



NATIONAL INSTITUTE FOR
OCCUPATIONAL HEALTH

Division of the National Health Laboratory Service

ANNUAL REVIEW

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LIST OF ACRONYMS

AFRICA	Asbestos Fibre Regular Informal Counting Arrangement
AgriSA	AgriCulture South Africa
AIA	Approved Inspection Authority
APP	Annual Performance Plan
CDC	Centre for Disease Control and Prevention (Africa)
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
COSATU	Congress of South African Trade Unions
COVID-19	Coronavirus Disease
DLBCL	Diffuse large B-cell lymphomas
DOMH	Diploma in Occupational Medicine and Health
FFPE	Formalin-fixed paraffin-embedded
FTIR	Fourier Transmission Infrared Spectroscopy
GHS	Globally Harmonized System
HIV	Human Immunodeficiency Virus
HPCSA	Health Professions Council of South Africa
HSC	Health and Safety Committee
HIS	Hyperspectral Imaging
HSR	Health and Safety Representatives
IEC	International Electrotechnical Commission
IFI	Invasive fungal infections
IJERPH	International Journal of Environmental Research and Public Health
ILO	International Labour Organization
ISBER	International Society for Biological and Environmental Repositories
ISO	International Organization for Standardization
IT	Information Technology

LIST OF ACRONYMS

MITS	Minimally invasive tissue sampling
MPH	Master of Public Health
MRC	Medical Research Council
MSc	Master of Science
NSCLC	Non-small cell lung cancer
NHLS	National Health Laboratory Service
NICD	National Institute for Communicable Diseases
NIOH	National Institute for Occupational Health
NRF	National Research Foundation
NWU	North West University
OECD	Organisation for Economic Cooperation and Development
OHASIS	Occupational Health and Safety Information System
OHNM	Occupational Health Nurse Managers
OHS	Occupational Health and Safety
OHSA	Occupational Health and Safety Act
OHSMS	Occupational Health and Safety Management System
OSHEMS	Occupational Safety Health and Environment Management System
PATHAUT	Pathology Disease Surveillance Database
PhD	Doctor of Philosophy
REDCap	Research Electronic Data Capture
RTCA	Real Time Cell Analyser
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SAFETP	South African Field Epidemiology Training Programme
SAIOH	Southern African Institute for Occupational Hygiene

LIST OF ACRONYMS

SA-MRC	South African Medical Research Council
SANAS	South African National Accreditation System
SARS	Severe Acute Respiratory Syndrome
SHE	Safety, Health and Environment
SHEO	Safety, Health and Environment Officer
SHSPH	School of Health Systems and Public Health
SLIPTA	Stepwise Laboratory Quality Improvement Process Towards Accreditation
SOP	Standard operating procedure
SPSPH	School of Health Systems and Public Health
TB	Tuberculosis
TBRS	Toxicology and Biochemistry Section
UJ	University of Johannesburg
UK	United Kingdom
UNISA	University of South Africa
UP	University of Pretoria
USA	United States of America
WAO	Waste Assurance Officer
WBPU	Waterborne Pathogens Unit
WHO	World Health Organization
Wits	University of the Witwatersrand
XRD	X-ray Diffraction

EXECUTIVE DIRECTORS OVERVIEW





Prof. Spo Kgalamono
Executive Director

EXECUTIVE DIRECTOR'S OVERVIEW

The NIOH is the only World Health Organization (WHO) Collaborating Centre for Occupational Health in sub-Saharan Africa and has maintained its status for the 17th consecutive year.

INTRODUCTION

During the 2024/25 financial year, the National Institute for Occupational Health (NIOH) continued to fulfil its mandate of providing expert advice, conducting research, and building capacity through teaching and training. Guided by its mandate and vision to promote healthier workplace environments and advance the field of occupational health, the NIOH remains a recognised centre of excellence and a regional hub of expertise for the South African government, industry, labour, Southern African Development Community (SADC) countries, and the broader African continent.

This report highlights the Institute's key achievements and milestones for the reporting period (2024/25 financial year). While the year was not without its challenges – and we acknowledge that some outcomes fell short of expectations – the NIOH

remained steadfast in its commitment to improving workplace health and safety. Notable progress was made in strengthening occupational health and safety within the National Health Laboratory Service (NHLS) and expanding the pathology services through ongoing partnerships with Limpopo province and the city of Gqeberha in the Eastern Cape.

HIGHLIGHTS

Specialised Services

Occupational Medicine Clinic: The Clinic manages workers referred by private and public sector, occupational medical practitioners for specialist occupational care services. Of the cases assessed over the year, 77% were new consultations. The majority (86%) were male with an average age

of 49.6 years. The mining industry accounted for nearly 38% of consultations. Key diagnoses included occupational asthma (40%), chronic obstructive pulmonary disease (COPD) (31%), with fewer referrals for musculoskeletal disorders (4%). The referrals were predominantly from machine operators (35%) and technicians (14%). Of all workers reviewed, coal (24%) and silica (14%) exposures were the most frequently mentioned. The top five diagnoses were occupational asthma at 40% (n = 32), followed by COPD at 31.25% (n = 25), silicosis at 5% (n = 4), silica tuberculosis at 5% (n = 4), and asbestosis at 4% (n = 3).

Occupational Hygiene Section: This Section maintained registration with the Department of Employment and Labour as an Approved Inspection Authority (AIA): Occupational Health and Hygiene. The Section provided services to the NHLS and private clients in its capacity as a Type C AIA. The X-Ray Diffraction (XRD) Laboratory retained ISO/IEC 17025 accreditation after a successful surveillance assessment in August 2024. The Section's Asbestos Laboratory participated in the Asbestos Fibre Regular Informal Counting Arrangement (AFRICA) proficiency testing scheme run by the Institute for Occupational Medicine in Edinburgh, in the United Kingdom (UK). The laboratory maintained a rating of 1 in all proficiency testing rounds, which is indicative of an excellent performance. The XRD/FTIR laboratory participated in the Air and Stack Emissions Proficiency Testing Scheme run by the Health and Safety Laboratory in the UK and administered by the LGC group. The laboratory has maintained satisfactory performance for all the samples for gravimetric weighing, XRD, and Fourier Transmission Infrared Spectroscopy (FTIR) analysis.

Pathology Division: The Division continued to meet its statutory obligations under the Occupational

Diseases in Mines and Works Act (Act No. 78 of 1973). It provided reports to the Mines Medical Bureau for Occupational Diseases for compensation purposes. It also supported the Centre of Pulmonary Excellence in Johannesburg and the city of Gqeberha in the Eastern Cape. The Division's autopsy service generates data that continues to be used for research purposes to inform policy. The Division introduced molecular testing for lung cancer to provide critical information to oncologists for offering personalised drug therapy. It also contributed to general surgical pathology services in Limpopo, enhancing both diagnostic capacity and registrar training.

Epidemiology and Surveillance Section: This Section supported the Gauteng Department of Health's Employee Health and Wellness Directorate in several projects. One of these is the annual Gauteng Staff Satisfaction Survey, with recommendations to improve workplace satisfaction for the Directorate and improve compliance through five-yearly Occupational Health and Safety Compliance Surveys in larger facilities within the Gauteng Department of Health. It also partnered with the HIV/TB in the Workplace Unit and the Minerals Council of South Africa to produce key milestone reports for the mining sector, including those related to occupational lung diseases and dust exposure.

Toxicology and Biochemistry Section: This Section provided specialised services, including support for cell line storage, maintenance, and retrieval to external clients and postgraduate students from various universities. It also advised the National Department of Health on organophosphate pesticide- and herbicide-related food poisoning cases following reports of several deaths in the country linked to the purchase of sweets and snacks from informal traders (spaza shops).

Immunology and Microbiology Section: This Section conducted diagnostic laboratory testing, performed risk assessments, and provided consultations for occupational allergies and infectious diseases. Its recommendations included risk reduction strategies in various workplaces.

HIV TB Section: This Section collaborated with the Department of Employment and Labour, AgriCulture South Africa (AgriSA), the Congress of South African Trade Unions (COSATU), and the International Labour Organization (ILO) to establish the “Agriculture and Forestry Occupational Health and Safety (OHS) Technical Committee”, which aims to strengthen OHS in the agricultural and forestry industries. It also worked with the NHLS and provincial health departments to produce an annual TB surveillance report for health workers – a major step in addressing the burden of TB in South African health workers.

Analytical Services Section: This Section conducted specialised laboratory testing for diagnostic, surveillance, and research purposes, and maintained a 97% turnaround time. The Organic Chemistry Unit within the Analytical Services Section successfully participated in Inter-comparison Programmes 73 and 74 for 2024, conducted by the German Institute and Outpatient Clinic for Occupational, Social and Environmental Medicine, and retained reference laboratory status for hexane urinary biomarkers for the 13th year.

Biobank and Quality Assurance Section: This Section continues to attract researchers across the NHLS as well as private clients, and its client base is growing. The Biobank has broadened its storage capacity through additional ultra-low temperature freezers. The Quality Assurance Section was instrumental in the NIOH maintaining all four South African National

Accreditation System (SANAS) accreditations: ISO 15189:2022 (medical laboratories), ISO 17025 (testing laboratories), ISO 7020 (inspection bodies), and ISO 9001:2015 (Quality Management Systems).

National Safety Health and Environment Department (SHE): This Department provided guidance and expert medical support and advice on exposures (e.g. brucella, Congo fever, TB, hepatitis B, noise, chemicals, ergonomic issues, glove-related allergies, etc.) across the NHLS.

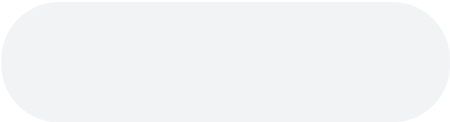
Information Services and Training Section: This Section continues to serve as a cornerstone of knowledge, learning, and technical support within the NIOH, National Institute for Communicable Diseases (NICD), and NHLS. The NIOH Library processed 96 scientific information requests, while 320 additional requests were fulfilled through the NHLS and NICD libraries. These requests supported research, training, and operational decisions, reinforcing the library’s critical support function.

The query-handling service remained a vital bridge between technical experts and a broad spectrum of users, processing 224 queries throughout the year. These covered diverse topics such as asbestos management, risk assessments, occupational hygiene surveys, compensation outcomes, environmental health concerns, training opportunities, and workplace health risks.

Research

In the 2024/25 reporting year, the NIOH produced 26 peer-reviewed publications. These publications were made available on the website and disseminated through the Institute’s quarterly newsletter, **OccuZone**. Although the target was 30 publications,

this output reflects the dedication of a relatively small and under-resourced research team. Topics ranged widely, including analysis of the Pathology Disease Surveillance Database (PATHAUT), which has tracked disease trends in the mining industry since 1975. PATHAUT remains critical for informing policy and public health interventions. The reports are available on the NIOH's website.



Senior staff have contributed as reviewers for leading international and national peer-reviewed indexed journals, such as *BMC Public Health*, *International Journal of Environmental Research and Public Health (IJERPH)*, *PLOS One*, *Environmental Research*, and *Frontiers in Public Health*, to mention a few.

NIOH staff have made significant contributions to the body of occupational and environmental health knowledge through publications in high-impact, peer-reviewed journals. These include *BMC Public Health*, *PLOS ONE*, *IJERPH*, *Environmental Research*, and *Frontiers in Public Health*, among others. These publications have helped inform evidence-based policy, guide workplace interventions, and support advocacy efforts to improve worker health and safety, nationally and globally.

In addition to research outputs, NIOH staff play an active role in academic development by supervising postgraduate students and serving as examiners for master's and PhD dissertations at institutions across South Africa. This reflects the Institute's continued commitment to capacity building and academic excellence in the field of occupational and environmental health.

Capacity Building

The NIOH delivered impactful and far-reaching training interventions through a robust programme of webinars. The Institute plays an integral role in building national capacity in occupational health and safety. It hosted 11 webinars, drawing 3 804 participants. Topics included epidemiology, biostatistics, ethics, asbestos exposure, biorisk management, and chemical hazard classification. Notably, two high-impact sessions on chemical exposure management attracted 1 623 attendees, reflecting the NIOH's national leadership in responding to public health crises.

The Institute contributes to capacity building of a critical mass of occupational health professionals via the co-ordination of formal courses (diplomas and master's degrees) in collaboration with institutions of higher learning. The NIOH also offers experiential learning for occupational medicine and public health medicine registrars, who rotate for a period of up to six months between various sections within the Institute. A notable contribution is its annual participation in the College Medicines of South Africa examination process.

Surveillance

Occupational health surveillance remained a strategic priority. In collaboration with the national departments of Health and Employment and Labour, the NIOH continued developing surveillance systems to guide interventions and protect workers. In the absence of a national occupational health surveillance system, the mortality data from Statistics South Africa were analysed to identify occupational disease trends. Eight disease-specific reports were published, focusing on links to cancer, pneumonia,

and chronic diseases. These National Occupational Mortality Surveillance South Africa reports are available on the NIOH website.

Support for the NHLS

The SHE Department implemented a robust OHS Management System across NHLS facilities, including annual audits, to assess compliance. Exposure assessments for formaldehyde and xylene continued nationally, with inland assessments conducted by the NIOH and coastal assessments outsourced.

The Department worked closely with the Occupational Hygiene, Medicine, Immunology, IT, HR, and Finance Sections on:

- Incident case management
- Legal compliance for medical surveillance
- Ergonomic assessments
- Immunology testing
- Occupational Health and Safety Information System (OHASIS) development
- Staffing support

The Quality Assurance Section conducted internal audits and supported NHLS labs in maintaining quality standards for the SANAS and Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA).

Local and International Partnerships

Strategic collaborations with academic institutions, government bodies, international agencies, and private entities enhanced the NIOH's impact and reach. We are pleased to report that we have successfully retained our World Health Organization (WHO) Collaborating Centre status and continue to manage several collaborative projects under this designation.

Appreciation

I wish to express my heartfelt gratitude to NHLS leadership, the Board, our valued partners, and collaborators across sectors. Your ongoing support and commitment have played a vital role in our progress. Most importantly, I commend NIOH staff for their professionalism, dedication, and resilience in advancing the vision of healthier workplaces and safer working environments.



PATHOLOGY DIVISION





Dr Deepna Govind Lakhoo
Head of Division

PATHOLOGY DIVISION

The Division has become a referral centre for lung biopsies through the expertise gained in lung pathology. Due to a general shortage of histopathologists nationally, the Division has been assisting with diagnostic surgical pathology services for the Limpopo Province.

INTRODUCTION

The Pathology Division continued to meet its statutory obligations under the Occupational Diseases in Mines and Works Act (Act No. 78 of 1973). During the year under review, the Division focused on occupational lung diseases by providing an autopsy service to assist with the compensation of the families of deceased mine workers. It submitted reports to the Medical Bureau for Occupational Diseases for compensation purposes.

The Division is a referral centre for lung biopsies through the expertise gained in lung pathology. It aims to become a centre of excellence in diagnostic lung pathology. It receives samples from sources nationwide, including the major tertiary teaching hospitals in Gauteng, Limpopo, and the Eastern Cape. Given the general shortage of histopathologists in South Africa, the Division has provided general diagnostic surgical pathology services to Limpopo. Beyond pathology services, the Division also

offers analytical electron microscopy services. The diagnostic service work of the Pathology Division provides data and material for teaching, research, and surveillance purposes. Additionally, it has introduced validation for molecular testing for lung cancer to provide critical information to oncologists for offering personalised drug therapy.

DIAGNOSTIC SERVICES

Autopsies

The Pathology Division examines the cardiorespiratory organs of deceased miners, as stipulated in the Occupational Diseases in Mines and Works Act (Act No. 78 of 1973). A pathology report of this examination is sent to the Medical Bureau for Occupational Diseases to assist with the compensation process for families of deceased mine workers.

The autopsy service plays a crucial role in assisting with workers' compensation and provides extensive information about the lungs examined at the Division. Pathologists carefully record approximately 200 items of information. This data is entered into the Pathology Division's Pathology Disease Surveillance Database (PATHAUT), a national resource containing unique information about diseases in the mining industry. The database has been maintained since 1975 and continues to be used extensively for policy decisions. It shows disease trends in the mining industry and supports research in collaboration with local and international partners. It is also an important tool for disease surveillance, which informs policy and other interventions that reduce occupational exposures in various workplaces. Detailed disease surveillance reports compiled from PATHAUT data, providing demographic data and disease rates, are produced annually. The reports are available on the NIOH's website.

