

**BRANCH: INSPECTION AND ENFORCEMENT SERVICES**

**CHIEF DIRECTORATE: OCCUPATIONAL HEALTH & SAFETY**

**OCCUPATIONAL HYGIENE AND  
EXPOSURE IN THE IRON & STEEL  
SECTOR**



**employment & labour**

Department:  
Employment and Labour  
**REPUBLIC OF SOUTH AFRICA**

# OUTLINE

- Introduction
- What is occupational hygiene
- What are the benefits of occupational hygiene
- The practice of occupational hygiene
- Who may conduct exposure monitoring
- Legal requirements
- Disjuncture of legislative requirements
- Linkage of legal requirements
- Examples of occupational hygiene hazards
- Exposure monitoring stats Iron & steel
- Conclusion



# Introduction

- Safe and healthy working environments –
  - ✓ Fundamental principle and right at work
  - ✓ Essential requirement for sustainable and inclusive economic growth, full and productive employment and decent work for all.
  
- The economic costs of poor occupational health and safety practices affects both the employer and the employee:
  - ✓ Employer – medical and rehabilitation costs
  - ✓ Employee – loss of income

# Introduction

- How does our supreme law respond to OHS matters
- **Bill of Rights**
  - ✓ 7(1) This Bill of Rights is a cornerstone of democracy in South Africa. It enshrines the rights of all people in our country and affirms the democratic values of human dignity, equality and freedom.
  - ✓ 24(a). Everyone has the right—
    - to an environment that is not harmful to their health or wellbeing;

The Occupational Health and Safety Act, 1993, requires the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the health of workers.

# What is Occupational Hygiene

- Occupational hygiene is the science of the-
  - ✓ the **anticipation and recognition** of the possible health hazards in the workplace
  - ✓ the **evaluation** of hazards, which is the process of assessing exposure and reaching conclusions as to the level of risk to human health
  - ✓ prevention and **control** of hazards, which is the process of developing and implementing strategies to eliminate, or reduce to acceptable levels, the occurrence of hazards in the workplace

## What is Occupational Hygiene

- The ultimate aim of occupational hygiene is to identify and control hazards arising in or from the workplace, which impair the health and well-being of employees
- Not only focused on the workplace, but also the impact of the workplace hazards on the surrounding communities and environment

## What are the benefits of Occupational Hygiene

- Occupational hygiene can identify the source and exposure through accurate investigation
  - Once you know the exact source of the hazard, specific controls can be investigated and implemented

# What are the benefits of Occupational Hygiene



**Human Capabilities**

**Task/System Demands**



## **MATCH**

Health & Safety  
↑ Productivity & Worker well-being  
Comfort

Efficiency  
Reliability

## **MISMATCH**

Fatigue  
↓ Productivity & Worker well-being  
Errors

Injuries  
Occupational diseases/ incidents

# What are the benefits of Occupational Hygiene

- Improves employee's health, quality of life and increases life expectancy
- Reduces the number of people who leave employment early through injury or illness
- Lowers social and healthcare costs
  - ✓ maximizes employee potential
- Leads to more efficient working processes with technological improvements
- Increases productivity

# Who may conduct exposure monitoring

- The evaluation of hazards step
  - ✓ Refers to exposure monitoring
  - ✓ Planned, carrying out and recording of the results of a measurement programme.
- In order to be able to conduct exposure monitoring, the following are required-
  - Qualifications, knowledge, training and experience in a hazard
  - Knowledge, understanding and implementation of appropriate methodologies for conducting exposure monitoring for that hazard
  - Knowledge and use of calibrated, fit-for-purpose equipment
  - Analyse and interpret results
  - Provide appropriate recommendations

# Who may conduct exposure monitoring

In terms of the Occupational Health and Safety Act and Regulations-

- Only approved inspection authorities (AIA) may conduct exposure monitoring for-
  - ✓ Noise
  - ✓ Hazardous chemical agents
  - ✓ Lead
  - ✓ Asbestos
- Only the results from an AIA report can be used in a risk assessment
- For other occupational stressors
  - ✓ Vibration, illumination, IAQ, HBA, heat stress, cold stress
- The person must have competency to perform the exposure monitoring

# Legal Requirements



OHS Act Section 8 (2) (d)  
Identify all hazards in the workplace, establish  
precautionary measures and provide such  
measures



# Legal Requirements

➤ The risk assessment comprises of two aspects-

Qualitative	Quantitative
Past risk assessment	Exposure monitoring
Employee complaints	
Past incidents/occupational diseases	
Medical screening/surveillance outcomes	
Workplace walk-throughs/observations	
interviews	

