference in the UK (Warwick University), I was asked to travel to Geneva, Switzerland to present IOHSA's case. Dr Johan J Schoeman joined me (for moral support) and the cat was truly set among the pigeons. Although apartheid was on its way out, there was a huge stigma attached to South Africa, and this was also the perception among members of the IOHA board, i.e. about apartheid's 'exploitation of black people' and related matters. I had to go to great pains to explain the evolution of IOHSA (and OH in South Africa), and that most of the South African workforce was black, and these people would be the ultimate beneficiaries of good OH practices implemented by recognised professionals. The decision-makers had to caucus on it, but eventually we did get entry into IOHA.

Following the presentation by Drs John R Johnston and Johan J Schoeman in Geneva, IOHSA was granted membership to the IOHA in Stockholm in September 1996. For many years after that, Rob Ferrie represented IOHSA, and later SAIOH, on the IOHA board; working hard and assisting IOHA to develop internal criteria and procedures, eventually becoming the IOHA president in 2004. Dr John R Johnston is very proud of this: "I am so very proud that Rob Ferrie, my OH successor at AECL, went on to become the IOHA President."

- Some of the many IOHSA highlights (1993–2000), include:
- Setting up the examining board, including application procedures, evaluation criteria, competency requirements, and written and oral examinations (the year 1995 saw the start of certification examinations)
- Dr David W Stanton, then at the National Centre for Occupational Health (NCOH), now the National Institute for Occupational Health (NIOH), establishing and organising the 'WHO/SA Technical Cooperation Programme in Occupational Health and Safety (1996–2003)' - which sponsored capacity-building courses in occupational health. At the time, concerned about the low IOHSA written examination standards, he arranged for examiners from the (then) British Examining Board in Occupational Hygiene (BEOH), now the BOHS Faculty, to travel to the NCOH to certify and test a core of BEOH examiners for South Africa, namely Drs David W Stanton and Johan J Schoeman, and Vali Yousefi
- Dr David W Stanton's initiative in establishing the first BEOH examiners for South Africa, to support the BEOH courses in OH arranged by Leon Harmse at the (then) Pretoria Technikon (now the Tshwane University of Technology – TUT). The WHO/SA Programme sponsored OHS practitioners interested in developing their OH skills to attend these courses. Dr David W Stanton not only initiated but ensured the sustainability of these courses, which was the major positive force that influenced IOHSA to raise its examination standards
- The WHO/SA Programme, through Dr David W Stanton, arranging for OHASA and IOHSA council members to sit examinations to obtain the Certificate of Operational Competency in OH (under the auspices of the (then) BEOH)
- Leon Harmse from Pretoria Technikon co-ordinating and arranging the delivery of BEOH (later the British Institute of Occupational Hygienists – BIOH, and now BOHS) OH courses, first for OHS practitioners to obtain the Certificate of Operational Competency in OH, and then progressing to the level of BIOH (now BOHS) Diplomates (holders of Professional OH Diplomas)
- Developing a points maintenance system in line with the system used by the AIHA, where points can be earned for CPD in OH, as well as involvement in IOHSA's activities (1995)
- Growing the IOHSA membership from approximately 30 members in 1993, to around 160 in 1999
- Collaborating with the (then) National DoL Directorate to draft new guidelines on AIA requirements, thus ensuring that AIAs be managed by an occupational hygienist certified by IOHSA, and all operational staff in AIAs be certified by IOHSA, in their respective work categories. Furthermore, the DME (later the Department of Mineral Resources – DMR and, more recently, the Department of Mineral Resources and Energy – DMRE) including the IOHSA certification requirements in the regulations of the Mine Health and Safety Act in 1997
- One of the first IOHSA bank account statements (dated 8 September 1993) reflecting R3 375 (which was on budget) versus one reflecting R45 365 in 1999
- Having prominent IOHSA presidents, such as: Richard Truter (first), SN Middel (second), Rob Ferrie, Dr Johan J Schoeman, Dr John R Johnston and Jace Naidoo
- Developing IOHSA guidelines (with permission of the Health and Safety Executive (HSE), UK) on 'Occupational Health Risk Assessment Guidance Notes' (1997), and the 'Employers' Guide to Monitoring Strategies for Hazardous Chemical Substances in Workplaces' (1998), mainly due to the work of Rob Ferrie

- Holding certification examinations regularly, first at the NCOH in Braamfontein and later with Ray Strydom ('Ray of Safety', taking over the secretarial duties from Brenor, with effect from April 1998), at the Building Industries Federation of South Africa (BIFSA) College in Midrand, Gauteng
- IOHSA being accepted as a member of IOHA at an IOHA meeting in Stockholm, Sweden, in 1996.

During the 1990s, the IOHSA board introduced the honorary title of 'Fellow of IOHSA'. Dr John R Johnston was the first recipient in 1999; this standing was also awarded to Dr Johan Kielblock not long thereafter.

MORE RECENT DEVELOPMENTS IN OCCUPATIONAL HYGIENE

Amalgamation of OHASA and IOHSA to form SAIOH

After several difficult and unproductive meetings dating as far back as 1994, the OHASA and IOHSA councils started holding joint OHASA-IOHSA meetings. At one of these joint meetings, early in 1998, the date of amalgamation was agreed: 6 October 1998. Both presidents – Johan Jacobs (OHASA) and Jace Naidoo (IOHSA) – agreed, in a joint statement on 12 October 1998, that the respective institutions would remain in contact until their 1999 annual general meetings (AGMs). In 1999, at a joint AGM, Hein Hughes-Treherne was elected as the president of the (then) OHASA (incorporating IOHSA) council, with Dr David W Stanton (as the vice president). Following the tragic death of Hein Hughes-Treherne in January 2000, Dr David W Stanton took over as president. He arranged a strategic and objective-setting workshop, in Bryanston (at Piet Marais' home) on 4 March 2000, where SAIOH was officially launched, and a new logo and name (proposed by Dr David W Stanton) was accepted. New council members were also elected, namely Dr David W Stanton (first SAIOH president), Piet Marais (vice president), Rob Ferrie, Coen Buddingh, Dr John R Johnston, Hennie van der Westhuizen, Schu Schutte and Deon Jansen van Vuuren. Rob Ferrie was elected as the chair of the new SAIOH Certification Board (CB), an autonomous certification/examination entity.

