

IOHA sponsors North-West University Student Top Achiever Award

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Education and research in the field of occupational hygiene at the North-West University (NWU) in South Africa dates back to the 1970s. Initially, a post-graduate Honours degree was offered but this was later followed by a Master's degree. In 2013, the need for a specialised Bachelor's degree was identified; the degree was approved within the South African higher education framework in 2015.

The objective of the four-year professional Bachelor of Health Sciences (BHSc) degree in Occupational Hygiene, the only one of its kind in Africa, is scientifically to educate and equip students with the necessary knowledge and specialised skills (including problem solving and relevant competencies) required to become occupational hygienists. This involves training them to be able to anticipate, recognise, evaluate and control health hazards in the working environment, with the objective of protecting workers' health and wellbeing, and safeguarding the community at large. The first cohort of students registered for the BHSc in 2016 and will graduate in early 2020. At present, exactly 100 students are registered for this degree (in any of the four years); at least five are from Namibia and Zimbabwe. If one considers that there were 893 individuals registered as members of the Southern African Institute for Occupational Hygiene (SAIOH) at the end of 2018, the addition of 100 graduates in the near future will make a significant human resource contribution to the field, which is responsible for rendering occupational hygiene services to a formal workforce of approximately 16 million workers in southern Africa.

The International Occupational Hygiene Association (IOHA) has generously sponsored the BHSc Top Achiever Award, which is awarded to the final-year student who achieves the highest overall marks for all the occupational hygiene modules in this degree, over the four-year period. For 2019, this was awarded to Ms Carol-Mari Schulz. The award of US\$300 was presented to Carol-Mari at a ceremony held on 24 October 2019 on the Potchefstroom Campus of the NWU. In addition to the IOHA award she received the Fritz Eloff-Petrus Laubscher floating trophy. This trophy carries the names of two NWU academics who were historically responsible for establishing and developing occupational hygiene as a subject field at the university. The trophy itself is a concrete test block from the Occupational Hygiene facility that was built on campus in 2018. Carol-Mari's immediate future plan is to enroll for a Master's degree in Occupational Hygiene at the NWU in 2020.

Prof. Fritz Eloff, Ms Carol-Mari Schulz and Mr Petrus Laubscher issued a joint statement of appreciation: "We sincerely thank IOHA for the sponsorship of this award. As a university, we share the vision of IOHA in promoting occupational hygiene as a profession.

We are of the opinion that this degree will make a significant contribution to the advancement of occupational hygiene in South Africa and Africa."

IOHA board members' travels and presentations

In October Mr Rene Leblanc, IOHA President, travelled to Medellin, Columbia to attend the Columbian Association of Occupational Hygiene (ACHO) 18th Columbian Congress of Ergonomics. He gave a presentation about future IOHA objectives and strategies, and met with representatives from a variety of organisations to discuss collaborations and projects.

Mr Leblanc also travelled to the 37th Annual Conference and Exhibition of the Australian Institute of Occupational Hygienists (AIOH) in Perth, Australia, from 30 November to 4 December 2019. He gave a presentation on IOHA activities and international collaboration. With some persuasion, Rene was also allowed to give an additional presentation to make a case for why IOHA is needed, and what the Association's strategic plans and most important projects will be in the next five years.

In November 2019, Dr Tom Fuller, the IOHA President-Elect, travelled to Buenos Aires, Argentina to meet with the Association of Occupational and Environmental Hygienists of the Republic of Argentina (AHRA). The Association has approximately 80 members



At the BHSc Top Achiever Award ceremony (L-R): Prof. Fritz Eloff, Ms Carol-Mari Schulz and Mr Petrus Laubscher

Photograph: Johan du Plessis

and has been in existence for several years. The meeting began with an overview of AHRA programmes and activities, both conducted and planned. Dr Fuller had an opportunity to provide information about IOHA and current projects regarding consensus building for curriculum development. Argentina offers both Bachelor's and Master's degree programmes in occupational hygiene. The development of an occupational hygiene exam in Spanish was also discussed, including the steps needed for it to be accepted into the National Accreditation Recognition programme.

During this meeting Dr Fuller also spoke about the Occupational Hygiene Training Association (OHTA) and its programmes. He described the various training modules that are available and encouraged AHRA to consider becoming approved trainers so that the OHTA courses can be offered in Argentina.

In a separate meeting, Dr Fuller also met with a new occupational hygiene professional group, the Argentine Society of Occupational Hygiene (SAHIO). This group has approximately 30 members and applied for IOHA membership during 2019. Recently, SAHIO received final approval by the Board and is now a full member of IOHA. Congratulations and welcome to IOHA!

