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NATIONAL INSTITUTE FOR OCCUPATIONAL HEALTH
Division of the National Health Laboratory Service

OccuZone

Promoting good health benefits both employers and workers by improving wellbeing, productivity and performance."

- International Labour Organization

inside
THIS ISSUE

Editorial team
Mr Vuyo Sabani | Prof Nisha Naicker | Dr Kerry Wilson | Ms Zandile Hoyi | Mr Ashraf Ryklief | Mr Msingathi Magwaxaza

MESSAGE FROM THE EDITOR

Workplaces are a microcosm of society, and as such, they have not escaped the burden of non-communicable diseases (NCDs). It is in this context that the editorial team decided to put the focus for this issue on NCDs. It is common knowledge that NCDs are a leading cause of morbidity and mortality worldwide. The World Health Organization (WHO) estimates that 41 million people die globally every year from NCDs, which primarily consist of heart and lung diseases, cancers and diabetes. The International Labour Organization (ILO) argues that NCDs can be prevented in the workplace by improving working conditions and through workplace health promotion programmes. For more on this, see the Research Focus on page 5.

In this issue, we have the usual features you have come to expect from this publication. We have the peer-reviewed research publications published in Quarter 1 of 2023/24 (April-June). In the Service Delivery Section, we highlight musculoskeletal diseases, particularly work-related upper limb disorders, in line with this issue's theme of NCDs in the workplace. In July, our Occupational Medicine Section hosted a two-day work-related upper limb disorders workshop to capacitate occupational medicine practitioners on implementing preventative programmes in the workplace to mitigate the increasing burden of work-related upper limb disorders (See page 13). There will be another similar training during the course of this financial year. Watch this space for more details.

In the Spotlight, we profile Ms Andani Tshifhiwa Nndwammbi, an Intern Medical Scientist in the Analytical Services Section.

The Surveillance Section discusses occupational medicine referrals for the 2022-2023 Financial Year. The NIOH's Occupational Medicine Section conducts specialist occupational medicine consultations for employees referred from different industries within South Africa and surrounding countries. Patients are often sent for a specialist opinion on the work-relatedness of a medical condition or an assessment of the employee's fitness for work. The Occupational Medicine section database links specific diseases and industries, which can inform preventative measures to reduce poor health in the workplace (See page 11).

In the Teaching and Training Section, we outline the training that took place in the first quarter (April- June) and upcoming training. The NIOH conducts various virtual and in-person training workshops for different sectors and industries; please be on the lookout for training relevant to your sector or industry. Earlier this year, the country grappled with cockroach infestation, which raised concern for their spread of disease and allergies; please see page 17 for the Occupational cockroach allergy fact sheet. As part of the ongoing NEDLAC/NIOH COVID-19 Legacy Programme, we share two posters on wearing of masks in the workplace. Scan the QR code below for more content on the NEDLAC/NIOH COVID-19 Legacy Programme.

SCAN ME

Vuyo Sabani

MESSAGE FROM THE RESEARCH COMMITTEE CHAIR

Welcome to this edition of *OccuZone*. The NIOH has successfully been awarded re-designation as a World Health Organisation Collaborating Centre for Occupational Health in June 2023. The NIOH is the only WHO Collaborating Centre for Occupational Health in the African Region, and will continue to promote healthy, safe and sustainable workplaces. The Collaborating Centre will be working on three focus areas: the effects of long working hours, the cost-benefit analysis of interventions for working time regulation and to develop training modules on the use of the WHO/ILO Joint Estimates in monitoring, policy making and practice.

The NIOH has provided training and teaching support to various academic institutions viz. University of the Witwatersrand, University of Pretoria and University of Johannesburg among others. The NIOH/NEDLAC Management of OHS COVID-19 Workplace training programme is ongoing and will continue until 2024. The full training highlights are presented later in this edition.

The Public Health Bulletin South Africa (PHBSA) is rebranding and will be launched soon. The rebranded and expanded PHBSA, supported by the Centre for Disease Control and Prevention (CDC), will publish surveillance reports and epidemiological research for South Africa and the region. An important feature of the PHBSA publications is the provision of actionable recommendations to improve health outcomes in the public and workplaces. The NIOH is pleased to be part of the editorial team and would like to encourage our readers and collaborators to submit manuscripts within the scope of the journal as soon as it is officially launched. More information can be found at https://www.phbsa.ac.za/.

The Pathology Research and Development (PathRed) Congress 2023 will be held from the 31 August to 3 September 2023. Of note is the workshop on day 1 titled: Introduction to analyses of routine data for surveillance and scientific reports. This will be conducted by the NIOH team and will provide the necessary skills to allow one to make the best use of routinely collected health data for improved evidence based medicine and surveillance. Late registration opened on 01 June 2023 (https://pathred.nhls.ac.za/).

I trust you will find this edition of the *OccuZone* informative.