# Legal Requirements (3)



## Exposure Monitoring

RHCA  
6

AAR  
16

NIHL  
7

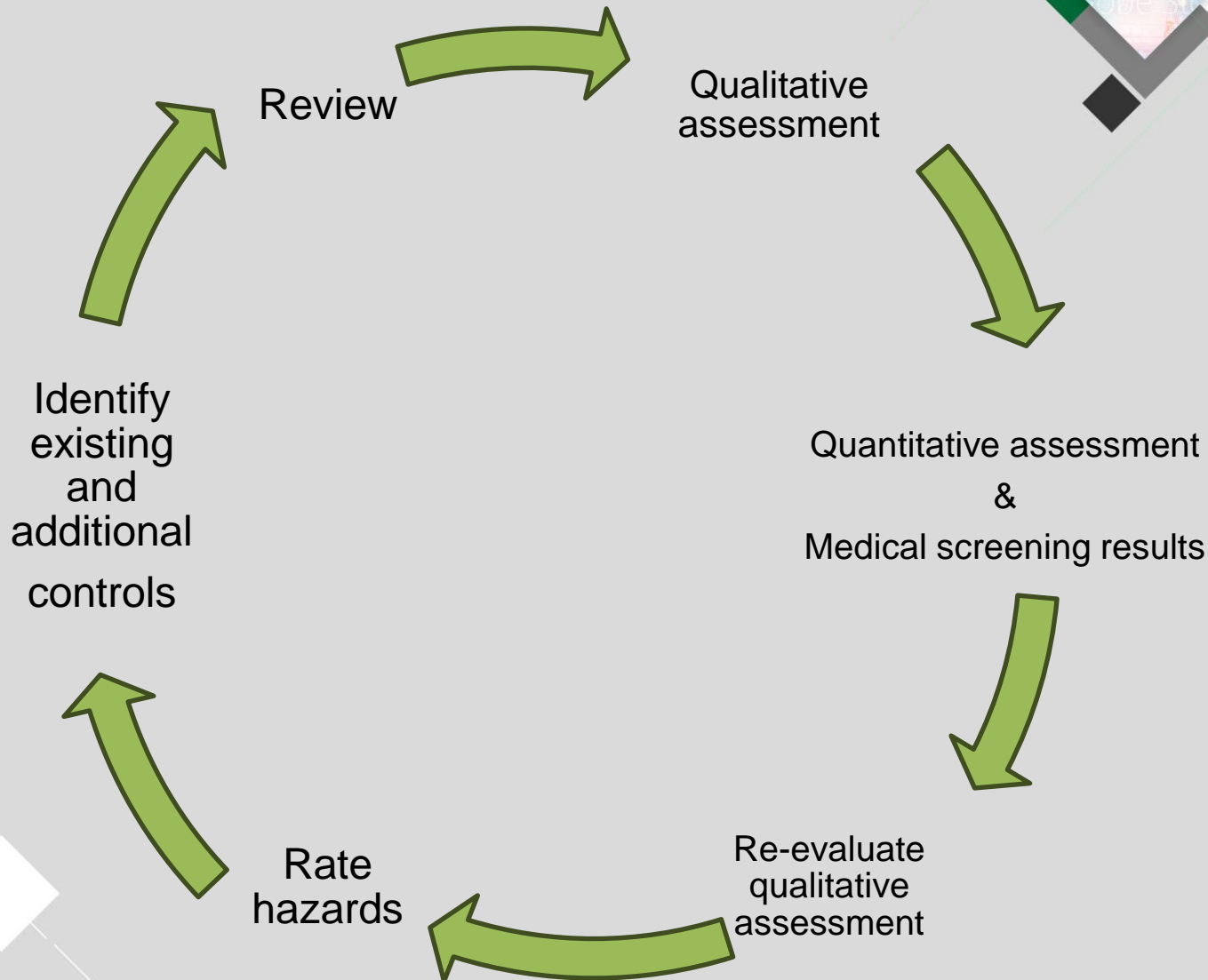
RHBA  
7

Draft PAR  
7

# Disjuncture of legislative requirements



# Linkage of legislative requirements



# Examples of occupational hygiene hazards

- Noise
- HCA – fumes, particulates, gases
- Ergonomics – physical, cognitive, organisational
- Illumination
- Heat
- UV radiation

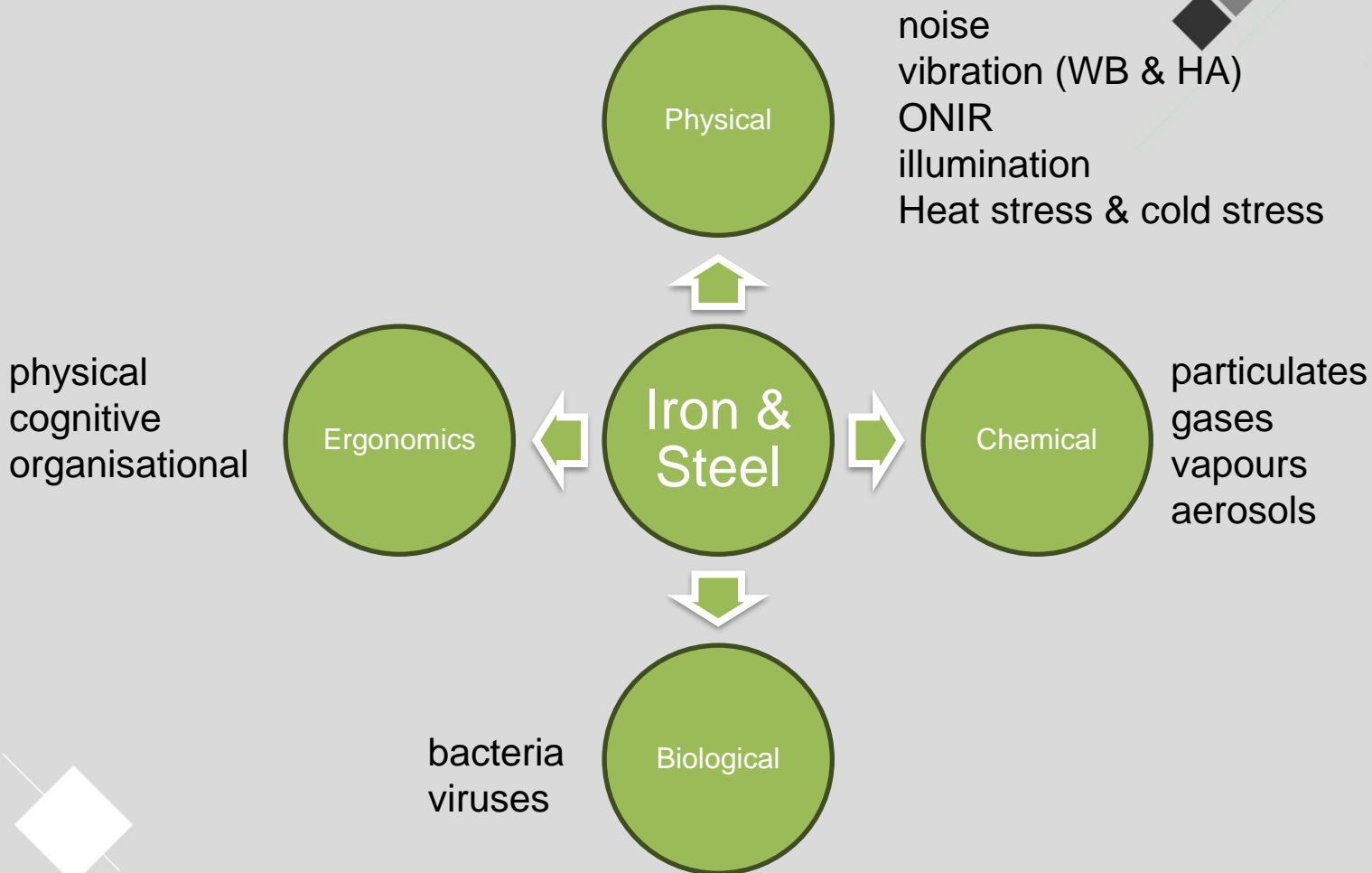


# Examples of occupational hygiene hazards

- Noise
- HCA – particulates
- Ergonomics – physical, cognitive, organisational
- Illumination
- Hand-arm vibration



