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

SPACE WEATHER AND OCCUPATIONAL HYGIENE

Overview

To whet the appetites of our members, in preparation for a paper to be presented by a speaker from the South African National Space Agency at the 2023 SAIOH Annual Conference in Cape Town, here is a brief overview of the concept of space weather and its effects on humans in space. It is followed by a brief discussion on the National Aeronautics and Space Administration (NASA) approach to managing hazards and risks to which astronauts are exposed, and views on the relationship between space weather and occupational hygiene. The information is by no means comprehensive.

Introduction

“And how is the weather down your way?” we may ask, to close those awkward gaps that sometimes punctuate conversation. When discussing space weather, however, one is most certainly not indulging in small talk. Imagine dealing with answers such as: “The solar winds are blowing strong today. I wonder if the Aurora Australis is going to be as spectacular as the Aurora Borealis!” Or, alternatively, “A wayward cosmic ray sped through our computer and spontaneously caused bit no. 13 in the memory to flip, resulting in 4096 extra votes for one candidate in our regional election.” Although a bit dramatised, an actual incident like this took place during an election in Belgium on 18 May 2003, where the cause of a bitflip was allegedly a cosmic ray.1,2

Thanks to the generosity of my colleague and friend, Dr Sibongeseni Myeni, I was introduced to this new concept of ‘space weather’. I was fascinated by this discipline and, instinctively, the question arose as to whether there is a relationship between space weather and occupational hygiene. Naturally, some feverish page flipping followed.

Space weather

The United States Department of Commerce: National Oceanic and Atmospheric Administration (NOAA) clarifies space weather as follows: “Space weather describes the conditions in space that affect Earth and its technological systems”. NOAA proceeds by saying that space weather is a consequence of the behaviour of the sun, the nature of Earth’s magnetic field and atmosphere, and our location in the solar system. Weather, as we know it down here on Earth, manifests itself by way of water, air, and temperature. In comparison, the elements of space weather are particles, electromagnetic energy, and magnetic fields.3 These elements present a high radiation hazard to astronauts and, to a lesser extent, pilots flying at high altitudes.3

Discussion

From an occupational hygiene perspective, the hazards and risks associated with travel in space and high altitudes need to be managed. NASA recognises the space radiation risks to astronauts; their controls are aimed at reducing the risks to the lowest achievable level.4 The technologies that they are developing are aimed at keeping exposure to space radiation below permissible exposure limits (PELs), whilst increasing the duration of flights. The aims are focused on the following aspects, which, to avoid misinterpretation of NASA activities, are copied verbatim from the NASA website:4

1. Risk assessment modelling: Reduce uncertainty in assessing the risk of death due to radiation exposure and improve cancer risk assessments as well. Include circulatory and central nervous system (CNS) effects in assessments.
2. Radiation mitigation and biological countermeasures: Extend the number of safe days in space by developing biological countermeasures that reduce radiation health risks by 50% for the mission duration through small, low-mass, low-power, crew-friendly sensors that monitor the radiation environment.
3. Radiation environment modelling: Improve the ability to predict future space weather events and their duration to prepare and protect the crew.

Knowledge of space weather events is essential in the control of the exposure of astronauts. Ultimately, the aims and actions are focused on the protection of astronauts against stressors – in this case, radiation from the space environment. These aims and actions resonate in the definition of occupational hygiene, of which the aim is to protect workers against stressors in the work environment. Our future SAIOH President, Naadiya Mundy, also did some page flipping, and is responsible for the phrase that has been capped for occupational hygiene in space: ‘astronautical hygiene’.6,7

Conclusion

All workplaces, whether on land, underwater, or in space have stressors to a greater or lesser extent. The approach of anticipating, recognising, evaluating and controlling these stressors is entrenched in the definition of occupational hygiene and may be applied to manage those stressors. Radiation hazards and their fluctuating intensities are related to space weather, and knowledge of space weather is essential for the protection of astronauts. Readers seeking more information on the topic may consult the NASA website on the use of manikins in the unmanned flight of Artemis 1.8 Information on astronautical hygiene research can be found in the article by Tran et al., 2018.8