Prof Nisha Naicker

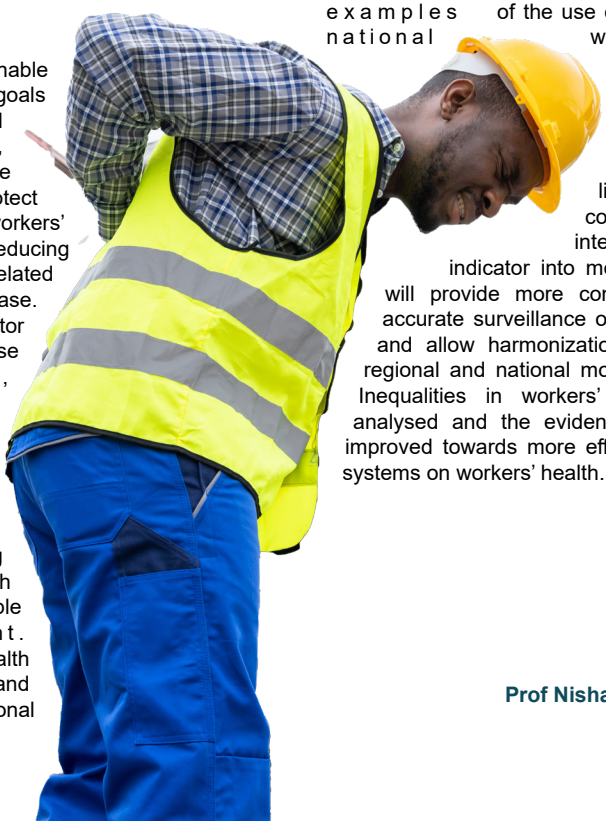
RESEARCH FOCUS

Non-communicable diseases (NCDs) are a leading cause of morbidity and mortality globally. The risks for NCDs are multifactorial and can be due to genetics, lifestyle, environmental or work-related factors. NCDs affecting individuals in the working age group will lead to a loss of productivity and have an adverse impact on the economic growth of the country. The workplace provides an important environment for the prevention of NCDs and for creating awareness around risk factors in the workplace as well as lifestyle and behavioural factors. Thus monitoring the burden of diseases in the working population is essential. The research focus article in this edition highlights a new global indicator: the mortality rate from diseases attributable to occupational risk factors to provide information at a local, national, regional and global level. The article is accessible here.

Abstract

Through sustainable development goals 3 and 8 and other policies, countries have committed to protect and promote workers' health by reducing the work-related burden of disease. To monitor progress on these commitments, indicators that capture the work-related burden of disease should be available for monitoring workers' health and sustainable development. The World Health Organization and the International Labour Organization estimate that only 363 283 (19%) of 1 879 890 work-related deaths globally in 2016 were due to injuries, whereas 1 516 607 (81%) deaths were due to diseases. Most monitoring systems focusing on workers' health or sustainable development, such as the global indicator framework for the sustainable development goals, include an indicator on the burden of occupational injuries. Few such systems, however, have an indicator on the burden of work-related diseases. To address this gap, we present a new global indicator: mortality rate from diseases attributable to selected occupational risk factors, by disease, risk factor, sex and age group.

We outline the policy rationale of the indicator, describe its data sources and methods of calculation, and report and analyse the official indicator for 183 countries. We also provide examples of the use of the indicator in national workers' health monitoring systems and highlight the indicator's strengths and limitations. We conclude that integrating the new indicator into monitoring systems will provide more comprehensive and accurate surveillance of workers' health, and allow harmonization across global, regional and national monitoring systems. Inequalities in workers' health can be analysed and the evidence base can be improved towards more effective policy and systems on workers' health.



Prof Nisha Naicker

PUBLICATIONS

Title: Saponins of North Atlantic Sea Cucumber: Chemistry, Health Benefits, and Future Prospective

Author(s): Fagbohun, O.F., **Joseph, J.S.**, Oriyomi, O.V., Rupasinghe, H.P.V.

Source: Mar. Drugs 2023, 21, 262. https://doi.org/10.3390/md21050262

Abstract: Frondosides are the major saponins (triterpene glycosides) of the North Atlantic sea cucumber (Cucumaria frondosa). Frondosides possess amphiphilic characteristics due to the presence of various hydrophilic sugar moieties and hydrophobic genin (sapogenin). Saponins are abundant in holothurians, especially in sea cucumbers that are widely distributed across the Northern Atlantic Ocean. Over 300 triterpene glycosides have been isolated, identified, and categorized from many species of sea cucumbers. Furthermore, specific saponins from C. frondosa are broadly classified into frondosides, fallaxosides, lefevreiosides, cucumariosides, and colochirosides. Recent studies have shown that frondoside-containing extracts from C. frondosa exhibit anticancer, anti-obesity, anti-hyperuricemic, anticoagulant, antioxidant, antimicrobial, antiangiogenic, antithrombotic, anti-inflammatory, antitumor, and immunomodulatory activities. However, the exact mechanism(s) of action of biological activities of frondosides is not clearly understood. The function of some frondosides as chemical defense molecules need to be understood. Therefore, this review discusses the different frondosides of C. frondosa and their potential therapeutic activities in relation to the postulated mechanism(s) of action. In addition, recent advances in emerging extraction techniques of frondosides and other saponins and future perspectives are discussed.