# Examples of occupational hygiene hazards



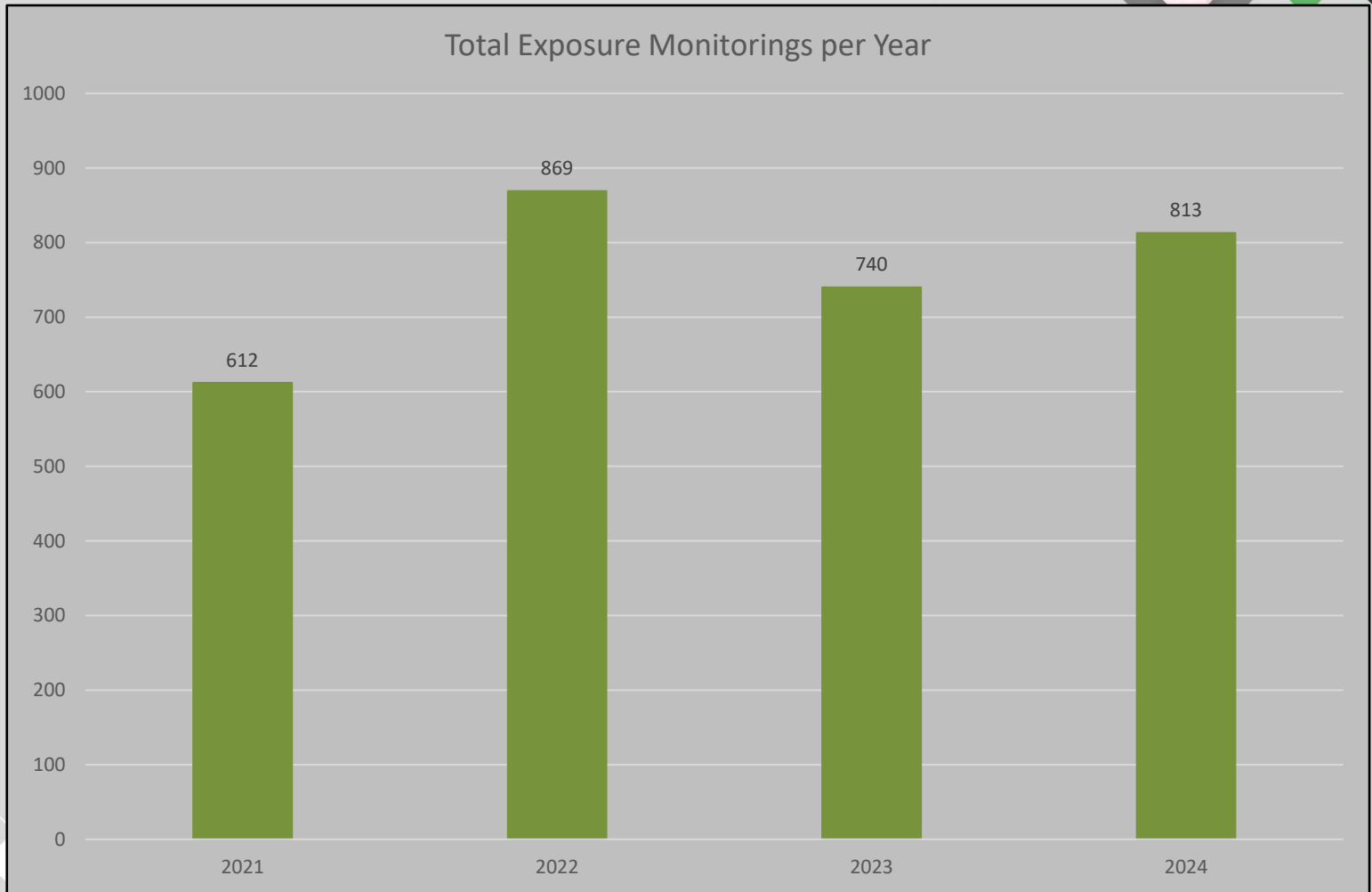
# Exposure monitoring trends Iron & steel