The formation of SAIOH was the first step in attaining the initial and long-cherished objective of creating an official OH professional institute and enhancing OH as a discipline.

Mining versus industry: the SAIOH challenge (1995 to 2012)

From the outset of the official launch of SAIOH, one of the significant challenges was the integration and acceptance of candidates from two very different areas of practice.

The mines implemented specific training and education requirements



IOHSA AGM and awards ceremony. L - R: Rob Ferrie and Drs Johan J Schoeman and John R Johnston were 'Three Musketeers' who worked tirelessly to launch IOHSA in 1993 *Photograph: courtesy of SAIOH*



for mine ventilation officers, with relevant qualification criteria and outcomes. Issues related to this mining background would cause a significant change in the registration criteria, as the scope of subjects covered was found to be lacking in some critical areas of competence required by occupational hygienists. However, these practitioners would eventually become an essential stable of members for SAIOH, bringing excellent knowledge and capabilities related to OH to SAIOH. Many of these early members held senior positions on the SAIOH council and the (then) SAIOH CB.

The OH profession was growing exponentially, with an increasing number of industry-based occupational hygienists. These hygienists generally had formal qualifications with more emphasis on the full range of OH skills. The introduction of post-graduate qualifications in OH, and the BIOH Certificate and Diploma of Competence in OH at Pretoria Technikon, presented opportunities for the previously mixed entry criteria to become more aligned.

In theory, the availability of modular learning via the BIOH training and qualification system had allowed a levelling of the playing field, and many members from both mines and industry took advantage of this enhanced offering. As can be expected with any change process, the introduction and alignment of new systems and qualifications also led to disagreements and differences of opinion amongst members from different sectors, resulting in many years of robust debate and drawn-out negotiations.

Introduction of the Occupational Health and Safety Act (OHSAct), 1993 (Act No. 85 of 1993) and the Mine Health and Safety Act (MHSAct), 1996 (Act No. 29 of 1996): new challenges emerge for SAIOH

A higher recognition of, and emphasis on, occupational health and OH in the two South African OHS Acts increased the need for SAIOH to ensure that its registered members delivered high levels of quality and professional service.

The early years of the 2000s saw many challenges in both industry and mining sectors, and the officers of the (then) SAIOH Professional Certification Board (PCB) spent many hours in meetings with government departments, member groups and academic institutions, trying to find acceptable entry criteria; it certainly wasn't a 'one size fits all' situation for the practice of OH.

The OHSAct and MHSAct each set different criteria and expectations for the OH professionals in their individual sectors, with SAIOH committees and officers having to navigate an integrated system that would work for all. This was, and will be for the foreseeable future, an ongoing process. The SAIOH Professional Certification Committee (PCC) had already started an engagement process with the MVSA to investigate a mining certification stream to accommodate the OH practitioners who work only in mines.

CERTIFICATION AND REGISTRATION OF OCCUPATIONAL HYGIENE PRACTITIONERS

The SAIOH Professional Certification Committee (PCC); previously the SAIOH Certification Board (CB) and the SAIOH Professional Certification Board (PCB)

In 2004, under the leadership of Rob Ferrie, Dr Johan J Schoeman, Deon Jansen van Vuuren, Melinda Venter and Johann Beukes, SAIOH started developing and implementing procedures, standards/criteria and official forms – this was the beginning of a quality management system (QMS). As a growing concern, operating with consultant secretarial support and a transitional council, the need for a more continuous and formally-managed process became evident.

The implementation of the QMS was also a prerequisite for application to the National Accreditation Recognition Committee (NARC) of IOHA for recognition of SAIOH's certification system.

The old examination committee (or IOHSA), initially the SAIOH CB, was renamed the SAIOH PCB and, more recently, the SAIOH PCC. Thus began the development and implementation of a formal, stricter and internationally-aligned certification process.

The SAIOH PCC consists of approximately 40 registered occupational hygienists (ROHs) who have been registered with SAIOH for three to five years. PCC members join on an invitation basis and undergo training as assessors, with emphasis on the oral assessment process in conjunction with set procedures, question criteria, and marking systems, to ensure a relatively fair application across the board. This is an important process as these members work across the various provinces. These 'provincial' assessment centres enable written and oral assessments to occur locally for SAIOH members throughout southern Africa.

PCC members meet every quarter to discuss operations, improvement and PCC-related issues. The PCC must remain independent from the national SAIOH council and is directed by a chair, a vice chair and a chief examiner (the PCC executive committee). These PCC officers, co-ordinated by the chief examiner and PCC administrator, not only manage the day-to-day running of the PCC but are also responsible for developing the assessment materials, generating the examination papers, and marking and evaluating the written and oral assessments.

Unlike the SAIOH council, these PCC officer positions have no set time frames for their individual portfolios, hence the appointed officers can serve for extended periods, ensuring continuity and uniformity, and allowing for the efficient implementation of projects. Generally, the officers serve for three to six years, and only leave the PCC upon resignation. The chair and vice chair also automatically serve on the SAIOH council and on the council's management board.

IOHA-NARC recognition of the SAIOH certification system

In 2005, after the hard work and dedication of Deon Jansen van Vuuren, Rob Ferrie, Julie Hills and the PCB team, Deon Jansen van Vuuren handed the IOHA secretariat a hard copy of the PCB application documentation with supporting evidence, for consideration by NARC. This took place on the first day of the IOHA 2005 Scientific Conference, held in the Pilanesberg, South Africa. At the Conference, Deon Jansen van Vuuren (then the SAIOH president) participated in a 'question and answer' session with the IOHA-NARC members who were present. During the remainder of 2005, further requests and clarification questions were received and additional support documentation was submitted to IOHA.

