95% CI: 1.5 to 60.9) respectively having been adjusted by age group and working activity.

Discussion Miners appear to be more susceptible of developing IKF rather than other manufacturing workers. Further research is needed to explain the role of specific occupational exposures in kidney impairment among miners.

1636d USABILITY TESTING FOR ERGONOMIC CRITERIA MATRIX: CASE STUDY OF A DEEP MINING COOLING VEST

V Ngô, S Nadeau, S Hallé*. *Ecole de technologie supérieure, Montreal, Canada*

10.1136/oemed-2018-ICOHabstracts.699

Introduction Deep mining and ultra-deep mining (UDM) push the boundaries of what is considered tolerable for workers in hot and humid environments. Since ventilation is costly for mining companies, a novel personal protective equipment (PPE), a cooling vest, is a possible means to safeguard the health and safety of miners. Such a PPE must meet both their needs and expectations. The objective of this study was to build a matrix of ergonomic criteria that would help define the base on which a cooling vest would be developed for deep and UDM.

Methods First, a literature review was conducted on the constraints and requirements that miners are subjected to in deep mining conditions. Then, a field study was conducted in a mine in Abitibi Témiscamingue, Canada. A convenience sample of 20 participants was used to collect information such as height, weight, PPE worn as well as concerns as to the use of a cooling vest. The information collected was then interpreted to generate the matrix of ergonomic criteria suitable for an UDM environment.

Results All participants agreed that a cooling vest would help alleviate the risk of a heat stroke, as well as improve their well-being during work. The main concerns of minors relate to the weight, the comfort and ease of movement. Additional criteria such as design aesthetics, maintenance and conformity to laws, regulations and standard have been added to the matrix. The resulting matrix contains 16 criteria, seven of which are centred on the user and nine on the design of the cooling vest.

Discussion We are hopeful the matrix can be validated and that it will be possible to broaden its use to apply it, for instance, in the development of cooling vests for other hot and humid work environments such as foundries and certain construction projects.

1636e GOOD PRACTICE GUIDANCE ON OCCUPATIONAL HEALTH RISK ASSESSMENT

CJ Badenhorst. *Anglo American plc., Johannesburg, South Africa*

10.1136/oemed-2018-ICOHabstracts.700

In 2009 the International Council on Mining and Metals (ICMM) developed the *Good Practice Guidance on Occupational Health Risk Assessment* to help site practitioners assess and address the risks posed by health hazards in the mining and metals sector. It provided those practitioners with the information they needed to assess the health and well-being of employees and contractors. In 2016 a review was undertaken to bring the text and advice up to date with changes in the field of occupational health risk assessment and align this document with the terminology and approaches proposed in ICMM documentation published since the first edition, principally the concept of material unwanted events (MUEs) and the management of those through the use of critical controls. The guide identifies the occupational health impacts of mining and metals processing, outlines good practices in the identification of hazards and exposed workers, assists practitioners in estimating exposure levels and assessing the effectiveness of controls and explains the importance of quality analysis and reporting. Healthy workers are essential to the success of mining and metals companies, and ICMM company members are driven in their protection of the health and well-being of both workers and local communities by the ICMM's Sustainable Development Principle 5: 'Pursue continual improvement in health and Safety performance with the ultimate goal of zero harm'. Occupational health risk assessment is the foundation of any occupational health programme and will determine the effectiveness of the programme. It is the intention of the ICMM that this publication provides a practical tool to assist companies in protecting the health and well-being of their workforce.

1636f VISION ZERO – THE GLOBAL FUTURE TO PREVENT ACCIDENTS AND DISEASES IN MINING

H Ehnes. *International Section of the ISSA Mining on Prevention in the Mining Industry, Bochum, Germany*

10.1136/oemed-2018-ICOHabstracts.701

The Singapore World Congress on Safety & Health at Work 2017 truly marked a milestone in prevention. The International Social Security Association (ISSA) launched the Global VISION ZERO Prevention Strategy. As a leading organisation representing more than 320 members in over 150 countries, the ISSA enters a new level of commitment towards 'zero harm' and presents a toolset called the 'Seven Golden Rules' which delivers hands-on solutions for businesses. The approach gives systematic answers to companies worldwide on how to improve safety and health at work while offering a harmonised, proven toolset for managers.

The Golden Rules span the areas

Golden Rule 1: Take leadership – demonstrate commitment

Golden Rule 2: Identify hazards – control risks

Golden Rule 3: Define targets – develop programmes

Golden Rule 4: Ensure a safe and healthy system – be well-organised

Golden Rule 5: Ensure safety and health in machines, equipment and workplaces

Golden Rule 6: Improve qualifications – develop competence

Golden Rule 7: Invest in people – motivate by participation

The presentation will discuss the development of the 'Seven Golden Rules' by ISSA's Prevention Section for the Mining Industry and gives insight into the implementation in Germany, where the German social accident insurance institution for the raw materials and chemical industry – BG RCI introduced it for 35 000 companies.