Outreach Activities

The Pathology Division provides an outreach service guiding all relevant stakeholders through the process of having cardiorespiratory organs of miners and ex-miners examined for possible occupational lung disease.

During the financial year under review, outreach activities included the following:

- The Exxaro CEO Sustainable Impact Summit was held in April 2024 at the Matla Coal Mine, in Kriel, Mpumalanga, to reaffirm the 'zero harm' vision, where the NIOH focused on information

dissemination regarding coal workers' pneumoconiosis.

- The Mine Health and Safety Council Tripartite Summit was held in October 2024. The theme was "Innovate and Elevate: Breaking Boundaries to Achieve Zero Harm". The NIOH pathology team discussed current trends relating to occupational lung disease with various stakeholders, institutions, and mine personnel.
- In January 2025, the NIOH hosted delegates from African Rainbow Minerals, including delegates from Nkomati Mine, Bokoni Platinum Mine, and Anglo American Mine. These visits created many more networking opportunities, and the Division has subsequently been invited to attend future stakeholder events.
- The Gauteng Provincial TB Event, co-hosted by Harmony and the Gauteng Department of Health, took place in March 2025 at Kusasaletu/Mponeng Mine in Carletonville. The primary objective was to raise awareness about TB and other occupational lung diseases affecting miners and ex-miners.

Surgical Pathology

The Division has vast experience in pulmonary pathology. It provides diagnostic services to meet the demand for information on lung biopsies, fine needle aspirates and bronchial washings. Since 2017, the NIOH's Pathology Division has provided specialised pathology services to the Centre of Pulmonary Excellence in Johannesburg. As of March 2023, the Division has been assisting the city of Gqeberha in the Eastern Cape in reporting their lung biopsy specimens. The Division has also made significant strides in offering routine testing for molecular targets in lung cancer, in an attempt to provide critical information to oncologists for offering personalised drug therapy.

The Division also fills a gap by providing general surgical pathology diagnostic services to Limpopo province, while supporting the province in building further capacity. This has enhanced pathology services to the province. The general surgical pathology specimens received from Limpopo provides an opportunity for pathologists at the NIOH to examine a broad range of general pathology and offer a more extensive training platform for registrars.

Electron Microscopy

The Electron Microscopy Unit is an essential component in the Pathology Division, and its function is to assist in service delivery, research, and training. The Unit is equipped with a scanning electron microscope. The microscope is linked to an energy dispersive spectroscopy analyser, which analyses the chemical composition of asbestos and various other molecules. Its function is to identify the type and concentration of asbestos fibre in the lung tissue of deceased miners, to assist with the diagnosis of asbestos-related diseases, and to determine environmental and occupational asbestos exposure. Samples are analysed to identify asbestos in building materials and enumerate asbestos fibres in the air. These analyses are performed for internal and external clients, including national, provincial, and local government, non-governmental organisations, universities, and private businesses. The Electron Microscopy Section participates in an external quality assurance scheme. It has maintained a satisfactory rating in the Asbestos in Materials international quality assurance scheme that is coordinated by the Health and Safety Laboratory, UK. Its database is unique in South Africa and provides information about the legacy of asbestos in the country. The information from the database has been used to produce Annual Asbestos Surveillance Reports, which are available on the NIOH's website.

RESEARCH

Staff members of the Pathology Division conduct research relevant to the health of South African workers. Material and data from the Division's service work provide information for research projects. Current areas of interest centre around lung diseases in mine workers caused by exposure to silica dust or asbestos fibres and some aspects of the surgical pathology cases received from Limpopo.

Research output

A summary of the projects completed or at the final stages of completion is presented below:

- **Validation of PDL-1 22C3 clone using Bond III to effectively identify patients in the public sector for Anti PDL-1 immunotherapy**

Study Team: Mayeza T,¹ Naidoo S,¹ and Govind Lakhoo D^{1,2}

National Institute for Occupational Health, a division of the National Health Laboratory Service,¹ School of Pathology, Faculty of Health Sciences, University of the Witwatersrand²

Abstract

Programmed Death-Ligand 1 immunohistochemistry (PD-L1 IHC) 22C3 pharmDx test is an assay used to predict which patients will likely benefit from anti-PD-L1 immunotherapy. This

was the first assay to receive United States Food and Drug Administration (U.S. FDA) approval as a companion diagnostic test utilising the Envision FLEX visualisation system on the Dako Auto stainer Link 48 (ASL48). A constraint faced by laboratories in the public sector of developing countries, including South Africa, is the restricted availability of Dako platforms and the high cost of the PD-L1 22C3 pharmDx kit. This study aimed to validate PD-L1 22C3 expression on non-small cell lung cancer (NSCLC) formalin-fixed paraffin-embedded (FFPE) biopsies by comparing the laboratory-developed test results obtained on the Bond-III Leica Biosystems platform against the gold standard on the Dako ASL48 platform. This retrospective study included 26 FFPE blocks of patients previously diagnosed with NSCLC. The PD-L1 22C3 expression was evaluated using the tumour proportion score by two pathologists. Data were analysed using STATA version 16 (Stata Corp, College, TX, USA). The average sensitivity and specificity were 81.3% and 100%, respectively. The results demonstrate that the Bond-III Leica Biosystems provides a comparable and cost-effective alternative for analysing PD-L1 expression with the PD-L1 22C3 pharmDx test. The results remained reliable while the staining intensity was weaker than that achieved with the Dako ASL48 platform. The study presents opportunities for developing the assay on other IHC platforms to allow more public sector laboratories to offer PD-L1 screening.

Stage of research: Awaiting review from DHET-approved journal

- **Minimally invasive post-mortem tissue sampling for diagnosis of occupational lung diseases**

Study Team: Manenzhe R¹ and Govind Lakhoo D^{1,2}

National Institute for Occupational Health, a division of the National Health Laboratory Service,¹ School of Pathology, Faculty of Health Sciences, University of the Witwatersrand

Funding: K-project funding: PR2345284

Abstract

Aims and objectives: The study aimed to determine the accuracy of minimally invasive tissue sampling (MITS) in diagnosing occupational lung disease by comparing the concordance of this method to the gold standard autopsy method. This was accomplished by determining the diagnostic yield of MITS samples for diseases such as pneumoconiosis, pulmonary tuberculosis, and neoplastic diseases. **Material and methods:** This was a prospective and quantitative study. The cohort included a total of 24 cases. Findings of MIT samples were compared to findings at autopsy and macroscopic examination of the lungs. Sensitivity and specificity of the MITS technique in diagnosing pneumoconiosis, neoplasms, and infections at autopsy were calculated. **Results:** The MIT sampling technique did not detect any of the pneumoconiosis or pulmonary TB at autopsy. The sensitivity of the MITS technique for findings of mesothelioma was 50%, and the specificity was 100%. The sensitivity using MITS in findings of more generalised disease processes such as pneumonia was 87.5% and the specificity was 100%. **Conclusion:** Minimally invasive tissue sampling is a technique that reduces the duration and the costs incurred

when conducting a conventional autopsy. In this study, focal diseases such as pneumoconiosis, mycobacterium tuberculosis, and primary lung cancer could not be detected in samples using MITS. Minimally-invasive tissue sampling was, however, able to show findings of a more widespread disease such as pneumonia.

Stage of research: Thesis has passed examination for degree of Master's of Medical Science in Anatomical Pathology (University of the Witwatersrand)

- **Immunophenotypic and molecular features of TP53 in diffuse large B-cell lymphomas (DLBCL)**

Study team: T. Mashele,¹ Magangane P,^{1,2} and Pather S^{1,2}

Funding: NHLS PR2232879

National Institute for Occupational Health, a division of the National Health Laboratory Service,¹ School of Pathology, Faculty of Health Sciences, University of the Witwatersrand²

Summary: The study aims to document histopathologic features and determine the p53 immuno-expression profile associated with TP53 gene mutations within DLBCL at CHBAH. This retrospective, descriptive, cross-sectional review of confirmed cases of DLBCL was conducted from 01 Jan 2019 to 31 Dec 2021. Immunohistochemistry for p53 protein and sequencing of TP53 was conducted on a sample size of not less than 66 samples.

Stage of research: Thesis undergoing examination for the degree of Master of Science (Anatomical Pathology) at the University of Witwatersrand.

- **Histologically confirmed invasive fungal infections before and during the COVID-19 pandemic in South Africa (1 September 2018 –31 August 2021)**

Study Team: Sriruttan C,¹ Govender N,¹ Govind Lakhoo D,^{1,2} and van der Byl D^{1,2}

National Institute for Communicable Diseases (NICD), a division of the National Health Laboratory Service,¹ National Institute for Occupational Health, a division of the National Health Laboratory Service,² and School of Pathology, Faculty of Health Sciences, University of the Witwatersrand³

Summary: In this retrospective, cross-sectional, observational study, the investigators aimed to describe the epidemiology of histologically diagnosed invasive fungal infections (IFI), before (1 September 2018–28 February 2020) and during (1 March 2020–31 August 2021) the COVID-19 pandemic in South Africa. A search of NHLS CDW, NIOH PATHAUT and NICD MRL databases were conducted for histologically-confirmed IFI. Fungal PCR (polymerase chain reaction) and sequencing was performed on FFPE tissues with a histologically confirmed diagnosis of IFI, where no/discordant fungal serology, culture, or molecular result was present. Among 659 infections (0.4% of all histology specimens), 97 were IFIs (15%; prevalence 0.05%). Routine clinical diagnostic histopathology specimens contributed 28 IFI cases (median age 35 years, 54% male; prevalence 0.01–0.02%), largely in younger adults with HIV or diabetes. Miner autopsies contributed 69 IFI cases (median age 59 years, 93% male; prevalence 1.8%), predominantly cryptococcosis (43%) and Pneumocystis jirovecii pneumonia (29%). Pan-fungal PCR on FFPE tissue had poor yield.

Stage of research: Thesis submitted for examination for the degree of Master of Science (Anatomical Pathology) at the University of Witwatersrand.

- **Evaluation of the possibility of asbestos environmental contamination and exposure resulting from laboratory processing of probable asbestos-contaminated samples**

Study Team: Mhlongo L,¹ Ngcobo Z,¹ Mizan G,^{1,2} and Govind Lakhoo D^{1,3}

Funding: K-Project funding (PR2345464)

National Institute for Occupational Health, a division of the National Health Laboratory Service,¹ School of Public Health, Faculty of Health Sciences, University of the Witwatersrand,² School of Pathology, Faculty of Health Sciences, University of the Witwatersrand³

Summary: Exposure to all kinds of asbestos leads to lung cancer, various non-malignant respiratory diseases, and some non-respiratory cancers. Therefore, it is critical to ensure that quality and safety management systems are always in place in the laboratory during the processing of all laboratory specimens. This protects employees working with samples suspected to contain asbestos. With this understanding, this study aimed to evaluate the possibility of asbestos contamination during the pathology department's processing of probable asbestos-containing lung tissue/bulk samples. The study evaluated forty (40) air monitoring results from samples collected during routine processing and testing of lung and bulk material specimens suspected to contain asbestos. In addition, ten (10) air monitoring control samples were randomly collected on days where no suspected asbestos specimens were being processed.

On analysis, none of the air monitoring filters were positive for asbestos fibres.

Stage of research: Awaiting review from DHET-approved journal

TEACHING AND TRAINING

The Division provides teaching and training through workshops, presentations, and formal lecturing to professional bodies, universities, and teaching hospitals. Staff members participate in mentoring, teaching, and supervising various students.

The pathologists are actively involved in the undergraduate teaching of medical, dental, and allied health care students at the University of the Witwatersrand (Wits), as well as postgraduate anatomical pathology registrar training. They also actively participate in and present cases at regular clinical pathology meetings with pulmonologists from Johannesburg's teaching hospitals.

Staff members from the Division are actively involved in teaching and training intern medical scientists. One intern medical scientist (Ms T Mayeza) successfully completed her training within the Division and received Health Professions Council of South Africa (HPCSA) certification as a medical biological scientist in July 2024.

The Division is also accredited by the HPCSA for training of student medical technologists and technicians. Two medical technologists (Ms U Phembeshiya and Ms B Gabela) completed their training in the department and obtained their certification as medical technologists in December 2024.

PROFESSIONAL DEVELOPMENT

- One staff member completed her diploma in Business Management (Damelin) in 2024.

OCCUPATIONAL MEDICINE SECTION





Dr Mpho Makwela-Rakgoale
Head of Section

OCCUPATIONAL MEDICINE SECTION

Research is conducted to inform occupational health policy and practice while specialised services such as diagnosis of referred workers through clinical assessments and ergonomic services are provided to support workplaces.

INTRODUCTION

The Occupational Medicine Section is essential in developing occupational health in South Africa. The Section strives to provide good quality expert tertiary occupational and ergonomics services, contribute to capacity development of relevant stakeholders and contribute to relevant research within the OHS space. It contribute to occupational health, safety and environmental risk reduction strategies for effective prevention of work-related diseases and injuries. The Section establishes long-term key relationships with industries to enable them to create a safe environment for employees. Teaching and training are performed to produce and increase the number of qualified occupational health professionals. Research is conducted to inform occupational health policies and practices. The diagnosis of referred workers through clinical assessments and ergonomic services is for compensation purposes, optimal management of occupational disease and injuries and fitness adjudication.

DIAGNOSTIC AND SPECIALISED SERVICES

The Occupational Medicine Section is comprised of the Ergonomics Unit and the Occupational Medicine Clinic. The Clinic provides services to current and former workers referred for clinical assessments and workups for occupational disease and compensation purposes. The Ergonomics Unit assesses workers with musculoskeletal disorders, with particular emphasis on lower back and work-related upper limb disorders. During the year under review, the Occupational Medicine Clinic provided occupational treatment and care to 80 workers referred by private and public sector medical practitioners.

Of the cases assessed in the Clinic, 77% were new clients, while 23% were returning clients. Most clients were male (86%), and the mean age of all workers visiting the Clinic was 49.7 years (ranging from 26 to 72). Further analysis of age by gender revealed that

males had a higher mean age (49.6 years) than females (48.4 years). The mining industry accounted for almost 37.5% of all clinical consultations. The majority of cases were for workups and confirmation of occupational asthma (40%), followed by COPD (31%), with few referrals for musculoskeletal disorders (4%). The referrals were predominantly from machine operators (35%) and technicians (14%). Of all workers reviewed, coal (24%) and silica (14%) exposures were the most frequently mentioned.

REFERRING INDUSTRIES

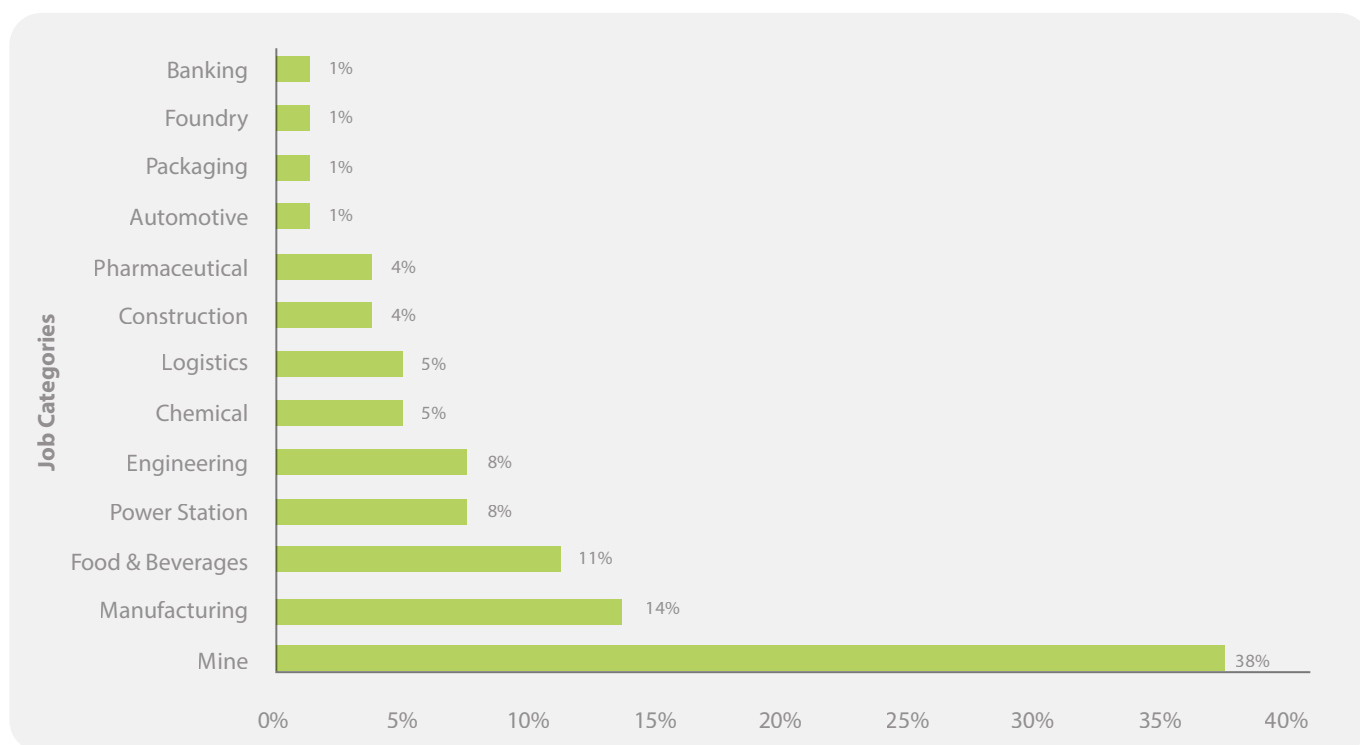


Figure 1: Classification of referring industries to the Occupational Medicine Clinic



The top five industries that referred cases to the Occupational Clinic were mining at (38%), followed by manufacturing (14%), food and beverages (11%), and power station and engineering at 8%. Within the mining sector, coal mines were the largest contributor (40%), followed by the gold mines (20%), chrome mines (7%) while, the diamond, iron ore and manganese mines, each account for 3%.

