



**MINING INDUSTRY
OCCUPATIONAL
SAFETY & HEALTH**



**MINERALS COUNCIL
SOUTH AFRICA**

THE BENEFITS OF ILLUMINATION IN UNDERGROUND WORKING ENVIRONMENTS

Date: 05 July 2024

Venue: Avianto, Muldersdrift

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Content

- 1 Background
- 2 Illumination: Risk Management Perspective
- 3 Benefits of Illumination
- 4 Conclusion



1. Background



REGULATORY FRAMEWORK



Mine Health and Safety Act

Mine Environmental
Engineering and
Occupational Hygiene
Regulations



Occupational Health and Safety Act

Environmental
Regulations



Standards

SANS 10114: Part 1 and 2



International Practices

International Labour
Organization
ISO 8995-1

2. Illumination: Risk Management Perspective



ILLUMINATION: RISK MANAGEMENT PERSPECTIVE





IDENTIFY THE RISK: MEASUREMENT CONSIDERATIONS



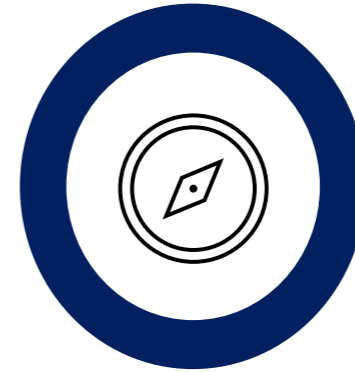
The type of activity
(i.e., drilling,
support, marking
etc.)



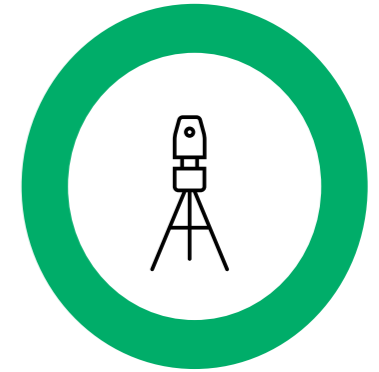
Background
illumination



The different
angles that might
have an impact on
blind spots



Define different
points of
measurement
(Uniformity)