In 2006, SAIOH was finally awarded recognition of the PCB certification system by the IOHA-NARC. SAIOH was the 6th 'National OH Associations' Certification Body' to be recognised by the IOHA-NARC since the inception of this recognition system. This was a significant leap forward, as SAIOH's registered OH members were now recognised and aligned with their international peers. This made it possible for ROHs to apply for international positions and take up registration with other NARC-recognised international sister organisations, without the need to undergo extensive re-assessment. This achievement, attained in 2006, formed the basis of the reciprocity agreement between all IOHA-NARC-recognised national associations' certification bodies.

As the IOHA-NARC recognition certification is valid for five years, the SAIOH PCB, under the chairmanship of Deon Jansen van Vuuren, re-applied for IOHA-NARC recognition in 2011. Peter-John (Jakes) Jacobs (SAIOH councillor) and a dedicated PCB team assisted Deon Jansen van

Vuuren with this re-application and, in 2012, SAIOH again received recognition for the PCB certification system, for a second five-year term.

In September 2016, a team comprising Julie Hills, Deon Jansen van Vuuren and Jakes Jacobs applied, with supporting documents, to the IOHA-NARC for certification recognition for a third term. A breakdown of the IOHA-NARC from August 2015 to the end of 2018 effectively rendered this IOHA sub-committee non-functional during this period, with no re-submissions or new applications being considered or processed. After numerous communications to the IOHA presidents (2015–2018) and requests through the SAIOH representative on the IOHA board, the new SAIOH representative to the NARC, Garth Hunter (SAIOH ROH and co-opted member of the PCC ExCo), had a teleconference with the chair and regional co-ordinator of the new, reinvigorated NARC in October 2018. Eventually, while attending the IOHA board and NARC meetings in 2019 in Bali, Indonesia, Garth Hunter was presented with the SAIOH PCC's new IOHA-NARC Recognition Certificate, for a third five-year term, effective from 2019.

These are no mean feats, as the requirements are based upon proof of alignment to the International Organization for Standardization (ISO) International Electrotechnical Commission (IEC) 17024 quality management system standards continuous improvement and strict audit requirements. On each certified SAIOH member's annual membership certificate, the IOHA logo appears with the wording 'IOHA-Recognised Certification Scheme'.

IOHA and SAIOH: a close and long-standing collaboration

Mention has been made of how IOHSA (now SAIOH) became a member of IOHA. SAIOH was accepted as an IOHA member in September 1996 and, to this day, continues to be the only IOHA member in Africa. IOHA is an association of OH/IH societies. The criteria for individual associations to become IOHA members are relatively straightforward: the organisation must be solely dedicated to OH/IH and it must be the only OH/IH association in a country, i.e. the national association. Currently, there are 37 national associations worldwide that are IOHA members. The IOHA sub-committee, NARC, sets standards and evaluation criteria, and recognises the certification systems of its members. Presently, there are 16 such recognised certification bodies, of which the SAIOH PCC is one.

The first SAIOH (then IOHSA) representative on the IOHA board and the NARC was Rob Ferrie, from 1997 to 2008; Rob was recognised for his valuable contributions and was elected IOHA president for the 2006-2008 term.

Late in 2007, Deon Jansen van Vuuren became the SAIOH representative, first on the IOHA-NARC, and then taking over from Rob Ferrie on the IOHA board in 2009. He became an IOHA board director in 2010 and served two three-year terms on the IOHA board until September 2015. During his tenure, he was elected the IOHA-NARC chair (September 2012), a position he held until May 2015. During this time (2008 to 2015), the NARC evaluated and recognised seven new national certification bodies and processed the certification renewals of five associations.

Jakes Jacobs took over as SAIOH representative on the IOHA-NARC in 2012 when Deon Jansen van Vuuren became the NARC chair. Jakes Jacobs was nominated by SAIOH and became an IOHA board director in September 2015; he was then elected and served as IOHA president for the 2018-2019 term.

Garth Hunter was recently nominated to take over from Jakes Jacobs on the IOHA-NARC (early in 2019) and, in September 2019 in Bali, Indonesia he became the SAIOH representative on the IOHA board, and an IOHA board director (current appointment).

SAIOH recognition by the South African Qualifications Authority (SAQA)

The South African Qualifications Authority (SAQA) is a legislated governmental body that not only provides oversight of the conduct of the SAIOH PCC (as a professional registration body in South Africa), but also ensures that the PCC carries out OH candidate assessments following its own rules and procedures. SAQA ensures that the PCC treats all applicants in an equitable manner. SAQA also maintains an accurate and up-to-date record of registered members and will investigate and respond to complaints and appeals. SAQA provides representatives of interested and affected parties with a means of interacting with SAIOH to ensure that OH professionals serve the needs of broader society as well as the OH profession itself.

Once a candidate has completed and passed the required assessment at the appropriate OH practitioner level and paid the applicable fees, the candidate's name is forwarded to SAQA for registration in the SAQA National Register.

Early in 2011, SAIOH started an application and motivation process, spearheaded by Jakes Jacobs, assisted by Deon Jansen van Vuuren and the PCC team, to become the SAQA-recognised professional body for the registration and certification of OH practitioners in South Africa, who practise at different OH designation and registration levels.

The application process and criteria were extensive and required commitment and hard work by Jakes Jacobs, the sitting SAIOH council and the PCC. After a review of the SAIOH application, which included an on-site assessment by SAQA, the SAIOH PCC was accredited as the only professional registration body for OH in South Africa, in 2011.

The SAQA recognition, similar to the IOHA-NARC accreditation, is a five-year renewable accreditation, with mid-term audits and proof of continuous improvement. This means that the SAIOH council and the PCC are continually working to ensure that SAIOH delivers quality systems and certified registered members.

SAIOH's SAQA recognition was successfully renewed in 2016, and SAIOH is presently undergoing its mid-term audit for the current period.

