INDEPENDENT STATE OF PAPUA NEW GUINEA

Mining Industry Quarterly OHS Bulletin

Quarter 2- 2017

(Apr – Jun)

Mineral Resources Authority, Mining Haus, Poreporena Highway
PO Box 1906, Konedobu, Port Moresby, NCD, Papua New Guinea

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MINERAL RESOURCES AUTHORITY

Mining House, Poreporena Freeway

P O Box 1906

Port Moresby 121, NCD

Papua New Guinea

Tel: +675 321 3511

Facsimile: +675 321 5711

Email: info@mra.gov.pg

Website: www.mra.gov.pg

1 Message from Managing Director of MRA

Despite the current economic gloominess, the mining industry in PNG is experiencing an increase in employee numbers when compared with the reporting period last year, consistent with rising productivity and commodity prices.

It also appears that the safety and health statusof our sector has improved over the same period, giving me confidence that the efforts of the Mineral Resources Authority, through the Mines Safety Branch's emphasis on increased compliance is making a difference to ensure worker's health and safety is improved at every opportunity.

The **"Mining Industry OHS Bulletin – Quarter 2 - 2017"**, is a continuation from the previous publications. It is our desire to see that this wealth of data could be utilized by management and stakeholders to influence both short and long term Occupational Health and Safety (OHS) outcomes.

This quarter continues the trend of fatality-free reporting periods. However, the number of serious incidents occurring in the industry reminds us to continue our effort and commitment to prevent unplanned events, as we are aware that these negative outcomes can have detrimental impacts on the livelihoods of individuals and their families.

Mines Safety Branch has up skilled the capabilities of its Inspectors with the recent Lead Auditor training in OHS to international standard; ISO 18001. Audits are a proactive effort to identify deficiencies in the health and safety management systems within our mines, enabling gaps in the system to be remedied. The management of MRA has allocated the necessary resources to ensure safety standards can be improved and maintained through similar training programs. It is also anticipated that the audits will be conducted in a more efficient and effective manner, thus leading to the better management of risks and safety exposures.

Mines Safety Branch, with the continuous support of senior mine management, and all other stakeholders, must continue to work together to ensure that mine workers get back to their home and families safe and healthy at the end of each shift or rostered period.

PHILIP SAMAR
Managing Director

2 Message from Chief Inspector of Mines

This OHS bulletin titled **"Mining Industry OHS Bulletin – Quarter 2 – 2017"** is an important element in our drive for continuous improvement in the safety and health performance of our industry.

The Mines Safety Branch within the reporting period has continued to work closely with mine operators to ensure that hazards and hazardous behaviour is being identified, risk assessed, and that effective control measures are implemented. With its increased compliance efforts, it is reassuring to see key safety indicators have improved with significant reduction in lost time injuries.

However, serious accidents continue to recur during this quarter. In one incident, a mine worker had suffered acid burns to both his lower limbs, whilst there were several others who suffered foot and finger injuries.

The data provided by the industry indicated total manpower employed during this reporting period was 17,198 an increase of 12% compared with Quarter 2 of 2016. 1,846 of these employees were females who now comprise 11% of the total workforce.

There was a decrease in the fatality frequency rate (FFR) by 100 % (from 0.09 to 0.00), while man-hours increased by 19% in this quarter when compared with the same reporting period in 2016. Whilst serious injury frequency rates significantly decreased by 60% (from 1.57 to 0.62), the total injury frequency rate (TIFR) has also shown a considerable decrease of 29% compared to Quarter 2 of 2016 (from 11.10 to 7.93). The severity rate has also shown a slight decrease of 11% (from 43.00 to 38.38).

The reporting of near misses has slightly increased by 20% (126 to 151) when compared with Quarter 2 of 2016.

Overall there has been an improvement in key safety indicators. However, the recurrence of serious incidents is a grim reminder - there are more opportunities available to improve and sustain these positive outcomes.

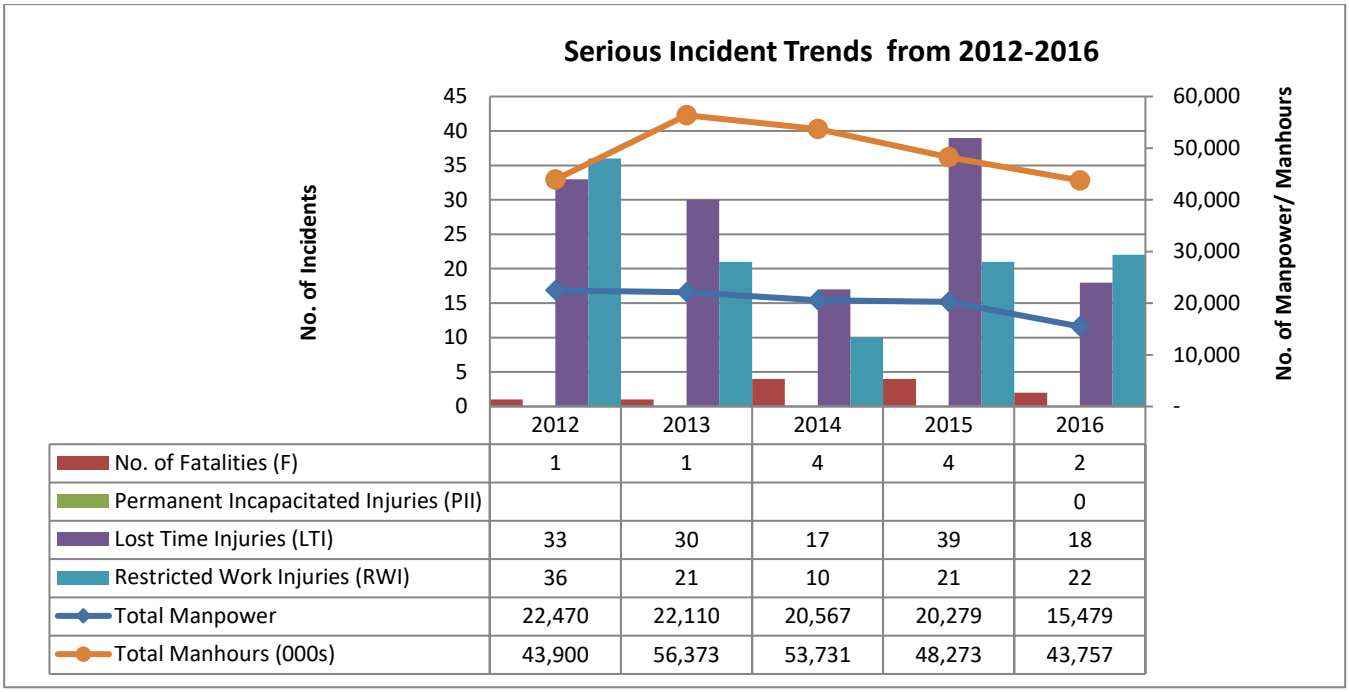
I wish to thank the industry for continuously providing timely data to the Mines Safety Branch and look forward to this bulletin as another means to identify and develop improved strategies for proactive safety and health initiatives.

I encourage the industry to continue to work with the Mines Safety Branch to ensure the PNG Mining Industry workforce's health and safety behaviour is improved through enviable safety standards, as well as demonstrating a strong commitment towards our ambitious goal of 'no harm' to all persons working on mine sites.

Lave Michael
Chief Inspector of Mines

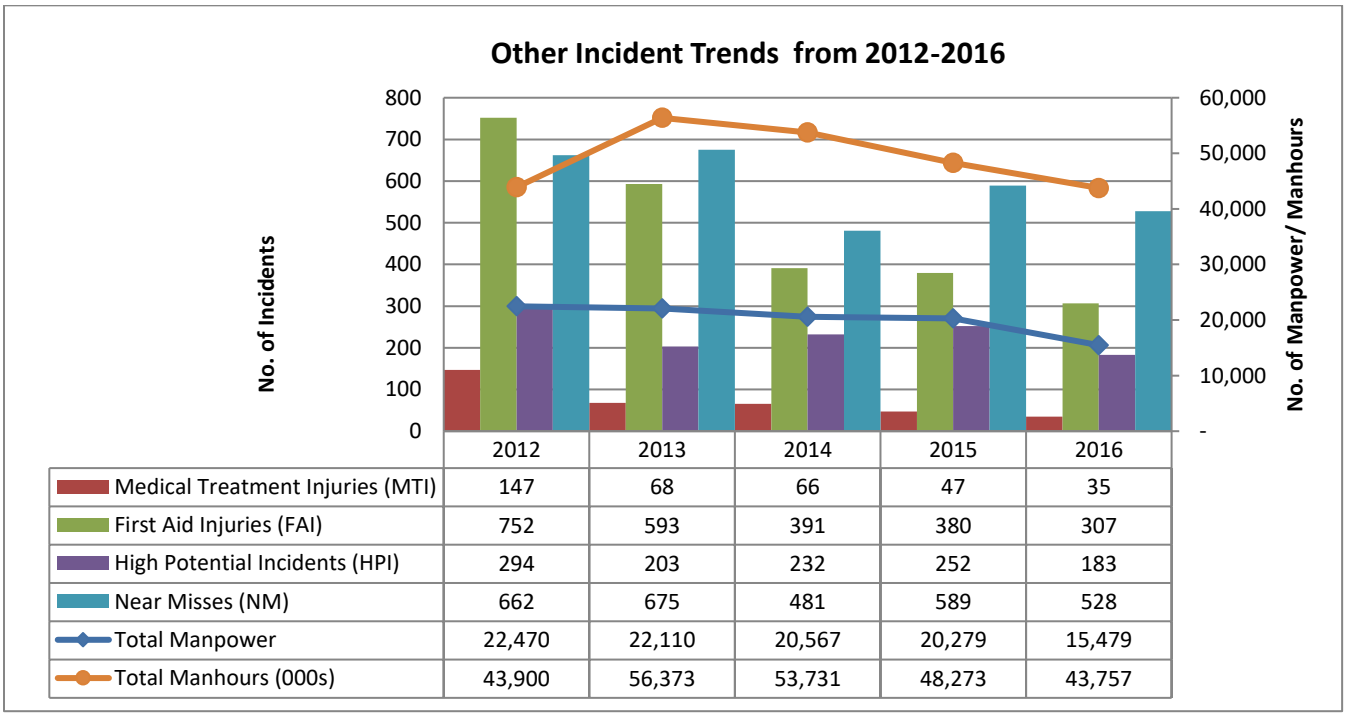
3 Historical Safety Performance of the Industry

The brief below shows the safety performance of the industry in the last five (5) years.