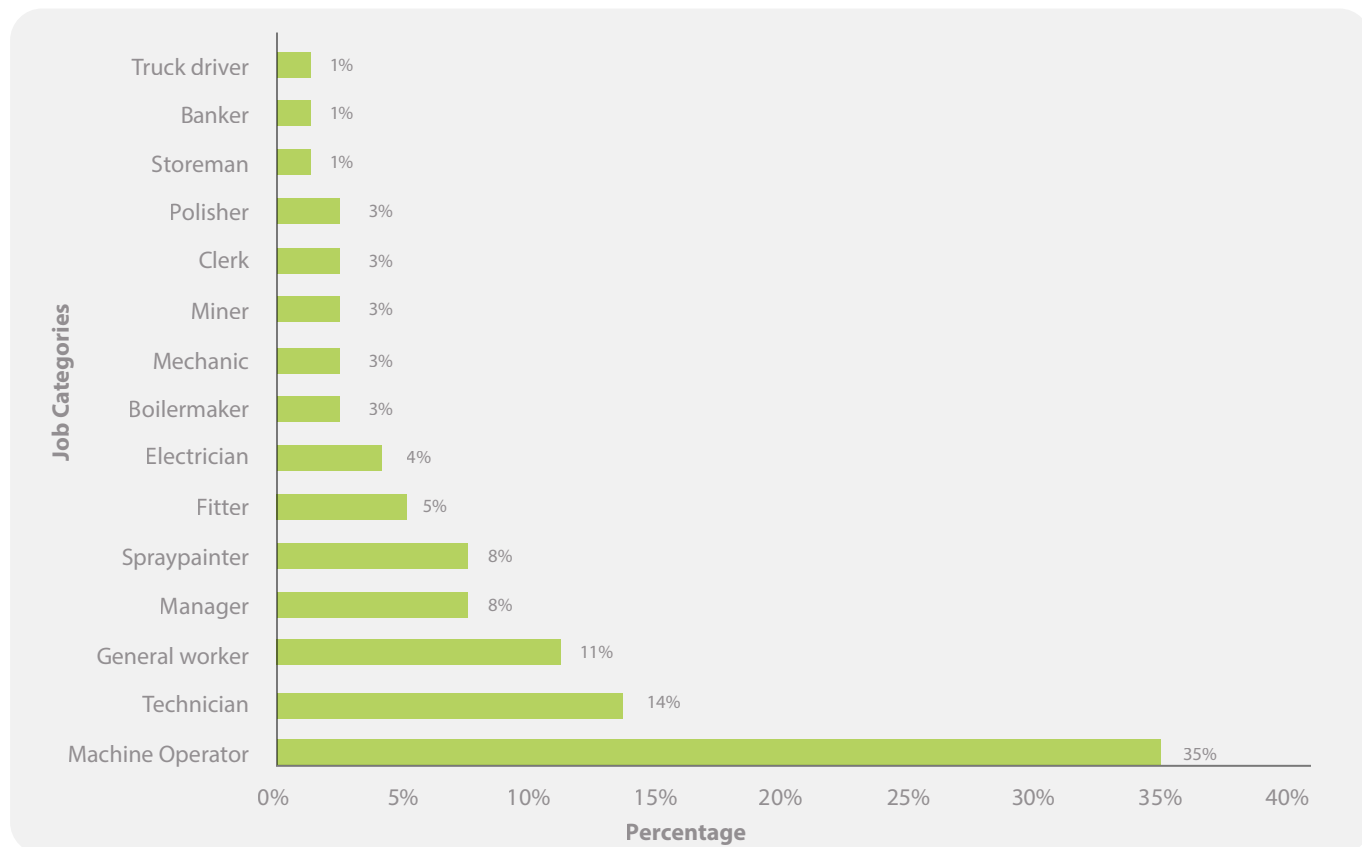


Figure 2: Job categories of workers who consulted the Occupational Medical Clinic in 2024



The majority of workers referred to the Occupational Medical Clinic worked as machine operators (35%), followed by technicians (14%), and general workers (11%). In total, over 15 job categories were listed. The workplace exposure profile was predominantly for coal (24%), followed by silica exposure (14%), and welding fumes (10%).

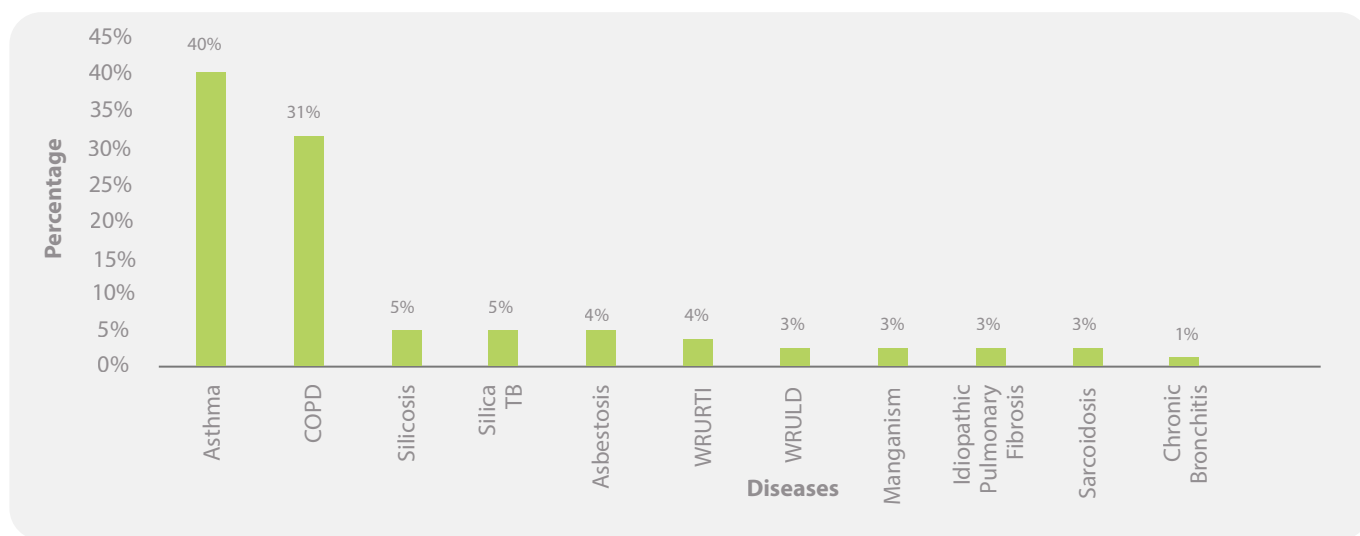


Figure 3: Disease Classification System – Clinical diagnosis of consulted cases

The top five diagnoses were for occupational asthma at 40% (n = 32), followed by COPD at 31.25% (n = 25), silicosis at 5% (n = 4), silica tuberculosis at 5% (n = 4), and asbestosis at 4% (n = 3).

ERGONOMICS UNIT

Diagnostics and Specialised Services

Human Factors and Ergonomics is a scientific discipline concerned with understanding the interactions among humans and other elements of a system to optimise human well-being and overall system performance. The Ergonomics Unit offers specialised ergonomics services that not only meet the requirements of the Ergonomics Regulations outlined in the Occupational Health and Safety Act (Act No. 85 of 1993), but also align with international best practices and industry standards.

In recent years, the application of ergonomics principles in South Africa has gained significant momentum in both the mining and non-mining industries. Increasingly, different industries recognise that investing in ergonomics is not just

about compliance but also enhances productivity, performance, and worker well-being. As a result, many industries are requesting ergonomics services, including risk assessments, teaching and training, and research and development.

During the 2024/25 financial year, the Ergonomics Unit conducted a walkthrough survey for an external client in the mining industry. The primary objective was to identify the required ergonomics services, determine the scope of work, and select the required assessment methods. The subsequent baseline ergonomics risk assessment will use the systems model and participatory ergonomics approach to acquire a comprehensive understanding of the operational activities in the mine. The assessment

will cover the different factors of ergonomics (i.e., physical ergonomics, cognitive ergonomics, and organisational ergonomics). The risk assessment findings will help develop effective ergonomics solutions for the mine. NIOH aims to provide specialised ergonomics services from a holistic approach.

Additionally, the Ergonomics Unit initiated internal ergonomics initiatives within NIOH, which introduced ergonomic chairs in various sections. This effort is the first step towards enhancing workplace comfort and promoting staff health and well-being. Looking ahead to the new financial year, the Unit will expand ergonomics initiatives within NIOH and strengthen stakeholder partnerships to drive a culture of safety and performance.

COMPENSATION OF MINE/EX-MINE WORKERS

The NIOH Occupational Medicine Section is part of the Medical Bureau for Occupational Diseases Review Committee. This Committee reviews referrals from the Certification Committee or individuals/parties dissatisfied with the Certification Committee's decisions on adjudication of occupational disease claims. The Committee adjudicates occupational cardiorespiratory diseases of miners and ex-miners for confirmation of occupational disease and compensation purposes.

Specialised Services/Projects

The Occupational Medicine Section led a key project with the Mine Health Safety Council to develop educational materials and videos on musculoskeletal disorders and whole-body vibration for the South African mining industry. This was a collaborative effort with the Epidemiology and Surveillance Section and the Communications Section.

The team conducts workplace assessments in collaboration with the NIOH Occupational Hygiene Section and the Immunology and Microbiology Section. An ergonomics scoping study and assessment was conducted at a smelters to support workplace health and safety.

Research

The Section continues to contribute to occupational health research through several ongoing projects, including:

- Prevalence and factors associated with liver and renal diseases among petrol attendants
- Healthcare access and associated risk factors affecting golf caddies in Johannesburg, South Africa
- Analysis of surveillance data from the specialist NIOH Occupational Medicine Clinic

TEACHING AND TRAINING

The Occupational Medicine Section remains actively engaged in teaching and training initiatives to build capacity and promote awareness of occupational health and safety principles among various stakeholders. The Section contributes to formal academic programmes in academic institutions through lectures and supervision.

It plays an ongoing role in the Occupational Medicine and Public Health Register Programmes. As part of its mandate to share knowledge in academic platforms, it offers continuous education, training, and mentorship. Additionally, the Section supports the Diploma in Occupational and Environmental Health at Wits and the University of Pretoria. The Section also coordinates and serves as a moderator and external examiner in Wits University's undergraduate and postgraduate programmes. The Section further

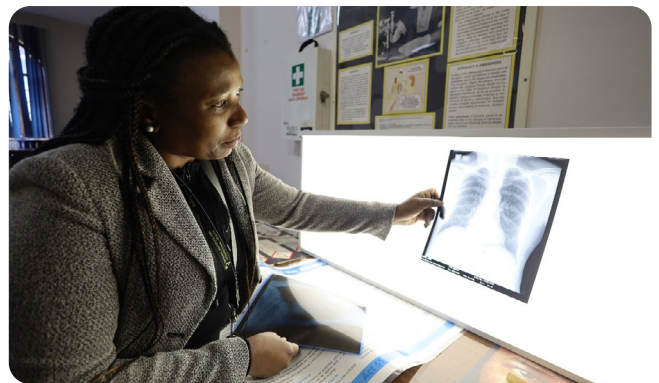
participates in specialist examination processes through the South African College of Public Health Medicine (Occupational Medicine). The unit has supervised two Occupational Medicine Registrars (in a 4-year programme), four Public Health Registrars on six-monthly rotation, seven MPH student supervision, and one MSc in this financial year. Beyond its academic contribution, the Section provided training to different professional cadres within the occupational health field. This was done through continued professional development activities such as webinars, workshops for environmental health practitioners, symposiums to the South African Society of Occupational Health Nursing Practitioners, and workplace knowledge sharing with the Department of Mineral Resources and Energy's inspectors and the Department of Employment and Labour, including Compensation Fund professionals.



Occupational Medicine Section team. From left to right, Ms Thato Malesa (Ergonomics Manager), Mr Jacob Senamolela (Clerk Administration), Sister Goitsimang Buffel (Nurse Clinical Management), Dr Nompumelelo Ndaba (Occupational Medicine Specialist), Dr Christel Nagoorsamy (Occupational Medicine Specialist), and Dr Mpho Rakgoale Centre (Head of Occupational Medicine).



NIOH Occupational Medicine Section staff during Diagnostic and Specialised Clinic Service. From left to right: Dr Mpho Rakgoale, Sister Goitsemang Buffel, Mr Jacob Senamolela, and Dr Nompumelelo Ndaba.



Dr Mpho Ndaba examining a patient's lungs.



Ms Thato Malesa conducting an office workstation ergonomics assessment.

IMMUNOLOGY AND MICROBIOLOGY





Ms Edith Ratshikhopha
Acting Head of Section

IMMUNOLOGY AND MICROBIOLOGY

The Section provides diagnostic services such as consultations, allergy testing, water and air sample testing, and efficacy testing of devices aimed at reducing microbial transmission in various settings.

INTRODUCTION

The Immunology and Microbiology Section is crucial in diagnosing and preventing occupational allergies and infectious diseases. It provides laboratory testing, risk assessments, and expert consultations to address health risks associated with these conditions. Based on its findings, the Section issues recommendations to various workplaces, helping manage diseases and develop effective mitigation strategies. It offers laboratory diagnostic and consultation services for suspected occupational respiratory and skin allergy cases. The results are essential for effective clinical management and can serve as supporting evidence in compensation claims. The Section also conducts tests to detect airborne pathogens, aiding in infection prevention and evaluating the effectiveness of existing control measures in workplaces. Furthermore, it tests for waterborne pathogens in drinking water in several workplaces to enable early detection and

response. The Section tests for bacterial pathogens in recycled water to protect workers potentially exposed to these risks.

Beyond laboratory testing services, the Section responds to external queries. It contributes to evidence-based guidance to improve workplace health and safety. Staff actively engage with stakeholders to build long-term relationships and facilitate the implementation of research findings. The Section also collaborates with the NIOH's Epidemiology Section on the surveillance and compilation of the occupational allergies report.

The Section's research activities focus on the impact of microbiological agents and allergens in formal and informal work settings. These research efforts generate knowledge that is disseminated through

various media platforms, including fact sheets, social media, scientific briefs, reports, and peer-reviewed publications.

In addition to its research and diagnostic roles, the Section actively conducts teaching and training on occupational diseases related to allergies and infections. These initiatives are designed to raise awareness and promote best practices in occupational health. Training includes postgraduate supervision and lectures for undergraduate and postgraduate students at various tertiary institutions. The Section also offers competency-based training, workshops, and ad hoc industry-based sessions, and is accredited by the HPCSA to train medical scientist interns in microbiology.