The occupational hygiene approved inspection authority (OH AIA) system

In the early 1990s, the (then) DoL, now the Department of Employment and Labour, became concerned about the poor quality of OH consulting



Occupational hygiene professionals dedicated to the enhancement of the discipline in South Africa strike a pose at the official launch of IOHSA at Eskom Megawatt Park Club, February 1993. L-R: SN Middel, Jo-Anne Bradley (now Benjamin), Faizel Salie (chief inspector, DoL), Rob Ferrie, Jace Naidoo and Richard Truter

Photograph: courtesy of SAIOH

services. These concerns led to the implementation of the assessment and approval of all AIAs. The guideline document encompassed the SAIOH certification and registration system for OH practitioners, and the registered occupational hygiene technologist (ROHT) level became the critical standard for working on site without direct supervision. This criterion was also included in the Mine Health and Safety Act as the minimum level of practice for mine-based OH practitioners, with ROHTs in possession of the Intermediary Mine Environmental Certificate being allowed to carry S16.1 appointments at surface works/mines.

In 2013, new guidelines for OH approved inspection authorities (OH AIAs) were published by the (then) DoL, making it mandatory for all approved OH AIAs to apply for accreditation by the South African National Accreditation System (SANAS), aligned with the SANS ISO IEC 17020 Inspection Body system. The OH AIAs were allowed just over two years to obtain their SANAS accreditation. The OH AIAs then had to undergo an assessment by the DoL, and if successful, were approved as OH AIAs (also for a five-year term).

The guidelines developed by the SANAS OH specialist technical committee (STC) have to be complied with, and regular surveillance audits by SANAS follow during a five-year period. Additionally, the managers of OH AIAs must be SAIOH ROHTs and all inspectors/OH field officers must be certified and registered by SAIOH at their respective competency levels. Technical managers and technical signatories must also be SAIOH ROHTs, especially as the latter do quality checks and sign off on all OH inspection reports. Furthermore, all OH inspection equipment must have annual calibration certificates issued by SANAS-accredited laboratories, and all chemical analyses are to be carried out by SANAS-accredited analytical laboratories, in line with SANS ISO IEC 17025, etc.

THE INNER WORKINGS OF SAIOH

The SAIOH administration and alignment of the quality management system (QMS) to ISO IEC 17024

The year 2012 was pivotal for SAIOH. After many years of commissioning secretarial services (via 'Ray of Safety', owned and managed by Ray Strydom), exponential growth in membership numbers and professional registrations, and the ongoing onerous requirements for attaining and maintaining IOHA-NARC and SAQA accreditations, SAIOH made the following decisions to provide the necessary permanent support to serve its members better:

- First SAIOH employed a part-time consultant, Bernd Oellermann, to drive SAIOH projects and in March 2012, the SAIOH PCC appointed Lee Doolan as the PCC administrator, in full-time employment
- In August 2012, SAIOH employed Kate Smart as the SAIOH administration officer (later promoted to chief administrative officer, after Bernd Oellermann left the employ of SAIOH). They were tasked with opening SAIOH's first dedicated office in Midrand, Gauteng
- In 2015, the PCC offices relocated to Kyalami Estate and Rebecca Dick joined Lee Doolan as a full-time PCC administrative assistant
- In 2016, the council administration office relocated to Willow Wood Office Park in Broadacres, Gauteng. Tracy Mphaphuli joined the council administration team in 2018, as an administrative assistant to Kate Smart
- Another ground-breaking project was the purchase and adaptation of a formal and fit-for-purpose membership database, 'MySAIOH'. This integrated management and membership software programme is an essential tool for maintaining the data of SAIOH's approximate 1 000 members. This system includes original applications, member profiles, evaluations, assessments, CPD points loading, SAIOH membership certificates, registrations and attendance registers

of SAIOH branch meetings/discussion groups, workshops and the annual conference, invoices, etc. The 'MySAIOH' database is linked to the SAIOH website

- The SAIOH website www.saioh.co.za also hosts the SAIOH Constitution, QMS, all forms, procedures, OH technical and training information, registration criteria, etc.
- The four permanently employed SAIOH administrative staff members have worked hard to support and aid the growth of SAIOH into the successful business it is today
- In April 2019, SAIOH embarked on a recruitment and interview process for its first general manager on a contract basis. Deon Jansen van Vuuren was appointed in this post, following his official retirement as an occupational hygienist after working in industry, AIA OH consulting and training OH practitioners for many years.

SAIOH is registered in terms of Section 14 of the Companies Act, Act 71 of 2008 and with the Companies and Intellectual Properties Commission of South Africa. SAIOH is a not-for-profit (NPO) organisation in terms of the Nonprofit Organisations Act, 1997 (Act No. 71 of 1997). These registrations and the legal ramifications mean that SAIOH operates as a recognised business.

In 2013, it quickly became apparent that the original QMS and procedures required a significant transformation and alignment to the ISO IEC 17024 quality management system. In 2014, the sitting SAIOH council, under the presidency of Jakes Jacobs, worked with consultants and internal council members to upgrade the SAIOH policies and procedures to be aligned with this ISO standard. This process was repeated in 2018, as part of a comprehensive review of a growing and changing OH entity and is envisaged to be finalised and approved by the end of 2020.

One of the significant changes and projects within the QMS was a total revision and modification to the (then) PCB application and assessment procedures described in more detail below. The changes to the QMS also led to a name change for the PCB, to 'PCC'.

SAIOH branches, discussion groups and the regional strategic plan

SAIOH has always had active regional branches, and more recently discussion groups. The committees and members of these branches ensure that SAIOH communications and support systems are available as widely as possible. Regions and provinces currently covered are Gauteng North, Gauteng South, Central (Free State and Northern Cape), Eastern Cape, Mpumalanga, KwaZulu-Natal, Zululand, Western Cape, North West (Rustenburg), North West (Potchefstroom), Botswana, and Namibia. SAIOH also has an approved regional strategic plan, which includes the appointment of regional coordinators, currently in the roll-out phase, to strengthen communication and contact between SAIOH members. SAIOH's strategic plan also includes further growth and development beyond national borders into more member states of the Southern African Development Community (SADC) and the rest of Africa.