Keywords: sea cucumber; saponins; frondoside A; triterpenes; glycosides; Cucumaria frondosa

Title: Control strategies for domestic cockroach (B. germanica, B. orintalis and P. Americana) pests: A scoping review

Author(s): Molewa, M.L., Barnard, T., **Naicker, N.**

Source: Int. J. Adv. Multidiscip. Res. (2023). 10(3): 20-40; DOI: https://ijarm.com/cissuemar2023.html

Abstract: Historically, cockroaches have been primarily targeted with chemical insecticides. However, the extensive use and overuse of chemical insecticides has led to a growing phenomenon of pesticide resistance in cockroaches. This scoping review aims to evaluate and discuss different control strategies used for domestic cockroaches (B. germanica, B.orientalis and P. americana).Studies were searched through PubMed, ScienceDirect, EBCOHOST, Springer Link, Wiley Online Library and Cambridge for a period between January 1990 and December 2022. Cockroach studies were considered relevant if they included at least one control strategies. Eligible studies were identified through the principles of Preferred Reporting Item for Systemic Reviews and Meta-Analyses (PRISMA). The search identified 264 studies without duplication and 70 full text studies were found to be eligible for the scoping review. The most frequently studied control strategies were chemical (conventional) strategies (n= 31), integrated pest management (IPM) strategies (n=18), biopesticides (n=12) and non-chemical strategies (n=10). The scoping review provides evidence that IPM can lead to long-term reductions in cockroach infestation and as well as a decreased allergen concentration. The study identified the insect growth regulators (IGRs) and biopesticides, mainly essential oils (EOs) emerging as potential futuristic control strategies evidently proven to be sustainable and safer than the application of poisonous chemicals. Few studies investigated B. orientalis. Future studies should be conducted precisely on more conventional and future cockroach control strategies for P. americana and B. orientalis.

Keywords: Cockroaches pest control; insecticides; baits; traps; biopesticide; integrated pest control.

Title: An ancestral molecular response to nanomaterial particulates

Author(s):): Del Giudice, G., Serra, A., Saarimaki, L.A., Rouse, I.….**Sanabria, N**., et al

Source: Nature Nanotechnology https://doi.org/10.1038/s41565-023-01393-4

Abstract: The varied transcriptomic response to nanoparticles has hampered the understanding of the mechanism of action. Here, by performing a meta-analysis of a large collection of transcriptomics data from various engineered nanoparticle exposure studies, we identify common patterns of gene regulation that impact the transcriptomic response. Analysis identifies deregulation of immune functions as a prominent response across different exposure studies. Looking at the promoter regions of these genes, a set of binding sites for zinc fnger transcription factors C2H2, involved in cell stress responses, protein misfolding and chromatin remodelling and immunomodulation, is identified. The model can be used to explain the outcomes of mechanism of action and is observed across a range of species indicating this is a conserved part of the innate immune system.

Title: Occupational Bioaerosol Exposures Associated with Poultry Farming

Author(s): Matuka, O.D., Ngajilo, D., Baatjies, R., Dayal, P., Jeebhay, M.F., Singh T.S

Source: Journal of Agromedicine 2023, DOI: 10.1080/1059924X.2023.2206405

Abstract: This study aimed to investigate occupational exposure to particulate dust, endotoxin, and (1–3)- β-D-glucan among workers involved in various poultry farming activities. A total of 298 personal samples were collected from randomly selected individuals from exposure groups based on distinct poultry farming activities comprising broiler farms, rearing, laying, hatchery, and catching activities. Aside from the inhalable particulate dust concentration that was determined, filter extracts were also analyzed for (1–3)-β-D-glucan and endotoxin using the endpoint Glucatell® and Limulus amoebocyte lysate (LAL) assays, respectively. Data were analyzed using STATA 12 and linear regression models developed. The mean (GM) dust particulate concentration was 11.04 mg/m3 (GSD = 3.87); 2298 endotoxin units (EU/m3) (GSD = 10.56) and 149 ng/m3 for (1–3)- β-D-glucan (GSD = 4.62). A modest positive correlation was observed between log-transformed endotoxin and (1–3)-β-D-glucan concentrations (Pearson r = 0.44, p < .001), whilst a moderate negative correlation was observed for inhalable dust particulate and (1–3)-β-D-glucan (Pearson r = −0.33, p < .001). However, there was a very poor correlation between inhalable dust and endotoxin (Pearson r = −0.02, p < .001). In the regression models, exposure group based on the nature of farming activity explained 50% of the variability in dust particulate and glucan levels. For dust particulate, rearing activities were significant predictors of higher dust levels compared to hatchery work, while rearing, laying, broiler and catching activities were significant predictors of higher endotoxin or glucan levels. Furthermore, working in a small broiler was a significant determinant of elevated glucan exposures. Farms using automated laying activities had significantly higher particulate levels compared to those using manual laying activities. This study revealed that workers engaged in poultry farming activities were exposed to significantly high levels of inhalable particulate dust, endotoxin, and (1–3)-β-D-glucan concentrations, posing an increased risk for adverse respiratory health effects in these farm workers.

Keywords: Inhalable particulate dust; endotoxin; (1-3)-β-D-glucan; poultry organic dust; occupational exposure assessment.

Title: Managing the Risks of an Asbestos Bulk Storage Facility at a Research Institute

Author(s): Ntlailane, L., Sebola, L., Singo, D., Nthoke, T., Mizan, G.