	2012	2013	2014	2015	2016
No. of Fatalities (F)	1	1	4	4	2
Permanent Incapacitated Injuries (PII)					0
Lost Time Injuries (LTI)	33	30	17	39	18
Restricted Work Injuries (RWI)	36	21	10	21	22
Total Manpower	22,470	22,110	20,567	20,279	15,479
Total Manhours (000s)	43,900	56,373	53,731	48,273	43,757

Figure 1: Serious Incident Trends from 2012-2016

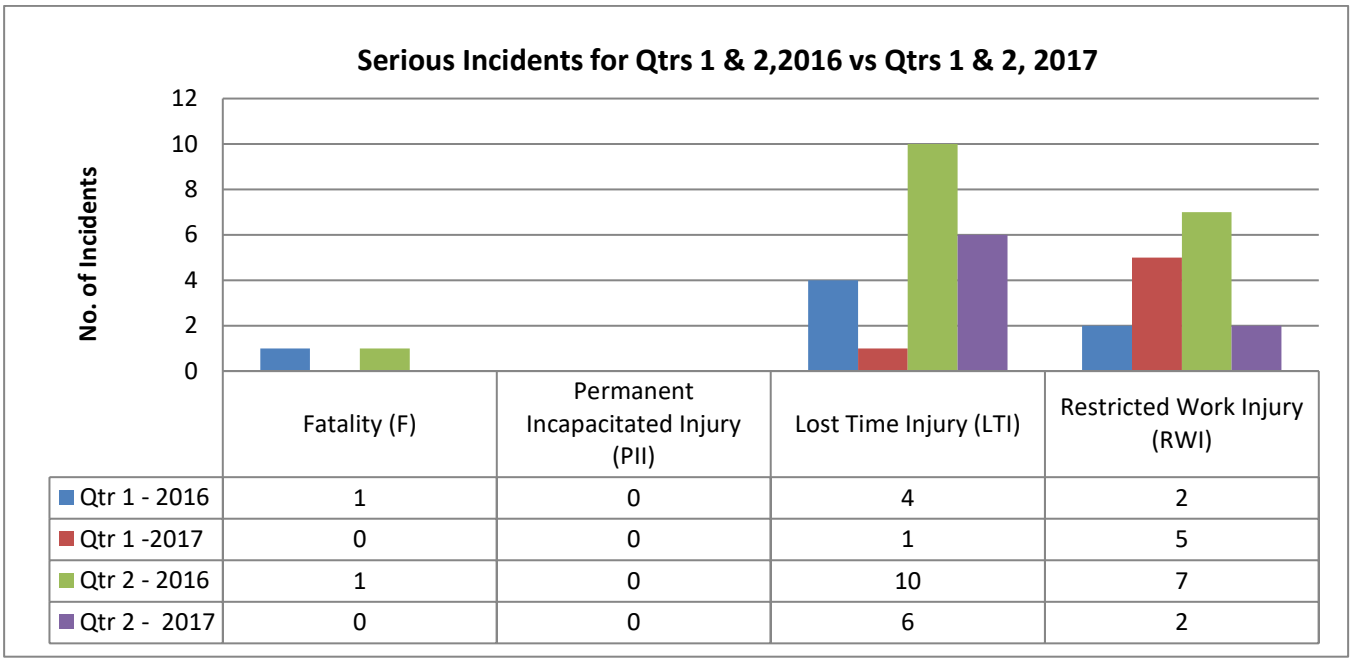


	2012	2013	2014	2015	2016
Medical Treatment Injuries (MTI)	147	68	66	47	35
First Aid Injuries (FAI)	752	593	391	380	307
High Potential Incidents (HPI)	294	203	232	252	183
Near Misses (NM)	662	675	481	589	528
Total Manpower	22,470	22,110	20,567	20,279	15,479
Total Manhours (000s)	43,900	56,373	53,731	48,273	43,757

Figure 2: Other Incidents Trends from 2012-2016

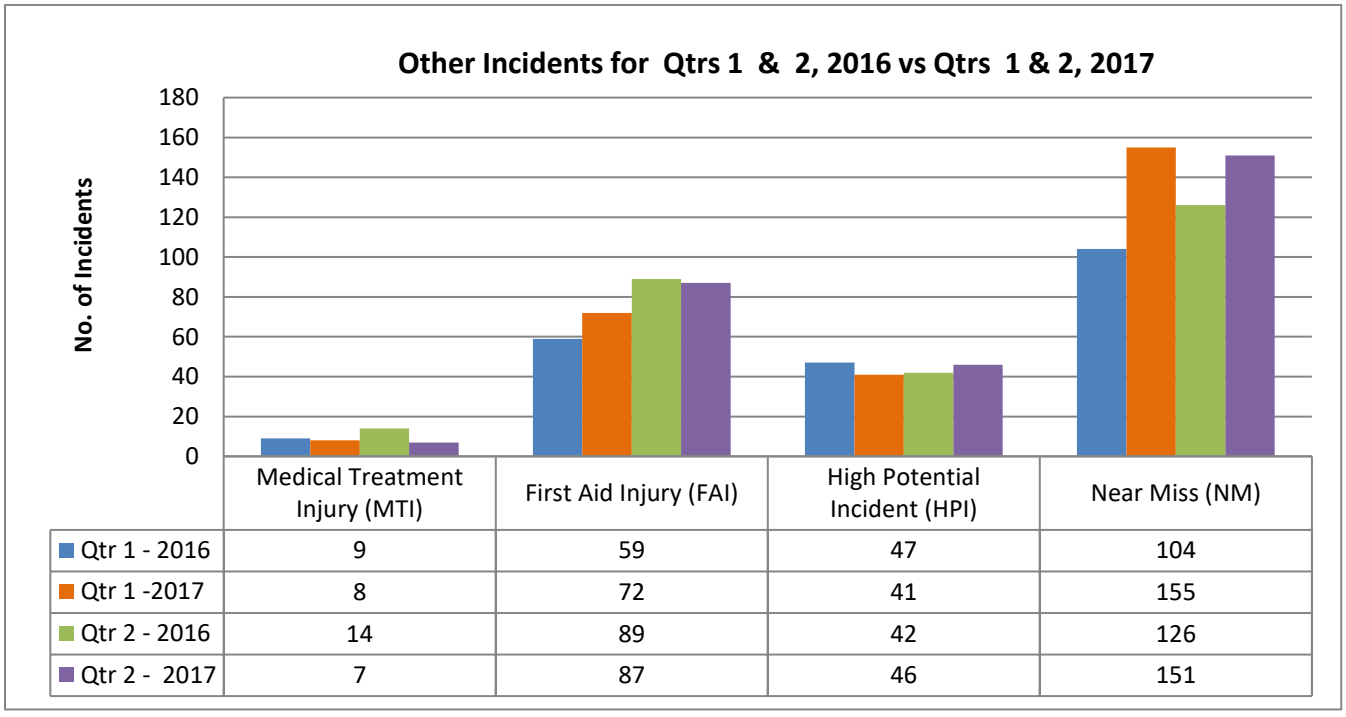
4 Current Safety Performance of the Industry

The following charts shows the incidents reported during the reporting quarters.



	Fatality (F)	Permanent Incapacitated Injury (PII)	Lost Time Injury (LTI)	Restricted Work Injury (RWI)
Qtr 1 - 2016	1	0	4	2
Qtr 1 -2017	0	0	1	5
Qtr 2 - 2016	1	0	10	7
Qtr 2 - 2017	0	0	6	2

Figure 3: Comparison of Serious Incidents for Qtrs. 1 & 2 of 2017 with 2016



	Medical Treatment Injury (MTI)	First Aid Injury (FAI)	High Potential Incident (HPI)	Near Miss (NM)
Qtr 1 - 2016	9	59	47	104
Qtr 1 -2017	8	72	41	155
Qtr 2 - 2016	14	89	42	126
Qtr 2 - 2017	7	87	46	151

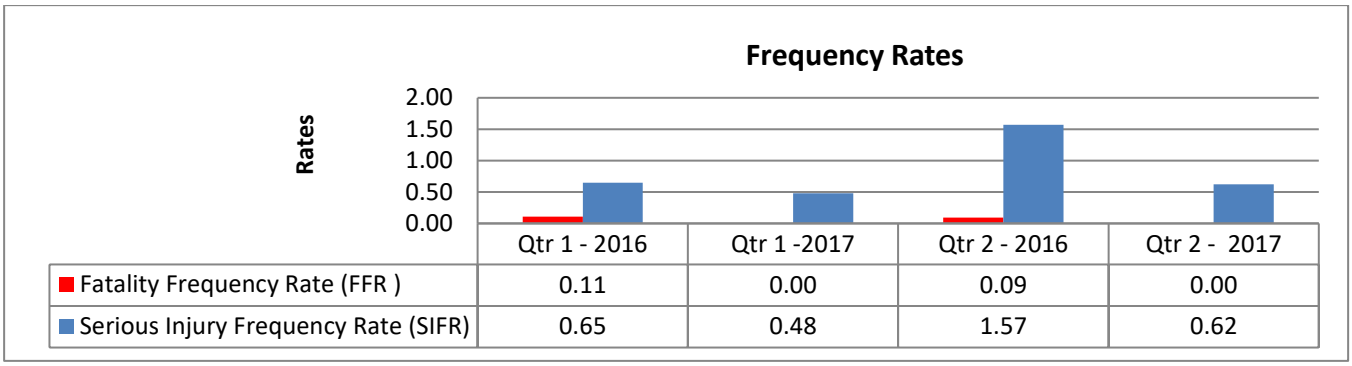
Figure 4: Comparison of Other Incidents for Qtrs. 1 & 2 of 2017 with 2016

5 Frequency Rates & Severity Rates

The frequency and severity rates provide a more comprehensive analysis of the industry's safety performance. The following formulae were adopted and used to guide us in the calculation of these rates.