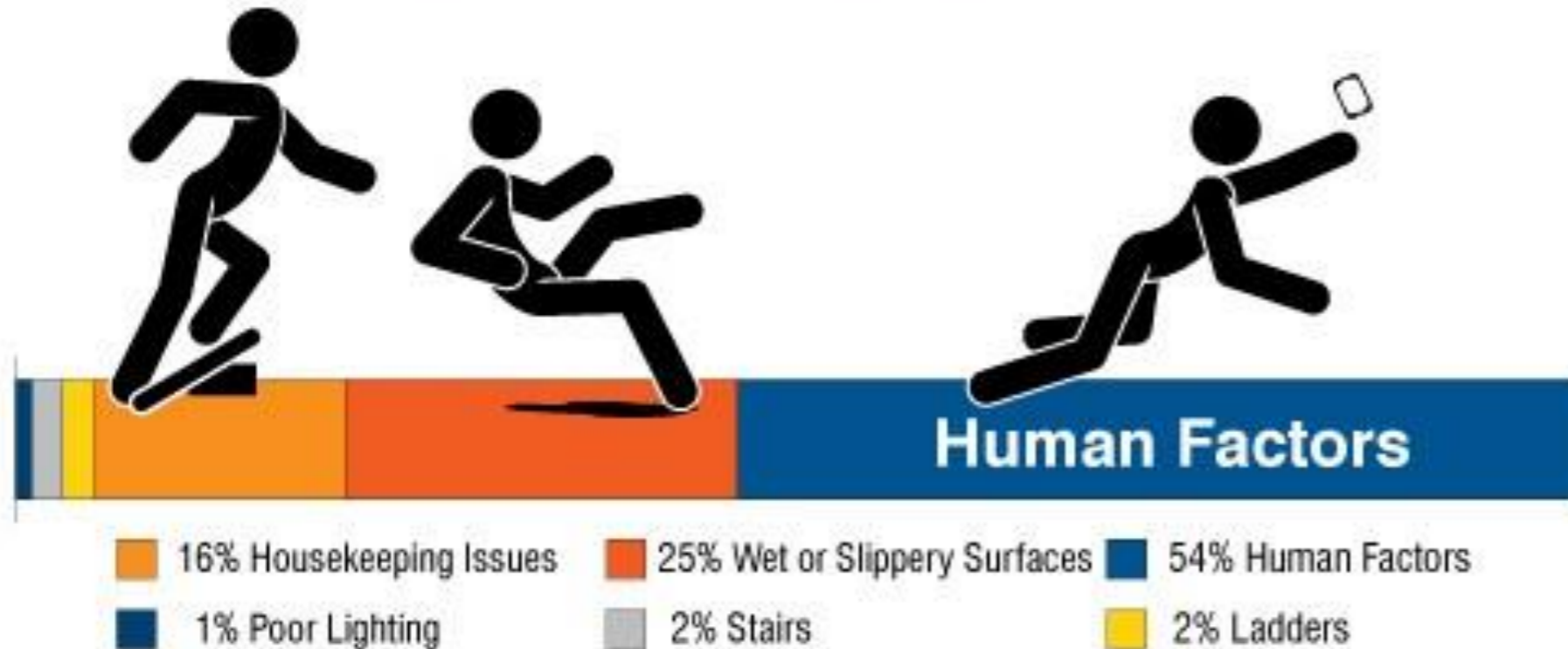
The type of
instrument vs.
lighting



ANALYZE THE LIKELIHOOD AND IMPACT

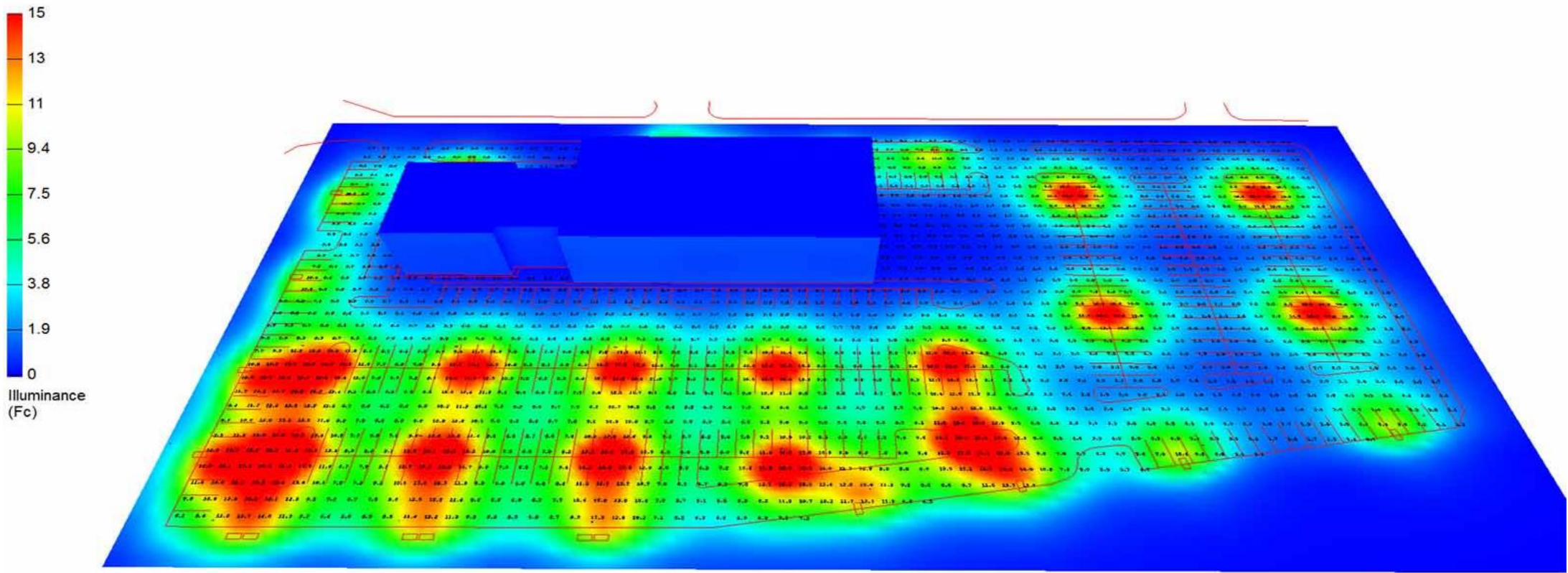


Most Frequent Factors in Slip, Trip & Fall Incidents

