
	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

STANDARD OPERATING PROCEDURE








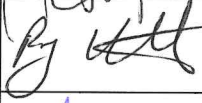


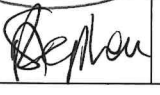
MEDICAL SURVEILLANCE PROGRAM

TNCL-OHS-SOP-0016



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	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

Table of Contents

1. INTRODUCTION	5
2. DEFINITION AND ACRONYMS	6
3. RESPONSIBILITIES	7
3.1 Site General Manager	7
3.2 Occupational Health and Safety Manager	7
3.3 Occupational Health Lead	8
3.4 Human Resources Team	8
3.5 Employees	8
4. PROCEDURE	9
4.1 Eligibility	9
4.2 Program cost	9
4.3 Process flow	9
4.4 Initial Medical Testing Based on The Grouping of The Employees	10
4.4.1 Group A Medicals	11
4.4.2 Group B Medicals	12
4.4.3 Group C Medicals.....	13
4.4.4 Group D Medicals.....	13
4.4.5 Group E Medicals	13
4.4.6 Group F Medicals	14
4.5 Timing of the Initial Medical Examination	14
4.6 Fitness requirements for groups A to F initial Medicals stated above.	14
4.6.1 Group A.....	14
4.6.2 Group B.....	15
4.6.3 Group C.....	15
4.6.4 Group D.....	15
4.6.5 Group E.....	15
4.6.6 Group F.....	16
4.7 Periodic Medical Examinations Based on The Grouping of The Employees	17
4.7.1 Group A.....	17
4.7.2 Group B.....	17
4.7.3 Group C.....	17
4.7.4 Group D.....	18

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.7.5 Group E.....	18
4.7.6 Group F.....	18
4.8 Exit Medicals.....	19
4.9 Handling of the abnormal results during the periodic medical examination.....	19
4.10 Training to the employees.....	19
4.11 Records.....	19
5. SYSTEM EVALUATION.....	20
6. DISTRIBUTION.....	20
7. CONTRAVENTION.....	20
8. DOCUMENT CHANGE PROCESS.....	20
8.1 Reason for Change.....	21
8.2 History of Change.....	21
9. RECORD CONTROL.....	21
10. DECLARATION.....	22
11. APPENDICES.....	23
11.1 Appendix One: Biological monitoring program for organophosphate exposure.....	23
11.2 Appendix Two: Laboratories for Biological Monitoring.....	24
11.3 Appendix three: Biological Monitoring for epoxy resins.....	24

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

1. INTRODUCTION

Medical surveillance refers to the overall monitoring of employees to identify changes in their health status because of exposure to certain agents at the workplace. These monitoring activities are not limited to only medical testing. Monitoring activities also include monitoring and analysing the individual and group outcome data, including historical data, derived from the medical testing.

Employees of Tembo Nickel Cooperation Limited (TNCL) and contractors are eligible for inclusion in this program if they perform work-related tasks that might be reasonably anticipated or if risk assessment results show that there is overexposure to cause occupational exposure to a potential hazard. The program does not include casual labour or any temporary employees who will work with the company for less than one month in a year.

The medical surveillance plan will involve questionnaire (s), clinical examination, radiological investigations, biological exposure monitoring and biological effect monitoring.


The TNCL Medical Surveillance Program has been implemented to meet regulatory requirements, such as the Tanzanian Occupational Health and Safety Act 2003.

The Tanzania Occupational Health and Safety Act, 2003 states in section 24 (1)," 24--(1): a thorough pre-placement and periodic occupational Medical Examination for fitness for employment and for employees shall be carried out by a **qualified occupational health physician** or where necessary a qualified medical practitioner as may be authorized by the Chief Inspector".

Further down in the same section, it states about the exit medical examinations.


"(2) There shall be an exit medical examination carried out by a qualified occupational health physician. (3) In carrying out a medical examination under this section, a prescribed fee and all other related expenses shall be borne by the employer. (4) Any occupational health physician carrying out a medical examination and the employer shall maintain the confidentiality of the results of the medical examination".