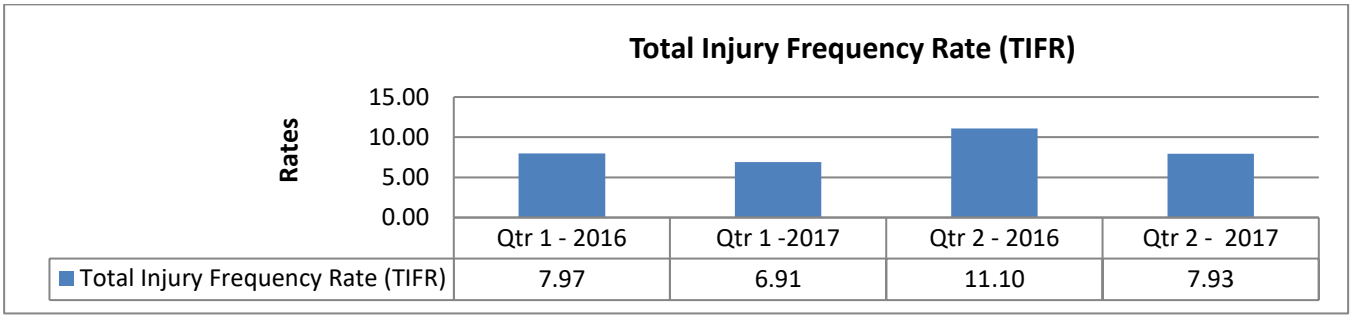
Formulae for Frequency & Severity Rates Calculations
Fatality Frequency Rate (FFR) = No. of Fatality x 1,000,000/total Man-hours worked
Serious Injury Frequency Rate (SIFR) = (No. of PII + LTI + RWI) x 1,000,000 & divided by the total man-hours worked
Total Injury Frequency Rate (TIFR) = (No. of F+PII + LTI + RWI + MTI + FAI) x 1,000,000 & divided by the man-hours worked
Severity Rate (SR) = Total Man-days lost divided by no. of (F + PII + other LTI + RWI)
*A fatal injury is treated as 220 days lost

5.1 Frequency Rates



	Qtr 1 - 2016	Qtr 1 -2017	Qtr 2 - 2016	Qtr 2 - 2017
Fatality Frequency Rate (FFR)	0.11	0.00	0.09	0.00
Serious Injury Frequency Rate (SIFR)	0.65	0.48	1.57	0.62

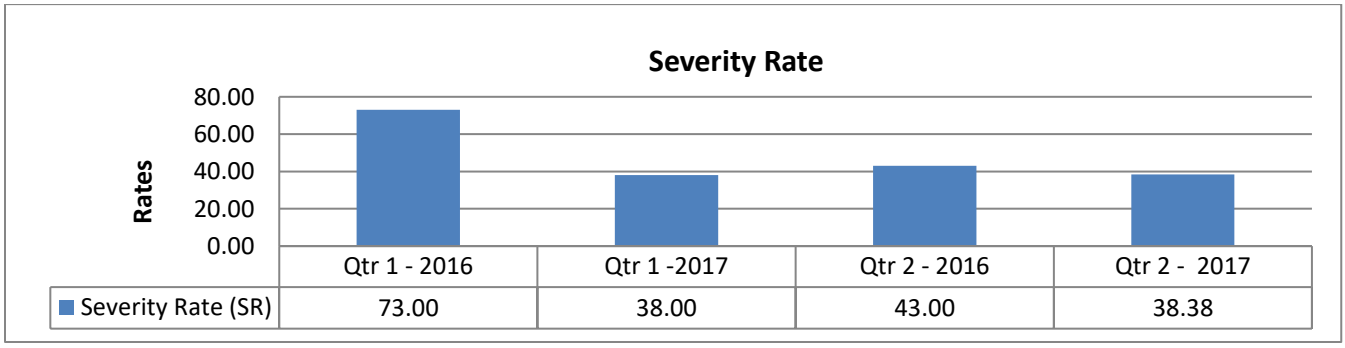
Figure 5: Fatality Frequency Rate and Serious Injury Frequency Rate



	Qtr 1 - 2016	Qtr 1 -2017	Qtr 2 - 2016	Qtr 2 - 2017
Total Injury Frequency Rate (TIFR)	7.97	6.91	11.10	7.93

Figure 6: Total Injury Frequency Rate

5.2 Severity Rate



	Qtr 1 - 2016	Qtr 1 -2017	Qtr 2 - 2016	Qtr 2 - 2017
Severity Rate (SR)	73.00	38.00	43.00	38.38

Figure 7: Severity Rate

6 Incident Analysis for Apr-Jun of 2017

To help us further examine the reported incident(s), a detailed incident analysis by; severity types, causes of the incidents, which body –part(s) are involved, location or area where the incident occurred, occupation and age group of persons involved in the incident is being provided.

The severity types includes; Fatality(F), Permanently Incapacitated Injury (PII), Lost Time Injury (LTI), Restricted Work Injury (RWI), Medical Treatment Injury (MTI), First Aid Injury (FAI), High Potential Incident (HPI) and Near Miss (NM) Incidents.