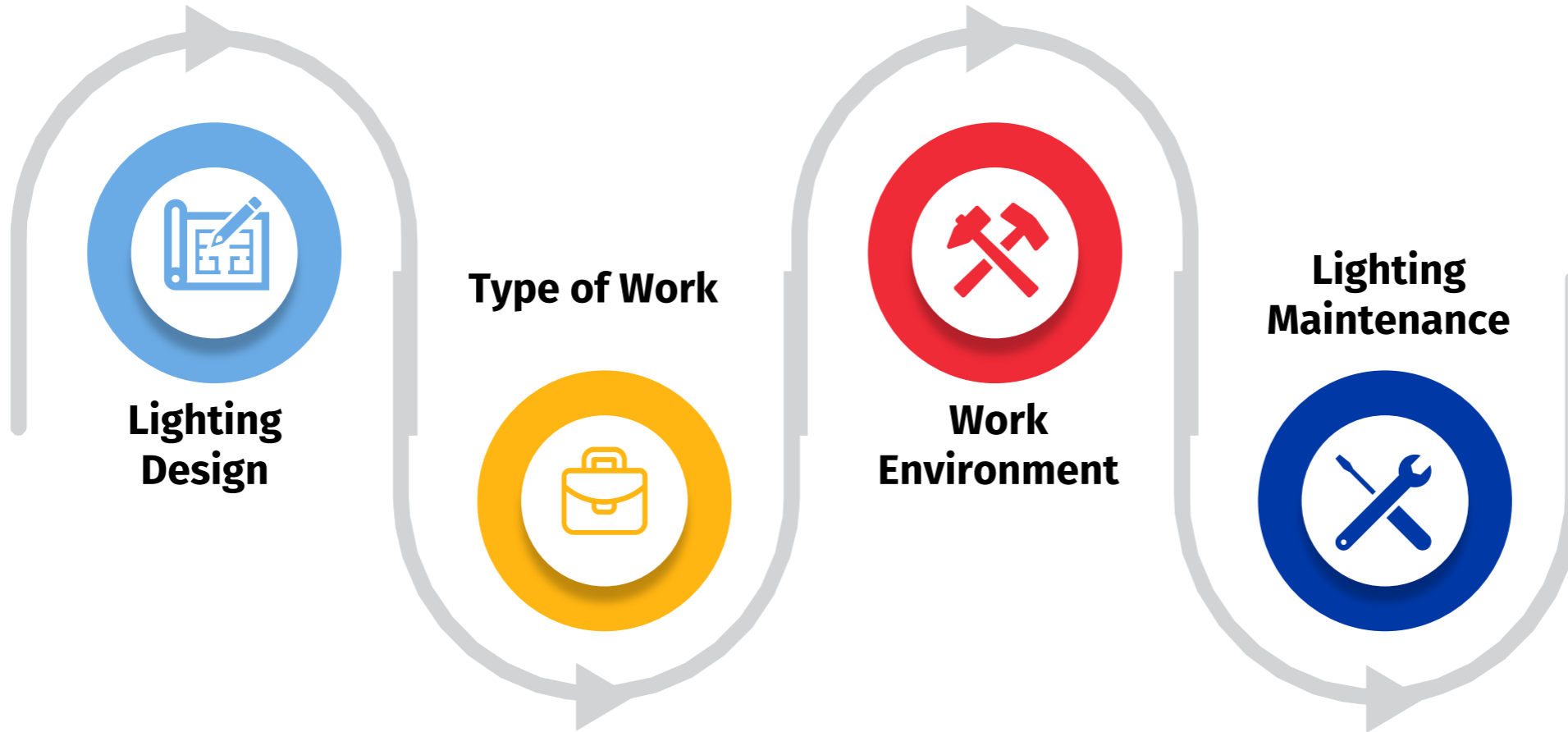


According to the International Labour Organization Globally, there are around 340 million occupational accidents each year, with slips, trips, and falls being a major contributor.