Source: Annals of Work Exposures and Health, 2023, XX, 1–5 https://doi.org/10.1093/annweh/wxad028

Abstract: The South African National Institute for Occupational Health (NIOH), formerly the Pneumoconiosis Research Unit, has previously milled about 544 kg of anthophyllite, crocidolite, amosite and chrysotile asbestos fibre materials. This endeavour came about in an attempt to address a recommendation, made by the International Union Against Cancer (UICC), to make asbestos standard reference samples available for research. Some of these reference samples, as well as the bulk, unprocessed materials are still within the care of the NIOH and can be obtained for the purpose of Public Health research under strict terms and conditions. Considering the hazardous nature of asbestos and regulated prohibitions imposed on this mineral, the NIOH asbestos storage facility is being subjected to various occupational and environmental control measures to ensure that any potential fibre release, and subsequent risk of exposure, are prevented.

Keywords: asbestos; mesothelioma; reference standards.

Title: Hairdressers in Johannesburg: knowledge, attitudes and practices regarding occupational health

Author(s): Mphaga, K.V, Rathebe, P.C, **Utembe, W**.

Source: Occupational Health Southern Afr. 2023; 29(2):75-82.

Introduction: Hairdressers are exposed to hazardous chemicals in haircare products, which can cause adverse respiratory, skin, and reproductive effects. The incidence of these effects can be reduced with good occupational health and safety (OHS) knowledge, attitudes, and practices (KAP).

Objective: The objective of the study was to assess Johannesburg hairdressers' knowledge, attitudes, and practices towards occupational health and safety.

Methods: Three hundred and eighty-three hairdressers were recruited into this cross-sectional study. They were categorised into employees/wage earners (earning a salary or wage, n = 151), or business owners (self-employed, n = 232). Data were collected using an interviewer-administered questionnaire. The data were analysed using Statistical Package for Social Sciences (SPSS) version 26. Frequency tables were generated and chi-square tests were used to test differences between KAP amongst business owners and wage earners.

Results: Most of the study participant were female (n = 237, 61.9%). A higher proportion of business owners than wage earners knew that hairdressing was hazardous to their health, in general (n = 44, 29.1% and n = 120, 51.7%, respectively), and with regard to specific health risks such as asthma, cancer, and skin diseases. However, more of the wage earners than the business owners had good attitudes towards the wearing of personal protective equipment (PPE) such as gloves, (n = 143, 94.7% and n = 210, 90.5%, respectively). Overall, wage earners practised better OHS than business owners, e.g. 67.5% (n = 102) and 55.2% (n = 128) reported that they wore gloves, respectively.

Conclusion: Wage earners had poorer OHS knowledge than those who owned or operated hairdressing salons. Both had good attitudes towards OHS, but self-employed hairdressers had poorer OHS practices. Training, including workshops and seminars, is needed to improve KAP regarding OHS amongst all hairdressers, regardless of their employment status.

Keywords: hair products; chemical hazards; PPE; hairdressing.

Title: House-dust mites: Challenges with establishing causal associations in occupational health for ubiquitous agents- A retrospective study

Author(s): Matuka, D.O., Ratshikhopha, E., Singh, T.

Source: Current Allergy & Clinical Immunology. June 2023; Vol 36, No 2

Abstract: In this retrospective study, the sensitisation profiles of 846 workers (≥18 years old) were tested with house-dust mite (HDM) allergens and other common aeroallergens for the ten-year period 2002–2022. This study aimed to determine the proportion of HDM sensitisation among workers from various industries and to highlight the role of HDM exposure and current developments in occupational settings. Exposure to HDM allergen can occur in both households and work environments. Dermatophagoides farinae and Dermatophagoides pteronyssinus are the most commonly distributed dust mites worldwide. Inhaling allergens produced from these mites can result in respiratory symptoms, rhinitis and asthma in sensitised individuals. Exposure to these allergens in the workplace may result in occupationally acquired or work-aggravated allergic reactions, leading to poor quality of life, an increase in absenteeism arising from sickness and, consequently, reduced productivity. The percentage sensitisation among workers referred to the NIOH Occupational Allergy clinic was 41.67% for D farinae and 33.81% for D pteronyssinus. Nineteen per cent of the patients who reported work-related symptoms tested positive for HDM; therefore, work-related sensitisation is plausible. While Blomia tropicalis was not tested in the current study, it may be beneficial in tropical areas.

Keywords: house-dust mite allergy; asthma; occupational exposure; occupational risk.

Ms Andani Alice Tshifhiwa Nndwammbi
Intern Medical Scientist, Analytical Services

Why did you choose this career?
I chose this career because I like being in laboratory and doing research. I want to expand my skills and knowledge I have gained through my studies.

What training and qualifications did you undergo and where?
I have BSc Degree in Biochemistry and Microbiology and Honours in Biochemistry from the University of Venda. Masters in Biochemistry from the University of Johannesburg.

What are the most enjoyable aspects of doing research?
I enjoy the experimental part of the research.

Why did you choose this field of research?
I chose this field because it is challenging and I needed to learn more about it.