6.1 Distribution by Incident Types

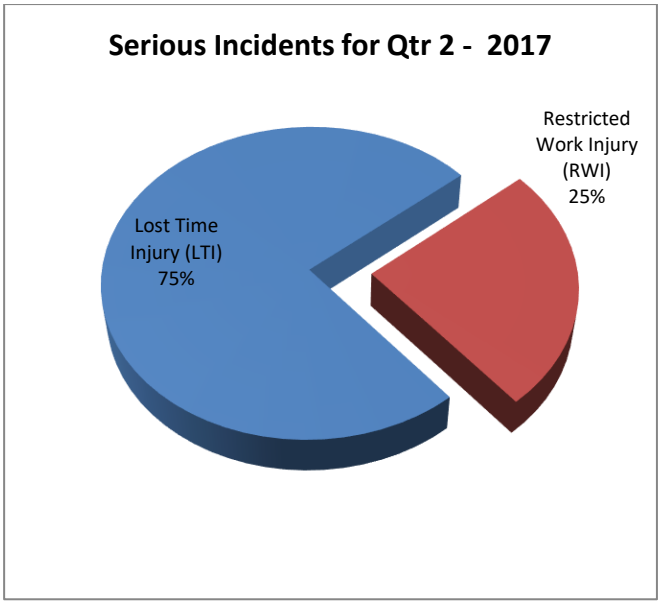


Figure 8: Distribution of Serious Incidents

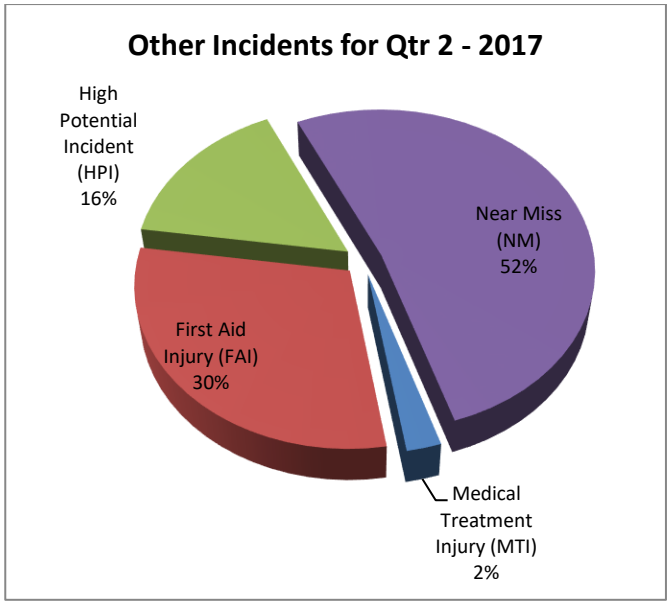


Figure 9: Distribution of Other Incidents

6.2 Incidents by Mechanism of Injury

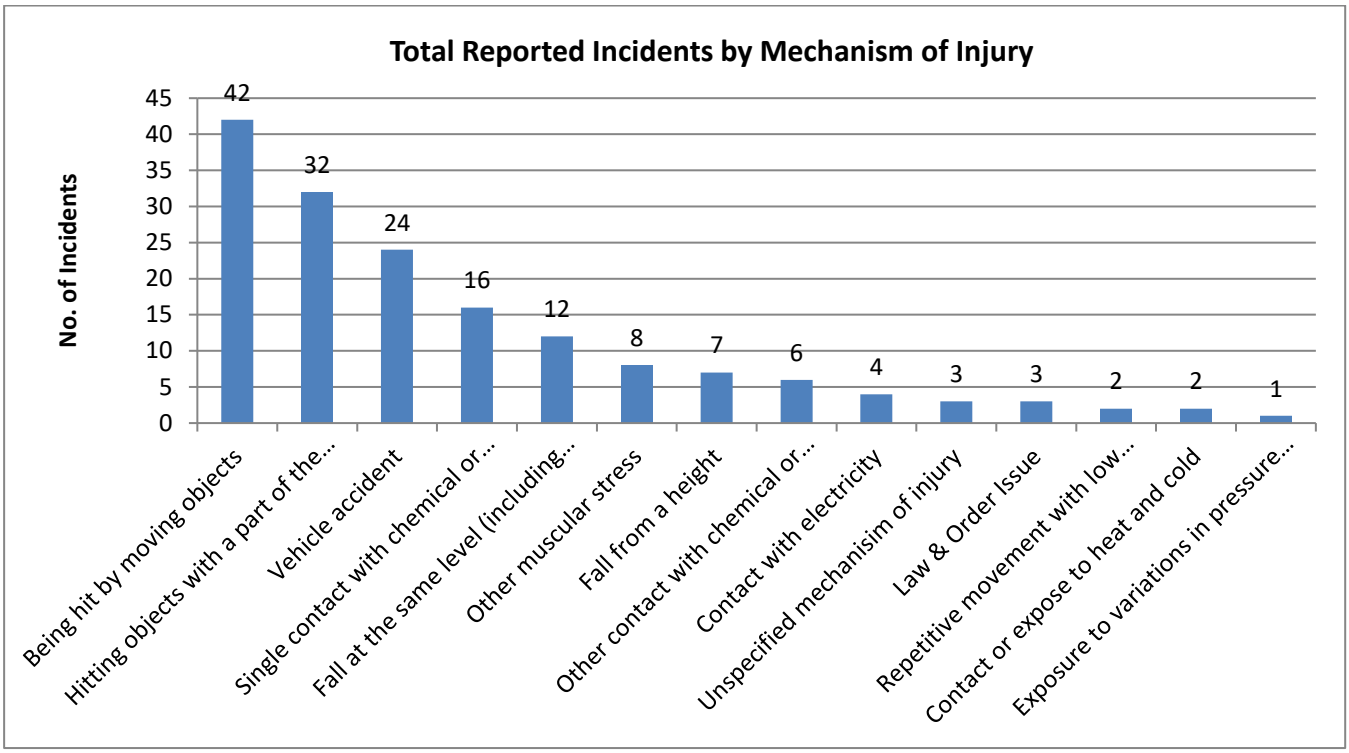


Figure 10: Total Reported Incidents by Mechanism of Injury

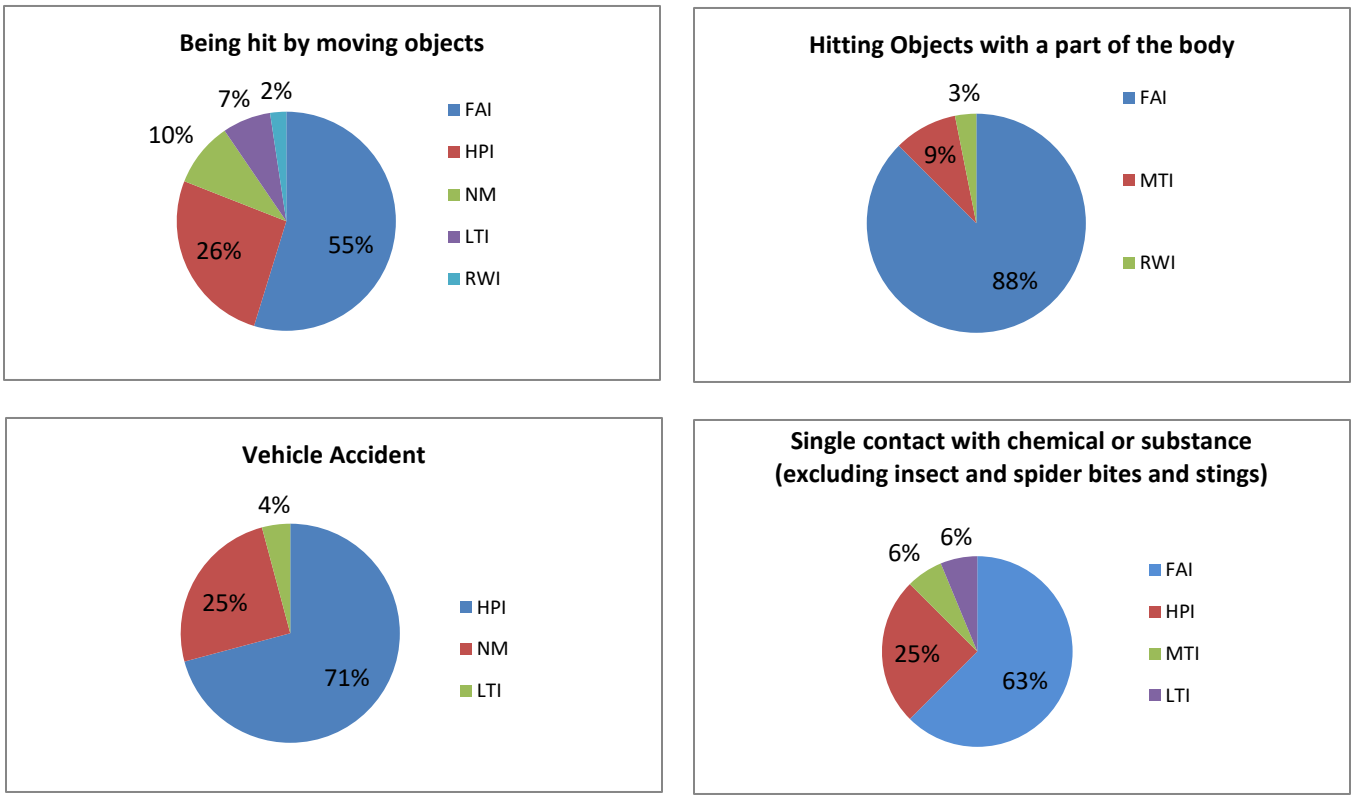


Figure 11: Analysis of Reported Incidents by Top 20% of the leading Mechanisms of Injury