PRIORITIZE RISK BASED ON SET ILLUMINATION TARGETS: PHOTOMETRIC LIGHTING PLAN

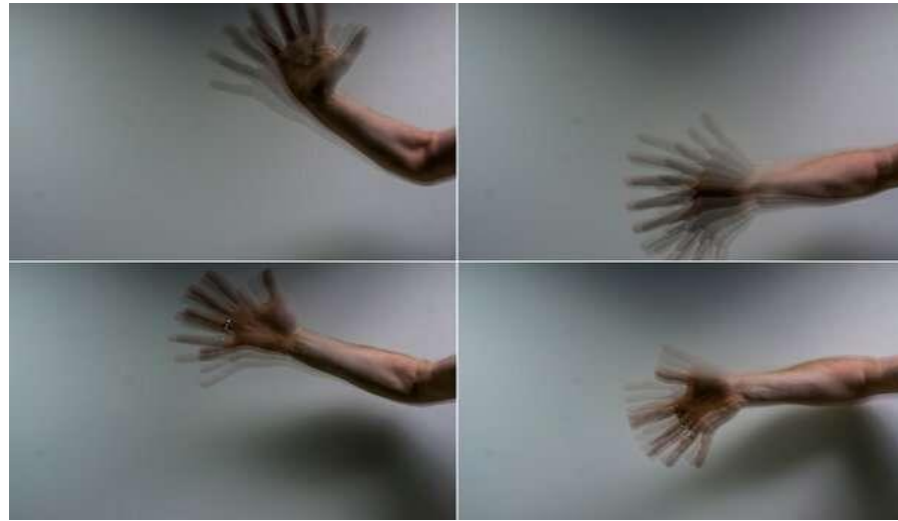


TREAT OR RESPOND TO THE RISK CONDITION: LIGHTING SELECTION CONSIDERATIONS





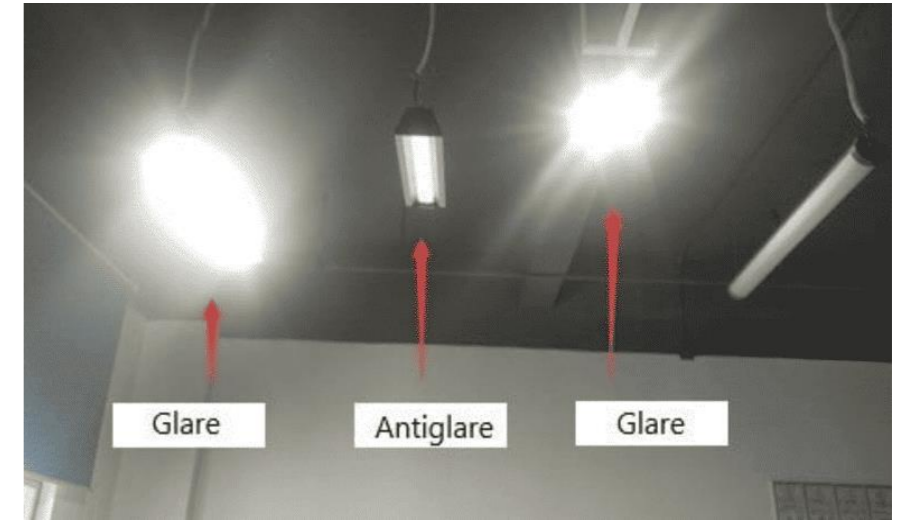
EFFECTS OF POOR LIGHTING DESIGN



Stroboscopic Effect



Flickering



Glare

MONITOR RISK AND ADJUST AS NECESSARY: CONTINUOUS MONITORING



**Regular
Illumination
Surveys**

**Cleaning
Schedule**

**Repair and
Replacement
Program**

**Maintenance
Schedule**

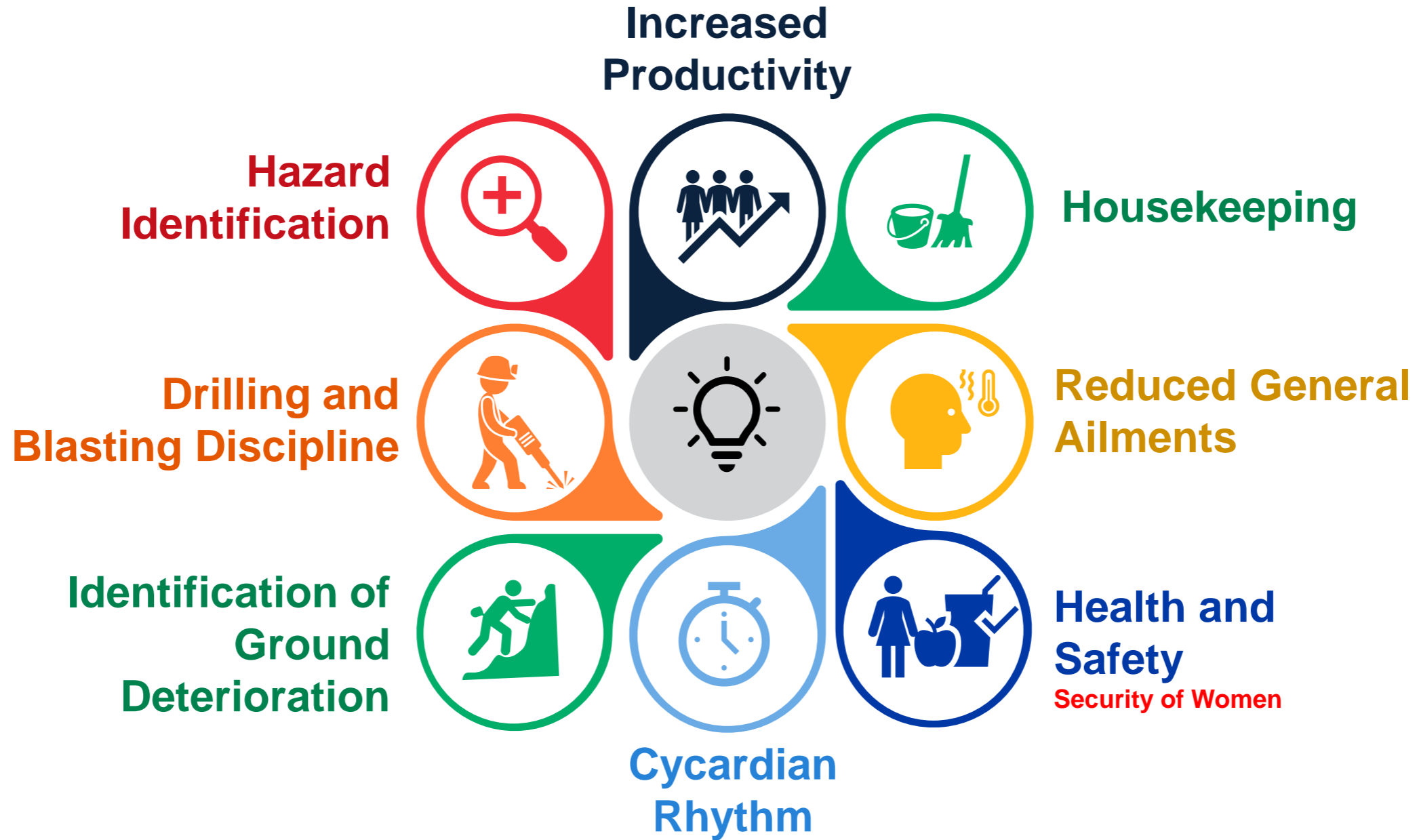
**Lighting
Disposal
System**



3. Benefits of Illumination