## ➤ Results submitted by AIA over four years

- 2020/2021
- 2021/2022
- 2022/2023
- 2023/2024

# Exposure monitoring trends

## Iron & steel

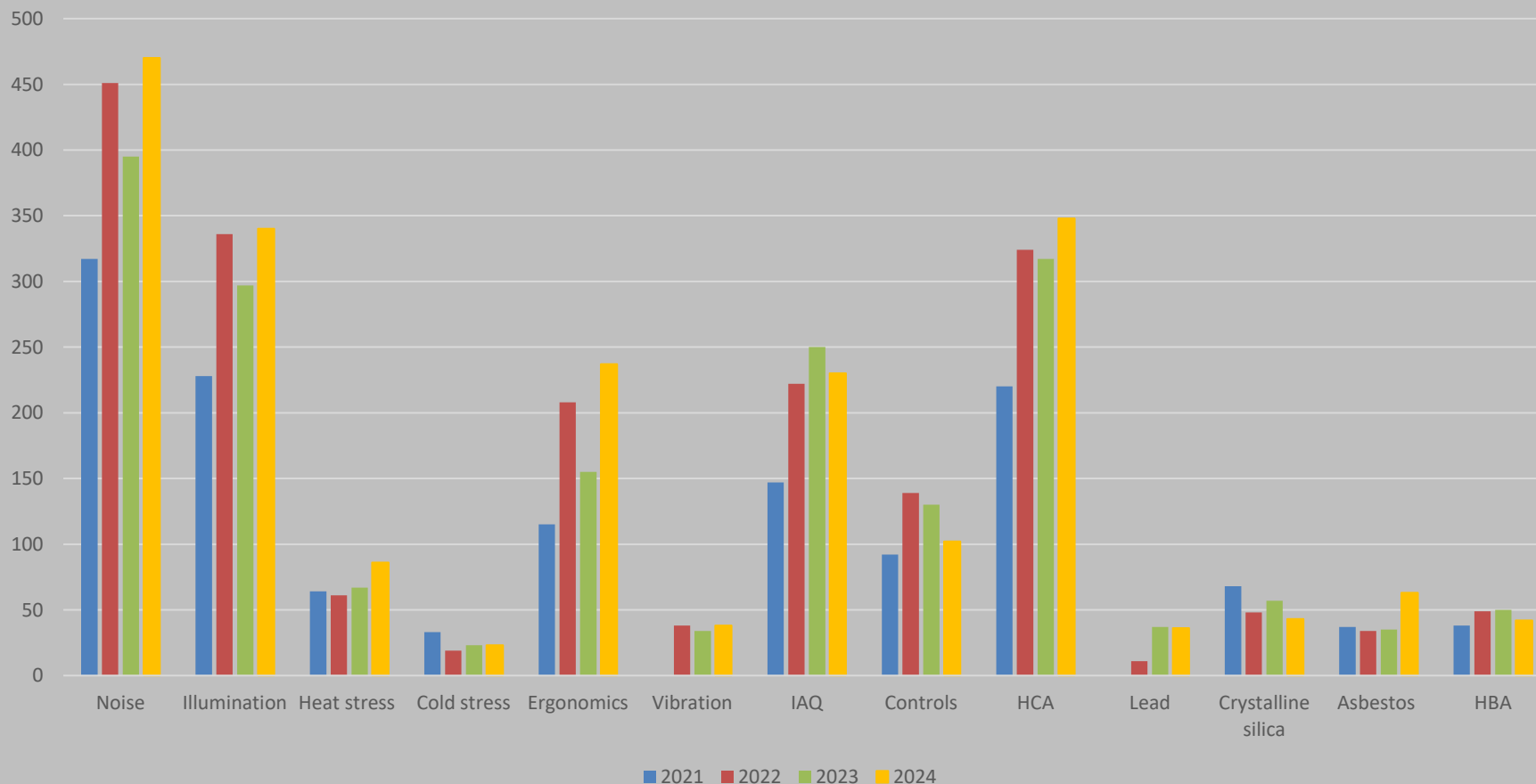


# Exposure monitoring trends

## Iron & steel



Total Occupational Stressors Monitored per Year



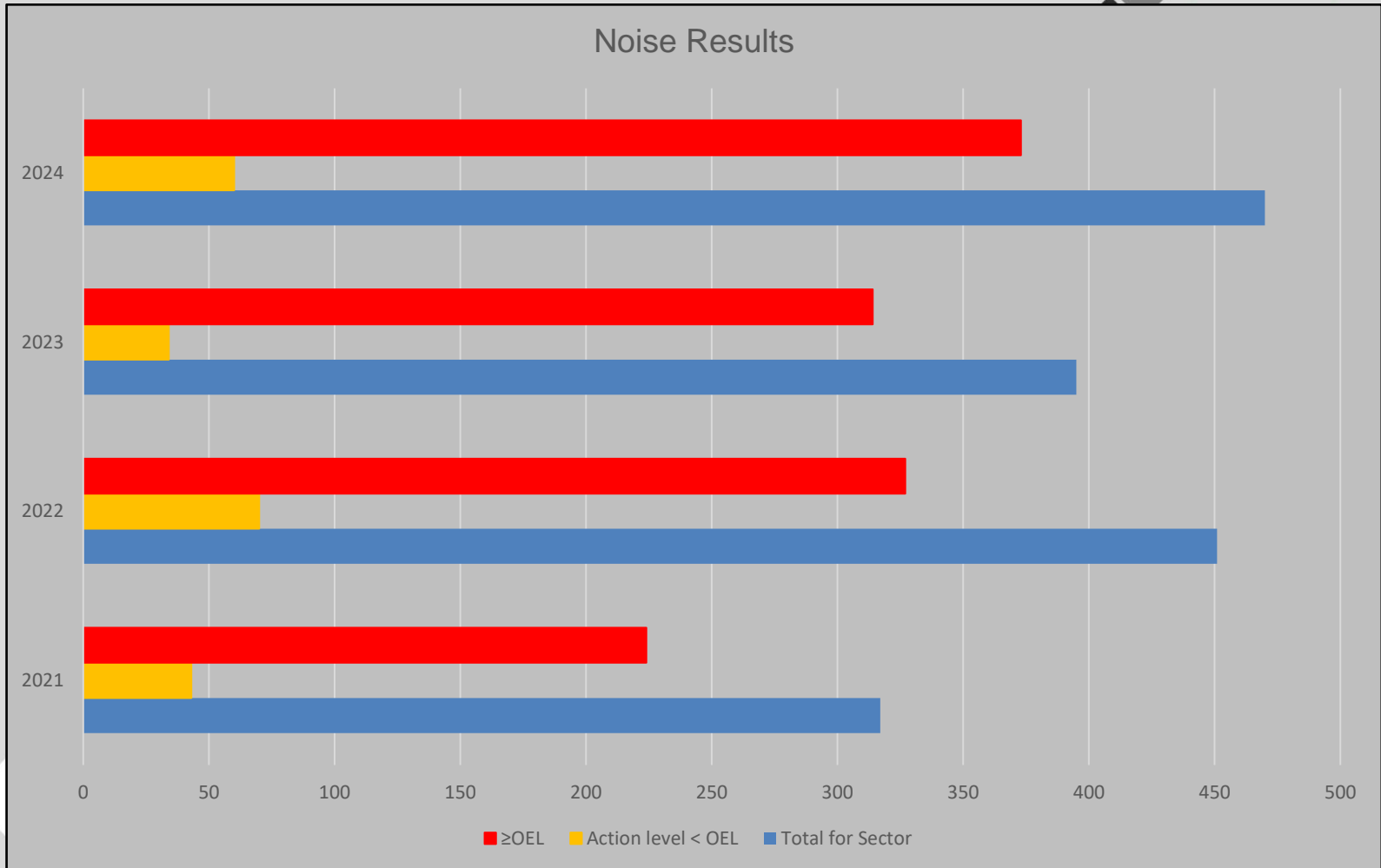
# Exposure monitoring trends Iron & steel