6.3 Injuries by Body Part

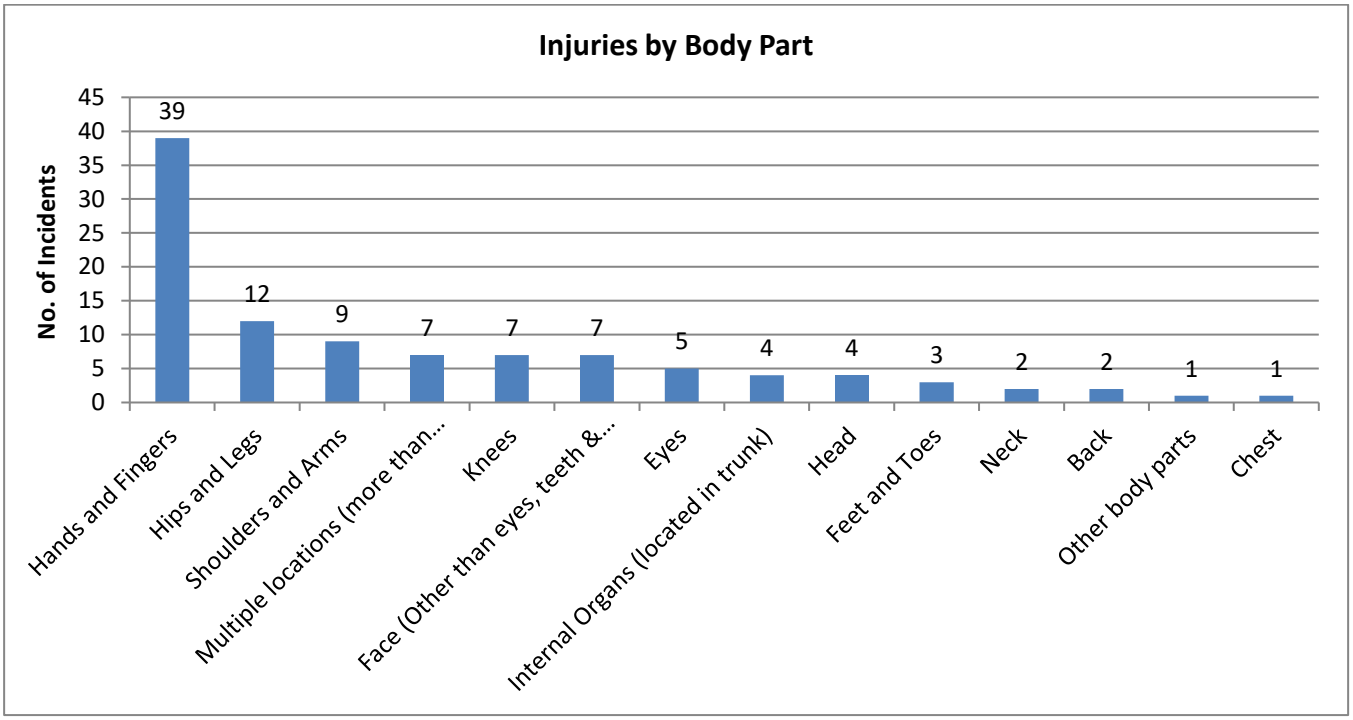


Figure 12: Reported Injury by Body Parts

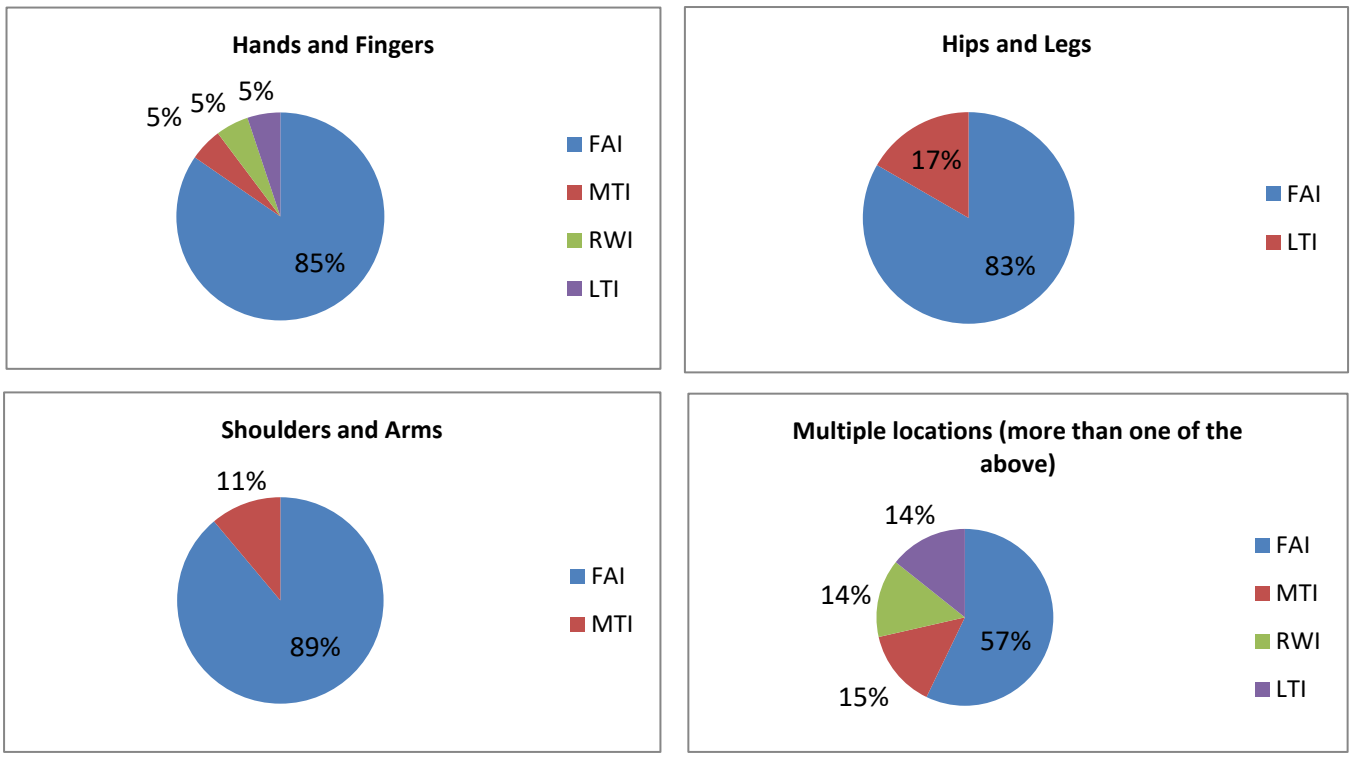


Figure 13: Analysis of Reported Incidents by Top 20 % of the leading Body Parts

6.4 Incidents by Area

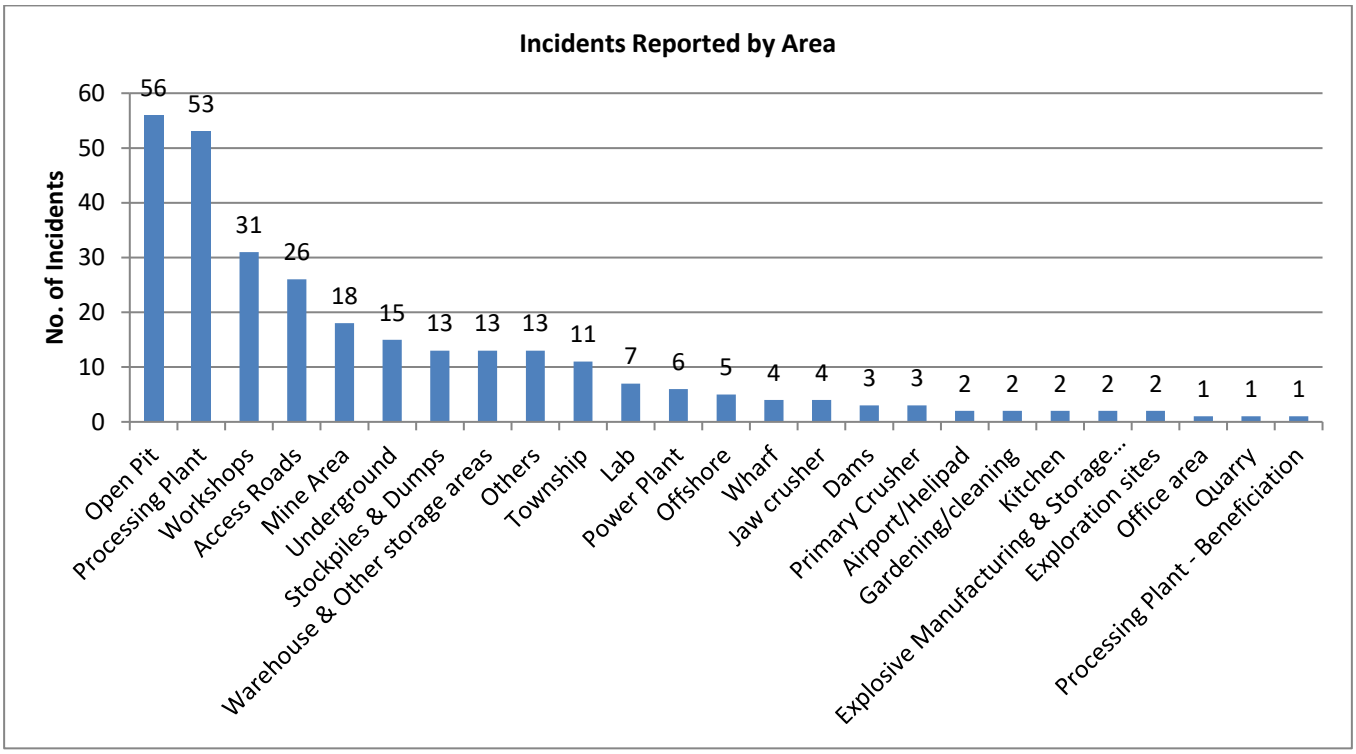


Figure 14: Incidents Reported by Area

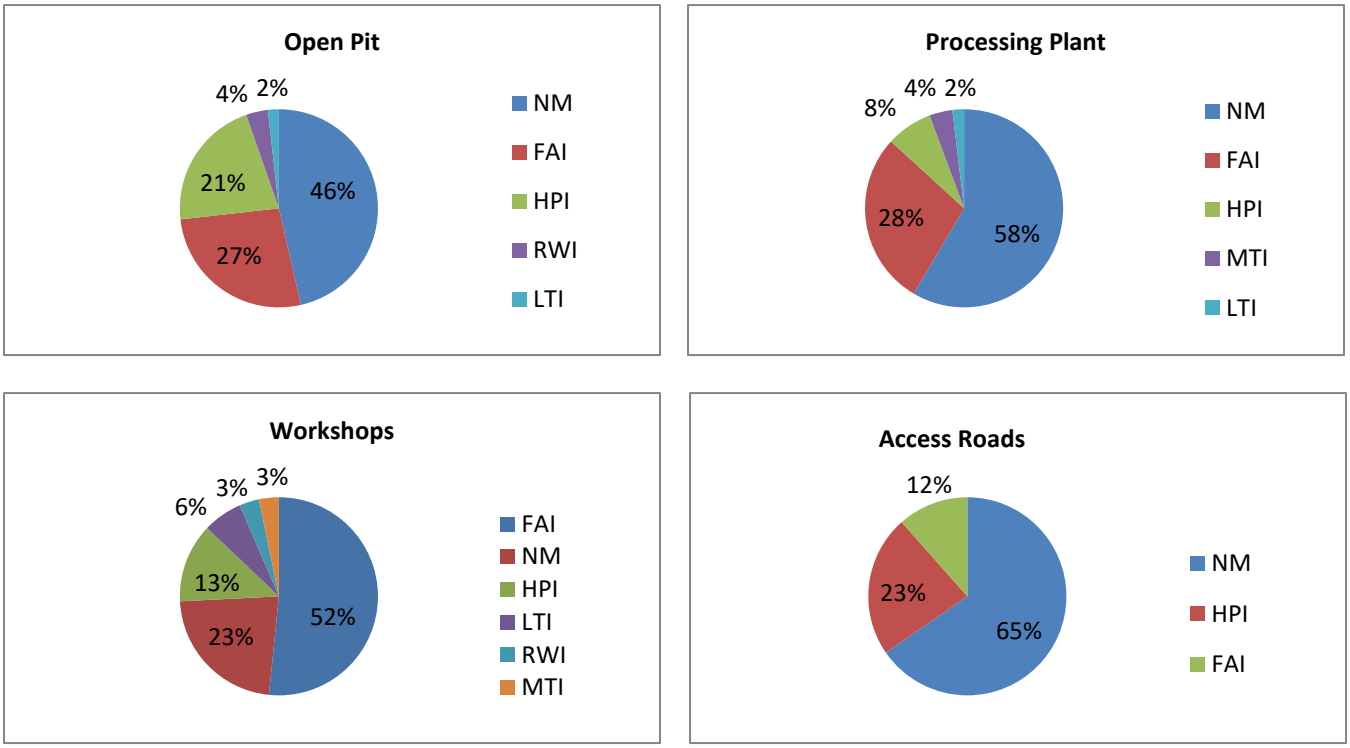


Figure 15: Analysis of Reported Incidents by Top 20% of the leading Areas

6.5 Incidents by Occupation

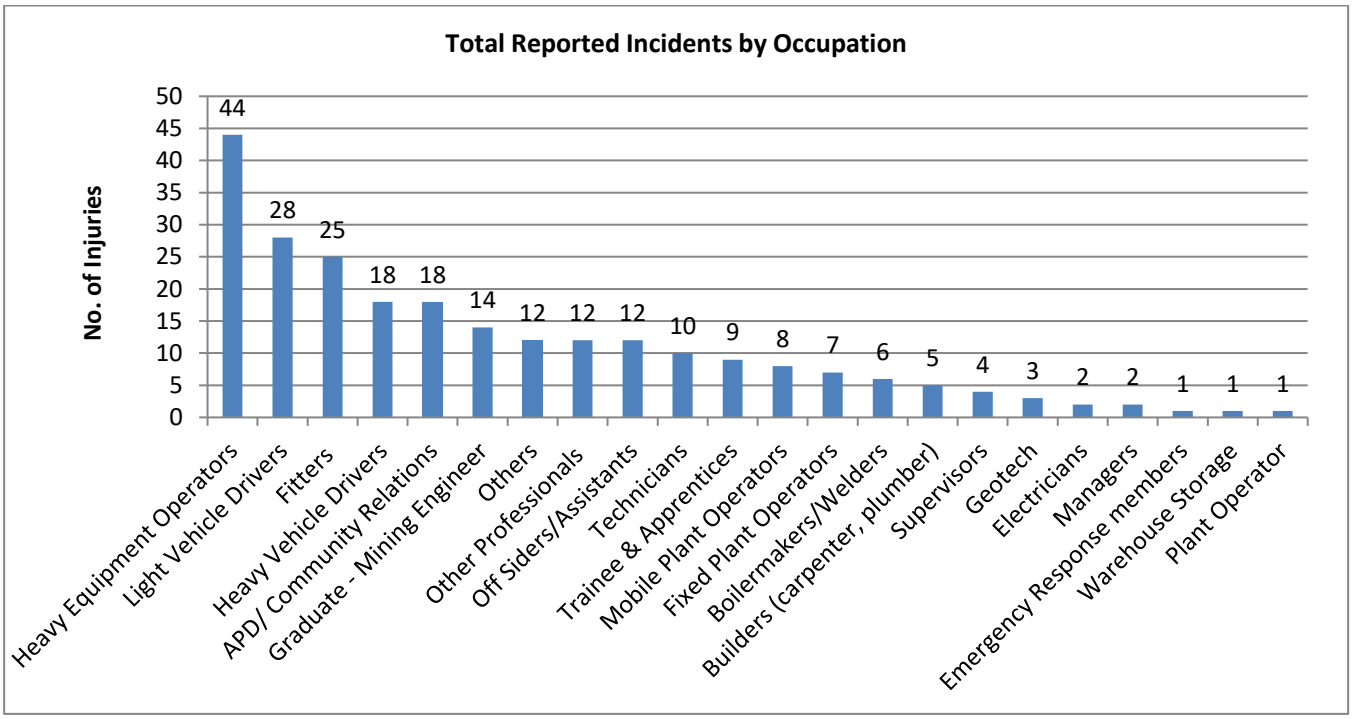


Figure 16: Incidents Reported by Occupation

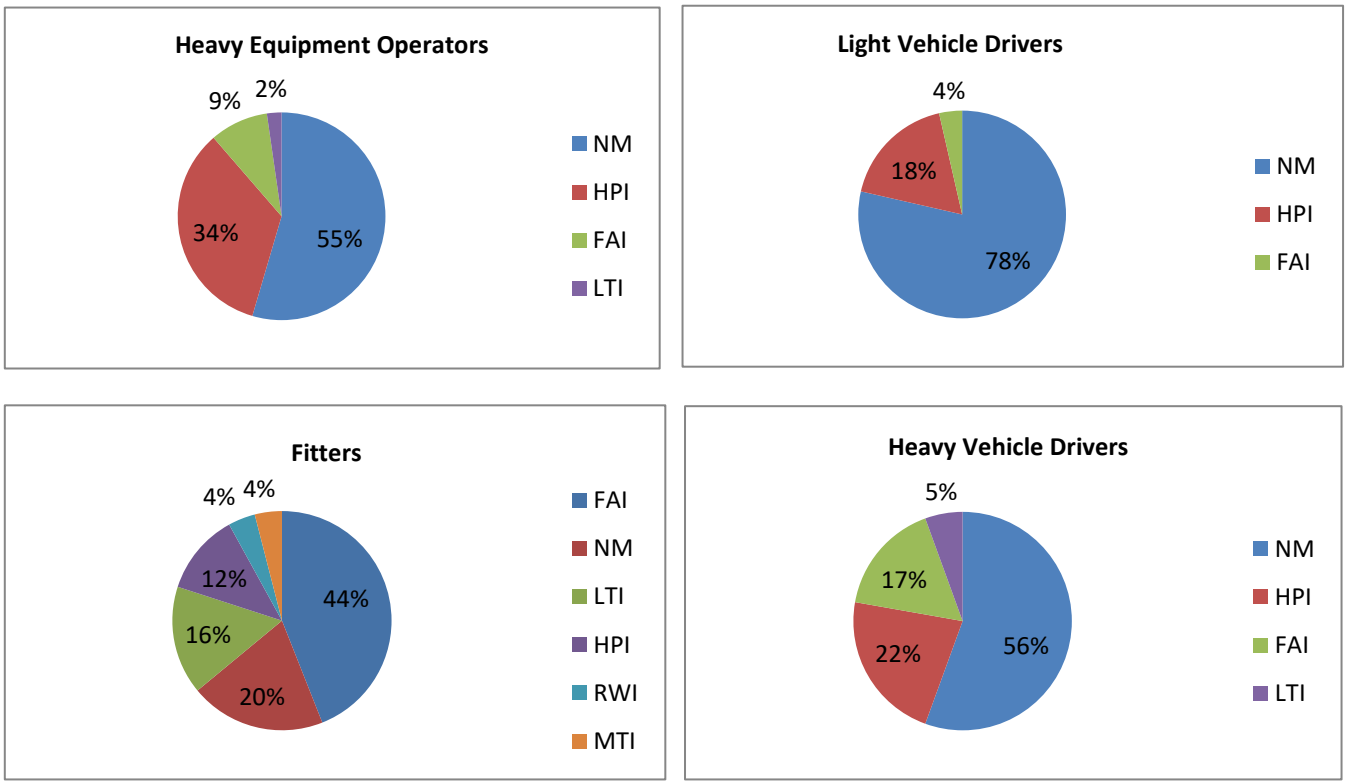


Figure 17: Analysis of Reported Incidents by Top 20% of the leading Occupations

6.6 Incidents and Employment - by Age

The graphs below show the distribution of all reported incidents by Age and total manpower by Age.
Note that some mines have not provided a breakdown of man power by age; hence, it cannot be reflected in the corresponding graph.

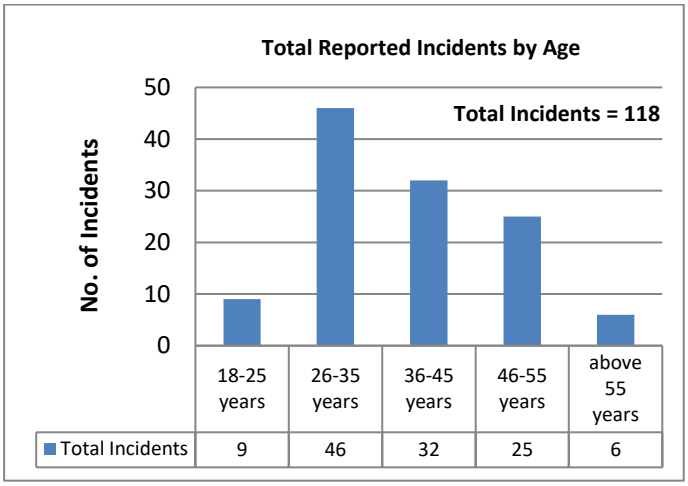