Therefore, a medical surveillance program not only serves as the hierarchy of control but also as a statutory requirement.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

2. DEFINITION AND ACRONYMS

Terms	Definition
Anti-HepB-	Antibodies against Hepatitis B
Biological effect monitoring	<p>The measurement and assessment of early biological effects caused by the absorption of chemicals.</p> <p>A disease is a condition of the human body that impairs the performance of one of its vital functions. In this document, it is used broadly to include illness, injury, or organ dysfunction.</p>
Biological Monitoring	The measurement and assessment of chemicals or their metabolites (substances the body converts the chemical into) in exposed workers.
HIRA	Hazards Identification and Risk Assessment
Medical Examination:	<p>Includes the medical test and evaluation administered by a healthcare provider:</p> <ul style="list-style-type: none"> • The initial medical Examination is the Examination that is administered after employment but before initiating work that might be reasonably anticipated to cause occupational exposure to a potential hazard. • A periodic medical examination is administered annually. • Placement medical is an examination that will place an employee from one exposure group to another. • Exit medical examination is the Examination that is administered at the time of termination of employment or at the time the employee is no longer occupationally exposed to the potential hazard. • Special assigned tasks, i.e., casual, consultant, or specialised Jobs.
Occupational exposure	Is the reasonably anticipated contact with a potential hazard that may result from an employee's work-related tasks.
OREP	Occupational Risk and Exposure Profile
PDP	Professional driving permit

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

Primary prevention	It is taking action to prevent the initiation of a disease process by removing or reducing risk factors for disease in a target population. Actions may follow the hierarchy of control principles.
Secondary prevention	Is the early intervention in a disease process to reverse or limit its progression? Interventions may include medical surveillance and medical treatment.
TNCL	Tembo Nickel Corporation Ltd.
TNCL Employee	Any person with an employment contract with TNCL working for wages or salary.


3. RESPONSIBILITIES

3.1 Site General Manager

- Ensure that the required funding is available for the implementation of this program.

3.2 Occupational Health and Safety Manager

- The Occupational Health and Safety Manager will oversee the program.
- Negotiate the contract for services with the healthcare provider.
- To support the TNCL medical surveillance program technically and administratively.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

3.3 Occupational Health Lead


- To ensure the program is operational and sustainable.
- Conduct HIRA onsite.
- Develop and implement the TNCL Medical Surveillance Program.
- Maintain a computer database that includes information about the employees enrolled in the TNCL Medical Surveillance Program.
- Be the intermediary between TNCL and the healthcare provider.
- Provide information on the steps required to obtain and complete a medical examination to the employee's supervisor.
- Receive the physician's written opinion from the healthcare provider and process as necessary.
- Be available to answer questions or concerns about the program from the employer.
- Be responsible for reviewing this program.
- Manage restrictions imposed on an employee because of the medical Examination that limits the employee from performing certain functions of a work-related task.
- Annually update this program.

3.4 Human Resources Team

- Ensure communication of the Medical Surveillance program, as well as its essence and applicability to employees.
- Ensure that the TNCL Medical Surveillance Program is available to eligible employees.
- Ensure that all contracts specify medical surveillance as part of the onboarding process.
- Ensure that the issuing of the contract is subject to a successful medical surveillance report where it is reasonably practicable.
- There will be no contractor allowed to work onsite if they don't have a medical clearance certificate indicating their employees have completed the Medical Examination.

3.5 Employees

- Follow the requirements of the TNCL Medical Surveillance Program, if applicable.
- Enrol in the TNCL Medical Surveillance Program by presenting themselves for medical Examination as advised by the employer.
- The employee should understand that if he/she declines to be under a medical surveillance program and the occupational puts him/her at risk, then the employee will not allow the employee to do the risk work as per the OSHA, 2003.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4. PROCEDURE

4.1 Eligibility

Employees of TNCL and contractors will be eligible to be included in the medical surveillance program if:

- The results of risk assessment show that there was over-exposure to occupational hazards or.
- The exposure of the employee to any occupational hazardous to his or her health is such that an identifiable disease or adverse effect to his or her health may be related to the exposure, there is a reasonable likelihood that the disease or effect may occur under the particular conditions of his or her work, and there are techniques to diagnose indications of the disease or the effect as far as is reasonably practicable;
- The site occupational health physician recommends that the relevant employee should be under medical surveillance, in which case the employer may call on an occupational medicine physician to ratify the appropriateness of such a recommendation.


4.2 Program cost

- Medical Examination and test shall be provided without cost to the employee and at a reasonable time and place. TNCL will back-charge the contractors for medical surveillance they received onsite; this will cover consultation and medical tests.
- For the contractors, the clinic will back-charge the contractor. The total cost of a full medical Examination, excluding the chest x-ray and lab work, will be twenty-five US dollars (\$25).