## ➤ Top five findings

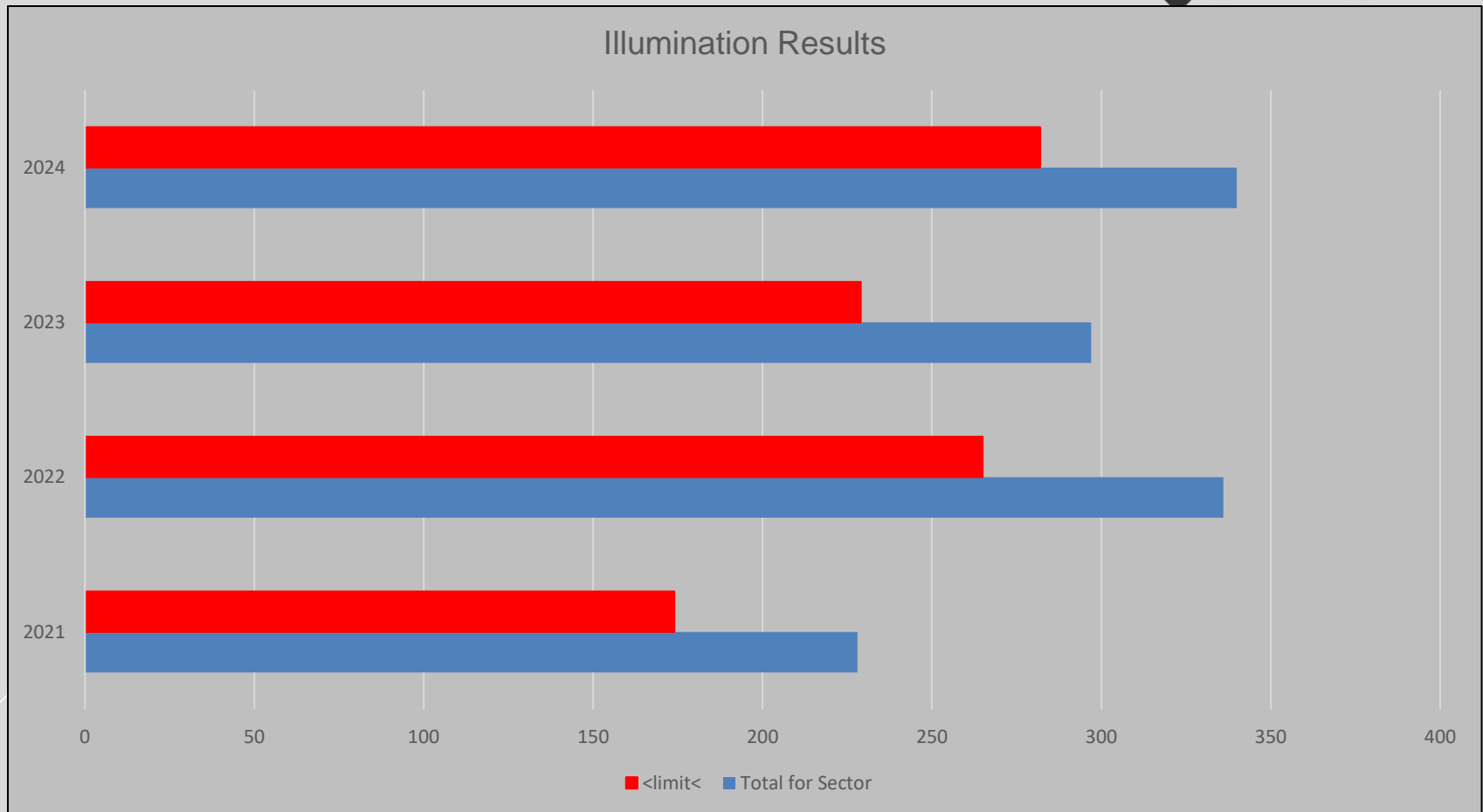
- ✓ Noise
- ✓ Illumination
- ✓ Ergonomics
- ✓ Vibration
- ✓ LEV Controls



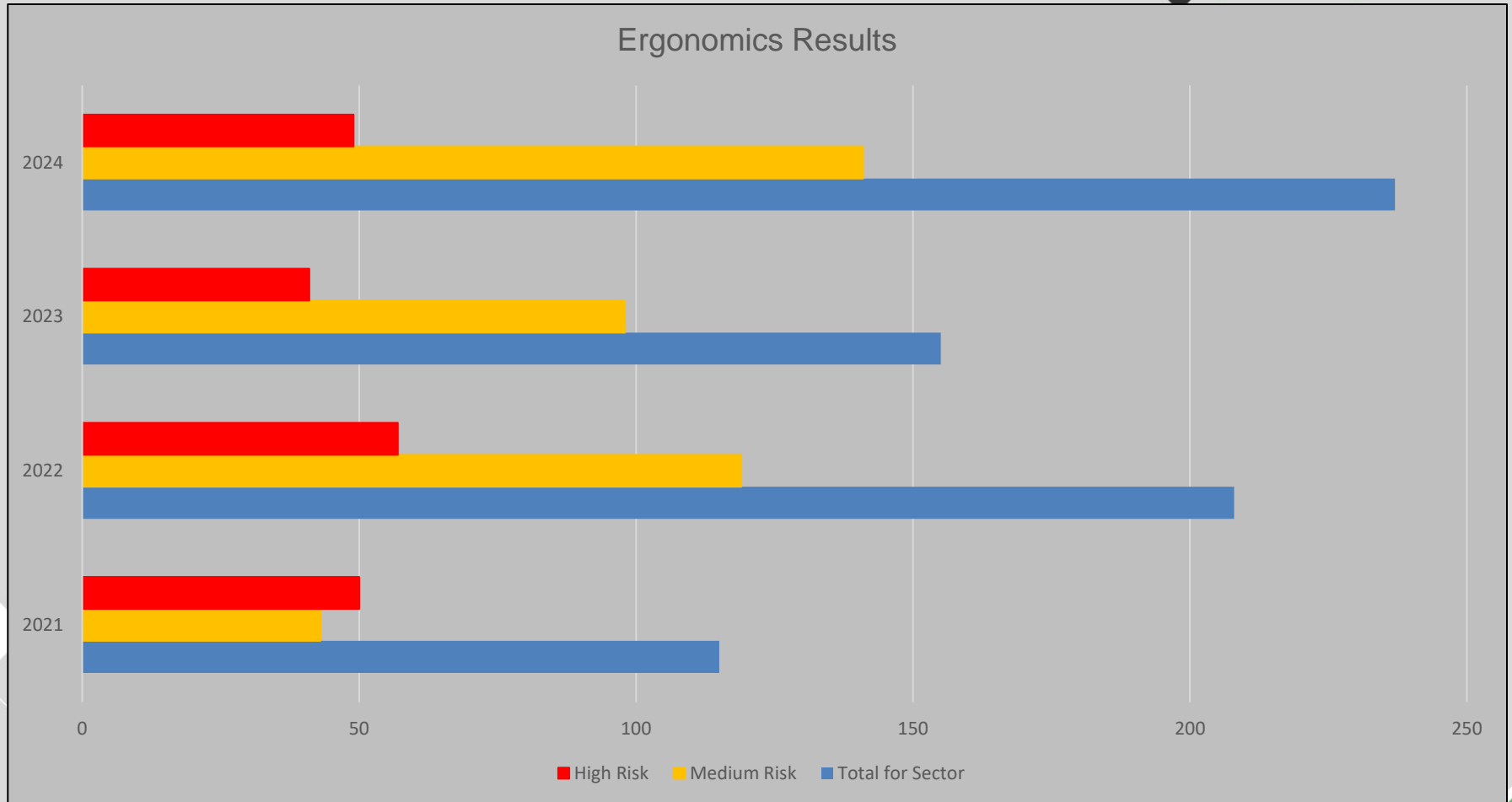
# Exposure monitoring trends Iron & steel - noise