It will explain the VISION ZERO mindset and experience both internationally and in Germany, and demonstrate what aims, measures and tools have been derived. Furthermore options for cooperation will be discussed.

1619 PROVISION OF OCCUPATIONAL HEALTH AND EMERGENCY CARE IN REMOTE LOCATIONS

W Ponsonby*. *Society of Occupational Medicine, Chairman International Committee, London, UK*

10.1136/oemed-2018-ICOHabstracts.702

Many industries by the nature of their business have to locate themselves in remote locations often distant from urban centres. This remoteness creates many challenges, not least in the provision of medical care, and in the practice of occupational health for the employees. During this session we will look at different aspects of medical and occupational health care in these remote settings and how some of the challenges can be overcome. My colleagues will discuss the provision of medical services in remote locations, and the particular features of the provision of occupational health services in Russian Siberia, in the Deserts of the Gulf Region in the Middle East and in Malaysia.

Before looking at the examples we will examine elements of the Health Risk Assessment (HRA) that should be carried out to enable the formulation of the Health Plan. Ideally the HRA should be carried out well in advance of the commencement of operations, but that does not always happen. Elements to be considered include:

- Health Hazards of the operation and project
- Local climate
- Patterns of diseases and illness, in the community and local work force
- Levels of education in the local workforce, including awareness of health and safety
- Standards and access to local health care
- Availability of National Medical and Nursing staff – requirements for local employment
- Availability of drugs and medical equipment
- Routes for medical evacuation
- National Legislation
- Industry and International Standards
- Access to food and drinking water
- Security Situation
- Potential Community Health Projects

All these elements and more need to be considered to formulate and execute a comprehensive medical and occupational health plan.

1619a OCCUPATIONAL HEALTH IN THE ENERGY INDUSTRY – IMPROVING HEALTH IN REMOTE AREAS

Alistair Fraser*. *Vice President Health, Royal Dutch Shell. Den Haag, Netherlands*

10.1136/oemed-2018-ICOHabstracts.703

The Energy Industry has had a challenging period with low and fluctuating oil prices driving uncertainty and massive structural impact. This has come at a time when exploration and operations are moving into increasingly remote and challenging areas of the planet. The resultant business changes create pressure on people that is related to job security, to divestments and to organisational redesign. However, these changes also drive efficiencies and include opportunities to create new ways to improve access to health. One area of health at work that has benefited from this innovation opportunity is the provision of healthcare in remote areas and operations. The session will focus on several specific topic related to driving Health in remote areas:

- Remote Health Care provision. Examining the impact of new medical technologies on both health and business outcomes. An overview of the shift in mindset, competence and the change management required to implement this new paradigm of care and to deliver real outcomes
- Supporting remote populations by moving beyond a medical model of health promotion. Implementing interventions based on positive psychology, linked to specific cultural interventions that boost engagement, thriving, social cohesion and productivity, whilst mitigating health risk
- Health Practitioners in a remote environments in the energy industry– skillset, mindset and qualifications?
- Looking forward – opportunities, paradigms and do we need new types of practitioners and business models?

1619b OCCUPATIONAL HEALTH IN DESERT ENVIRONMENT

R Moen*. *Iqarus, Abu Dhabi UAE*

10.1136/oemed-2018-ICOHabstracts.704

Occupational Health management in the Middle East presents many interesting and complex challenges. Some of the challenges are due to the climate and topography as might be expected. However other challenges may not be so obvious related to culture demography and politics.

In terms of climate, occupationally it is necessary to protect workers in temperatures of +50C plus, in many areas high temperature is combined with high levels of humidity. This presents a significant challenge and if with WBGT method of worker heat management was used then work would be curtailed for significant portions of the year. More flexible but effective approaches to heat management have to be adopted. The Holy month of Ramadan dramatically compounds the issues relating to heat exposure and resultant heat illnesses.

Distance is also a significant challenge some sites are very remote from health care and it is necessary to arrange medical evacuation routes to centres of medical excellence. Workers often live in work camps, and if not well managed infectious diseases like Norovirus, TB can significantly impact the workforce. Camp Health and Hygiene (food, water, sanitation, etc.) form an integral part of OH responsibilities.

Demographically in some countries in the Gulf of Arabia there are large numbers of migrant workers,>80% of the population in UAE and Qatar. These workers often have existing health concerns, which require ongoing management. Also they can bring diseases form their home locations to the area of work e.g. Malaria. Migrant worker welfare and CSR programs are an integral part of workplace health provision in these environments, which includes local competency building and nationalisation programs ultimately resulting in sustainable developments.

There are also the usual anxieties and psychiatric risk factors of living away from home and family which have significant impact on mental health. Programs need to be arranged