Figure 18: Incidents Reported by Age

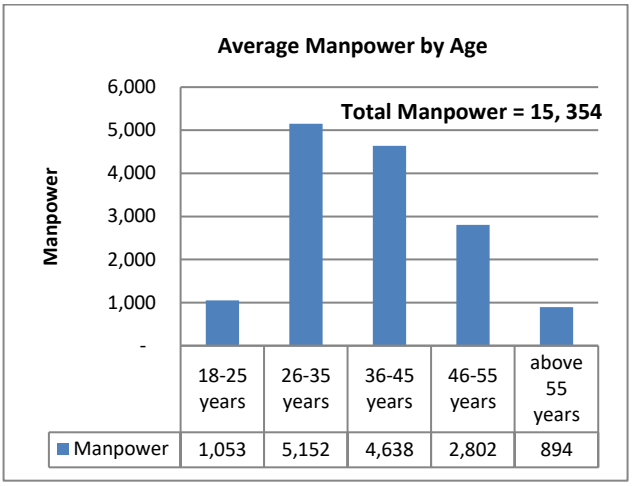


Figure 19: Average Manpower by Age

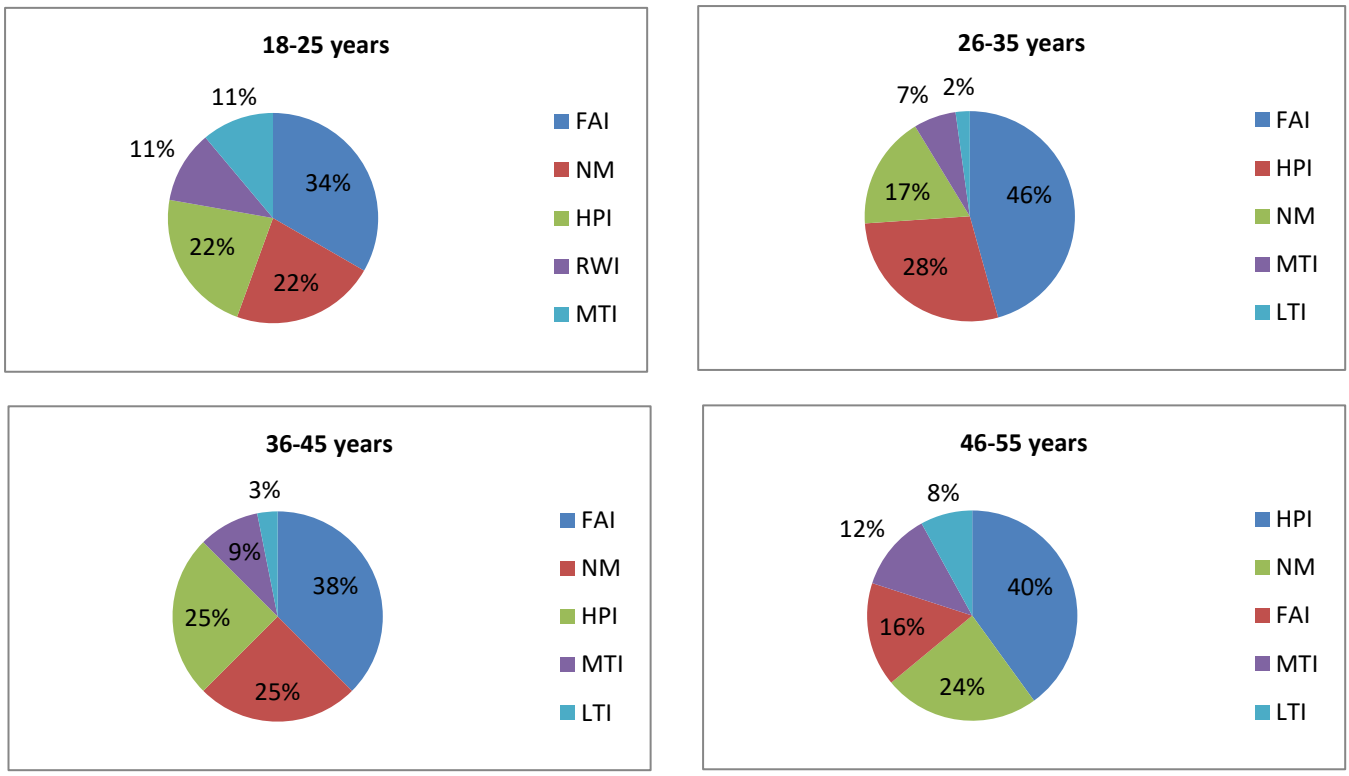


Figure 20: Analysis of Reported Incidents by Top 20% of the leading Age-groups

6.7 Key Safety Initiatives undertaken during the quarter

Safety initiatives for the quarter ranged from general safety awareness to safety oriented trainings. Significant safety activities continue to be rolled out throughout the industry to raise awareness and promote health and safety issues. The initiatives below are only representative from the mines which have provided the programs to the Mines Safety Branch. Most safety programs for the quarter were ongoing from the previous quarters thus are not mentioned below.

6.7.1 Safety Awareness

Safety Awareness was carried out on the following themes:

- Understanding Safety
- Conveyor Safety
- Chemical Awareness
- Lightning Awareness
- Siren Evacuation Drill Awareness
- Hot Work Awareness
- Cultural Awareness