The SAIOH application and skills management system and tools

The SAIOH KwaZulu-Natal branch is one of the oldest and most active, with a good contingent of long-serving members. In 2013, after a productive meeting and discussion with local branch members, the (then) sitting committee (of which the majority also sat on the PCC as oral assessors) approached SAIOH council with a proposal for a significant overhaul and improvement of the SAIOH application and certification system. The proposed system would be based on a skills matrix and the establishment and maintenance of a 'personal learning portfolio' (PLP) for individual members.

The skills matrix doubles as a gap analysis tool and a draft syllabus to allow members to understand the level and scope of knowledge of a set of skills required to practise OH at the various designated and recognised levels of registration for OH practitioners.

The skills definitions were developed and benchmarked against international sister organisation requirements as well as SAQA and local academic syllabi. Candidates conduct their own self-analysis, which yields scores to enable them to identify their readiness for assessment, or to arrange additional study and practice in weak areas (e.g. the identified gaps), as part of their 'self-assessment matrix'. From 2018 onwards, no new or upgraded applications could be accepted by the SAIOH PCC for consideration if they did not include the completed 'self-assessment matrix'.

In 2012, IOHA recognised the Occupational Hygiene Training Association's (OHTA's) training modules and qualifications. More information on OHTA, its modules and qualifications, and the approved training providers (ATPs), is available on the OHTA website: www.OHLearning.com.

OHTA negotiated with various training service providers to develop and offer a set of modular learning packages on specialised subjects in OH, many of the modules being based on the previous BIOH (now BOHS) modules originally offered at the (then) Pretoria Technikon (now TUT). From a basic introductory module, candidates for OH registration can work through a set of six or more intermediate modules. Completion of at least six of the core modules (week-long practical courses presented by licensed ATPs, with a BOHS Faculty Examination on the final day), in combination with a collection of reports as part of a PLP to prove OH experience and competence, and an oral assessment by an international committee, can lead to an Intermediate Certificate of Competence in Occupational Hygiene (ICertOH). This ICertOH is internationally recognised by IOHA and all its OH Associations, globally. Modules for an upgrade from ICertOH to a Diploma in OH Competence (DipOH) are currently under development.

SAIOH has a MoU with OHTA, as well as a SAIOH representative (nowadays designated a director) on the OHTA board. Deon Jansen van Vuuren was the first representative, followed by Jakes Jacobs and now Garth Hunter, thus ensuring seamless and parallel collaboration between SAIOH and OHTA with IOHA. SAIOH evaluates all OHTA ATP applications in southern Africa and conducts regular quality audits of the ATPs at a nominal fee, and has permission from OHTA to set and mark examination papers for the foundation OHTA module (W201 – Basic Principles in OH). SAIOH also recognises the OHTA qualifications in the PCC certification qualification requirements and uses this as the 'recognition of prior learning' (RPL) route, as required by the SAQA. More information is available on the SAQA website, and in the PCC certification sections on the SAIOH website.

The PCC recognises these OHTA training modules and qualifications as meeting the SAIOH certification requirements:

- OHTA W201: Basic Principles in OH – at the Registered Occupational Hygiene Assistant (ROHA) level, and with effect from 1 January 2020, replacing the PCC ROHA written assessment
- ICertOH – at the ROHT level
- For the future: DipOH (or the BOHS Diploma of Professional Competence in OH) – at the ROH level

The PCC system requires candidates to keep a PLP, which comprises proof of various learning and experience-related documentation. The inclusion of this type of portfolio as part of the assessment system aids the PCC assessors to have a better understanding of the candidate's experience in OH. The PLP policy and guidelines are available on the

SAIOH website. The PLP doubles as a file for the annual collation of proof for CPD point claims, which certified SAIOH members are required to submit every year via the 'MySAIOH' platform, as part of the requirements for renewal of their certified membership. The categories and activities that are eligible for CPD points are comprehensive, covering all OH aspects, and assist SAIOH not only to encourage member participation, but also to ensure a vibrant and active Institute. The CPD system and guidelines are available on the SAIOH website.

During the development of the system and tools, the project team realised that to ensure support to address the recognised skill gaps and the identified learning requirements, the system would also need a mentorship system and procedure. Currently there are 23 full-time mentors on a voluntary basis and 26 mentees registered in the SAIOH system. This project was developed and rolled out in 2015. The mentorship procedure, guidelines and forms are available in the QMS and thus on the website. Mentors and mentees can claim a specified number of CPD points annually for the mentorship process – if they are registered and the mentee development is maintained with proof of activities provided.

The skills definitions developed for the application and assessment system also enabled the PCC assessors to start a more streamlined and user-friendly oral assessment process. The model uses the skills definitions in various work-related scenarios, which are given to the candidates to discuss.

The new scenarios have model answers for use by the PCC assessors, resulting in a fairer, more objective, and aligned marking system across the board. This reduces variables between assessors and assessment teams, especially at the different SAIOH assessment centres, namely Gauteng (Midrand), KwaZulu-Natal (Durban), Western Cape (Cape Town), Free State (Bloemfontein), Eastern Province (Port Elizabeth), Northern Province (Kathu), Namibia (Windhoek and/or Swakopmund) and Botswana (one of the Debswana mines). This new oral assessment system is currently a work in progress with implementation planned during 2020. Extensive local training will be rolled out countrywide for all PCC assessors, as soon as the new oral assessment process has been completed and approved by the SAIOH PCC.

How it works: the certification and registration system of the SAIOH Professional Certification Committee (PCC)

From the outset SAIOH set three designated levels of registration, now also SAQA-registered designations:

• Registered occupational hygiene assistant (ROHA)

This designation allowed entry-level candidates with acceptable tertiary qualifications to sit a written examination covering the basic principles of OH.

Entry-level candidates were often employed as junior practitioners and worked with qualified and experienced occupational hygienists, or OH technologists, while learning the hands-on skills required to develop competency. Their registration and membership of SAIOH introduced them to OH as a profession and allowed them the benefits of membership, including participation in branch meetings, conferences and other forms of peer interaction.