BENEFITS OF ILLUMINATION



4. Conclusion

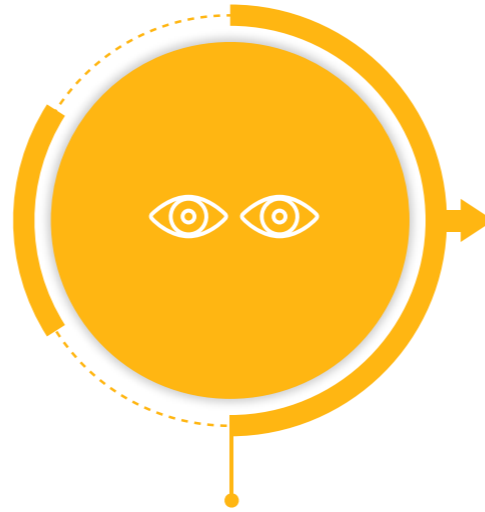


CONCLUSION

The National Institute for Occupational Safety and Health (2022) conducted a comparative study between a traditional cap lamp and the installation of area LED lights in a development end.



**94% faster trip
hazard detection**



**79% faster
peripheral motion**



**53,8% reduction
in glare**

Effective lighting is fundamental to maintaining a safe, efficient, and sustainable underground working environment.



Gold Fields – South Deep

Thank you

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