DIAGNOSTIC SERVICES

The Immunology and Microbiology Section comprises three units: Bioaerosol, Waterborne Pathogens, and Occupational Allergy. The Bioaerosol and Waterborne Pathogens units are SANAS ISO 17025 standard accredited, while the Occupational Allergy Unit holds the SANAS ISO 15189 standard accreditation.

Bioaerosol Unit

The Bioaerosol Unit conducts comprehensive workplace assessments for hazardous biological agents, workplace environmental sampling, and mould assessment in a building. It identifies bacteria and fungi from environmental air samples in workplaces, checking the efficacy of control interventions and recommending preventive measures. The Unit also tests for the efficacy of ultraviolet germicidal irradiation air disinfection devices to verify that devices meet required performance standards to effectively reduce airborne infections, particularly in high-risk environments such as healthcare facilities.



A postgraduate student conducting air sampling near inlet screens at a wastewater plant.

Waterborne Pathogens Unit (WBPU)

The WBPU investigates the health impact of waterborne bacteria transmitted through water distribution systems on workers across various industries and the general public. The Unit conducts monthly SANAS-accredited microbiological testing of potable water from workplaces and public sources to assess compliance with SANS 241 drinking water standards. It also tests non-potable water to verify microbiological safety for its intended occupational use. Additionally, the WBPU tests raw and treated municipal wastewater (sewage) to identify potential health risks for exposed workers. The Unit also conducts consultations and risk assessments on water quality-related queries.

Occupational Allergy Unit

The Unit provides diagnostic testing for occupational allergies related to respiratory and skin diseases. It prepares custom allergens from workplace materials when commercial allergens are unavailable. The occupational skin disease clinic in the Unit offers consultations with a dermatologist and patch testing to identify allergic causes of contact dermatitis. The Unit also conducts skin prick tests for patients with suspected IgE-mediated allergy symptoms. This helps identify agents causing respiratory tract reactions and atopic workers who are at higher risk of developing work-related allergies. Screening is provided for workers exposed to sensitising agents such as platinum and nickel, enabling early detection of sensitised employees and implementation of timely interventions before clinical symptoms develop.



NIOH staff member with African Reclaimers Organisation members at their Head Office in March 2025, discussing the Waste Reclaimer project.

TEACHING AND TRAINING

Part of the mandate of the NIOH's Immunology and Microbiology Section is to provide teaching and training to raise awareness about allergies and infections caused by hazardous biological agents and other offending allergens. The teaching and training programme targets undergraduate and postgraduate students at various tertiary institutions. During the year under review, the Section contributed to academic programmes through lectures and practical training. Notable examples include a lecture on occupational skin disease at the University of KwaZulu-Natal; a session on contact dermatitis and patch testing for dermatology registrars at Wits University; and a lecture on water reuse and associated health risks, delivered to Bachelor of Health

Sciences (Honours) students in Clinical Microbiology and Infectious Diseases at Wits University. Currently, 14 postgraduate candidates are being supervised in the Section: one PhD student, four MSc students, six Master of Public Health (MPH) students, and three HPCSA medical scientist interns.

The Section conducted two workshops during the reporting period: A Biorisk Management workshop, where delegates were trained on biorisk assessments, and an Occupational Allergies workshop, which covered topics such as allergy identification, risk assessments, allergy testing, and prevention strategies.

EPIDEMIOLOGY AND SURVEILLANCE





Prof Nisha Naicker
Head of Section

EPIDEMIOLOGY AND SURVEILLANCE

In 2023/24, the Epidemiology team supported the Gauteng Department of Health in several projects. The Gauteng Staff Satisfaction Survey is an annual survey conducted by the Employee Health and Wellness Programme (EHWP) Directorate. The Epidemiology Section designed the survey and produced reports per health facility for the Directorate.

INTRODUCTION

The NIOH Epidemiology and Surveillance Section investigates occupational exposure patterns, causes, and effects on morbidity and mortality. The Section conducts primary research and provides research methodology and analytical support to internal and external occupational health and safety (OHS) stakeholders. Its work focuses on understanding the risk factors and health outcomes associated with occupational and environmental exposures. This research is crucial in establishing the burden of occupational diseases over time. It informs the planning and delivery of occupational health services and the prevention of work-related diseases and injuries in South Africa.

SERVICES

The Epidemiology and Surveillance Section provides technical research support to all NIOH sections

and external clients in the public sector, including national and provincial departments, parastatals, science councils, and the private sector. The support includes assistance with study design, sample size determination, project management, data collection, data entry, data analysis, and scientific writing.

Collaborating with the Gauteng Department of Health

During the reporting period, the Epidemiology team supported the Employee Health and Wellness Directorate of the Gauteng Department of Health on several key initiatives:

- **Gauteng Staff Satisfaction Survey:** Dr Kerry Wilson designed the survey and compiled a comprehensive report, including

recommendations to improve staff satisfaction within the directorate.

- **Occupational Health and Safety Compliance Survey:** The team assisted in designing tools for a five-year OHS compliance assessment in major facilities to improve adherence to occupational health standards.

Support to the Mining Sector

- **High-Performing Teams Research:** Dr Kerry Wilson and Mr Hlologelo Ramatsoma led the data analysis for a study titled *“Profiling High-Performing Teams within Mines”*, conducted for Harmony Gold. The research assessed physical, functional, and psychosocial characteristics of mining teams in Gauteng to identify factors associated with work performance. The project was undertaken in collaboration with the NIOH HIV/TB in the Workplace Unit.
- **Minerals Council South Africa Reports:** The Epidemiology team, under the leadership of Dr Wilson, Mr Ramatsoma, and Prof. Nisha Naicker, provided data analysis and independent reporting services for the Minerals Council South Africa under a three-year contract. The 2024 reports covered:
 - The Masoyise Health Programme (MHP)
 - The Occupational Medicine Report on compliance and reporting of occupational lung diseases (silicosis and pneumoconiosis)
 - The Occupational Hygiene Milestone Performance Report on dust (coal dust, silica, and platinum dust) and noise exposure.

Internal NIOH Surveillance Reporting

Dr Wilson, Mr Vusi Ntlebi, and Prof. Naicker supported the completion of key NIOH surveillance reports

through advanced data analysis:

- Pathaut database: Autopsy data on occupational respiratory diseases among mineworkers
- Annual Pathology Asbestos Analysis Report
- Occupational Medicine Annual Surveillance Report
- Occupational Allergy Surveillance Report (diagnosed via the Immunology Allergy Clinic)

Literature Review for the Mine Health and Safety Council

Dr Wilson conducted a comprehensive literature review for the Mine Health and Safety Council project titled *“Effects of cannabis on occupational health and safety in the SAMI and benchmark for maximum allowable blood level of cannabis at the workplace”*. This work was completed under the Mundele Business Consulting contract. The review was used to inform medical screening at mines in South Africa.

RESEARCH AND SPECIAL PROJECTS

The Epidemiology and Surveillance Section combines primary research, secondary data analysis, and commissioned research projects for government departments, as well as parastatal and private sector organisations. These research initiatives contribute to the evidence base required for effective occupational health policy, surveillance, and intervention planning in South Africa.

Currently, two large studies are underway:

- **Occupational exposures, oxidative stress, and health impacts among petrol attendants in Johannesburg, South Africa: An intervention study**

This study investigates the health impacts

of occupational exposure to petrol fumes, including oxidative stress and DNA damage, and evaluates the effectiveness of targeted workplace interventions.

- **Occupational risk factors for lung cancer among newly diagnosed patients in a population-based cancer registry in South Africa**

This study aims to identify occupational exposures that may contribute to lung cancer risk by analysing data from patients diagnosed with lung cancer from the Ekurhuleni Population-Based Cancer Registry. It is one of the first population-based efforts in South Africa to examine such associations using cancer registry data.

TEACHING AND TRAINING

The Section continues to play an active role in academic teaching and research supervision across several institutions. Staff contribute to undergraduate and postgraduate academic programmes within the NIOH, as well as at the University of Witwatersrand (Wits), the University of Johannesburg (UJ), the University of Pretoria (UP), and Nelson Mandela University.

Researchers in the Section serve as:

- **Lecturers and facilitators** for epidemiology, biostatistics, public health, and occupational health modules
- **Postgraduate supervisors** for honours, master's, and PhD students, offering research guidance and mentorship
- **Dissertation/thesis examiners** for various academic programmes across South Africa

- **Peer reviewers** for local and international indexed journals, including *BMC Public Health*, *IJERPH*, *PLOS One*, and *Environmental Research*
- **Editorial board members** or editors for journals such as *PLOS One*, *BMC Public Health*, and *Frontiers in Public Health*.

During the reporting period, the Section made significant contributions to postgraduate teaching and capacity building, developing future public and occupational health practitioners and researchers.

The Section currently hosts one Field Epidemiology and Laboratory Training Programme student, a PhD candidate, and two interns. Staff members continued to deliver lectures in the Field Epidemiology Training Programme (SAFETP), a collaboration between NICD and UP, and the Diploma of Occupational Health at UP. Dr Wilson and Prof Naicker served on the postgraduate (master's and PhD) assessors committee at the School of Public Health, Wits University. In February 2025, the Section conducted the Epidemiology Module for the Diploma in Occupational Health at UP. Additionally, Prof Naicker facilitated the online modules for the Master of Public Health in Epidemiology and Biostatistics Research Methodology at UJ. The Epidemiology and Surveillance Section staff supported students with project development, data cleaning, and analysis.

In addition to providing teaching and training for undergraduate and postgraduate programmes, the Epidemiology and Surveillance Section supported capacity building for occupational health stakeholders. The staff conducted regular training sessions throughout the year on a range of topics, including "Introduction to Epidemiology and Biostatistics," "Intermediate Biostatistics," "REDCap and the use of Excel for analyses", and "Use of Stata (Basic)". These courses were open to all NHLS staff and external stakeholders.

Staff members contributed to formal academic programmes, including:

- Lecturing in the South African Field Epidemiology Training Programme (SAFETP), a collaboration between the NICD and UP
- Delivering modules in the Diploma of Occupational Health at UP
- Conducting the Epidemiology Module for the Diploma in Occupational Health (February 2025)
- Facilitating the Master of Public Health online modules in Epidemiology and Biostatistics Research Methodology at UJ (Prof. Nisha Naicker)
- Serving on postgraduate assessment committees (Dr Kerry Wilson and Prof. Naicker) at the School of Public Health, Wits University.

The Section also delivered **capacity-building training** for occupational health stakeholders and NHLs staff. Training topics included:

- Introduction to Epidemiology and Biostatistics
- Intermediate Biostatistics
- REDCap and Use of Excel for Data Analysis
- Basic Use of Stata

These sessions were well-attended and enhanced epidemiological and analytical skills among internal and external participants.

PROFESSIONAL DEVELOPMENT

The Epidemiology and Surveillance Section continues to play an active role in postgraduate research supervision across various academic levels, including diploma, honours, master's, and doctoral programmes. Currently, the Section is supervising 36 master's students and 10 PhD candidates. During the reporting period, eight master's students successfully graduated. The research topics covered diverse areas such as occupational health and safety in mining and the healthcare sector, environmental health, public health, and clinical medicine.



OCCUPATIONAL HYGIENE





Dr Jeanneth Manganyi
Head of Section

OCCUPATIONAL HYGIENE

The Section conducted noise assessments resulting from the operation of generators. The reliability of the functions provided by the Section is supported by ongoing efforts to maintain the quality management systems.

INTRODUCTION

The NIOH Occupational Hygiene Section performs a distinct function within the Institution in addressing occupational health hazards and promoting the health and well-being of employees at various workplaces. Ongoing efforts to maintain quality management systems contribute to the Section's technical capacity to provide reliable services. During this reporting year, the Section's deliverables supported the NHLS with cost-recovery activities while safeguarding regulatory compliance with the Department of Employment and Labour. The Section provided these support services through the NHLS Safety, Health and Environment (SHE) Department, which is responsible for the overall health and safety of the NHLS workforce. Following the recently promulgated Asbestos Abatement Regulations, the Occupational Hygiene Section has supported their

implementation through asbestos service work and expert advisory support for developing RFQ specifications for asbestos demolition work. The Occupational Hygiene Section's capacity-building activities focused on equipping NHLS staff with the necessary skills to perform risk assessment and interpret occupational hygiene reports at the facility level. In addition, the Section collaborated with several other NIOH centres, researched exposure hazards, and recommended control interventions, thereby contributing to developing health and safety policies. Advisory support services provided during the year included responding to queries and participating in professional and technical committees. These activities were directly in alignment with the Institute's primary deliverables.



Occupational Hygiene Section staff.

SERVICES

The Occupational Hygiene Section maintained its registration with the Department of Employment and Labour as an Approved Inspection Authority (AIA): Occupational Health and Hygiene. Following a successful first surveillance assessment in May 2024, where no non-conformances were raised, the Section was granted unconditional maintenance of its SANAS accreditation under ISO/IEC 17020. As a Type C AIA, the Section continued to provide occupational hygiene services to its parent body, the NHLS, and the private sector. The XRD Laboratory also retained its accreditation under ISO/IEC 17025 after a successful surveillance assessment in August 2024. The Section's Asbestos Laboratory, managed by Mr Gabriel Mizan, continued to participate in the Asbestos Fibre Regular Informal Counting Arrangement (AFRICA) proficiency testing scheme operated by the Institute for Occupational Medicine in Edinburgh, UK. The laboratory participated in two rounds of proficiency testing and maintained a rating of 1 in both rounds, indicative of an excellent performance. The XRD/FTIR laboratory, managed by Mr Jonas Shai, participated in the Air and Stack Emissions Proficiency Testing Scheme run by the Health and Safety Laboratory

in the UK and administered by the LGC group. The laboratory has consistently achieved a Z-score of lower than ± 2 , which is satisfactory performance for 100% of samples for gravimetric weighing and XRD and FTIR analysis.

Exposure Assessment

One of the Occupational Hygiene Section's distinct functions, compared to other traditional AIAs, is its support for investigations that contribute to clinical assessments of workplace referral patients (by Occupational Medicine) and collaborative efforts with other NIOH sections. The exposure assessments conducted by the Section addressed regulatory requirements and contributed to meeting the NHLS Annual Performance Plan (APP) targets. The Occupational Hygiene, Occupational Medicine (including the Ergonomics Unit), and Immunology and Microbiology sections contributed towards meeting the APP targets. However, the exposure assessment reports generated by these sections fell short of the APP targets, resulting in a negative variance.



Occupational Hygiene staff clad in their personal protective equipment, ready to safely remove bulk asbestos materials from the Toxicology and Biochemistry Section to the Occupational Hygiene Asbestos storeroom for proper storage.

Sample Analyses

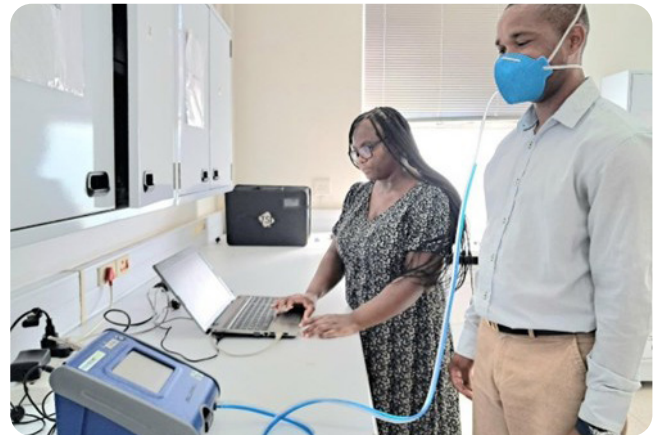
The XRD and asbestos laboratories continued to operate under the guidance of the Head of the Section to support the AIA's operational activities. Sample analysis, including gravimetric weighing, of respirable crystalline silica and asbestos, was conducted primarily to support two PhD research studies – highlighting the importance of having accredited in-house analytical services. Both laboratories continued to participate in international proficiency testing schemes and consistently achieved satisfactory ratings for all methods, demonstrating reliability in their tests.



Respirable crystalline silica analysis in the Occupational Hygiene XRD laboratory.

Respirator Fit Testing

The Section continued to raise awareness about respirator fit testing as part of its service delivery and advisory support. In many workplaces, respirator fit testing is considered best practice. During the year under review, 96% of respirator fit testing activities were conducted for external clients to contribute towards income generation. These revenue-generation activities included raising awareness and preparing external clients to acquire their equipment and provide the service to internal staff, thereby promoting service delivery independence. Respirator fit testing is an important element of the respiratory protection programme because it assists employers in selecting a properly fitting respirator, thereby reducing the risk of exposure to inhalation hazards. The recently promulgated Hazardous Biological Agents Regulations recommends employers conduct respirator fit testing for all employees who need to wear respirators.