However, it became apparent over time that some employers abused and misused the ROHA designation. They employed or appointed young, sometimes poorly qualified, ROHAs on a contract basis, expecting them to work long hours and carry out field work in OH monitoring and other tasks, but did not pay them fair wages, nor assist or allow them to progress to the next level of SAIOH certification. After numerous complaints to SAIOH and the (then) DoL, the latter requested that SAIOH address this situation of concern.

The PCC then amended the ROHA requirements, setting a five-year limitation rule for progress to the next level. Thus, with effect from 1 January 2018, any ROHAs certified and registered with SAIOH have five years to become certified at the next OH registration level.

With effect from 1 January 2020, the PCC written assessment has been replaced by the successful completion of the foundation OHTA module (W201 – Basic Principles in OH). Julie Hills and Kevin Renton were the drivers and originators of the project, which culminated in SAIOH receiving permission from OHTA to set and mark the W201 examination papers in South Africa.

• **Registered occupational hygiene technologist (ROHT)**

Once candidates achieved two years of experience, working full-time in OH (a minimum of 70% working time per year), and providing their qualifications met the entry-level requirements, they could upgrade to ROHT level of OH registration.

The minimum qualifications were always a three-year tertiary qualification in OH, or a related science, at the SAQA National Qualifications Framework Level NQF07. IOHSA implemented a 'granny clause' (later referred to as the 'grandfather clause') to enable OH practitioners who had worked for many years in this field, without the correct tertiary qualifications, to exchange two years of OH practical experience for one year of tertiary qualification. Thus, to qualify for assessment at the ROHT level, an applicant needed six years OH experience (= 3 x 2, to cover the qualification requirement) and another two years of work experience (to comply with the two years of OH experience requirement); a total then of eight years working in OH.

This 'allowance' created many issues of concern at the IOHA-NARC, with SAIOH having to prove in 2011 that this 'informal conversion system' was in the process of being phased out. Fortunately for SAIOH, as early as 2008, the Institute had already started alerting its members and prospective applicants that the 'grandfather clause' would be terminated within five years (officially by 31 December 2014).

The ROHT assessments are comprised of a written examination of three hours, with more complex essay and calculation questions. Upon a successful written examination outcome, the candidate then undergoes an oral evaluation with a team of experienced assessors. The oral assessment is based on practical aspects of OH practices and aims to ensure the hands-on competence and ability of the candidate to perform surveys in line with accepted quality methodology. A minimum pass rate of 65% is required for each of the ROHT assessments. The ROHT level is also the maximum entry level into the SAIOH certification system, meaning that any first-time applicant cannot be assessed at the ROH level if he/she did not pass the ROHT assessments first.

Finally, with effect from 1 Jan 2021, the ROHT applicant will need a SAIOH-recognised OH qualification at SAQA NQF level 7, or a scientific qualification at NQF 7 and at least three core OHTA modules, or the OHTA ICertOH certificate (RPL route).

• **Registered occupational hygienist (ROH)**

This level of registration is the full professional grade. Candidates must be registered as ROHTs and gain a further three years of experience (again full-time, at 70% working time in OH), resulting in five years in total. They then sit a written assessment (three hours), and if successful, they also sit an oral evaluation. The minimum pass rate for each of these ROH assessments is 70%. At ROH level, the expectation and emphasis are on management and control aspects of OH practice.

From the outset, the requirements for the ROH grade were aligned with international criteria. In the early years, due to a lack of formal

education options in OH, and in line with several national sister associations in OHS, SAIOH implemented the 'grandfather clause' already mentioned, allowing candidates with many years of practical experience to substitute experience years for qualification criteria of the NQF. Although eventually abolished, this practice was justifiable at that time, due to a shortage of competent personnel on the ground, providing much-needed resources.

In 2016, the SAIOH PCC decided to set the minimum OH content of the recognised qualifications at not less than 50%, and 'clean up' the qualification requirement to align it with the required standard of IOHA, namely 'Minimum OH competency requirements for an OH practitioner' and the SAQA NQF rating(s).

On 31 December 2020, this three-year grace period will also come to an end and the ROH criteria will come into effect; namely, a tertiary qualification, meeting the 50% OH content requirement and at the NQF 08 or better rating, or the scientific degree (NQF 08) and the additional OHTA ICertOH qualification, or the DipOH from OHTA or BOHS qualification(s) as per the RPL route. More information on this important development is already available on the SAIOH website and will, in due course, also be available in the PCC section in the QMS.

The only exception to this rule is as follows: until 31 July 2022, holders of a BTech degree (NQF 07) in Environmental Health from an university of technology will still qualify to be assessed at the ROH level. SAQA previously rated a BTech degree at the same level as BSc (Hons) degrees, thus NQF 08. SAQA reviewed its ratings two years ago, re-rating the BTech degree (NQF 07). Universities of technology are currently phasing out BTech degrees, effectively replacing them with Bachelor degrees at a SAQA NQF 08 rating. Currently there is no 'quick route' to upgrade the BTech to the Bachelor qualification.

The observed high failure rate for the assessments, not only at the ROHT level, but becoming higher at the level of occupational hygienists, became a serious concern for the SAIOH PCC. Under the leadership of the various PCC chairs and senior PCC assessors, i.e. Deon Jansen van Vuuren, Julie Hills, Richard Mdlalose, Sean Chester, Jaco van Rensburg and Andrew Dickson, the PCC proceeded to develop a complete OH question database, with enough questions verified by tertiary institutions, and covering a wider variety of topics. New written assessment papers were developed; these were marked by teams of qualified ROHTs. The pass rate did improve somewhat, i.e. increasing to 59% for ROHTs (from 41% in the previous years) and 32% for ROHs (up from 19% in previous years). This was still not an acceptable quality standard, and all PCC members agreed on the simple fact that candidates did not have enough knowledge in both basic and advanced OH principles. Ultimately this meant that SAIOH was losing more ROHTs to other safety, health, environment and quality (SHEQ) jobs, and through retirement and death, than could be grown organically within the OH profession, by upgrading to the next OH registration level. Over the years, occupational hygienists became scarce and sought-after resources with specialised skills and experience. Hence, many employers opted to appoint several ROHTs working under only one ROH and paying salaries well above the market benchmark for both categories (ROHT and ROH). Effectively, the ROH registration has been rendered as 'elitist, non-lucrative and unattractive' as it was perceived to be unattainable.