Acknowledgement

I wish to thank Lee Doolan and Naadiya Mundy for their valuable contributions in finalising this section of the Presidential Report.
REFERENCES


NATIONAL COUNCIL FEEDBACK

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Strategic plan

The current SAIOH strategy (5-year plan) is steered by Jaco Pieterse. The strategy is discussed, and progress thereof evaluated, at each monthly SAIOH Management Board meeting, and at the quarterly Council meetings. The revised 5-year strategy will be circulated to all SAIOH members and launched at the annual general meeting (AGM) on 27 October 2022.

Ethics

As previously mentioned, SAIOH entered into an agreement with well-known legal advisors, NGO Law, to represent the Institute when required. The first task, i.e. to develop a memorandum of incorporation (MoI) to replace our current Constitution, was received and final comments are in preparation. This will be circulated to all SAIOH members and approved at the AGM on 27 October 2022.

Our legal advisor’s next task will be to review the SAIOH Ethics Policy and Procedure(s), thus enabling the Ethics Committee to start its work in earnest. The Ethics Plan forms an important part of the SAIOH strategy.

A multiple-choice questionnaire, based on Terry McDonalds’ webinar, which was presented at the 2021 annual virtual conference, will be forwarded to all participants and members who purchased the recording during 2022. In a format similar to the Survey Monkeys that SAIOH uses, there will be a time limit of 30 minutes to complete the questionnaire, and only the members who attended the 2021 ethics webinar, or purchased that recording, will receive a passcode to access and complete the test. Members will be allowed three attempts at weekly intervals, with the system automatically marking the paper and notifying the candidate of the outcome. The required pass rate is 60%. The successful candidates will be able to download their certificates from the website.

There will be a hybrid ethics professional development course (PDC) at the 2022 SAIOH Annual Conference in Gauteng on 26 October 2022.

SAIOH branch activities

Virtual meetings and workshops present numerous opportunities to SAIOH members. All SAIOH members are invited and may attend any SAIOH branch meeting (or event), regardless of their branch affiliations. We encourage all our members to support their branches, and to participate in branch activities and earn continuing professional development (CPD) points. Members can submit topics for discussion to the various branch Chairs for consideration for future webinars/meetings and/or workshops.

On 10 June 2022, the Western Cape branch hosted its second in-person meeting. Rinus Kriel gave an exceptionally interesting presentation on ototoxicity. Thirty-seven occupational health professionals (OHPs) attended. The KwaZulu-Natal branch held their second virtual meeting on 23 June 2022. Four branch members presented talks on the new Hazardous Chemical Agent Regulations, and 51 persons attended. The Gauteng branches held a successful virtual meeting on 24 June 2022. Sean Chester gave an excellent presentation on toxicology (human biology and target organs); 53 persons attended.

The Botswana branch held a virtual meeting on 14 July 2022. A new branch committee was elected, with Patrick Baleseng as the new Chairperson. There were two presentations: mine ventilation during COVID-19, and the health effects experienced by women working in open-cast mines. Thirty OHPs attended. More branch meetings are scheduled for September 2022.
A call for abstracts on the conference theme was circulated. Significant interest has been shown with several abstracts already received from SAIOH members.

Appreciatively, SAIOH has received sponsorships for the conference from several supporting companies.

New SAIOH website and online payment platform
SAIOH engaged website developers to completely overhaul the SAIOH website, specially to allow integration with the Member Management System (MySAIOH). The SAIOH administration teams are progressing well with the implementation and population of the new website.

SAIOH has started the process of implementing an online credit card payment system on a well-known international platform, like PayU, to make electronic payments easier for members. As soon as this is finalised, SAIOH will notify all members with a guideline on how to use it. A special ‘thank you’ goes to Kate Smart for her work in this regard.