What are your research highlights to date?
A research project I did for my masters, which was based on Malaria. The study was titled “Evaluating iso-mukaadial acetate and ursolic acid acetate as Plasmodium falciparum Hsp90 (PfHsp90) inhibitors.”

What are your career goals?
My career goal is to do more research with an aim to do PhD in future.

Occupational health surveillance data provides vital information on the prevalence of occupational related diseases and injuries. It allows trends to be determined and prevention programmes to be monitored and evaluated. Thus surveillance of occupational exposures and health outcomes is an essential function of the NIOH.

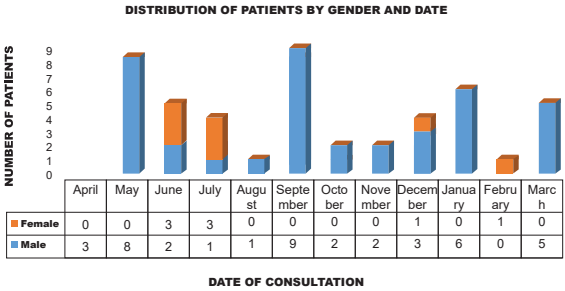
Occupational Medicine Referrals for the 2022-2023 Financial year

The Occupational medicine section of the National Institute for Occupational Health (NIOH) conducts specialist occupational medicine consultations for employees referred from different industries within South Africa and surrounding areas. Patients are often sent for a specialist opinion on the work-relatedness of a medical condition or an assessment of the employee's fitness for work; as occupational disease is compensable under the South African Compensation for Occupational Injuries and Disease Act of 1993 (Act 130, 1993). Not every patient with an occupational disease is referred to the NIOH Occupational medicine clinic, but those who have been assessed by the company's Occupational Medicine Practitioner (OMP) or attending doctors and require further specialist investigation and opinion are referred.

Patients are asked for consent to store their data for surveillance and research. Data from patient files is entered into the clinic database at the end of a consultation. Data from the clinic database are then extracted into an excel spreadsheet after verification with clinic records where necessary. The data is then imported into STATA SE version 16 for data cleaning and analysis. Summary measures consisting of means, medians and ranges for all continuous or discrete study variables were documented. Frequencies (numbers and percentages) were produced for categorical data.

Results

A total of 50 patients were seen at the Occupational Medicine Clinic for the period April 2022 - February 2023. An average of five patients were seen per month.



	April	May	June	July	August	September	October	November	December	January	February	March
Female	0	0	3	3	0	0	0	0	1	0	1	0
Male	3	8	2	1	1	9	2	2	3	6	0	5

Figure 1 Bar chart of patients by gender visiting the clinic.

Males were predominant at 82% of referred patients. While of the male patients, 18% were white with the remainder black. Of the women, 100% were black. The Mean age of all referrals was 46.9 years, 36% of both men and women fell into the 40-49yr age group. A total of 60% of the patients were from the mining industry. The other industries represented were iron and steel production, power station, nuclear energy, bakery, automobile assembly, construction and industrial minerals. Exposure information collected indicated that dust and fumes (44%) were the most common workplace exposure followed by vibration (18%). Chemicals and welding fumes were also commonly reported (12% each).

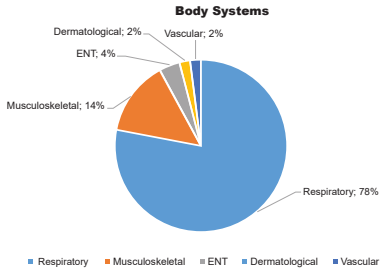


Figure 2 Pie chart of body systems affected male and female.

Respiratory diseases were the most common referrals; this pattern is similar to reported risk excluding diarrhoea, heart disease and stroke as seen in the Global Burden of disease. Respiratory disease was most common in both the mining (73%) and non-mining industries (85%).

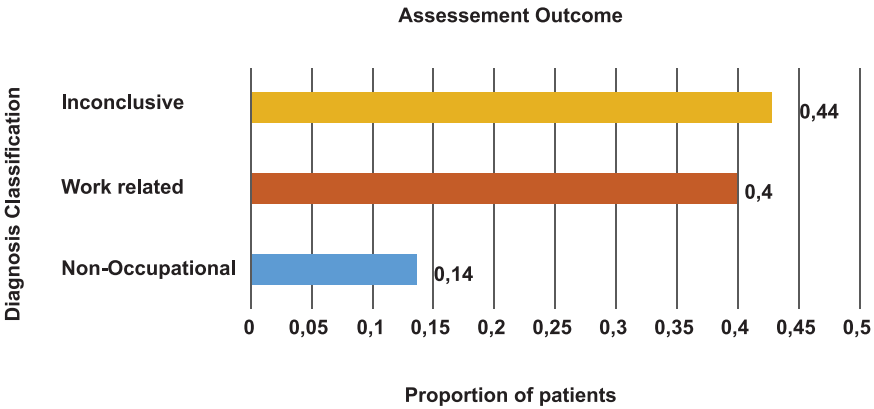


Figure 3 Bar chart indicating outcome classification of assessment.

The majority of cases had inconclusive results for work-relatedness (44%) but of the 54% that had a clear outcome 74% were work-related. Inconclusive cases required further investigation.