With jobs still readily available in the OH profession, there was also an influx of poorly qualified practitioners into SAIOH, with no specific qualifications in OH. This caused discontent amongst members who could not progress, and with employers and the (then) DoL alike, who did not see high-quality OH work.

The SAIOH PCC started to address this issue of declining standards in

OH training in 2016 already, as previously indicated, by means of setting the minimum OH content of the recognised qualifications at not less than 50%, and in alignment with the IOHA standards and SAQA NQF ratings. During 2020, the first five tertiary institutions that have applied for this new SAIOH accreditation of their qualifications will be assessed, and the qualifications that are accredited will be posted on the SAIOH website, to assist in the career choices of current and prospective students.

After notifying all new and upgraded certification candidates about these imminent changes to the specific requirements for OH qualifications, in their application correspondence from 2016 already, on 31 May 2019 the PCC disseminated a general notification for all interested parties. A statutory six-week comment period followed, and in July 2019 the PCC approved and circulated an 'Amendment to the Original Notification'. Each SAIOH member was requested to acknowledge and sign this new amendment (now part of any new or upgraded certification application). Thereafter, the PCC embarked on an intensive 'marketing campaign' across the provinces, delivering detailed presentations at SAIOH branch meetings and workshops, at the meetings and workshops of the OH AIA Association, and also publishing an article in both the *Occupational Health Southern Africa* journal and the *National Safety Magazine* (now the *African Occupational Safety and Health Magazine*) towards the end of 2019. The marketing campaign culminated in a professional development course (PDC) (a half-day session) at the 2019 SAIOH Annual Conference, held in Magaliesburg in October 2019, as well as an information session within the 2019 SAIOH AGM.

SAIOH HIGHLIGHTS AS IT MOVES WITH THE TIMES

The SAIOH Mining Forum

After many years of discussion and negotiation around the practice of OH in the mining sector, and issues relating to SAIOH assessment and certification requirements, SAIOH council proposed the formation of the 'SAIOH Mining Forum', to be managed and integrated as a sub-committee of SAIOH council and PCC members, led by Prof. Cas Badenhorst and Brian Mongoma.

The 'SAIOH Mining Forum' was officially launched at the 2018 SAIOH Annual Conference held in the Drakensberg, in KwaZulu-Natal. The Conference programme allocated a full day for presentations and the launch of the 'SAIOH Mining Forum'. The new sub-committee organised the content of the programme, and the session turned out to be one of the highlights of the Conference. Riding on the wings of the initial success, the 'SAIOH Mining Forum' sub-committee then offered to organise the 2019 SAIOH Annual Conference. Last year's (2019) Conference was another resounding success, with excellent content and presenters (especially from abroad).

SAIOH looks forward to a more interactive involvement with these keen and supportive sub-committee members, in terms of ongoing collaboration to align the mining sector requirements with the SAIOH development system. This collaboration dovetails very well with the established partnership between the MVS SA and SAIOH, referred to earlier.

The SAIOH Fellow Awards

The category 'SAIOH fellow' was adopted from the initial IOHSA Constitution and written into the SAIOH QMS. In effect, a SAIOH fellow is a longstanding SAIOH member who is nominated by the SAIOH council or PCC in recognition of his/her contribution to OH. The nominees are required to have been SAIOH-certified members at the ROH level for at least ten years, to have participated at branch, PCC and/or council levels for several years, and to have made significant contributions to the field

of OH (at the levels of education and OH practice), and to the Institute. A comprehensive *curriculum vitae* (CV), with supporting evidence of said contributions, must accompany the nomination. A matrix with set criteria was developed for assessing nominees (by Hennie van der Westhuizen), and only if a score higher than 70% is awarded by the SAIOH evaluation sub-committee, will the nomination be put forward to the SAIOH council and PCC for final adjudication and award of the Fellowship.

At the following SAIOH annual conference, the new SAIOH fellow is required to deliver a short presentation on OH and lessons learned. A certificate is then handed over to the new SAIOH fellow at the conference's gala dinner.

Benefits extended to SAIOH fellows include free life-long SAIOH membership with the associated free subscription to the official journal, *Occupational Health Southern Africa*, a requirement for fewer CPD points to continue being a SAIOH-certified member, and free registration for the SAIOH annual conferences.

During the IOHSA period, only two nominees were successful in receiving SAIOH Fellow Awards, as mentioned earlier, namely Drs John R Johnston and Johan Kielblock. In the years that followed, no SAIOH Fellow Awards were bestowed until Deon Jansen van Vuuren received this coveted recognition in 2012.

In 2019, the SAIOH council and PCC decided at a joint workshop to reinstate the nomination process for more deserving SAIOH members to become SAIOH fellows. Hennie van der Westhuizen (as mentioned above) developed a matrix with a scoring system that incorporated all Fellowship criteria on a weighted scale. Following the evaluation process, and using this new matrix, three SAIOH Fellow Awards were bestowed at the 2019 Annual Conference; namely, to Julie Hills, Johann Beukes and Prof. Fritz Eloff, bringing the total number of SAIOH fellows to six.

The SAIOH Annual Awards

From as far back as the OHASA and the IOHSA days (from 1989), every year at the annual conference, SAIOH bestows annual awards, to honour and recognise valuable contributions made by its members to the OH discipline and profession. Members are invited to nominate their peers of choice and provide supporting motivations for consideration by SAIOH. Following a review process, the Awards are bestowed for the following categories: (i) Occupational Hygienist of the Year; (ii) Personality



IOHA-NARC recognition certificate: Ray Strydom (left) and Deon Jansen van Vuuren (centre) prepared SAIOH's application for recognition of the PCB certification system for submission to IOHA. Deon hands his OHASA tie to Emmanuel Rushford (SAIOH Western Cape Branch Conference Organiser) at the SAIOH 2006 Annual Conference held at the Cape Peninsula University of Technology Photograph: Bertie Brits



of the Year; (iii) OH Article of the Year; (iv) OH Student of the Year – Tertiary Institutions; (v) OH Student of the Year – Vocational Education and Training; and (vi) candidate(s) with the highest average marks in the three assessment categories (ROHA, ROHT, ROH).