Occupational Hygiene staff undergoing respirator fit testing.

Advisory support service

During the year under review, the Occupational Hygiene Section responded to several advisory queries. Approximately 51% of these were related to occupational hygiene training provided by the

Section, with the remainder relating to general occupational health and safety information and stakeholder advisory requests.

The Section's occupational hygienists actively participated in various internal and external committees. These included the NIOH Research Forum, OccuZone Editorial Team, NIOH Climate Survey Focus Group, SANAS Occupational Hygiene Specialist Technical Committees, the Department of Employment and Labour, and various SAIOH structures such as Leadership, the Professional Certification Committee, Technical Committees, and the Occupational Hygiene Skills Forum. Participation in some of these committees requires experience and technical expertise, reflecting the high level of competence within the Section and the NHLS's support for staff contributions to national and professional development platforms. Notably, one of the occupational hygienists, Mrs Karen du Preez, was elected as SAIOH President and currently sits on both the SAIOH Management and National Council, among other platforms providing direction to the Occupational Hygiene profession. Advisory support services were also extended to stakeholder engagements, where the Section promoted its services and fostered collaboration.



Stakeholder engagement meeting with ARM VOHE Management.

RESEARCH

The Occupational Hygiene Section completed two research projects during the year under review. Bench Marks, a non-profit organisation, commissioned one of the studies to investigate the potential exposure of the Riverlea community to dust from the adjacent gold mine tailings dumps. The findings were based on measurements of ambient air concentrations of inhalable dust, respirable dust, respirable crystalline silica, heavy metals, and dust fall-out deposition in Riverlea and a control community during the dry and wet seasons. The scientific report included several recommendations and highlighted the need for further research to address the study's limitations.

The Section conducted a second study with the NIOH Epidemiology and Surveillance Unit. The study assessed petrol attendants' occupational exposure to a range of hazardous chemical agents. It recommended control measures at six petrol stations in Johannesburg. Another noteworthy project that significantly progressed during the reporting period is the PhD study on asbestos exposure assessments at schools. Data collection for this study has been completed, and sample analysis is underway.



Occupational Hygiene staff, Tebogo Nthoke, collecting an asbestos air sample on the school table, in support of Gabriel Mizan's PhD study.

TEACHING AND TRAINING

The Occupational Hygiene Section maintained recognition as an approved training provider to deliver in-person training on the Occupational Hygiene Training Association modules. The Section developed in-house modules and delivered two of the four planned training sessions: the “Hazard Identification and Risk Assessment”, delivered in person to NHLS delegates, with a pass rate of 86%, and the “Interpretation of Occupational Hygiene Reports”, delivered online to eight NHLS delegates, with a pass rate of 88%.

The Section’s staff provided academic support to universities by reviewing protocols and supervising master’s students from University of Johannesburg. In 2024, the Section also delivered presentations on

occupational hygiene to students at University of Pretoria (UP), Wits University, and Tshwane University of Technology.

Honours

Mrs Karen du Preez was announced as SAIOH President for 2025/26 at the SAIOH conference held at Phakalane Golf Estate & Convention Centre in Gaborone, Botswana, from 21–24 October 2024.

The Occupational Hygiene Head of Section, Dr Jeanneth Manganyi, received the “Best Oral Presenter” award at the NIOH Biennial Research Day. The announcement was made during the staff meeting held on 12 December 2024.



QUALITY ASSURANCE





Mr Bonginkosi Duma
Head of Section

QUALITY ASSURANCE

The Section is responsible for the improvement and maintenance of quality management systems within the NIOH and for monitoring quality management systems

INTRODUCTION

The Quality Assurance Department is responsible for the improvement and maintenance of quality management systems within the NIOH and for monitoring these systems on an ongoing basis through internal audits conducted within the NIOH and at selected NHLS laboratories. These audits range from ISO 15189 to ISO 17025 for public health laboratories. The Section also provides support to the NHLS laboratories nationally by conducting pre-assessments for SANAS audits and SLIPTA, performing gap analyses, conducting internal audits, and participating in the Committee for Evaluations and Technical Function, as well as quality assurance workshops and training. Additionally, the Section supports the KwaZulu-Natal Public Health Laboratory and the NICD in maintaining ISO 17025 and ISO 9001, respectively. Cape Town Public Health Laboratory assisted in developing an ISO 17025 quality management system until accreditation.

SERVICES

The NIOH is accredited for various ISO standards, with the currently accredited tests conducted in its laboratories listed in Table 1 below. Other specialised tests can be performed upon request, provided they fall within the field of occupational health.

Table 1: NIOH current test accreditation

Accreditation	Region	Lab No.	Lab Name	Discipline
ISO 15189	NIOH	M0276	Analytical Services	Organic Chemistry
		M0276	Analytical Services	Inorganic Chemistry
		M0276	Immunology/Microbiology	Immunology
		M0276	Pathology	Histology
		M0276	Pathology	Cytology
ISO 17025	NIOH	T0660	Analytical Services	Water Testing Mercury
		T0660	Analytical Services	Water Testing Aluminium
		T0660	Occupational Hygiene	
ISO 17020	NIOH	OH0079	Occupational Hygiene	Noise
		OH0079	Occupational Hygiene	Illumination
		OH0079	Occupational Hygiene	Environmental testing
		OH0079	Occupational Hygiene	Surveillance
ISO 9001	NHLS-NIOH	Z19/210217	National Biobank	Collection and Storage of Biomaterial

NIOH continues to maintain all four standards of accreditation. These standards are:



Internal Audits and Pre-SANAS Audits

The Quality Assurance Department conducts various internal audits regularly within NIOH and assists other NHLS laboratories upon request to ensure the effectiveness of the quality management systems. These internal audits range from ISO 15189 to ISO 17025 for public health laboratories.

Other Services

The Department also assists laboratories across the country with pre-SANAS assessments. These include SANAS audits, gap analyses, internal audits, Committee for Evaluations and Technical Function evaluations, quality assurance workshops, and quality assurance training. The department supports

the KwaZulu-Natal Public Health Laboratory and assists the NICD with ISO 17025 and ISO 9001 implementation in Sandringham.

- Internal Audits – ongoing
- Pre SANAS audits (non-NIOH).
- Customer Surveys
- External SANAS Coordination –15189, 17025, and 17020
- ISO 9001 – SGS audit
- Audit and train public health labs (Non-NIOH departments) provide advisory support for FCL
- Coordinate the monthly QA meeting in different NIOH departments
- Assist with procurement tenders and deviations
- Coordinate SANAS training
- Participate in the national QA managers meeting and workshop



NIOH ISO 9001 IMPLEMENTATION PROGRESS

The Quality Assurance Department ensures that other non-technical areas receive the necessary support to ensure that quality management systems are implemented at the NIOH. The reasons for implementing ISO 9001 in non-technical departments include:

- Demonstrating commitment to quality and a willingness to improve service efficiency in core and non-laboratory processes
- Enhancing the Institute's credibility, as ISO 9001 Quality Management System is an internationally recognised standard
- Improving the consistency of operations throughout the NIOH
- Enhancing the Institute's image as viewed by customers, shareholders, and employees.

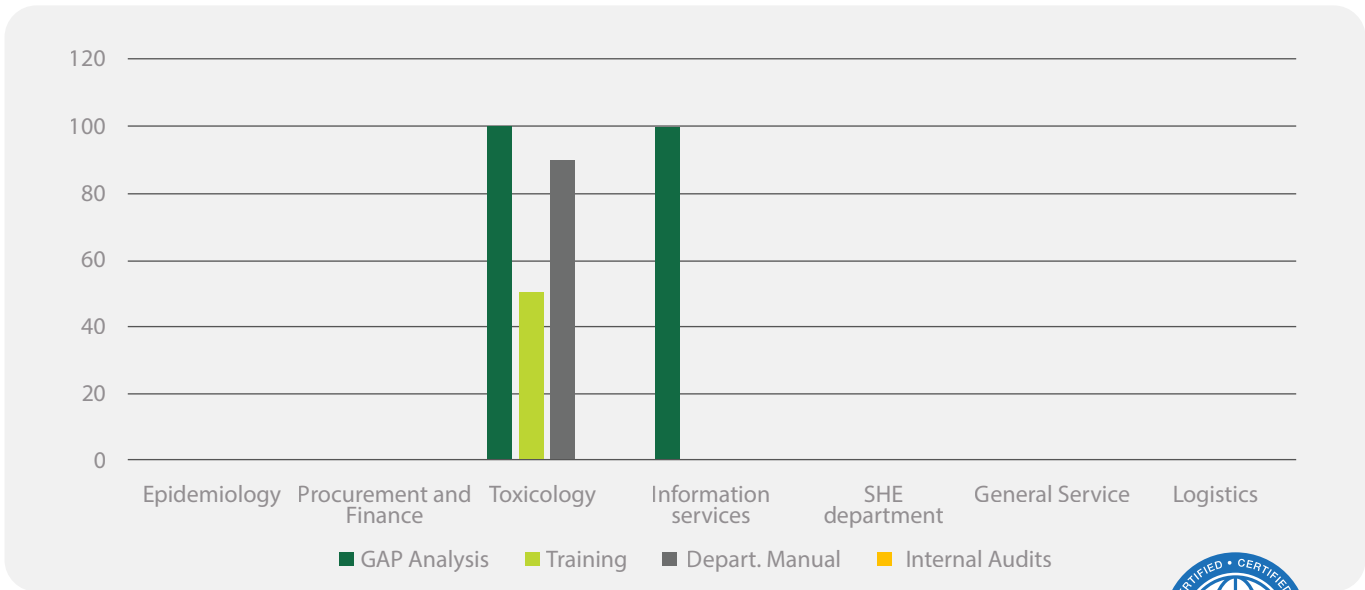


Figure 4: ISO 9001 implementation progress 2024/25

TEACHING AND TRAINING

The Department conducts internal training to strengthen the quality management systems in place. Some training sessions were conducted online, while others were held in person. Training conducted during the period under review included the following:

- ISO 15189 transition training
- Document control
- Risk management
- Identification of non-conformities
- Root cause analysis
- ISO TC meetings in SABS
- TR28
- Monitoring quality indicators
- Validations



HIV AND TB IN THE WORKPLACE





Prof. Muzimkhulu Zungu
Head of Section

HIV AND TB IN THE WORKPLACE

Research is conducted to inform occupational health policy and practice while specialised services such as diagnosis of referred workers through clinical assessments and ergonomic services are provided to support workplaces.

INTRODUCTION

The HIV TB in the Workplace Section is tasked with providing occupational health policy, systems, services, and programmes, which include research, teaching and training, and service delivery (advisory). In executing its mandate, the HIV TB Section often utilises HIV and TB as entry points into the workplace. This report provides the highlights for the year 2024/25.

SERVICE DELIVERY

Agriculture and Forestry

In South Africa, about 970 000 of the labour force are involved in the agricultural and forestry industries, excluding those who are migrant workers. Agriculture and forestry are among the most hazardous industries, with workers exposed to various hazards. To this end, the HIV TB Section has collaborated with government (Department of Employment and

Labour), organised business (AgriSA) and labour (COSATU), and the International Labour Organization (ILO), establishing the Agriculture and Forestry OHS Technical Committee. Following the Committee's invitation to other industry stakeholders (such as FEDUSA, NACTU, SAFTU, etc.), its membership is expected to grow. The purpose of the Committee is to strengthen occupational health and safety in the two industries, starting with the launch of the Occupational Health and Safety Prevention Accord and the OHS Strategy (2024–2029).

Community and Social Services

The service industry, which includes government corporate services such as the Gauteng Provincial Government's Office of the Premier, has limited documented OHS information. Moreover, entities such as the NIOH, which serve as a national and global resource, have insufficient capacity to address OHS needs in this growing sector. To address this gap, the HIV TB Section collaborates with the Gauteng

Provincial Government on evaluating and building capacity for wellness, disease management, and occupational health programmes in the industry using:

- SANS 16001:2013 – Wellness and disease (including HIV and TB) management system
- SANS 45001:2018 – Occupational health and safety management system: requirements with guidance for use

Health workers

Health workers in high TB burden countries, such as South Africa, are reported to have a two- to three-fold higher incidence of active TB disease compared to the general population. Therefore, the HIV TB Section collaborates with the NHLS and the Limpopo and North West Provincial Departments of Health to produce an Annual TB Surveillance Report. The HIV TB Section also contributes to health systems management within the NIOH and the Gauteng Department of Health through its registrar in Public Health Medicine.

Mining

Since its inception, the South African mining industry has been associated with poor health outcomes, including occupational lung diseases (TB, pneumoconiosis, etc.). The HIV TB Section collaborates with the Minerals Council South Africa and mining industry stakeholders (government, organised labour, WHO, and the ILO) in monitoring and evaluating health and wellness programmes, including the Masoyise Health Programme and the TB in Gold Mines Project. Within the Masoyise Health Programme, the Section provides technical (epidemiological and occupational health systems and programmes) support, including contributing to the annual report.

Construction industry

The HIV TB Section collaborates with the construction industry through Master Builders South Africa, serving in an advisory capacity at OHS, particularly with the Master Builders Association North. The Section provides advice on occupational health diseases and services regarding pertinent issues for the industry.

TEACHING AND TRAINING

The HIV TB Section coordinates and teaches in the Diploma in Occupational Medicine and Health (DOMH) on behalf of UP's School of Health Systems and Public Health (SHSPH). The Section served as a rotation site for practical training for public health medicine registrars from the University of Limpopo.

Public Health Post-Graduate Research Supervision

The HIV TB Section supervised and graduated two Master of Public Health students, Omowunmi Onwuegbuna and Jonathan Ramodike, from the SHSPH of the University of Pretoria:

- Omowunmi Onwuegbuna's research focused on the "Prevalence and molecular characterisation of drug-resistant patterns in Mycobacterium tuberculosis at an academic laboratory in Tshwane" [mini-dissertation]. Pretoria: University of Pretoria; 2024.
- Jonathan Ramodike's research focused on "HIV/AIDS and its profound impact on demographic and occupation-related mortality, 2013–2015" [mini-dissertation]. Pretoria: University of Pretoria; 2024.

Further, the Section is supervising four MPH students and co-supervises an additional four MPH students from UP, UJ, and Walter Sisulu University. The Section also graduated 21 DOMH students from UP's SHSPH.

Examination and Publication Reviews

- The HIV TB Section served as an examiner for the College of Public Health Medicine for the 2025 first semester examinations. These are national exams under the College of Medicine, South Africa.
- The Section reviewed at least four manuscripts for publication in peer-reviewed journals.

Undergraduate Training

The Section offers public health lectures to third-year (MBCHBIII) and fourth-year (MBCHBIV) medical students at Sefako Makgatho Health Sciences University.

Training of workers and management in occupational health and safety short courses

- The Section conducted and participated in at least 11 training workshops on OHS for agricultural, construction, health, mining, and municipal workers across the public and private sectors, including participation in the training of the Department of Employment and Labour's health and safety inspectors.
- The Section participated in and led two one-day training workshops for the South African National Defence College on "Disease and Effects on Stability, Security, and Prosperity". The target audience included senior military personnel, including visitors from India, Nigeria, Eswatini, and Botswana.

PROFESSIONAL DEVELOPMENT

In the reporting year, the HIV TB Section graduated two PhDs and enrolled two staff members for postgraduate studies:

- PhD graduates:
 - » Zungu Muzimkhulu: "Strengthening occupational health systems and services for health workers during the COVID-19 pandemic and beyond: The role of occupational health and safety information systems" [Thesis by publication]. Pretoria: University of Pretoria; 2024
 - » Mlangeni Nosimilo: "Investigating social and structural determinants of health inequities in HIV prevention and care among farmworkers in South Africa" [Dissertation]. Cape Town: Stellenbosch University; 2024.
- One staff member was enrolled for an MPH at UJ
- One staff member was enrolled for an MMed in public health medicine at Sefako Makgatho Health Science University



SAFETY, HEALTH, AND ENVIRONMENT DEPARTMENT





Ms Michelle Morgan
Acting Head of Section

SAFETY, HEALTH, AND ENVIRONMENT DEPARTMENT

The year under review has moved the SHE Department into a post-COVID-19 era and has resulted in a refocusing and reprioritising of occupational health, safety and environment services.