Table 1 Diagnosis and exposure of patients with a work-related disease

INDUSTRY	EXPOSURE	OUTCOME/ DIAGNOSIS
Bakery & sweets manufacturing	Flour dust and spices	Occupational Asthma
Brick tile and pottery manufacture	Silica dust, Acetone, detergents	Work-exacerbated Asthma
Construction	Welding fumes	Occupational Asthma
Precast concrete manufacture	Repetitive strain	WRULD
Mining	Blasting agent	Eye irritation
	Fumes, dust, gas, smoke	Bullous lung disease, occupational asthma
	Welding fumes, chrome dust	COPD
	Coal dust	CMDLD (Pneumoconiosis and COPD)
	Vibration	HAVS, Musculoskeletal neuropathy, WRULD, sensory neuropathy
	Nickel, nitric acid, hydrochloric acid	Occupational contact dermatitis
	Noise	NIHL
Motor assembly	Paint and spray paint vapours	Occupational Asthma
Power station	Asbestos	Mesothelioma

WRULD – work-related upper limb disorder, COPD – chronic obstructive pulmonary disease, CMDLD – coal mine dust lung disease, HAVS – hand-arm vibration syndrome, NIHL noise induced hearing loss.
Occupational and work-exacerbated asthma was a common respiratory outcome followed by COPD, which were associated with various exposures in different industries. Musculoskeletal disorders were the most common non-respiratory disorders.

Limitations
This report has some limitations and findings need to be interpreted in the context of the referral nature of the clinic. The patients provide a picture of the type of cases where work-relatedness or fitness for work is unclear.

Conclusion
This occupational disease database is paramount for our understanding of current occupational diseases and the surveillance thereof. Through the database specific diseases and industries are linked which can inform preventative measures to reduce poor health in the workplace.

SPECIALISED SERVICE DELIVERY

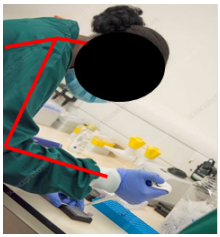
The NIOH delivers specialized and cost effective services in occupational health and safety through its multidisciplinary cohort. The services are delivered to all workplaces as required. Aligning with the theme of non-communicable diseases (NCDs), we highlight the NIOH's contribution to the prevention and management of Work-Related Upper Limb Disorders.

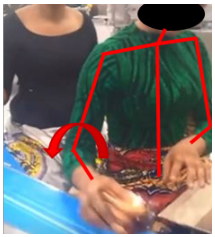
SHINING LIGHT ON WORK-RELATED UPPER LIMB DISORDERS

The Occupational Medicine section provides services to workplaces, health and safety practitioners, workers, and other decision makers to assist with the prevention and management of prevalent and disabling occupational conditions. An occupational disease is any illness, associated with a particular industry or occupation, resulting from biological, chemical, ergonomic, physical, and psychosocial factors. These factors are encountered in the course of employment or present in the work environment.

A combination of factors from the work environment and other individual factors usually interact towards the development of other conditions. Such conditions would then be referred to as work-related, as it is difficult to attribute them solely to workplace conditions.

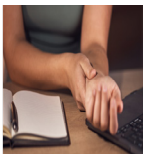
Musculoskeletal disorders (MSDs) develop following repeated, prolonged exposure to ergonomic hazards, usually from a combination of them namely repetitive movements, awkward postures, excessive force, prolonged sustained movements, extremes of reach, contact stress and using hand-held vibrating tools. While these hazards have been reported mainly in industries where there are manual handling activities, other workplaces have been reported and assessed by the NIOH team like health care workers in laboratory environments, office environments, food preparation and packing areas. Workplaces that have been assessed recently strongly indicate that there are other contributing ergonomic hazards like organisational and cognitive factors that get identified and evaluated accordingly. These include poorly structured shift work, lack of frequent rest breaks, decision-making latitude and targets, a normal phenomenon used in the workplace to allocate work and targets to be achieved by a person or a team.





Workers exposed to ergonomic risk factors performing various work activities (left) in the laboratory performing a pipetting task with repetitive movements and unnatural static postures and (right) on an assembly line packing items with repetitive elbow and wrist movements.

Work-related upper limb disorders (WRULDS) are an example of commonly encountered MSDs in the workplace. WRULDS are occupational diseases that affect the muscles, tendons, nerves, blood vessels, joints and bursae of the hand, wrist, arm and shoulder. They are associated with characteristic symptoms and physical signs.



Symptoms and physical signs typically experienced by workers include tired, discomfort and pain in the hand, wrist, elbow, shoulder and other soft tissue of the upper limb.

The NIOH ergonomics team assists workplaces by conducting workplace activity risk assessments for affected worker/s to identify hazards and risk factors. This includes appraisal of controls in place, advice for better prevention and formulation of a workplace ergonomics program. The team conducts the necessary investigation using various specialised tools to quantify the risk beyond walkthrough assessment identification, interacts with affected personnel and parties from the workplace, uses risk quantification scientific measures and validated methods where necessary and, consolidates all the information into a report with recommendations.