Communications
SAIOH publishes its newsletter and President’s Address in two electronic mediums, namely Occupational Health Southern Africa Journal, and the African Occupational Safety and Health magazine (A-OS&H). These publications are issued bimonthly, and the links are sent to all members via a Mailchimp and posted on our website. Four issues of these two publications have already been sent to all SAIOH members this year.

SAIOH communicates daily with its stakeholders via e-mails, phone calls and virtual meetings, imparting important news, technical information, legislation revisions, new Standards, and announcements of webinars, to name a few.

Some recent interactions
• SAIOH hosted a virtual Occupational Health Southern Africa Editorial Board meeting on 10 June 2022.
• Workplace Health Without Borders (WHWB) held several occupational hygiene-related webinars during the past three months.
• The International Labour Organization (ILO) held a virtual information session on 11 July 2022.
• The Occupational Hygiene Approved Inspection Authority (OH AIA) Association held a virtual meeting on 15 July 2022.
• A virtual presentation on SAIOH and the certification system was delivered to University of Pretoria 3rd- and 4th-year students of occupational hygiene, on 11 August 2022.
• SAIOH, DoEL, and OH AIA Association held a liaison meeting, in person, and online, at our Broadacres offices, on 18 August 2022.
FROM THE PROFESSIONAL CERTIFICATION COMMITTEE (PCC)

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Certification assessments
A summary of results from assessments, as of 18 August 2022, is provided in Table 1.

The third and final rounds of PCC written and oral assessments are scheduled to take place on Friday, 23 September 2022 and Friday, 21 October 2022, respectively.

Oral assessment improvements
The PCC technical team continues to work on revising the PCC oral assessment format and questions, in line with the occupational hygiene self-assessment tool. Two PCC technical teams are working in parallel to 1) update the SAIOH self-assessment tool and revise the PCC oral assessment format, and 2) develop questions and required answers. The first sub-committee, chaired by Garth Hunter, has been meeting bimonthly. The second sub-committee, to be chaired by Nico Potgieter, will be starting in earnest soon, with eight volunteers.

Improvements in the assessment format are to ensure that the growing field of occupational hygiene is covered, and that the assessment format and tools continue to remain relevant and current.

Occupational Hygiene Skills Forum (OHSF)
The SAIOH Occupational Hygiene Skills Forum (OHSF) was initiated to coordinate all aspects related to the recognition of occupational hygiene training materials. Examples of this are the asbestos training courses, occupational hygiene training providers and institutions, evaluating the OHTA’s approved training providers (ATPs) in southern Africa, as per our memorandum of understanding (MoU) with OHTA, and the development and management of assessment and examination systems, where required.

Another important function of the OHSF is to evaluate applications from tertiary institutions for recognition of their occupational hygiene-related qualifications. The OHSF is progressing well with these accreditations. A recently developed matrix is used to evaluate the occupational hygiene qualifications’ content in line with the 50% occupational hygiene subject requirement.

North-West University and the Tshwane University of Technology offer four-year bachelor’s degrees that are recognised by the OHSF as meeting the qualification criteria at the registered occupational hygienist (ROH) level. The OHSF is currently evaluating the University of the Witwatersrand’s and CPUT’s programmes.

All tertiary institutions that offer occupational hygiene qualifications are encouraged to contact the PCC Administrator for information regarding application for recognition (lee@saioh.co.za). Details of recognised training providers and recognised qualifications will soon be available on the SAIOH website (www.saioh.co.za). This will make it easier for students and certification candidates to select suitable occupational hygiene training programmes that meet SAIOH and international requirements.

<table>
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<th>Certification category</th>
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<th>Failed</th>
<th>Pass rate</th>
<th>Assessed</th>
<th>Passed</th>
<th>Failed</th>
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<td>89.8</td>
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Table 1. SAIOH PCC certification assessment results (18 August 2022)