INTRODUCTION

The National Safety Health and Environment (SHE) Department was established to provide SHE services to the NHLS. The Department functions as a support service for the NHLS. It is based at the NIOH to access the support and advice of departments such as Occupational Hygiene, Occupational Medicine, Epidemiology, Immunology, and Microbiology. The SHE Department is responsible for implementing, monitoring, and evaluating OHS in all NHLS workplaces. This is done through a well-established occupational health and safety management system. The main elements include policy, organising, planning, implementation, evaluation, and action for improvement.

Staffing

The SHE Department comprises three sections overseen by a National SHE Manager. The Safety Section consists of a Deputy Manager – National

SHE and seven (7) Safety, Health, and Environment Officers (SHEOs); an Occupational Health Section consisting of an Occupational Medicine Practitioner and eight (8) Occupational Health Nurse Managers (OHNMs); and a Waste Assurance Section consisting of a Waste Assurance Manager and two (2) Waste Assurance Officers (WAOs). The staff complement for the year under review was 22. Management and the Departmental Secretary are based at NIOH, Braamfontein, with a SHE team also based at each regional office of the NHLS: Gauteng; Free State and North West; Limpopo and Mpumalanga; Institutes (NICD, NIOH, FCL, SAVP) and Corporate; Eastern Cape, Western Cape, and Northern Cape; and KwaZulu-Natal. The SHE team comprises an OHNM, a SHEO and a WAO. Currently there are only two WAOs, one based in Gauteng and the other in the Western Cape. One OHNM was appointed for the Institute and Corporate region during the year under review. Notably, the National SHE Manager retired at the end of the year under review, creating a vacancy that has yet to be filled. The Deputy Manager is currently occupying this position in an acting capacity.

SAFETY

Risk Assessments

The Occupational Health and Safety Act (Act No. 85 of 1993) stipulates that all employers must provide and maintain a workplace that is safe and without risk to the health of employees, establish what hazards to the health and safety of employees are associated with the workplace, and take steps to eliminate or mitigate any hazards or potential hazards by putting appropriate control measures in place. To comply with this legal requirement, all NHLS facilities must conduct risk assessments of their workplaces per a risk assessment standard operating procedure (SOP). Regional SHE teams evaluate all risk assessments to ensure that they are conducted in compliance with SOPs and that all information contained is factually correct. Unsatisfactory risk assessments require facilitation by the Regional SHE team, who guide and assist NHLS facilities to improve the risk assessments until they are deemed satisfactory and approved. Risk assessments must be reviewed at least once every two years or immediately when there are changes in the workplace, equipment, reagents, and/or procedure.

Table 2: NHLS Risk Assessment status for FY 2024/25

Regions	Identified Facilities	% Risk Assessments Satisfactory	% Risk Assessments Valid
E Cape	67	76%	76%
FS & NW	31	77%	58%
Gauteng	62	100%	87%
Corporate	23	100%	13%
NICD	28	100%	71%
NIOH	21	100%	19%
FCL JHB	1	0%	0%
FCL PTA	1	0%	0%
FCL DBN	1	0%	0%
FCL CPT	3	100%	100%
KZN	63	98%	98%
Limpopo	61	100%	98%
WC & NC	57	95%	95%
Totals	419	93%	79%

Health and Safety Representatives (HSR) and Health and Safety Committees (HSC)

The Occupational Health and Safety Act (OHSA) stipulates that health and safety representatives (HSRs) must be appointed in writing for a specific period and be properly trained and competent to perform duties stipulated by the Act. Health and safety committees (HSCs) must be established in all workplaces, and the appointed HSRs must attend meetings of the HSC to which they belong. HSC meetings must be held at least once every three months, and minutes of these meetings must be filed for a minimum of three years. Regional SHEOs coordinate and monitor HSR appointments in the NHLS. Regional SHEOs receive and mark all HSR training modules and issue training certificates to successful candidates. Regional SHE teams attend HSC meetings in an advisory capacity. Where they cannot attend, input is sent in writing to the committee. The above process is completed in accordance with an NHLS HSR and HSC SOP.

Table 3: NHLS HSR and HSC status for FY 2024/25

Region	Facilities Identified in Region	HSRs Appointed	% Appointed HSRs	% Current HSR Training Valid	% HSC Meetings Held per Region
E Cape	67	67	100%	97%	95%
FS & NW	30	36	100%	94%	100%
Gauteng	64	104	100%	96%	88%
Corporate	14	14	100%	71%	50%
NICD	27	30	100%	100%	75%
NIOH	14	14	100%	71%	100%
FCL JHB	5	5	100%	100%	25%
FCL PTA	3	3	100%	100%	0%
FCL DBN	1	1	0%	0%	0%
FCL CPT	3	3	100%	100%	100%
KZN	60	60	100%	95%	67%
Limpopo	61	61	100%	97%	135%
WC & NC	60	69	100%	100%	96%
	409	467	100%	95%	87%

Safety Health and Environment Audits

The SHE Department is responsible for implementing, maintaining, and evaluating OHS in all NHLS workplaces, which is achieved through a well-established Occupational Safety Health and Environment Management System (OSHEMS). The main elements of the OSHEMS include policy, organising, planning and implementation, evaluation, and action for improvement. An integral component of the OHSMS are the SHE audits that are conducted annually at all NHLS workplaces by the Department's SHEOs. The audits are carried out in compliance with an NHLS SHE audit SOP to evaluate whether the OSHEMS is functioning efficiently, and to measure SHE compliance in the workplace.

Table 4: Safety Health and Environment (SHE) audit status from 1 April 2024 to 31 March 2025

Region	Q1	Q2	Q3	Q4	Audits Completed	Audit Target	% Completed
E Cape	0	16	11	39	66	66	100%
FS & NW	2	0	18	16	36	36	100%
Gauteng	0	0	44	29	73	73	100%
Corporate	0	0	5	14	19	23	83%
NICD	0	0	11	13	24	25	96%
NIOH	0	0	0	10	10	13	77%
KZN	0	4	21	37	62	63	98%
Limpopo	0	3	22	35	60	60	100%
WC & NC	5	5	22	19	51	54	94%
TOTAL	7	28	154	212	401	413	97%

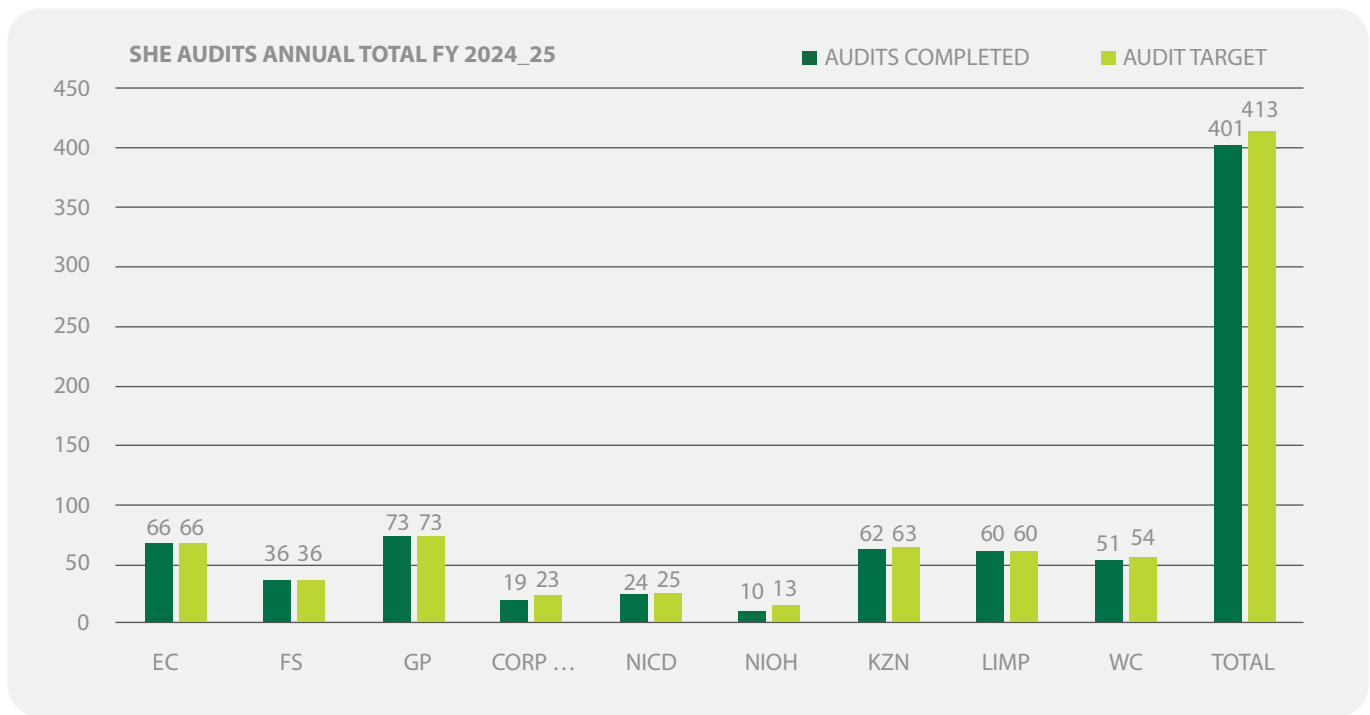


Figure 5: SHE Audits completed for the period 1 April 2024 to 31 March 2025

OCCUPATIONAL HEALTH

Under the leadership of the NHLS Occupational Medicine Practitioner, the Department continued to provide guidance and expert medical support to specific cases and incidents.

Of particular note were:

- Possible exposure to Brucella
- Possible exposure to Congo fever
- Employees diagnosed with TB
- Employees with hepatitis B
- Ergonomic incidents and issues
- Gloves and other work-related allergies
- Exposure or possible exposure to other biological agents, chemicals, and noise
- Medical fitness for work assessments

The OHNMs are continuing with the medical surveillance programme of checking, among others, the levels of compliance with hepatitis B immunisation, surveillance for tuberculosis, and formaldehyde exposure. The information collected is being captured into the Occupational Health and Safety Information System (OHASIS) Workforce Health module.

SPECIAL INVESTIGATIONS AND NIOH SUPPORT

The programme of monitoring NHLS employees' exposure levels to formaldehyde and xylene is ongoing. In line with a decision taken at EXCO, the assessments for inland regions were performed by the NIOH and the assessments for coastal regions were outsourced. Since the introduction of the project, every cytology and histology laboratory has had at least one occupational hygiene exposure assessment.

OCCUPATIONAL HEALTH AND SAFETY INFORMATION SYSTEM

OHASIS has continued to be an invaluable tool during the year under review. It has been used to provide monthly statistics for the NHLS EXCO for high-level decision-making.

OHASIS has been used to:

- Conduct SHE audits
- Report and record all SHE incidents
- Investigate all SHE incidents
- Conduct TB staff symptom screening
- Record results of chest X-rays
- Record hazardous waste generated, treated, and disposed of

In the year under review, OHASIS was successfully implemented in the Western Cape Department of Health and is currently being rolled out in 14 Departments of the Gauteng Provincial Government.

INCIDENT REPORTING AND INVESTIGATION

NHLS employees are encouraged to report every incident, no matter how small or insignificant it may seem. The rationale for this approach is to promote a culture of reporting and correction rather than covering over and punishment. The affected person is responsible for reporting occupational incidents, accidents, near misses, and/or occupational diseases to their manager (Section 16.2) and health and safety representative (HSR) within 24 hours or before the end of the shift. All incidents must be reported into the Incident Reporting module of OHASIS within three days of the incident and investigated and recorded in the Incident Investigation module of

OHASIS within seven (7) days of the incident.

The number of incidents reported to OHASIS has fallen from the previous financial year. While manual incident records were kept for a portion of the year under review, the extent of the impact on data following the cyberattack on OHASIS is yet to be fully determined.

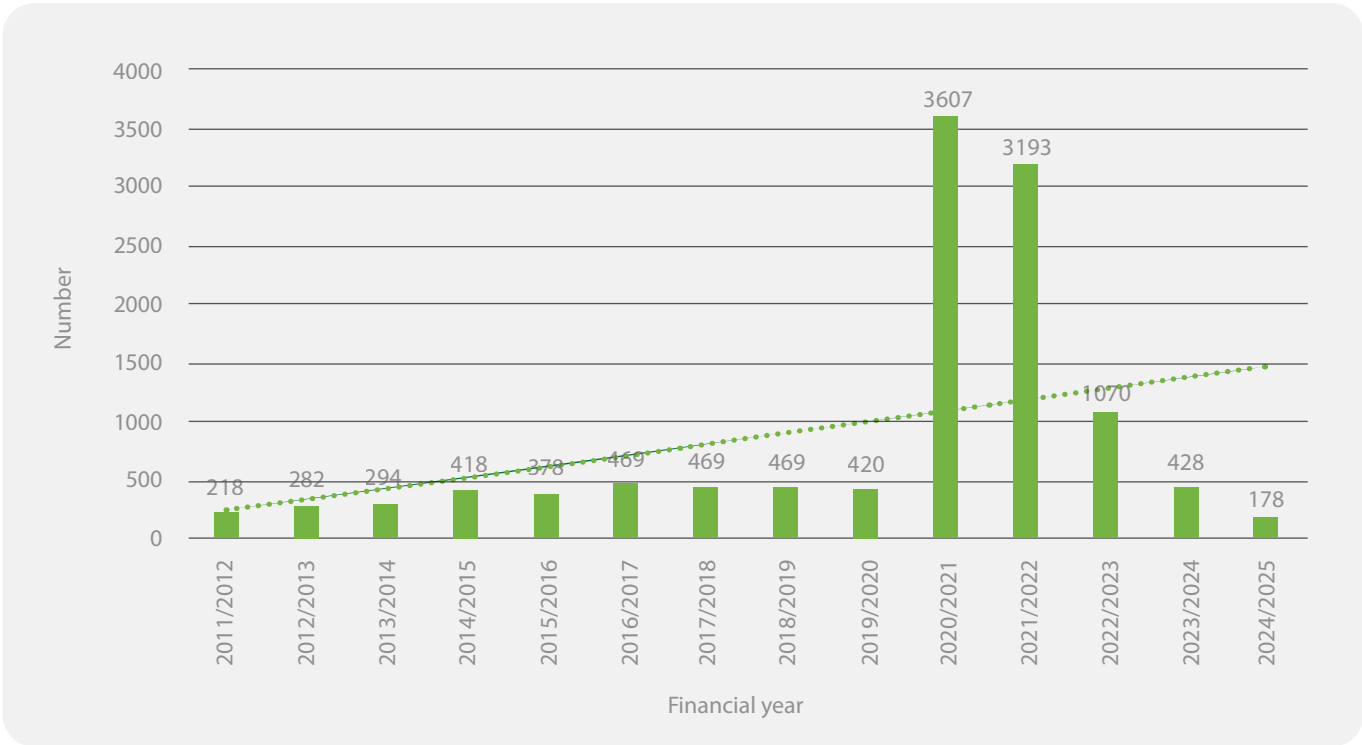


Figure 6: Year-on-year reporting of all incidents in OHASIS from 2011/12 to 2024/25 financial years



WASTE ASSURANCE

The Waste Assurance Manager is constantly revising the NHLS waste management procedures to ensure they comply with the terms of the national waste management policy. NHLS facilities are being audited to monitor compliance, and waste management training is being conducted to improve waste management standards in the NHLS. Details of generated hazardous waste continue to be captured in OHASIS by each NHLS facility. The Waste Assurance Section continues to engage with the relevant authorities and service providers to ensure that the facilities comply with the provisions of legislation and keep up to date with new developments in the waste management sector.



NHLS SHE Management staff with Technical representatives of TSI and Envirocon during a respirator fit testing training workshop.



Staff of the National SHE Department of the NHLS

(Includes SHE Management and Regional SHE teams based in Gauteng, WC and NC, EC, NW and FS, Limpopo, KZN, and Institutes and Corporate).



ANALYTICAL SERVICES





Dr Puleng Matatiele
Acting Head of Section

ANALYTICAL SERVICES

The Section has continued to respond to the need for the provision of specialised laboratory tests, advisory services, and the support of private industries, government departments, and academic institutions in occupational and environmental health.