The team also, engages with the occupational medicine clinic at the NIOH to assess the affected worker/s towards a diagnosis and staging of WRULDs with recommended clinical management.

The Occupational Medicine Section staff from (left to right): Ms Zandile Hoyi, Dr Edward Sepirwa, Dr Nompumelelo Ndaba, Dr Mmuso Ramatsi (Eskom Chief Medical Advisor) Dr Hloniphile Maso and Ms Buyisiwe Nkosi.

Dr Odette Volmink presenting to Occupational Health personnel on WRULDs.

For more information on these services, contact:
Ms Buyisiwe Nkosi | 011 712 6454
buyisiwen@nioh.ac.za

Ms Zandile Hoyi | 011 712 6497
zandileh@nioh.ac.za

NIOH TRAINING CONDUCTED – APRIL TO JUNE 2023

For the first quarter (April – June 2023), 2151 participants joined the three NEDLAC/NIOH COVID-19 Legacy Programme webinars. This translates to an average of 717.00 attendees per webinar (65.2% females and 34.8% male). For the period March 2020 to April 2023, the NIOH has trained 59 346 participants in 107 Occupational Health and Safety (OHS)/COVID-19 training webinars, i.e. an average of 554.6 participants per webinar and 1 562 per month.

NEDLAC & NIOH COVID-19 LEGACY TRAINING PROGRAMME

Fourth NEDLAC/NIOH Webinar: Hazardous Biological Agents (HBAs): Rapid Fire Panel Discussion

The fourth webinar was the "Hazardous Biological Agents (HBAs): Rapid Fire Panel Discussion". The discussion was pre-recorded and streamed on 20 April 2023.

The panellists were Ms Jabulile Mhlophe, Specialist in Occupational Health and Hygiene, Department of Employment & Labour (DoEL); Dr Tanusha Singh, Head: Immunology & Microbiology Section, NIOH; Ms Dikeledi Matuka, Medical Scientist: Immunology & Microbiology Section, NIOH.

The discussion also focussed on the amended *Regulations for Hazardous Biological Agents (HBAs), 2022* as published by the Minister of Employment and Labour on 16 March 2022.

The webinar was attended by 623 participants (64.5% female and 35.5% male) representing 484 workplaces.

Webinar video recording URL: https://www.youtube.com/watch?v=Z6DVb3deg9M

Fifth NEDLAC/NIOH Webinar: Guidance on the management of risks and risk assessments at places of work

The fifth webinar was "Guidance on the management of risks and risk assessments at places of work". This webinar was coordinated by North-West University (NWU) partners on 1 June 2023.

The presenters were Prof Johan Du Plessis, Dr Stefan Linde and Prof Cas Badenhorst from the NWU; Mr Christo de Wet and Mr Rehan Badenhorst from D'Sayensi; and Mr Sean Chester from Apex Environmental. The presentations focussed on the key steps in the process of conducting OHS risk assessment.

This webinar was attended by 1 057 participants (64.7% female and 35.3% male) representing 771 workplaces.

Webinar video recording URL: https://www.youtube.com/watch?v=SCUEu4V5PzI

Sixth NEDLAC/NIOH Webinar: COVID-19 Control measures and current practices

The sixth webinar was a panel discussion on "COVID-19 Control measures and current practices". This discussion was pre-recorded and streamed on 22 June 2023. The panellists were Ms Jeanneth Manganyi (Head: Occupational Hygiene Section, NIOH), Ms Karen du Preez (Occupational Hygienist, NIOH) and Mr Gabriel Mizan (Occupational Hygienist, NIOH). This webinar was attended by 471 participants (67.1% female and 32.9% male) representing 370 workplaces.

Webinar video recording URL: https://www.youtube.com/watch?v=CRVMktCQRnU

UPCOMING OHS TRAINING

- Application, benefits, promotion, impact, boosting, and combining vaccines in the workplace (17 August 2023)
- Lessons learnt from COVID-19 vaccinations (7 September 2023)
- Update on Long COVID (28 September 2023)
- Vulnerable workers (26 October 2023)

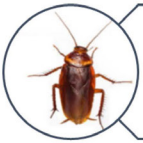
Note:
The webinar topic, date and time may be subject to change. For further details, look out for the official NIOH webinar notices/invites. The webinar invitation and programme, including the ZOOM link-to-register, will be circulated in due course.

OCCUPATIONAL COCKROACH ALLERGY

RECENT COCKROACH INFESTATIONS IN SOUTH AFRICA HAVE RAISED CONCERN OF THEIR SPREAD OF DISEASE AND ALLERGIES

- About 4,600 species, but only a few are considered pests.
- Females can lay up to 30 batches of eggs in their lifetime, with between 10 and 40 eggs at a time.
- They feed on paper, clothing, books, dead insects, human food and faecal matter.
- Hide in cracks, crevices in walls, door frames, furniture, cupboards, electronic devices, sewer systems etc.
- Cockroaches can transmit disease-causing organisms, including bacteria and viruses.
- They are a source of allergens and cause allergies.