Creating a Spanish-language national accreditation recognition certification body

After recent meetings and conversations with Spanish-speaking organisations in IOHA (AHRA, ACHO, AMHI and AEHI), Dr Fuller has created a group with the intent of establishing a Spanish-language National Accreditation Recognition (NAR) certification body, which will offer examinations in Spanish. The project will proceed in two parallel paths. The objective of the first is to create a governing body that meets the IOHA NAR requirements, including policies, programmes and procedures. The second major activity will involve the development of a large bank of exam questions. Dr Fuller is in the process of identifying a group of volunteers to assist in this project and is aiming for completion within two years. Anyone with insight or recommendations for the group is encouraged to contact Dr Fuller directly at the e-mail address: tpfuller1@gmail.com



AHRA meeting attendees in Buenos Aires, Argentina

Photograph: unknown



SAHIO meeting attendees in Pilar, Argentina

Photograph: Amanda Mastrovincenzo

New Zealand Whakaari volcano eruption and occupational hygiene responses

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A unique adventure tourism experience offered in New Zealand was a visit to an active volcanic island—Whakaari (White Island). Visitors could walk on the uninhabited live volcano, located a short boat ride from the coast of New Zealand. On 9 December 2019, about 100 people were on or near the island when it erupted without warning. Steam, rock and ash shot 3.6 km into the air. Sadly, 20 people died and 25 are still in hospital, some in critical condition. The victims suffered severe burns from super-heated geothermal fluids and highly corrosive ash. Skin banks from around the world have contributed millions of square centimetres of skin for the multiple skin grafts needed for the survivors, many of whom will require months of surgery and rehabilitation.

Immediately following the eruption, tour boat operators and local helicopter pilots ferried injured people back to the mainland. One civilian helicopter that was on the island during the eruption was so badly damaged by ash it could not be flown. After the initial evacuation, the island and nearby water were closed due to the high risk of further eruptions and the unknown atmosphere and ground conditions. Drones were deployed to identify any remaining people; sadly, the images showed that it was unlikely anyone on the island survived the initial eruption.

IDENTIFIED HEALTH RISKS

In addition to projectiles and super-heated fluids, gases likely to have been present at high levels at the time of the eruption were carbon dioxide, sulphur dioxide, hydrogen sulphide and halides of hydrogen (hydrogen chloride, hydrogen fluoride and hydrogen bromide). The halides produced acidic liquids and resulting ash was high in fluorides. In addition, heavy metals such as mercury, lead and arsenic were released during the eruption of the volcano.

Although the island's volcanic activity had been monitored for many decades by volcanologists, and in-situ monitoring equipment was still functioning, the equipment was located in areas remote from where the recovery team had to venture, and was designed for assessing volcanic activity, not assessing health risk. People had been visiting the island for decades, usually without respiratory protection, and the atmospheric concentrations of hazardous aerosols following the eruption were unknown. Eyewitness reports indicated that gas and airborne particulate exposure caused health effects during and immediately after the eruption. To provide additional information before going onto the island, air monitoring equipment with remote sensing was deployed using drones.

Risks to first responders, ambulance staff, hospital staff and post-mortem workers included exposure to hazardous chemicals through cross contamination of ash and hydrothermal fluids on patients. Early responders attempting to recover bodies from the island were at risk of an additional eruption and exposure to unknown hazardous particulates, gases and hot acidic fluids. In addition, the ground was covered in ash and difficult to walk over, and was also hot and shaking with tremors.



Rescuers working in testing conditions on Whakaari Island after the volcano eruption Source: NZDF. <https://www.stuff.co.nz/national/118185646/whakaari-white-island-nzdf-shows-absolute-courage-in-an-unpredictable-environment>

RISK MANAGEMENT

To recover the deceased safely, and minimise the risk of further loss of life or health, a multi-disciplinary team, led by the New Zealand Police, gathered to pool knowledge and resources to develop a plan. This involved various scientists (occupational hygienists, volcanologists), medical specialists, search-and-rescue specialists, victim-identification specialists, and the New Zealand military.

The risk management plan depended not only on the right timing, personal protective equipment (PPE), gas monitors, health surveillance and decontamination, but—most critically—the operation had to be carried out by the right people. Given the high heat load from wearing impervious chemical suits (to prevent contact with corrosive gas, liquid or particulate matter), rebreather closed-circuit breathing apparatus (in case of toxic gases), and the heat from the volcano itself, heat stress was a critical risk. The people selected for this operation had been highly trained in the assessment of their own physiological state at the extremes of physical effort, and could hold their nerves under very testing conditions. These people comprised the New Zealand Defence Force specialist bomb disposal team.

Fortunately, recovery operations were successful and no additional injuries occurred. Travel to the island has been discontinued as the Whakaari volcano remains active. The newly created National Emergency Management Agency was responsible for coordinating more than 20 government and support agencies. WorkSafe New Zealand, for which this author works, will continue to be involved and work to investigate worker exposures and outcomes.

REFERENCES

1. RNZ. New Zealand. Whakaari/White Island rescue: 'Nothing can really prepare you for an eruption like this'. Available from: <https://www.rnz.co.nz/news/national/405185/whakaari-white-island-rescue-nothing-can-really-prepare-you-for-an-eruption-like-this> (accessed 23 Jan 2010).