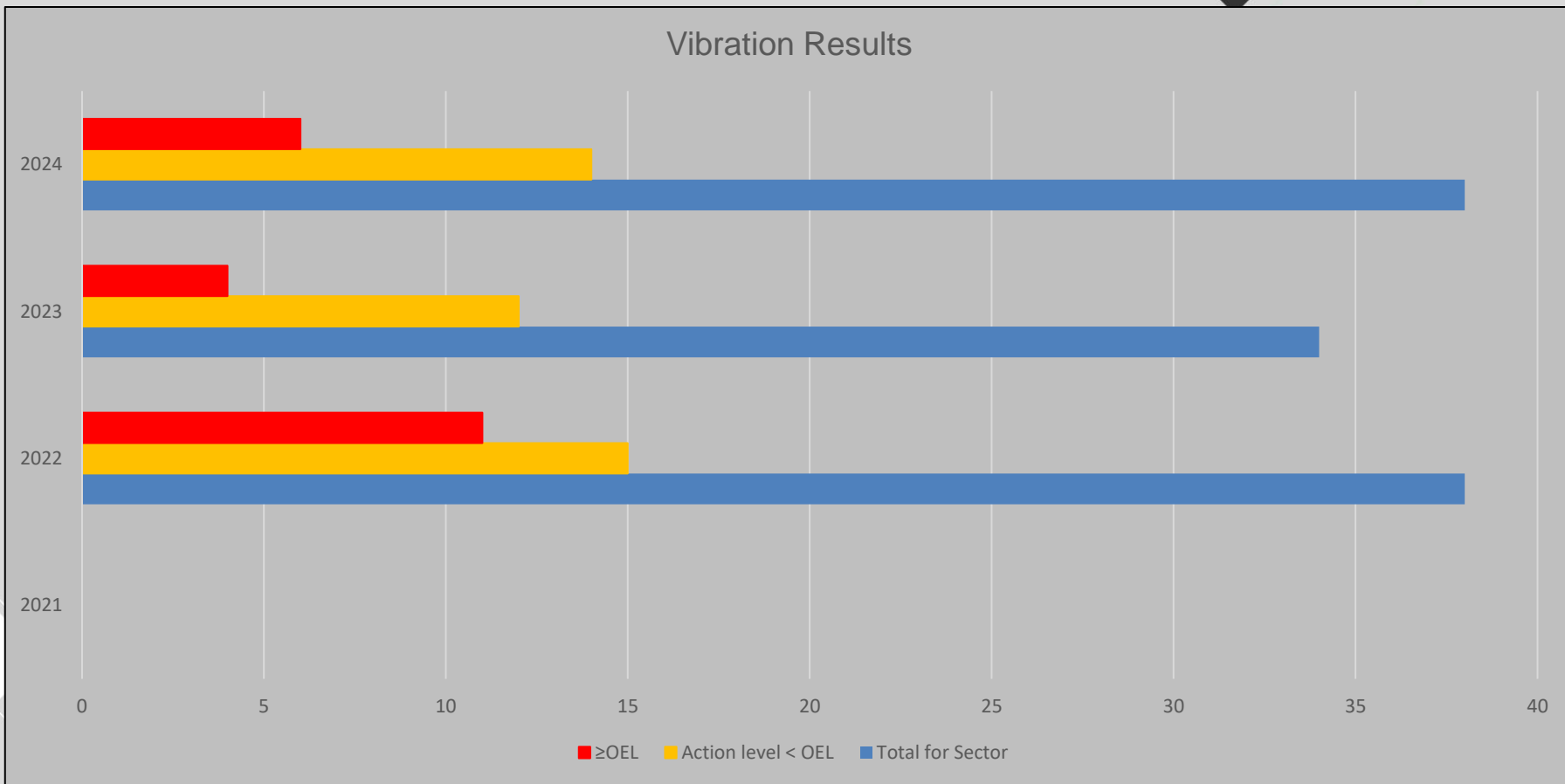
# Exposure monitoring trends Iron & steel - illumination



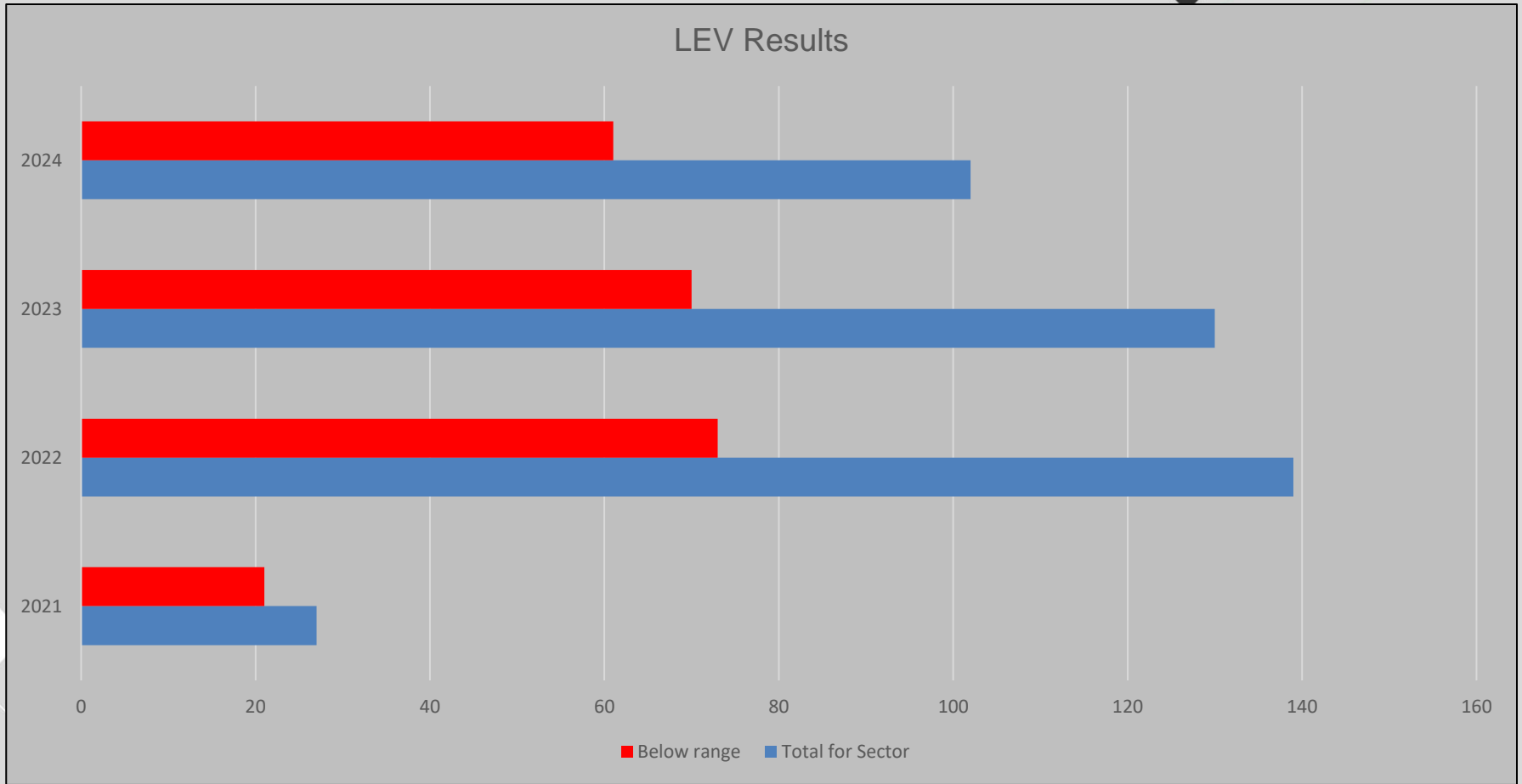
# Exposure monitoring trends Iron & steel - ergonomics