COMMON SPECIES IN SOUTH AFRICA



American Cockroach
Periplaneta americana
Large (30 - 50 mm)
Black colour

German Cockroach
Blatella germanica
Small (~12 mm)
Light brown with two dark stripes

Oriental Cockroach
Blatta orientalis
Medium size (18–29 mm)
Dark brown to black in colour

RECENT COCKROACH INFESTATIONS IN SOUTH AFRICA HAS RAISED CONCERN OF THEIR SPREAD OF DISEASE AND ALLERGIES.

The results of a successful fumigation, a row of dead cockroaches of various sizes with feelers forlornly spread out around them. Photo: Getty Images

South Africa is in the grips of a "near-pandemic outbreak" of cockroaches that is seeing the world's most hated household pests scuttling about in their numbers in homes and businesses throughout the country, according to CropLife South Africa.

https://mg.co.za/environment/2023-04-21-sa-facing-plague-of-cockroaches-says-pesticides-group/

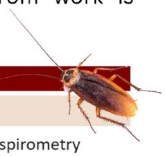
COCKROACH ALLERGY

- Cockroach allergy is an allergic reaction triggered by exposure to cockroach allergens.
- These allergens are tiny particles such cockroach scales, hairs, secretions, faecal materials, saliva, body parts and eggs on surfaces.
- Cockroach allergens can become airborne and be inhaled or come into contact with the skin leading to respiratory or skin allergies in sensitised individuals.
- Exposure may also aggravate existing allergic symptoms.

Common symptoms
– Nasal congestion
– Itchy, runny nose
– Sneezing
– Postnasal drip
– Ear infection
– Itchy, red or watery eyes
– Cough
– Itchy skin or skin rash
Asthma symptoms
– Shortness of breath
– Chest tightness or pain
– Wheezing
– Coughing

OCCUPATIONAL COCKROACH ALLERGY

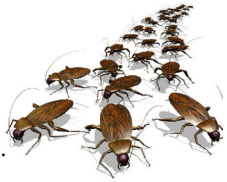
- Cockroach allergy is common in domestic settings where conditions are conducive for breeding. It is no surprise that they can cause occupational allergy, for example in laboratory personnel investigating cockroaches, occupational risk to seamen working on infested seagoing ships, bakers and stored cereal workers exposed to cockroaches feeding on grain, gold miners with infestations underground.[1]
- Establishing an occupational association to cockroach allergies is challenging, as it is ubiquitous in many environments.
- If workers are sensitised to cockroaches and the workplace has an infestation, a strong level of suspicion for occupational sensitisation should be present.
- Establishing whether workers' symptoms improve when away from work is important.



Species	Year	#Cases	Occupation	Diagnostics
Aberus giganteus	1995	1	Animal care[2]	SPT, sIgE
Blatella germanica	2008	145	Seamen[3]	Questionnaire, SPT, sIgE, spirometry
Blatella germanica, Periplaneta americana	1987	6	Laboratory[4]	SPT, sIgE, nasal provocation, inhibition test
Blatta orientalis	1997	50	Cereal workers[5]	SPT, sIgE, SIC, conjunctival provocation
Blatta orientalis	2008	54	Bakers[6]	SPT, BHR
Periplaneta americana	1978	4	Laboratory[7]	Open patch test
Undefined	2007	1	Baker[8]	SPT, sIgE, BHR, SIC
Undefined	2008	6	Seamen[9]	Questionnaire
Undefined	2013	1	Zoo owner[10]	SPT

BHR: bronchial hyper-reactivity test, SIC: specific inhalation challenge, sIgE: specific IgE, SPT: skin prick test, #cases: number of employees assessed for occupational allergy.

PREVENTION STRATEGIES (ALLERGEN AVOIDANCE):



- Maintain good hygiene and sanitation practices in the workplace.
- Regularly clean and vacuum areas prone to cockroach infestations.
- Seal cracks and crevices to prevent cockroach entry.
- Store food properly and dispose of waste promptly.
- Maintain proper ventilation to reduce humidity levels.
- Use of pesticides and where necessary professional pest control services.

OCCUPATIONAL HEALTH CONSIDERATIONS:

- Employers should create a safe and healthy work environment, including regular pest control measures and proper cleaning protocols.
- Employees with known cockroach allergies should inform their employers and occupational health professionals to ensure appropriate accommodations and preventive measures.
- Seek guidance from occupational health professionals or allergists for proper diagnosis, management, and preventive measures.
- Access educational materials and resources provided by occupational health organisations and allergy associations.

CONTACT US

+27 11 712 6400

www.nioh.ac.za

info@nioh.ac.za

25 Hospital Street,
Constitution Hill, Johannesburg

NATIONAL HEALTH LABORATORY SERVICE

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Division of the National Health Laboratory Service

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WEARING MASKS AT WORK

Notifiable Medical Conditions (NMC) are medical conditions, diseases or infections of public health importance that are classified as notifiable in terms of Regulation 12.

For more information, read the National Health Act 2003/regulations relating to surveillance and the control of NMCs.

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REPORT COVID-19 SYMPTOMS TO THE EMPLOYER

Although employees are not required to screen for COVID-19 e.g. taking temperature, they must notify their employer if they develop COVID-19 symptoms.

If an employer identifies a symptomatic COVID-19 positive worker at work they need to apply measures to protect other workers.

COVID-19 SYMPTOMS

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