INTRODUCTION

The Analytical Services Section remains committed to its dual focus on organic compounds and metals, which are essential to analysing hazardous substances in biological and environmental media. This approach enhances the assessment of workplace exposures, ensuring compliance with the regulations for hazardous chemical substances. The Section continues to strive to meet the growing demand for specialised laboratory tests, advisory services, and support for private industries, government departments, and academic institutions in the field of occupational and environmental health. Participation in Proficiency Testing Schemes is integral to monitoring analytical performance and maintaining competence in quantifying biomarkers in specimens.

Diagnostic Services and Specialised Laboratory Testing

During the reporting period, a total of 1 782 tests were conducted for diagnostic, surveillance, and research purposes. Of these, approximately 97% (1 733 tests) were completed within the required turnaround time. The distribution of tests across various matrices is illustrated in the graphs below, which also provide a monthly breakdown of the tests performed.

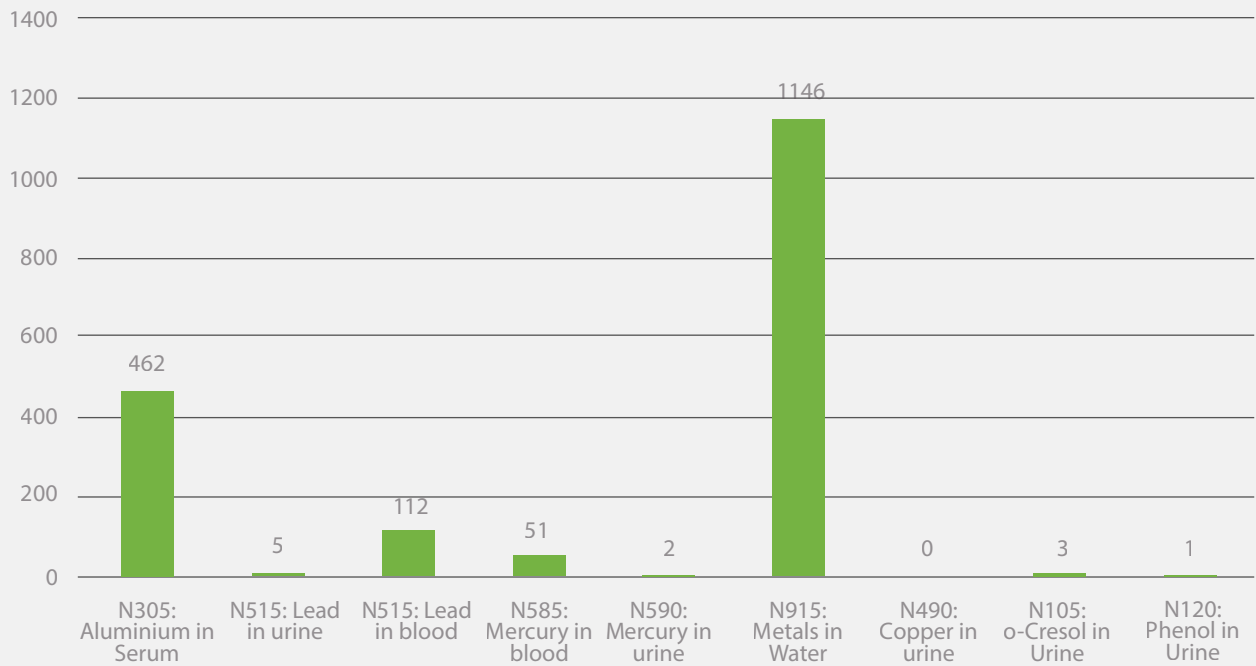


Figure 7: Total number of tests performed in FY 2024/25

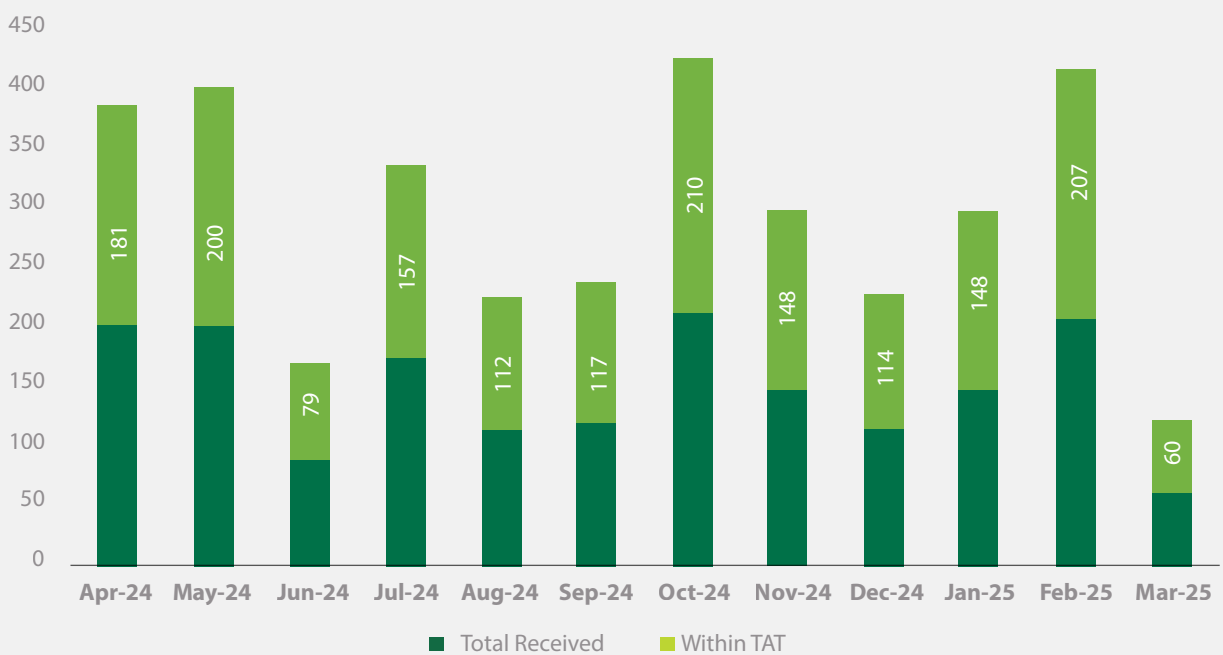


Figure 8: Number of tests completed within TAT in FY 2024/25

ADVISORY SERVICES

In addition to routine specialised testing, the Section fulfilled its commitment to providing advisory services to various clients during the reporting period.



Analytical Services team outside the NIOH building in Braamfontein.

TEACHING AND TRAINING

The Section successfully met its annual teaching and training commitments during the review period. This included providing specialised training to postgraduate students from Wits University on essential topics, including Health and Safety Practices in Medical Laboratories, Good Laboratory Practice, analytical techniques, and research methodology, with a focus on detecting chemical contaminants in the workplace and biological monitoring. Additionally, the Section continued to host Wits University students, offering them hands-on experience and familiarising them with various practical aspects of an accredited laboratory setting. The training of intern medical scientists for registration with HPCSA in the clinical biochemistry category continued, with two interns successfully completing the programme during the year under review. The Section also delivered the eighth edition

of the course “Introduction to Applied Chemistry in Occupational and Environmental Health” for second-year undergraduate students in Applied Chemistry at Wits University. This course was updated and conducted entirely in an interactive, face-to-face format, including its practical components, to ensure an engaging learning experience for all students.

RESEARCH OUTPUT

At the NIOH Biennial Research Day, held on 28 November 2024, the Section contributed the following two oral presentations:

- **Method validation for spectrophotometric quantification of airborne ammonia in the assessment of occupational exposure to ammonia.**

Study Team: Andani Nndwammbi¹, Puleng Matatiele¹, Boitumelo Dabula¹, Poobalan Poongavanum¹, Lerato Manamela¹, and Boitumelo Kgarebe¹

National Institute for Occupational Health, a division of the National Health Laboratory Service¹

- **Quantification of airborne formaldehyde in an occupational setting: a cross-sectional study**

Study Team: Tshephang Moswete¹, Puleng Matatiele¹, Poobalan Poongavanum¹, Lerato Manamela¹, Boitumelo Dabula¹, and Boitumelo Kgarebe¹

National Institute for Occupational Health, a division of the National Health Laboratory Service¹

ACCREDITATION AND QUALITY ASSURANCE

The Metals and Organic Chemistry Units retained their ISO 15189 and ISO 17025 accreditation status, confirmed on 17 April 2024 and 14 August 2024, respectively.

Throughout the year, the Section conducted rigorous internal audits to maintain laboratory safety, quality, and competence standards. Moreover, the training programme for intern medical scientists who plan to register with the HPCSA in the clinical biochemistry category has been revised to include a six-month attachment to the NHLS/Wits Clinical Chemistry Laboratory at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH). The HPCSA audited the programme in February 2025, granting accreditation and commending its continuous improvement efforts. The programme is already underway, with the first intern actively training at CMJAH, gaining valuable hands-on experience in clinical biochemistry.

In line with best practices for monitoring analytical performance and competence in quantifying biomarkers in specimens in various matrices, the Section actively participated in the following Proficiency Testing Schemes:

- **New York State Department of Health:** Lead and mercury in blood, and aluminium in serum.
- **German EQA Programme:** Urinary mandelic acid, phenol, o-cresol, and hexanedione.
- **South African Bureau of Standards (SABS):** Water Check Scheme for mercury and aluminium in water.

Participation in these programmes is essential for validating the laboratory's analytical methods and ensuring the accuracy and reliability of test results. These external assessments provide valuable insights

into the laboratory's performance, identify areas for improvement, and support the maintenance of accreditation standards.

Honours/Recognition

The Organic Chemistry Unit successfully participated in Inter-comparison Programmes 73 and 74 for 2024, conducted by the German Institute and Outpatient Clinic for Occupational, Social and Environmental Medicine. These programmes assess toxicological analyses of hexane exposure in biological materials. As a designated reference laboratory, the Section has now maintained this status for 13 consecutive years, underscoring its sustained excellence in analysing urinary biomarkers indicative of hexane exposure.



Figure 19: Lerato Manamela, Medical Scientist at NIOH, at work.

TOXICOLOGY AND BIOCHEMISTRY





Dr Jitcy Joseph
Acting Head of Section

TOXICOLOGY AND BIOCHEMISTRY

The Section is involved in teaching and training undergraduate students as well as supervising postgraduate students, including MSc and PhD, within the NHLS and in national institutions of learning.

INTRODUCTION

The Toxicology and Biochemistry Section (TBRS) conducts cutting-edge research in collaboration with national and international scientific institutions. It plays a pivotal role in occupational health by safeguarding workers' well-being through identifying, assessing, and managing toxicological risk in workplace environments.

TBRS provides specialised services and contributes to capacity development by teaching and training undergraduate and postgraduate students. The Section also offers expert consultation services to government departments and industries in occupational toxicology. These functions are delivered through four specialised units – the Toxicity Assessment Unit, Genotoxicity Unit, Ambient Particle Assessment Unit, and Toxicological and Chemical Risk Assessment Unit.



The toxicology and Biochemistry Team at work: from left, Dr Jitcy Joseph (Acting Head of Section), Dr Charlene Andraos (Medical Scientist), Ms Millicent Magogoty (Biotechnologist), and Dr Wells Utembe (Medical Scientist).

SPECIALISED TESTING AND ASSESSMENT UNITS

Toxicity Assessment Unit

The Toxicity Assessment Unit specialises in evaluating the potential harm (toxicity) of various substances, including pharmaceuticals, environmental con-

taminants, nanoparticles, and airborne particles. The Unit has two state-of-the-art instruments: the xCELLigence Real Time Cell Analyser (RTCA) and the CytoViva Dark-field Hyperspectral Imaging (HSI) System fitted with a 3D imaging module. The xCELLigence RTCA technology enables real-time, label-free monitoring of cellular responses by measuring cellular impedance. This allows for continuous assessment of the effects of workplace exposures, such as dust and chemicals, on cell health and behaviour. Moreover, these instruments can be used to screen new drug candidates and engineered nanoparticles. In addition to assessing toxicity, the Unit can determine whether compounds enter cells, a critical mechanism that influences their harmful effects. To achieve this, the CytoViva HSI System combines an enhanced dark-field microscope with a high-resolution spectrograph to provide a visual image and a complete spectral “fingerprint” for every pixel, allowing for label-free identification and mapping of nanoscale materials within a sample.

During the 2024/25 financial year, the TBRS Section provided services to postgraduate students from UJ, North West University (NWU), and the University of South Africa (UNISA) on assessing the toxicity of engineered nanoparticles using the xCELLigence System. Additionally, UJ utilised the CytoViva HSI System for the detection, characterisation, and spectral analysis of airborne nanoparticles *in vitro*.

Genotoxicity Unit

The Genotoxicity Unit investigates genetic damage that could lead to occupational diseases such as cancer. The Unit uses various tests to assess the genotoxicity of chemicals, including the Comet and Micronucleus assays. Genotoxicity refers to the ability of chemical agents to induce changes in the genetic material of somatic and/or germ cells. These effects

are assessed by measuring DNA damage in cells following chemical exposure.

The Comet assay, or single-cell gel electrophoresis, is a rapid and sensitive method for detecting and quantifying DNA damage in mammalian cells. It is widely used to assess the genotoxicity of chemicals, including nanomaterials. Applications of the Comet assay span ecological genotoxicity testing, human biomonitoring, and clinical research. In collaboration with the Epidemiology Section at the NIOH, the TBRS participated in a project focused on determining the antioxidant properties of rooibos and its potential to mitigate oxidative stress and DNA damage (using the Comet assay) caused by long-term exposure to petrol fumes and car exhausts.

Ambient Particle Assessment Unit

This dedicated Unit houses a variety of instruments for online and offline assessment of airborne particles at various exposure metrics, including number, size, and surface area. These instruments include real-time particle counters and sizers, including the NanoScan SMPS, OPS, Electrostatic Classifier, and APS. The Unit also houses a Nano-ID Select, which collects particles of various sizes on filters and glass slides for further offline analysis. The Unit also owns Partector personal sampling devices that measure the respirable lung-deposited surface area of nanoparticles. An AS200 Air Jet Sieve is also available, which separates bulk dust samples into different size fractions for further analysis.

The equipment in this Unit was utilised in a National Research Foundation-funded project focusing on assessing the exposure to chalk dust particles released in classrooms in schools in the central region of Johannesburg. The results from using these instruments could help researchers develop

interventions to preserve teachers' health and support epidemiological studies. The equipment was also utilised in a PhD project funded by the Department of Science, Technology, and Innovation. The exposure and risk of research laboratories in South Africa to airborne nanoparticles were assessed. This Unit, under the guidance of the SABS, is also heavily involved in the development and reviewing of global scientific-related standards, and it is an active participant in the International Standards Organisation (ISO) Technical Committee 229 (Nanotechnologies) on the Health, Safety, and Environmental Aspects of Nanotechnologies (Work Package 3). Being involved in the development of standards and by adopting other international standards will ensure that the NIOH has access to and implements the best scientific practices. In partnership with NWU, the Unit is developing the standard "Identification of Factors that can be Measured to Evaluate Exposure to Nano-Objects and their Aggregates and Agglomerates in the Workplace". Upon successful adoption of this standard, it will be made publicly available to be used in exposure assessment laboratories globally.

Toxicological and Chemical Risk Assessment Unit

Paracelsus taught that any substance can be harmful at a high enough dose – a principle that guides the work of the Toxicological and Chemical Risk Assessment Unit. The Unit draws on its extensive expertise in national and international regulatory frameworks to conduct comprehensive risk and safety assessments, develop safety guidelines, and review standards such as the Globally Harmonized System (GHS) Safety Data Sheets, ensuring worker safety and compliance with national and international regulatory frameworks. The TBRS conducted training on GHS classification and labelling of hazardous chemicals from 18–20 February 2025, with 41 external clients from various industries participating.

SERVICES

The TBRS provided key services, including support for cell line storage, as well as maintenance and retrieval to external clients and postgraduate students from various universities, including UNISA, UJ, Wits, and NWU. The cell lines stored in the Section are regularly monitored and maintained using liquid nitrogen containers that provide ultra-low temperatures to preserve their viability.

TBRS also extended its expertise through a range of high-level consultation and advisory services. Dr Utembe contributed a review report for Chapter 3 (Air) of the United Nations Environment Programme's Global Environment Outlook 7 (GEO-7). Dr Andraos represented NIOH at the 24th Meeting of the Working Party on Manufactured Nanomaterials and Advanced Materials: 3D Printing Workshop in Paris, France, from 25 to 28 June 2024, in her capacity as a participating member of SABS. The NIOH's active involvement in OECD forums is crucial, as it facilitates the exchange of best practices, policy comparison, and the development of solutions for shared challenges, particularly addressing potential health impacts of nanotechnologies in occupational settings.