6.7.2 Safety Trainings

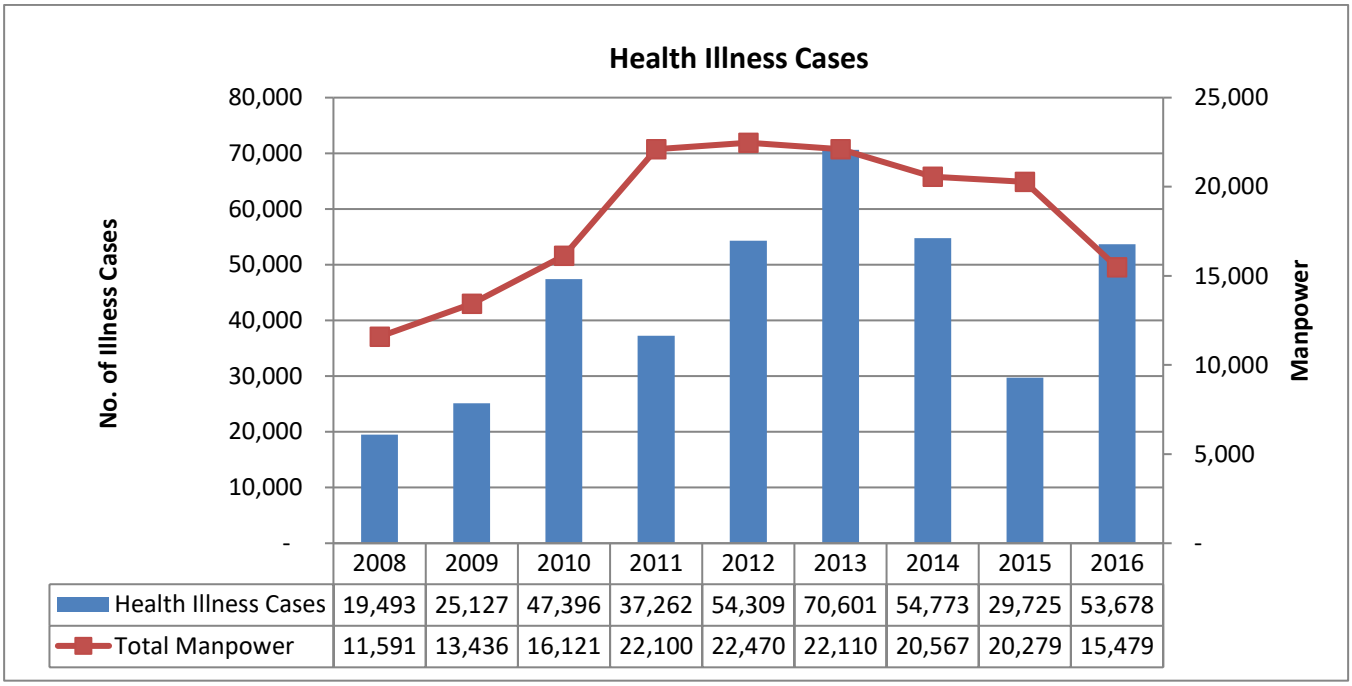
Training on safety issues were also carried out for employees which included, but not limited to the following:

- Emergency Response Training
- General Safety Training
- Radiation Safety
- Hazard Management during shut downs
- Field Critical Control Checks
- Fatigue Management
- Electrical Safety
- Cyanide safe use and handling
- Hazmat Training
- Basic First Aid
- Accident & Incident Investigation
- Sulfuric Acid Plant Safety
- Safe Material Handling
- Low Voltage Rescue

7 Employee Health and Fitness

With a renewed focus and thrust in this area, Employee Health and Fitness requires proper reporting of employee health and fitness data from the industry. The charts below are representative of the data provided by the mines which includes; General Health Illness, Occupational Health and Employee Fitness.

7.1 Historical Health Performance of the Industry



	2008	2009	2010	2011	2012	2013	2014	2015	2016
Health Illness Cases	19,493	25,127	47,396	37,262	54,309	70,601	54,773	29,725	53,678
Total Manpower	11,591	13,436	16,121	22,100	22,470	22,110	20,567	20,279	15,479

Figure 21: Health Illness Cases

7.2 Employee Health

The total illness cases reported during quarter two (2) of 2017 was 17,613. The main contributors to this statistics continued to be; 'Diseases of the Respiratory System' which contributed 43% of the total illness cases being reported. Some of the illnesses in this category include; respiratory conditions, flu (simple cough & tonsillitis) and URTI, common cold, sinusitis while 'Diseases of the musculoskeletal system and connective tissue' contributed 19%, mostly dominated by myalgia, backache, musculoskeletal pain. 'Diseases of the skin and subcutaneous tissue' contributed to 14% which include; boils (abscess/carbuncles) dermatitis, and skin infections

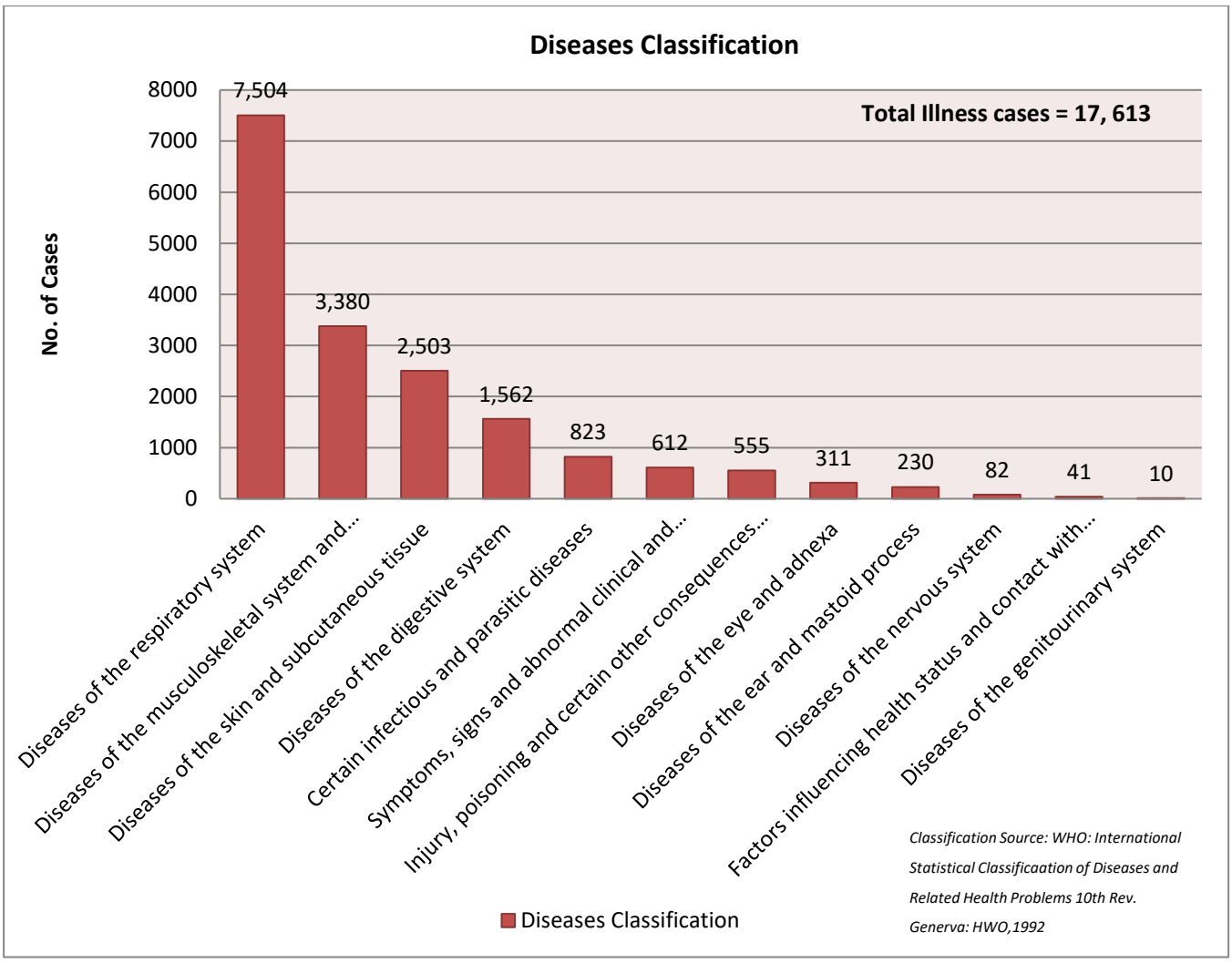
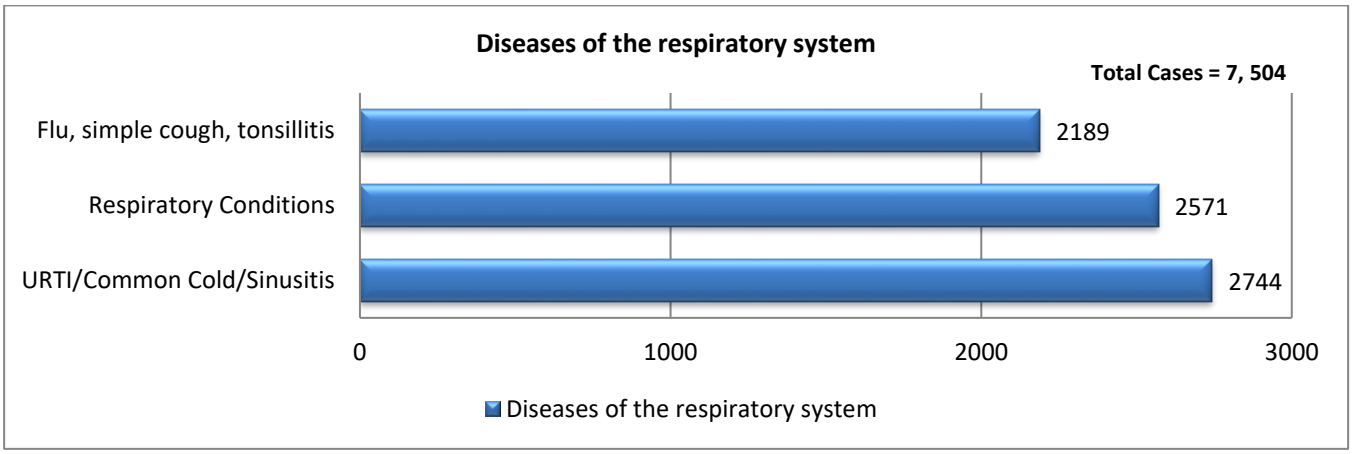
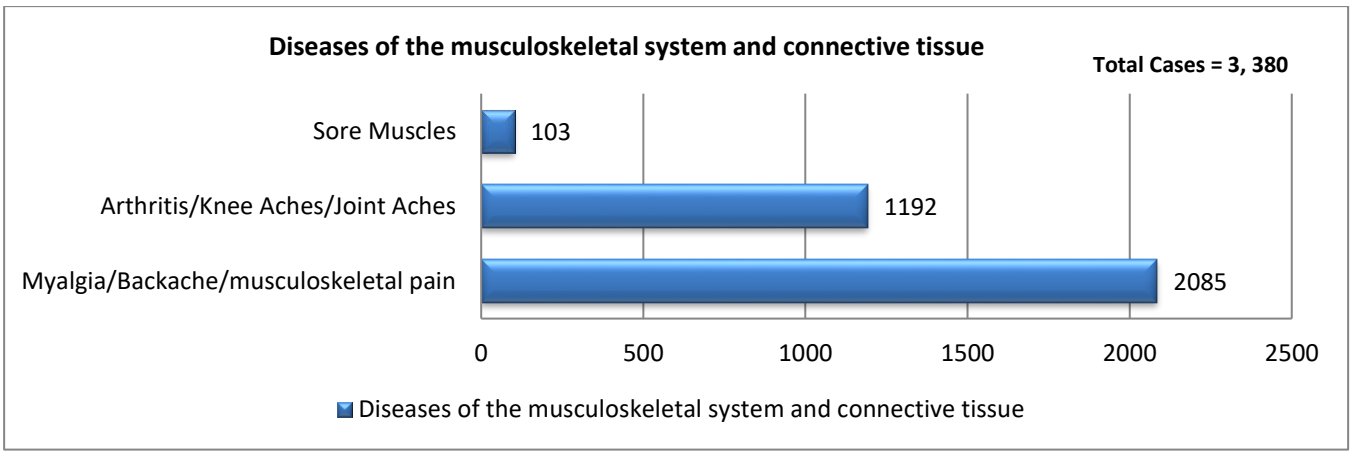
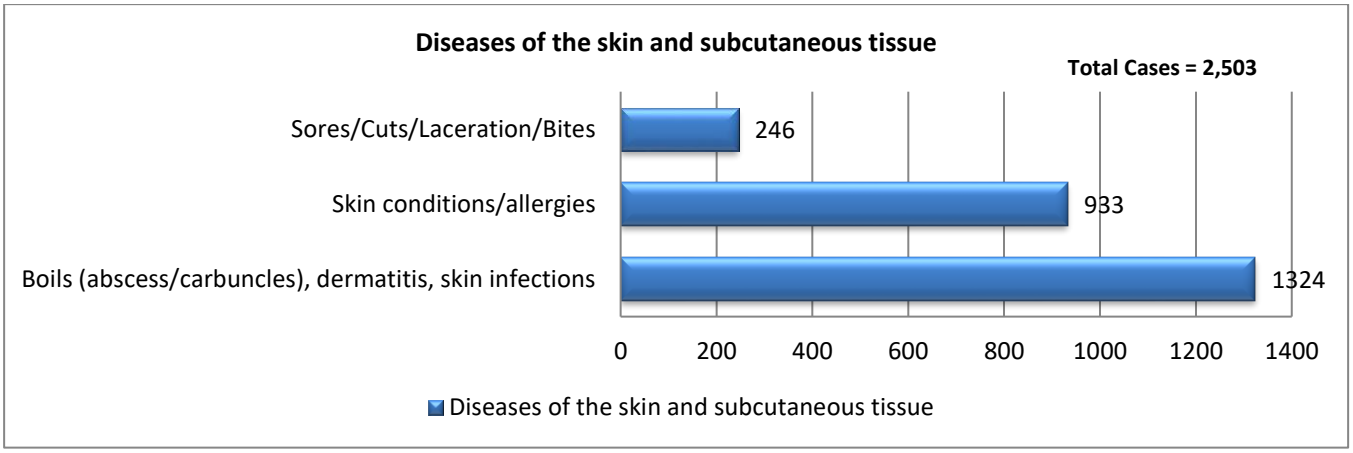