4.3 Process flow

The following steps shall be followed for an initial, periodic or exit medical examination:

- The TNCL human resource personnel will inform the clinic about the employee who will need medical surveillance.
- The human resources department will submit the job description of the employee, the duration of the employment, and the OREP.
- The TNCL clinic will book the employee and communicate with the HR team regarding the date and time of the medical exam.
- The employee will be required to visit the clinic on the specified date, and a Medical Examination will be conducted.
- The clinic will conduct the medical Examination based on the HIRA and the employee's risk profile.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024


- The clinic will communicate the outcome of the medical Examination to HR without disclosing the employee's disease.
- The outcome of the Examination will be divided into the following categories:
 - Fit without restrictions.
 - Fit with restrictions (the restrictions will be communicated).
 - Fit but will need medical follow-up periodically.
 - Temporary unfit.
 - Permanently unfit.
 - The employee will be briefed on the outcome of the Examination, and the certificate will be handed to the employee.
 - The employee can appeal the outcome of the medical Examination to the regulatory authority.
 - For the contractors, a similar process must be followed through their contract manager.
 - The link to book the medicals is provided through this link - <https://outlook.office365.com/owa/calendar/TNCLOHSCLINIC@kabanganickel.com/bookings/> .

4.4 Initial Medical Testing Based on The Grouping of The Employees

Occupational Medical doctors in Tanzania are scarce resources. The knowledge of occupational medicine is still limited. Therefore, doing the risk-based risk assessment, especially at the entry medical, can be interpreted as the employee being essentially fine in each body system. However, this is not the case. The occupational medical Examination will only focus on the risks at the workplace, and therefore, the medical Examination will be conducted based on the risks to which one will be exposed.

The management can opt to conduct a full medical examination for each employee. However, this is costly and cannot be helpful in disputes regarding the work-relatedness of the disease and compensation aspects. The baseline medicals may include Spirometry, audiometry, CXR, vision screening, HBA1c, FBC and differentials, and alcohol and drug tests will be conducted.

Otherwise, below is the risk-based categorisation that the occupational medicine team is advised to follow, and it is highly recommended that it be followed.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.4.1 Group A Medicals


These medicals will cover employees who are doing office-based work. The main exposure of these employees is ergonomic hazards, mainly prolonged sitting, and repetitive movements (mainly typing work). The following workgroup will be under the Group A:

- Site General Manager.
- Community Relations Manager, Chief Geologist and Geology Manager.
- Human Resources Personnel.
- Camp administrator and coordinator.
- Environmental Leads and Manager, Senior and Junior Environmental Officer.
- Security managers, Leads and supervisors.
- OHS administrators and document controllers.
- Accountants.

The following is a list of occupational medical examinations that the employee will undergo:

- General Occupational Health Questionnaire.
- Clinical consultation and general examination (for general wellness).
- Vision Screening Test (Snell's Chart).
- Musculoskeletal Questionnaire.
- Blood pressure (for general wellness).
- Fasting blood sugar (wellness and dietary arrangements onsite).
- HBA1c (wellness and dietary arrangements onsite).
- Other tests recommended by the site occupational physician.

The employee will, however, join the company once they complete the Occupational Health Questionnaire and Vision Screening Test.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.4.2 Group B Medicals


These are groups of employees who are exposed to biological hazards on top of other hazards like chemical, ergonomic, physical hazards, safety hazards and psychosocial hazards. These groups of employees are:

- OHS Manager.
- OH Lead.
- Medical doctors.
- Nurse (s).
- Paramedics.
- ERT members.
- Plumbers.

The following is a list of occupational medical examinations that the employee will undergo:

- Full Occupational Health Questionnaire
- Clinical Consultation and Examination.
- Respiratory Questionnaire.
- Musculoskeletal Questionnaire.
- TB Questionnaire.
- Skin Questionnaire.
- Audiometry.
- Spirometry.
- CXR.
- Anti-HBs titers, if Negative; full course of Hep B Vaccine.
- Hepatitis A vaccination proof for Plumbers; if unavailable, Hepatitis A vaccination must be given.
- Vision screening (electronic, including colour testing).
- Other tests are based on clinical consultation.

All tests must be conducted before employment.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.4.3 Group C Medicals

These are vector control officers who are exposed to organophosphate pesticides and other pesticides on top of Other Chemical, Ergonomic, Physical, Psychosocial, Safety and Biological Hazards.