Select SAIOH achievements to date

- SAIOH co-hosted the 6th IOHA Scientific Conference in the Pilanesberg (2005) in partnership with the MVS SA. Dr David W Stanton co-ordinated and submitted a bid in 2002 for SAIOH to host this prestigious global event; he was responsible for most of the organisational and management aspects, aided by a small team comprising members from SAIOH and the MVS SA, with Ray Strydom of 'Ray of Safety' assisting with the logistics. The successful conference was attended by approximately 350, mostly international, delegates
- A significant contribution to the literature was the 2007 Mine Health and Safety Council-sponsored *Handbook on Mine Occupational Hygiene Measurements* by Drs David W Stanton, Johan Kielblock, Johan J Schoeman and John R Johnston. It was dedicated to Derrick Beadle, a former president of the MVS SA and a world authority on occupational exposure to airborne dust in gold mining
- The SAIOH PCC has been officially accredited as an IOHA-NARC-recognised certification body for three five-year terms to date (2006–2019, and onwards)
- SAIOH bestowed four new SAIOH Fellow Awards during the period 2012 to 2019
- SAIOH established and continually maintains a question database with model answers for the SAIOH PCC written assessment
- The SAIOH PCC researched and established effective certification criteria for the SAIOH certification system (2016–2019)
- SAIOH has successfully grown its membership from 200 members in 2002 to almost 1 000 in 2020
- SAIOH set up its own administrative offices (effective 2012), first in Midrand, followed by a relocation to Broadacres (SAIOH council) and Kyalami Estate (SAIOH PCC) a few years later, and has employed four full-time staff members (two in each office) and, more recently, a part-time a part-time general manager (effective April 2019)
- SAIOH purchased and adapted an integrating membership database software programme, 'MySAIOH', for the benefit of its members and to ensure good practice in its record keeping
- SAIOH developed its own website: www.saioh.co.za
- SAIOH developed its own QMS, which is aligned to ISO IEC 17024, and is updated regularly
- SAIOH has been officially recognised by SAQA as the only 'Professional Registration Body for Occupational Hygiene' in South Africa, for three approved registered designations, namely ROHA, ROHT, and ROH
- SAIOH maintains MoUs with recognised occupational health/OH bodies at national and international levels, and with both public and private sector entities, e.g. IOHA, OHTA, AIHA, BOHS, MVS SA, SASOM, SASOHN, Saiosh, South African National Department of Employment and Labour, the US National Institute for Occupational Safety and Health (NIOSH), Australian Institute of Occupational Hygienists (AIOH), and WHWB (Workplace Health Without Borders)
- SAIOH makes valuable contributions to STCs of various entities, e.g. South African National DMRE, South African National Department of Employment and Labour, SANAS, SAQA and the South African Bureau of Standards (SABS)
- SAIOH provides expert input towards the development and update of the Occupational Health and Safety Acts and Regulations

- SAIOH hosts successful annual conferences on a rotational basis across the provinces and has co-hosted joint conferences, e.g. with the IOHA board after an IOHA meeting in Durban, SA (2013)
- The SAIOH PCC offers three written and oral assessment sessions every year. The 2019 statistics are: total number of candidates assessed – 331 (all categories); pass rate for all the written assessments – 81%; pass rate for all the oral assessments – 82.2%
- Presidents of SAIOH: Dr David W Stanton (2000–2001), Piet Marais (2002–2003), Coen Buddingh (2004–mid-2005), Deon Jansen van Vuuren (mid-2005–2007), Sibongiseni Myeni (2008–2009), Melinda Venter (2010–2011), Johann Beukes (2012–2013), Jakes Jacobs (2014), Prof. Cas Badenhorst (2015), Jaco Pieterse (2016), Kenneth Hlungwane (2017), Julie Hills (2018), Celia Keet (2019), and Norman Khoza (2020).

Current SAIOH projects

As we move into a new and exciting decade, the SAIOH council and PCC members are working diligently on various projects, including the development of:

- The SAIOH 'Occupational Hygiene Skills Forum' (OHSF), with the objective of providing more module-based specialised subject training, locally
- Communication and education materials and activities about the OH profession, for schools and career development agencies as the main target audiences
- Communication and education materials and activities about technical issues in OH for dissemination to SAIOH members, the media and the general public
- An electronic question database for the SAIOH PCC written assessments; the latter are to be made available online in due course.

CONCLUSION

As part of an ongoing process to ensure continuous high-quality standards for the OH profession, SAIOH evaluates its success and progress against the following Institute objectives:

- Advancing the discipline of OH
- Promoting the activities of the Institute
- Upholding and promoting the interests and status of members
- Recognising appropriate qualifications and/or experience
- Committing to strict ethical standards
- Offering opportunities for professional development.

Occupational hygiene and the related occupational health societies, have a long and rich history in South Africa. Through society efforts, occupational health has become well established in legislation and in government structures. Reports of occupational health activities and articles are published in *Occupational Health Southern Africa* and occupational health subjects are taught in tertiary institutions, i.e. universities and universities of technology. A wide range of occupational health research activities are conducted through established and recognised organisations, such as the CSIR, NIOH, Safety in Mines Research Advisory Committee (SIMRAC), and the various tertiary institutions. All occupational health societies in South Africa have well-cemented links with international organisations, e.g. ICOH, ILO, WHO, IOHA, NIOSH and several international conferences on occupational health have been hosted in South Africa.

Despite efforts from society and professionals alike, a considerable amount of work and ongoing commitment is still required to improve the working conditions and health of the population, to address the fragmentation in legislation and government structures, and to improve occupational health services and workers' access to medical examinations for compensation of occupational diseases.