In collaboration with the NHLS Management team, the Section advised the Department of Health on organophosphate pesticides and herbicides, particularly regarding food poisoning. Additionally, the Section provided internal advisory services to the NHLS SHE department by evaluating safety data sheets to recommend safer alternatives for cleaning and pesticide products.

The Section played a critical role in supporting national research and development initiatives. Dr Joseph contributed to research development as a panel member for the National Research Foundation's (NRF) Thuthuka and Research Infrastructure

Professionals Programme funding reviews. She also reviewed funding applications for the South African Medical Research Council (SA-MRC) in the non-communicable disease category and two NHLS K-funding applications. Dr Utembe reviewed SA-MRC applications focused on Environmental Health and Climate Change. In addition, Drs Utembe, Joseph, and Andraos were appointed technical experts for the Mine Health and Safety Council, where they evaluated various research projects and initiatives. Members of the TBRS also contribute to the scientific community by serving as reviewers for several peer-reviewed journal articles.

TEACHING AND TRAINING

In the 2024/25 financial year, the TBRS significantly advanced scientific excellence through the mentorship of MSc and PhD students from various universities, resulting in innovative research outputs, including peer-reviewed publications and conference presentations. The Section contributed to academic development at the undergraduate level by delivering lectures at the University of Cape Town and Wits, helping students build a strong foundation in key disciplines. The Section also demonstrated its commitment to nurturing future researchers by supervising many postgraduate students. This included mentorship of seven PhD candidates from various institutions – UNISA (2), UJ (1), Wits (2), and NWU (2) – as well as 10 MPH students from UJ.

Beyond supervision, the TBRS also served as an external examiner, assessing one MSc dissertation from NWU and two MPH dissertations from UJ, thereby supporting academic quality and standards. The Section enhanced postgraduate training by equipping students with advanced research skills in techniques such as cell culture, xCELLigence RTCA, and the CytoViva HSI system – boosting their research capabilities and career prospects. Ms Magogoty conducted hands-on training on the xCELLigence RTCA system on 6–7 November 2024, benefiting

four UNISA students with experience in advanced laboratory techniques.

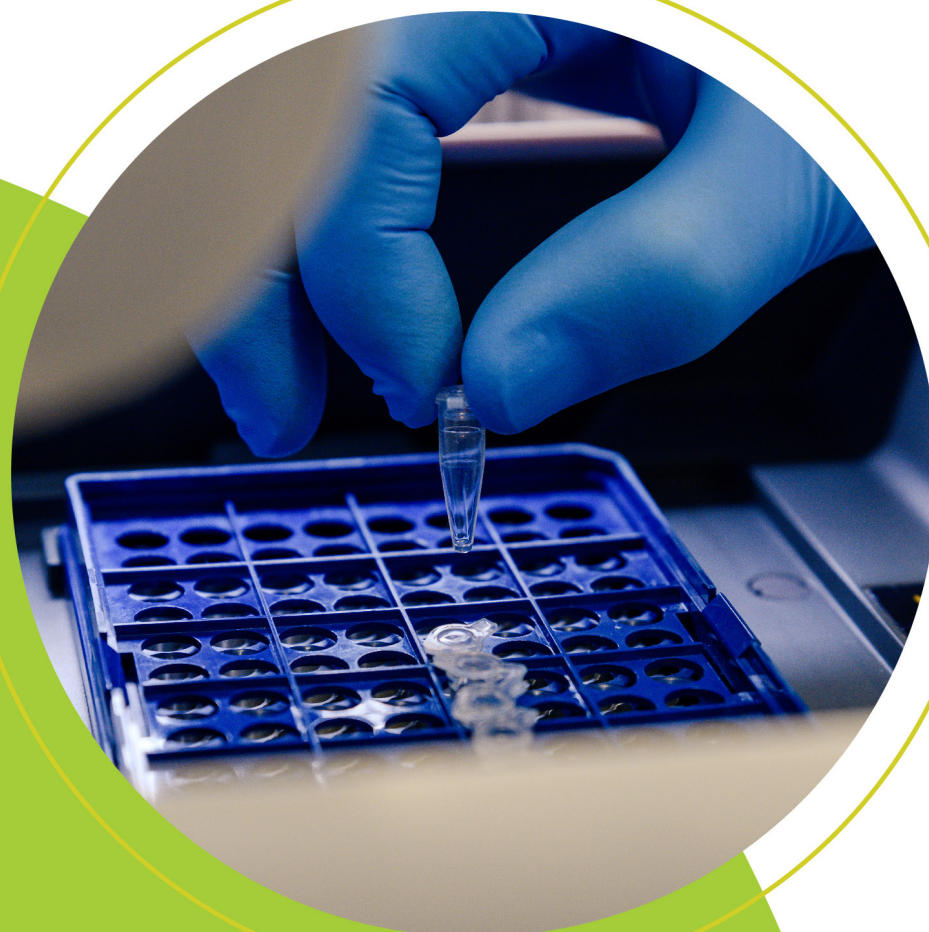
Support services were expanded through cell line storage, fostering collaboration with academic and industry partners. Additionally, the Section offered expert consultation on occupational toxicology to government agencies, contributing to evidence-based policy development and workplace safety improvements. The Section delivered GHS training to promote chemical safety, enhancing clients' and agencies' abilities to safely classify and label chemicals while ensuring compliance with international safety standards and promoting public health. The Section is also working towards achieving ISO 9001 certification by the 2025/26 financial year to improve its service-related capabilities. As part of this effort, a GAP assessment for ISO 9001 certification was conducted in September 2024.

Regarding professional development, the National Research Foundation of South Africa recognised Dr Joseph as a C2 NRF-rated researcher (established researcher), highlighting her significant contributions to her field. Dr Utembe completed a postgraduate diploma in Business Management from UNISA, further strengthening his leadership and organisational strategy expertise.

Research projects

In the 2024/25 financial year, TBRS achieved most of the study objectives in several occupational health research projects. Key research projects included: 1) Exposure assessment and cytotoxicity of chalk particles released in secondary public-school classrooms in the Johannesburg region (NRF-funded), and 2) Exposure and toxicity assessment of particles emitted during the synthesis of engineered nanomaterials in South African laboratories. TBRS also participated in the Petrol Attendant Study with the NIOH Epidemiology Section, focusing on blood sample processing for antioxidant assay and conducting Comet assay analyses.

NHLS BIOBANK SERVICES





Mr Bonginkosi Duma
Head of Section

NHLS BIOBANK SERVICES

The Biobank has new clients who store and collect samples for short and long-term research and preservation purposes.

INTRODUCTION

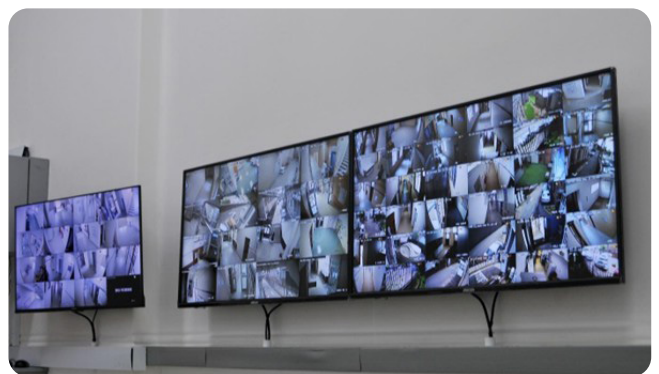
The Biobank Services continue to be used by researchers across the NHLS and private clients. During the year under review, the Section added the National Cancer Registry as one of its clients. The Biobank has collected and safely stored over 100 000 cancer specimens. To improve capacity and broaden its services, the Section added more ultra-low temperature freezers during the year under review.



Ultra-low temperature freezers where specimens are stored and secured safely.

BIOSAFETY AND BIOSECURITY

Security is a high priority at the Biobank Services. To ensure independence, state-of-the-art safety cameras have been installed and are operated by non-biobank staff.



Security monitors are installed at the Biobank to ensure the safety of specimens.

The number of cameras around the Biobank has been increased, including within the NIOH building, to ensure the safety of biospecimens and data. Storage temperatures range from -80°C in ultra-low

temperature freezers to -156°C in liquid nitrogen for samples. The -20°C freezer is used for storing vaccines and samples awaiting laboratory analysis. The Health Technology Assessment projects also uses the Biobank to collect and store specimens used during technology assessment within the NHL. The Biobank currently has an estimated 1.6 million samples in storage.

BIOBANK QUALITY MANAGEMENT SYSTEM



During the period under review, the Biobank retained its ISO 9001:2015 accreditation, making it the only biobank in Africa accredited with this standard.

Maintaining quality that is audited every year has various benefits, which include:

- Preserving confidence in the Biobank’s processes
- Saving time and money
- Maintaining high-quality samples and adding value
- Ensuring necessary biosafety and biosecurity standards
- Enabling the mapping of population flows, disease evolution, and epidemic sources
- Promoting early development of prevention and treatment strategies through the application of modern technology

AFRICA CDC BIOBANK DATA MANAGEMENT TRAINING



Mr Bonginkosi Duma, the Biobank Manager, and Mr Ephraim Mashaba from the NHL Data Warehouse Unit provided a Data Management training workshop at Africa Centres for Disease Control (CDC) in Addis Ababa, Ethiopia, in December 2024. They provided training on managing biobank data, data risk management, and understanding data sets and databases, facilitated theory and practical training sessions, and coached participants on various biobank processes

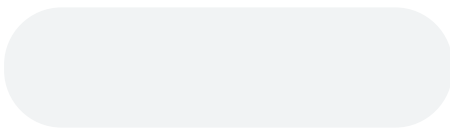


Left to right: Mr Ephraim Mashaba (NHL, South Africa), Ms Chimunya Siebenzu (Zambia Public Health), Mr Bonginkosi Duma (NHL Biobank), and Ms Chelishe Mutale (Zambia Public Health), at the Data Management Training Workshop in Ethiopia.

BIOBANK MEMBERSHIP

National Society for Research Platforms- NSCRP

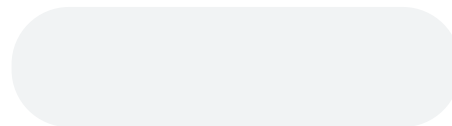
To ensure its operations align with international standards, the NHLS Biobank continues to maintain its memberships with the International Society for Biological and Environmental Repositories (ISBER) and the European, Middle Eastern, and African Society for Biopreservation and Biobanking. Mr Bonginkosi Duma remains an active member of the ISBER Standards Committee, which recently developed a new biobanking standard, ISO 20387. This standard will assist international biobanks in preparing for audits and achieving accreditation. For more information about the Biobank, visit the website here:



Africa CDC members from different countries, including Morocco, Senegal, Uganda, Sierra Leone, Ghana, Ethiopia, DRC, Zambia, and Kenya, visiting the Biobank.



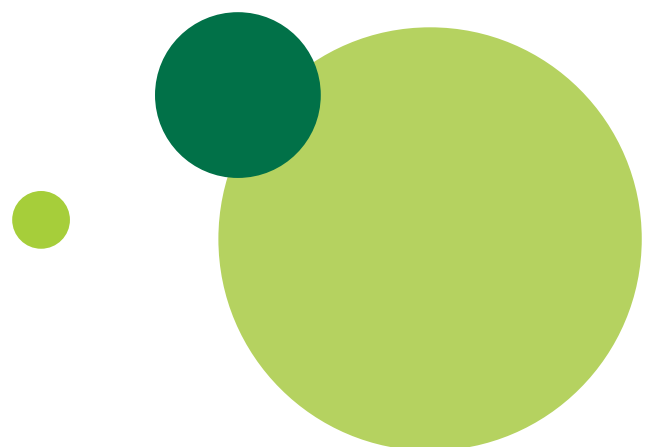
The ISBER Standards Committee, which is currently working on the ISBER Best Practices 5th Edition, is available on the ISBER website



PROFESSIONAL DEVELOPMENT



Biobank staff, Ms Musa Mokoloko, Ms Mandile Thobela, and Mr Bonginkosi Duma, attended the first-ever ISO 20387 training for Biobank Accreditation in 2024.



INFORMATION SERVICES AND TRAINING





Ms Angel Mzoneli
Head of Section

INFORMATION SERVICES AND TRAINING

Information Services serves as a support service to the NIOH and the NHLS, and acts as a gateway to occupational and environmental health and safety information.

INTRODUCTION

The Information Services and Training Section continues to be a cornerstone of knowledge, learning, and technical support within the NIOH, the NICD, and the NHLS. As a pivotal gateway to occupational and environmental health and safety information, the Section provides vital resources to internal and external stakeholders across South Africa and the SADC region.

Through its various units, including the AJ Orenstein Memorial Library, the query-handling service, the institutional archive and repository, and the OHS Training Unit, the Section has successfully upheld its mandate of supporting world-class research, professional development, and promoting good occupational health practices. It continued to provide seamless and consistent access to information resources (electronic and print) throughout the NHLS, supporting and enabling staff to conduct research.

LIBRARY AND INFORMATION SERVICES

Specialist Reference Library

The AJ Orenstein Memorial Library remains the only dedicated occupational health reference library in Southern Africa. It plays a central role in supporting the information needs of NIOH, NHLS, and NICD staff, academic institutions, practitioners, and the public. Despite financial constraints that prevent subscription to paid databases, the library continues to provide access to a wide range of open-access resources, trial databases, and curated electronic content.

The NIOH Library processed 96 scientific information requests, while 320 requests were fulfilled through the NHLS and NICD libraries. These requests supported research, training, and operational decisions, reinforcing the library’s critical support function.

Query-Handling Service

The query-handling service remained a vital link between technical experts and a broad spectrum of users, processing 224 queries during the year under review. These covered diverse topics such as asbestos management, risk assessments, occupational hygiene surveys, compensation outcomes, environmental health concerns, training opportunities, and workplace health risks. Queries were received from all South African provinces and beyond, highlighting the regional and international relevance of NIOH expertise. Clients included employers, employees, government departments, students, doctors, construction and mining companies, and international stakeholders.

RESEARCH OUTPUT

Institutional Repository and Archive

Through the institutional repository, the Information Services Section continued to provide access to the NIOH's intellectual output. In the 2024/25 reporting year, the NIOH produced 26 publications (against a target of 30), all made available on the website and disseminated through the Institute's newsletter, *OccuZone*. Additionally, the archive continued its mandate of documenting the evolution and legacy of the organisation for future reference and research.

PROFESSIONAL DEVELOPMENT AND EXPERIENTIAL LEARNING

Staff within the Section participated in several professional development initiatives, including webinars on information management trends and practical safety courses such as Basic Fire Warden and First Aid training.

The Section also hosted two final-year students from the University of Limpopo through the Experiential Learning Programme, offering practical library and information services exposure. New staff and interns across the organisation were also oriented through customised library inductions.

TRAINING AND CAPACITY BUILDING

Occupational Health and Safety Training Unit

The OHS Training Unit delivered impactful and extensive training interventions through a robust webinar programme. The Unit is integral in building national capacity in occupational health and safety.

Over the broader five-year period (March 2020 to March 2025), the Unit successfully delivered 124 webinars, reaching an impressive 66 295 attendees, with an average of over 1 000 monthly participants. For the current annual reporting period, 11 online webinars were held, totalling 3 804 participants, averaging nearly 346 attendees per session.

Training topics included:

- Biostatistics and Epidemiology
- Ethics in Scientific Research
- Biorisk Management
- Asbestos Handling and Exposure
- Occupational Hygiene Report Interpretation
- Construction Safety
- Classification and Labelling of Chemicals (GHS)
- Treating Clinicians on Chemical Exposure

Two high-impact sessions were the Training for Treating Clinicians/Physicians on Suspected Exposure to Chemical Substances (1 623 attendees) and the NIOH Biennial Research Day (1 525 attendees).

CONCLUSION

The Information Services and Training Section maintained its commitment to service excellence, resource dissemination, stakeholder education, and knowledge preservation despite fiscal limitations. The Section ensured continued access to critical occupational health information and training through innovative open-access resources and digital platforms.

Moving forward, strategic investment in digital infrastructure, enhanced partnerships, and expanded training offerings will be key to sustaining and growing the Section's impact across South Africa and the broader region.



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