These employees will undergo medical examinations like those of Group B except for the anti-HBs titer. Also, they will undergo the following additional examination:

- Baseline Plasma and/or Erythrocyte anticholinesterase level.
- Baseline Full Blood Count (FBC).
- Baseline Liver function test.

All tests must be conducted before employment and for anticholinesterase levels after complete removal from exposure.


4.4.4 Group D Medicals

These are special medical examinations for the Food handlers. Food handlers are exposed to Biological Hazards, i.e. Fish and animal proteins, Chemical Hazards, and Physical, Ergonomic, Psychosocial and Safety Hazards. They will undergo a similar medical examination as for group B except for anti-HBs titers. Also, the Food Handlers must undergo statutory Urine and Stool Lab testing twice a year. All food handlers must show proof of the following vaccines; if no proof is available, a full course of vaccination must be given.

4.4.5 Group E Medicals

These are employees who perform duties at the active project areas, including drilling sites, construction sites, mechanics, boiler makers, and workshops. These employees are exposed to all ranges of groups of hazards. These employees are:

- Drillers and Driller Assistants.
- Electricians.
- Geotechnician.
- Geologists.
- Masons and helpers.
- Heavy equipment operators.
- Fuel bay attendant.
- Painters.
- Masons.
- Security officers.
- Casual laborers.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

They must undergo group B medicals except for the Anti-Hep B titers; on top of that, those who will be working at Height must complete the working at height questionnaire.

4.4.6 Group F Medicals

These are Light Vehicle Drivers who must undergo the following medicals:

- General Health Questionnaire.
- Clinical Consultation and Examination.
- Vision screening test (using the electronic machine).
- HBA1C (if indicated), fasting and random blood sugar measurement.

4.5 Timing of the Initial Medical Examination


The initial medical Examination must be conducted before the start of employment.

4.6 Fitness requirements for groups A to F initial Medicals stated above.

4.6.1 Group A

In medical examinations, the visual acuity and visual field should be enough to conduct the visual work.

- Distance visual acuity should be at least 6/32 for binocular vision, and monocular vision should be 6/12.
- The following medical conditions may exclude the employee from employment:
 - Schizophrenia.
 - Uncontrolled Major Depressive Disorder.
 - Uncontrolled Epilepsy.
 - Uncontrolled.
 - Recent Myocardial Infarction.
 - Uncontrolled Movement Disorders.
 - Recent stroke with Hemiplegia.
 - Being diagnosed with PTB within one month.
- Based on the outcome of the occupational questionnaire, the occupational physician may request a further medical report from the treating doctor. For other medical conditions that are not mentioned above, it will be the discretion of the TNCL occupational physician to decide.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.6.2 Group B

- Distance visual acuity should be at least 6/32 for binocular vision, and monocular vision should be 6/12.
- CXR- There should be no features of active TB.
- ***Spirometry- moderate obstructive/restrictive/mixed lung disease as per ATS classification. DLCO will be used once the employee's Spirometry is normal; however, they have effort intolerance; again, the minimum criteria will be moderately impaired diffusion.
- Audiometry- for moderate to severe hearing loss, you must use the hearing aid that aids for conversion; otherwise, moderate hearing loss will be the minimum cut of value.
- Criteria for group A above will also apply.

NB: *** For ERT officers, Spirometry must be normal.

4.6.3 Group C


- The criteria for Group B will apply.
- The baseline acetylcholinesterase level must be recorded; however, the baseline differs from one person to another; therefore, there will be no cut-off value on the baseline (See the appendix for the details).

4.6.4 Group D

- The criteria for Group B will also apply.

4.6.5 Group E

- For those who are not machine operators, the criteria for Group B will apply.
- For those who are not machine operators and mainly work in the field, Spirometry's acceptable level is mild obstructive/restrictive/mixed, or DLCO should be mildly impaired.
- Audiometry cut of value will be moderate impairment; the use of a hearing aid will not be accepted.
- Vision screening, the criteria for Group B above, will apply.
- For electricians, the colour vision test will be conducted- all colours should be identified.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

- For those who are heavy machine operators:
 - Spirometry acceptable level is mild obstructive/restrictive/mixed, or DLCO should be mildly impaired.
 - Audiometry cut of value will be moderate impairment; the use of a hearing aid will be accepted.
 - Vision screening, the visual acuity for binocular vision, with or without glasses, should be 6/9.
 - Criteria for Group A above will also apply.