# Exposure monitoring trends Iron & steel - vibration



# Exposure monitoring trends Iron & steel – LEV controls



# Conclusion

- Occupational hygiene and exposure monitoring central to:

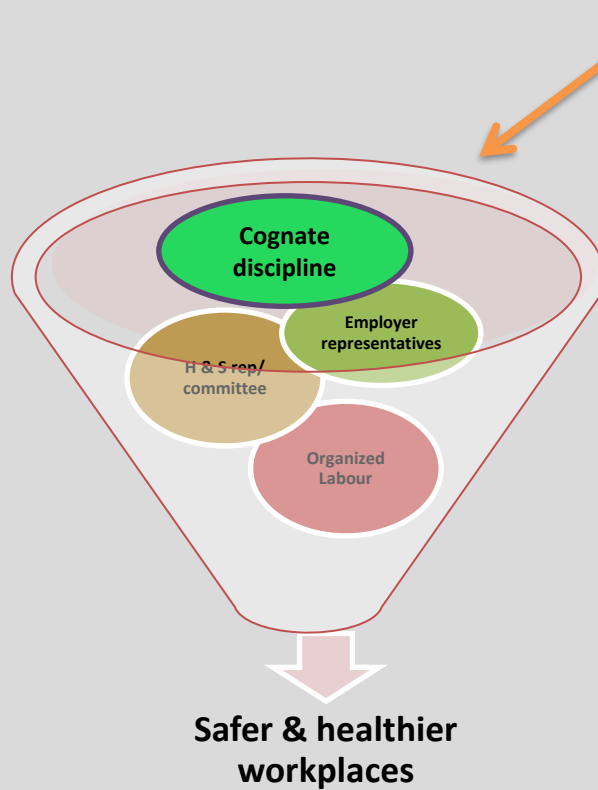
<b>ANTICIPATION OF NEW OHS RISKS</b>	<b>MULTIDISCIPLINARY APPROACH IN MANAGING OHS</b>	<b>BUILDING COMPETENCE ON OHS</b>
<b>WIDENING THE HORIZON: THE LINK TO PUBLIC HEALTH (Lessons from COVID-19)</b>	<b>INTERNATIONAL LABOUR STANDARDS AND OTHER INSTRUMENTS ON OHS</b>	<b>REINFORCING THE ROLE OF GOVERNMENTS AND SOCIAL PARTNERS AND EXPANDING PARTNERSHIPS</b>

- With OHS being the fifth principle on the fundamental principles & rights at work, greater responsibility is placed upon all role players
- Proper response (no silo approach) is required to promote and improve prevention efforts.

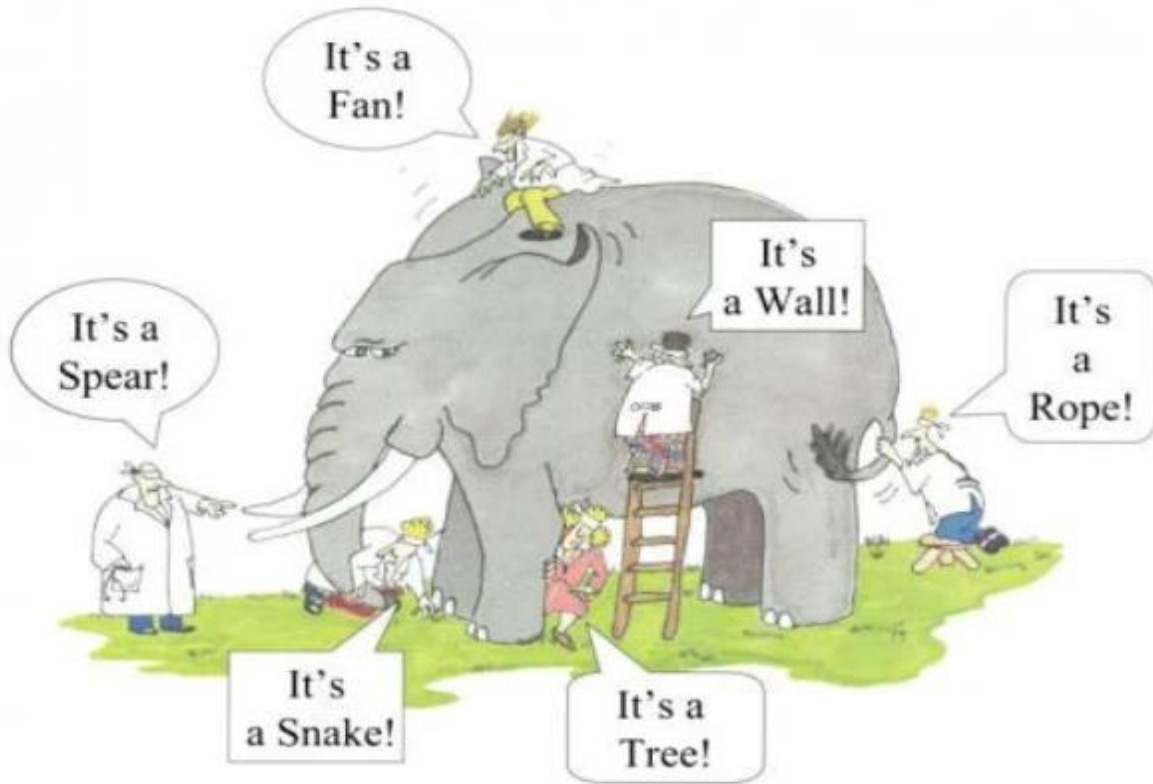
# Take home message

- A predominant factor is cooperation:

*Collective ownership & interactive collaboration in the implementation of initiatives & interventions in the workplace.*



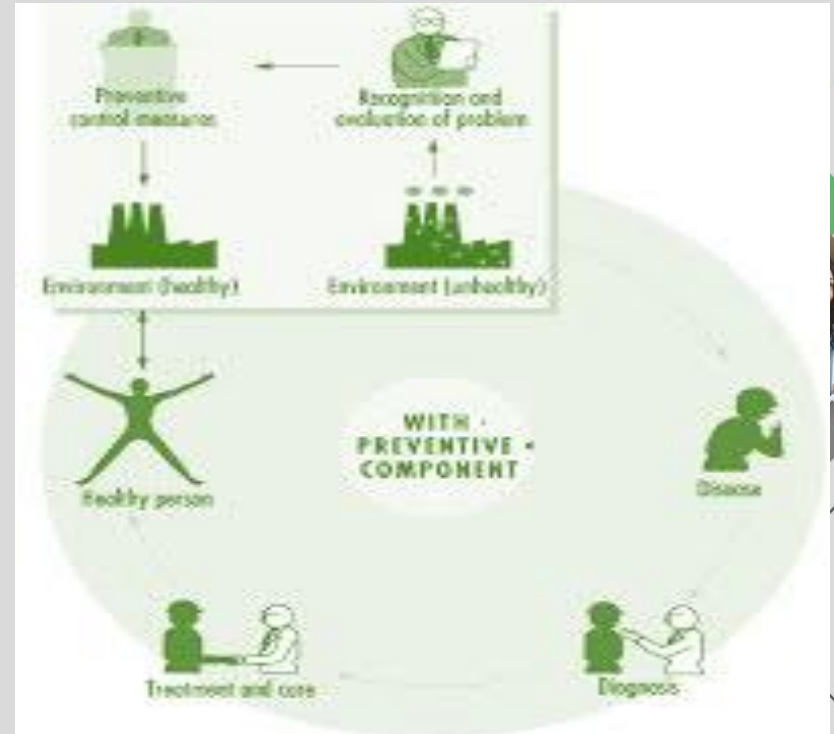
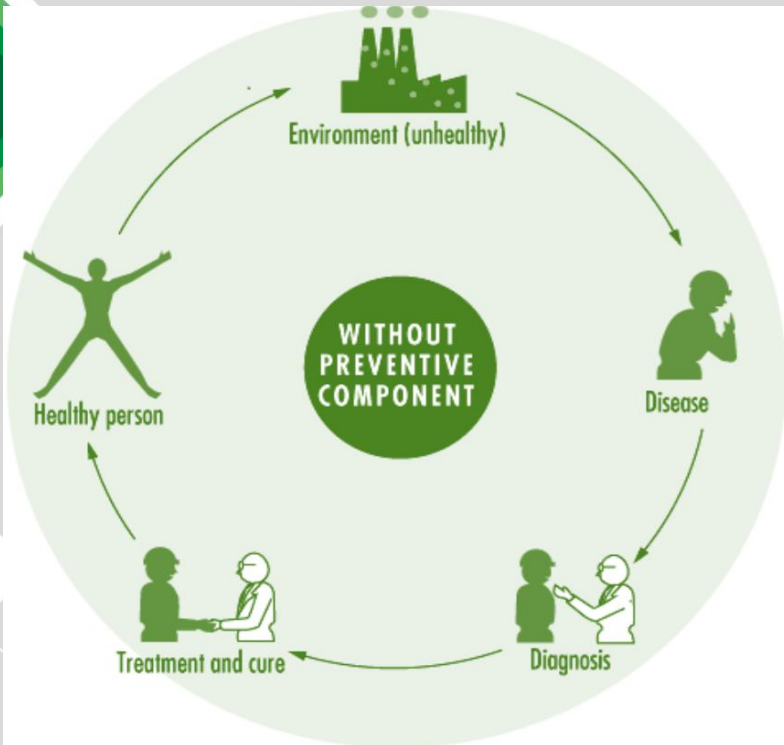
# Take home message



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# Take home message



Source: ILO Encyclopaedia

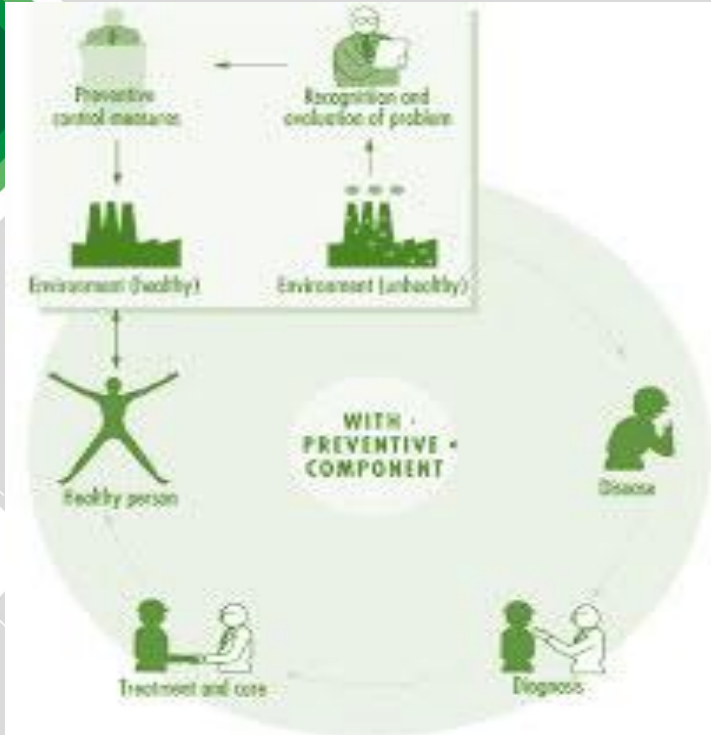


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# Take home message



**ECONOMY**



**REDUCED ACCIDENTS  
REDUCED INJURIES  
REDUCED OCCUPATIONAL DISEASES  
IMPROVED QUALITY OF LIFE  
IMPROVED COMMUNITY WELL BEING & RELATIONS**



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# Take home message

DEL has never accepted the proposition that  
injury and disease

“go with the job”

"IF YOU'RE GOING TO LIVE, LEAVE A LEGACY. MAKE A  
MARK ON THE WORLD THAT CAN'T BE ERASED."

— Maya Angelou



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# Resources

1. ILO <https://www.iloencyclopaedia.org/part-iv-66769/occupational-hygiene-47504>
2. Occupational hygiene training association  
<https://ohtatraining.org/students/oh/>



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Thank you



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