Casual labourers who will work in the field and who are expected to work continuously every two weeks will be treated as if they have a similar exposure group as Group E.

4.6.6 Group F

- Criteria for group A above will also apply.
- The vision screening and visual acuity for binocular vision should be 6/12 with or without corrective glasses, and for binocular vision should be 6/9.

NB:

- For all groups, alcohol and multi-drug tests will be conducted, and the current policy is zero tolerance.
- Those employees who are in Group G and any group identified who does manual material handling:
 - The onsite occupational physician should re-evaluate employees with chronic spine pain.
 - Employees known to have disc prolapse should be reasonably accommodated.
 - For heavy equipment operators with a history of chronic lower back pain or disc prolapse, a panel consisting of an occupational physician, an OHS manager and an external neurosurgeon must decide on the fitness.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.7 Periodic Medical Examinations Based on The Grouping of The Employees

4.7.1 Group A

Will undergo periodic medical Examinations after every two years.

Earlier periodic medical can only be conducted if the exposure profile has changed or there are occupational diseases identified within the group. During the periodic medical Examination, the occupational health questionnaire, clinical consultation, and examination will be conducted. Any disease identified, either occupational or non-occupational, will be managed as per the recommendations below.

- The employees will complete an Occupational Health Questionnaire.
- The employee will also complete the Musculoskeletal Questionnaire.

4.7.2 Group B

The employees will undergo periodic medical quarterly and then annually.


- For each quarter, the employees will have to complete the TB Questionnaire.
- They must complete the Musculoskeletal Questionnaire annually.
- They will have to undergo CXR, Vision Screening, Audiometry, and Spirometry annually.
- Check vaccination status annually.

Again, periodic medicals can be conducted earlier if the risk profile has changed, or occupational diseases have been identified.

4.7.3 Group C

The vector control environment officers will undergo periodic medical examinations monthly and annually.

- They will undergo quarterly plasma/erythrocyte anticholinesterase levels.
- Spirometry, Audiometry, and vision screening annually.
- Skin Questionnaire annually.
- Musculoskeletal Questionnaire annually.
- Respiratory Questionnaire annually.
- CXR annually

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.7.4 Group D

- Semi-annually- Statutory food handler medical by the government.
- Health questionnaire annually.
- Audiometry annually.
- Spirometry annually.
- CXR every two years
- Check Vaccination status annually.

4.7.5 Group E


- CXR annually.
- Audiometry annually.
- Spirometry annually.
- Vision screening annually.
- Respiratory Questionnaire annually.
- Musculoskeletal Questionnaire annually.
- Skin Questionnaire for Mechanics.
- Working at Height Questionnaire.
- Biological Monitoring for Painters.

The medicals might be conducted at shorter intervals if the risk profile has changed or if an occupational disease has been identified.

For casual labourers, their medicals will be valid for two years.

4.7.6 Group F

- PDP medical annually.
- Occupational Health Questionnaire annually.
- Clinical Consultation and Examination.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

4.8 Exit Medicals

- The employee will undergo two exit medical examinations.
- OSHA will do one exit medical as it is statutory.
- The site will also conduct its own exit medical for internal compliance.
- The site exit medical examination is statutory and cannot be waived.
- The exit medical will be conducted as the group categorised above.
- The exit medical must be conducted within two weeks after the termination of the contract.
- Any medical procedure conducted within one month before the termination of employment can also be used as exit medical.
- Investigations like MRI and CT scans of the lumbar spine are not routinely used for our medical surveillance program.
- The employee will also be required to undergo statutory exit medical by OSHA as they want to be that way.

4.9 Handling of the abnormal results during the periodic medical examination

Should the employee be identified as having abnormal results, further evaluation will be conducted to reach the diagnosis. Once the definitive diagnosis has been identified, the question will be whether the condition is suspected to be work-related or not.

Should it be the suspected work-related, the employer and employee will be informed, and statutory forms of reporting to the Compensation commissioner will be completed.

Should the condition be non-work-related, the employer and employee will also be informed; however, in both scenarios, the diagnosis of the employee will not be disclosed to the employer.


For both occupational and non-occupational employees, a fitness-for-work decision must be reached; for that purpose, please look at the separate document regarding fitness-for-work.

4.10 Training to the employees

During the induction and regularly in the toolbox meeting, the employee will be informed of the risks that will be exposed to, the available control measures, and the importance of medical surveillance.

4.11 Records

Both the soft and hard copies will be stored for forty years. The medical will be available to anyone under the consent of the employee. Otherwise, the medicals will be confidential.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

5. SYSTEM EVALUATION

This procedure shall be reviewed at least two years by members of the OHS department and presented to the Standard Committee for approval or when organisational changes take place or are required as part of internal and external audits. The TNCL Document Controller will monitor compliance with the document control system on an ongoing basis.

6. DISTRIBUTION

List physical locations which require a controlled copy of this document.

Copy	Controlled Document Folder Location
Master	Controlled Documents Central Filing System


7. CONTRAVENTION

Any breach of this procedure shall be regarded as refusal/failure to carry out a lawful instruction and will be dealt with as per the disciplinary procedure.

8. DOCUMENT CHANGE PROCESS

The process of document change starts when the document custodian identifies there is a need to make changes within the document. The document custodian/ owner shall complete the document change request form, sign it off and submit it to the Document Controller.

The Document Controller shall issue the controlled word copy of the document to the respective document custodian/owner so that changes may be made. The document custodian/owner shall resubmit the updated document to the document controller so that the document can be controlled and updated within the filing system and ready for use by the end users.

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

8.1 Reason for Change


A	As a result of incidents	F	Change in training requirements
B	As a result of the audit findings	G	Results of risk assessments
C	New / changes in governance documents	H	Change due to spelling or grammatical error
D	Changes in legislation	I	New document format
E	Changes in technology	J	To integrate special instruction into the document control system

8.2 History of Change

Date of Change	Revision No	Revised Item (paragraph Number reference if required)	Reason Code	Name of Reviewer
11 th March 2023	01	All document	G & I	Dr Weinand

9. RECORD CONTROL


Document Title:	Document ID:	Responsible for Maintenance:	Responsible for Filling:	Location of Storage:	Retention Period:	Method of Disposal:
Medical Surveillance Program Procedure	TNCL-OHS-SOP-0016	Document Controller	Document Controller	OHS Department	Hard Copy two Years	Hard copy shared file electronic

	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
		Approval Date	08 th April 2024

10. DECLARATION

I, at this moment, declare that I have taken part in the discussion of this procedure, and I understand its contents and do commit that I shall ensure compliance hereto:

	Name and Surname	Company Number	Designation / Role	Signature	Date Signed
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	STANDARD OPERATING PROCEDURE	Document ID	TNCL-OHS-SOP-0016
		Document Owner	OHS Manager
	MEDICAL SURVEILLANCE PROGRAM	Revision	01
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11. APPENDICES

11.1 Appendix One: Biological monitoring program for organophosphate exposure

Type of sample: Blood: both plasma and erythrocyte.

Type of test: Acetylcholinesterase level.

Baseline: Baseline samples must be taken before the employee is exposed or two exposure-free.


Action levels

Table Action thresholds for cholinesterase depression	
<u>Level of decline from baseline</u>	<u>Appropriate Action</u>
I. Plasma Cholinesterase	
By 15 – 25%	Re-test worker
By 25% - 40%	Re-test worker Investigate safety Conditions
By 40% or more	Remove
II. Red Cell Cholinesterase	
By 15 – 25%	Remove worker from exposure Investigate safety conditions
By 25% - 30%	Re-test worker Investigate safety conditions
By 30% or more	Remove worker from exposure Investigate safety conditions

Return: The improvement of acetylcholinesterase level by at least ninety per cent from the baseline.

Frequency: Monthly, since they will be exposed monthly.

Laboratory: Lancet laboratory or Pathcare laboratory.

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11.2 Appendix Two: Laboratories for Biological Monitoring

The OHS manager will facilitate the MoU between the TNCL and the two laboratories, and we will send our samples for biological Monitoring.

These are Lancet laboratories in Tanzania and Pathcare laboratories in South Africa.

These laboratories are internationally accredited; therefore, the results of the test will be valid.

11.3 Appendix three: Biological Monitoring for epoxy resins

The urine biomarker Bisphenol A Diglycidyl Ether (BADGE) across shifts will be used to determine the exposure.

A threshold value of 0.5 ng/mL for BADGE·2H₂O is proposed for occupational exposures.

However, the storage and transport of the sample are still challenging. Once it is sorted, the Monitoring will commence.