Figure 22: Disease Classification







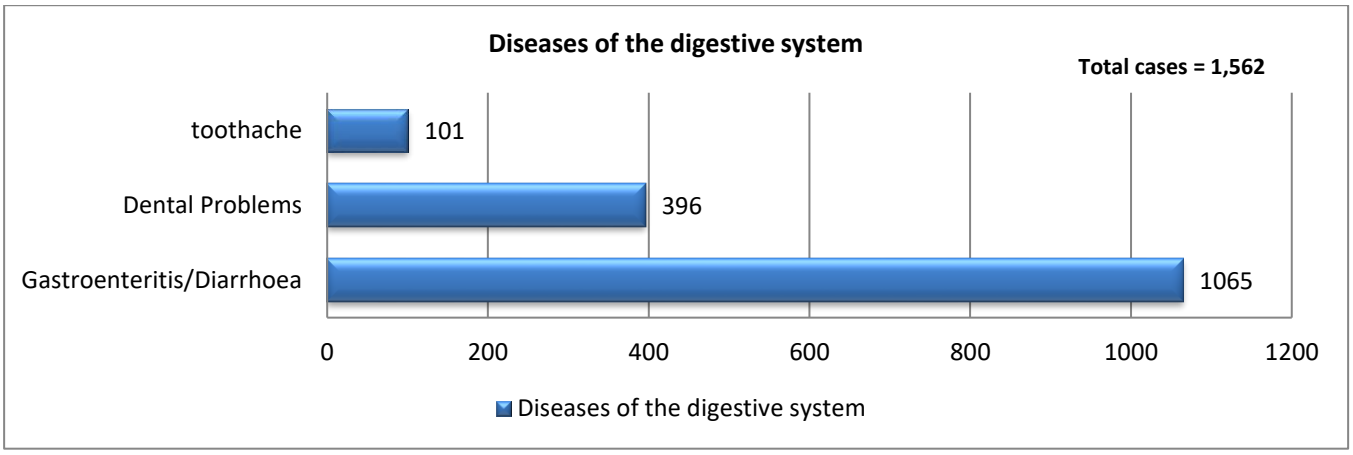


Figure 23: Breakdown of top four (4) disease classifications

7.3 Employee Fitness Analysis

Employee fitness continues to be an area which requires more attention and resourcing it. A total of 187 cases were been reported out of which 64.71% appears to be overweight, 14.97% hypertension, 10.16% obese and 4.81% suffer from chronic backache.

The pie chart below shows the distribution while the subsequent charts show the fitness classification and distribution by occupation.

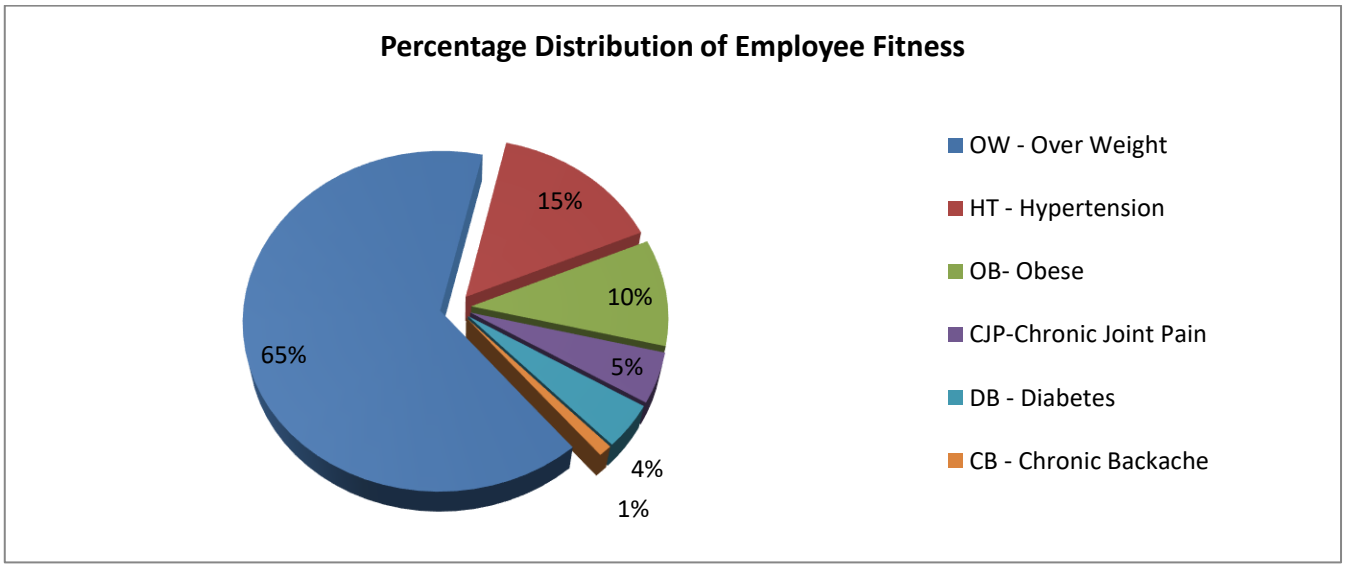


Figure 24: Percentage Distribution of Employee Fitness

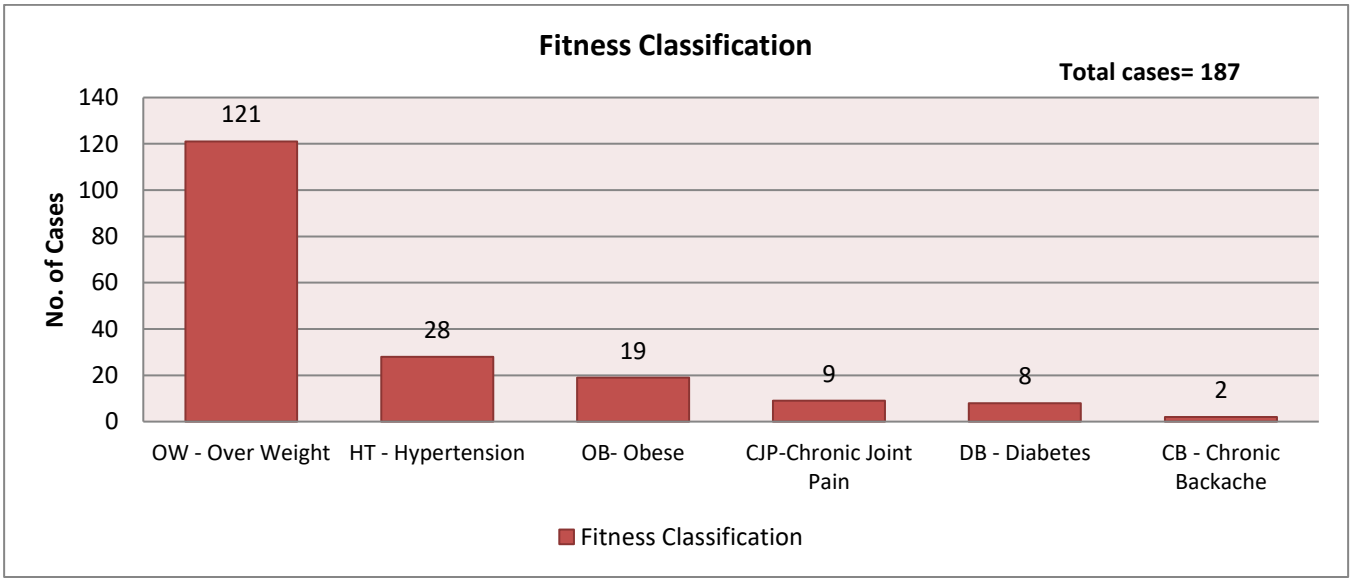


Figure 25: Fitness Classification

Further analysis into the occupations revealed that; Heavy Vehicle Drivers contributed to 27.81%, Heavy Equipment Operators contributed 26.74% while other critical occupations contributed 12.83% and Supervisors contributed to 9.09%.

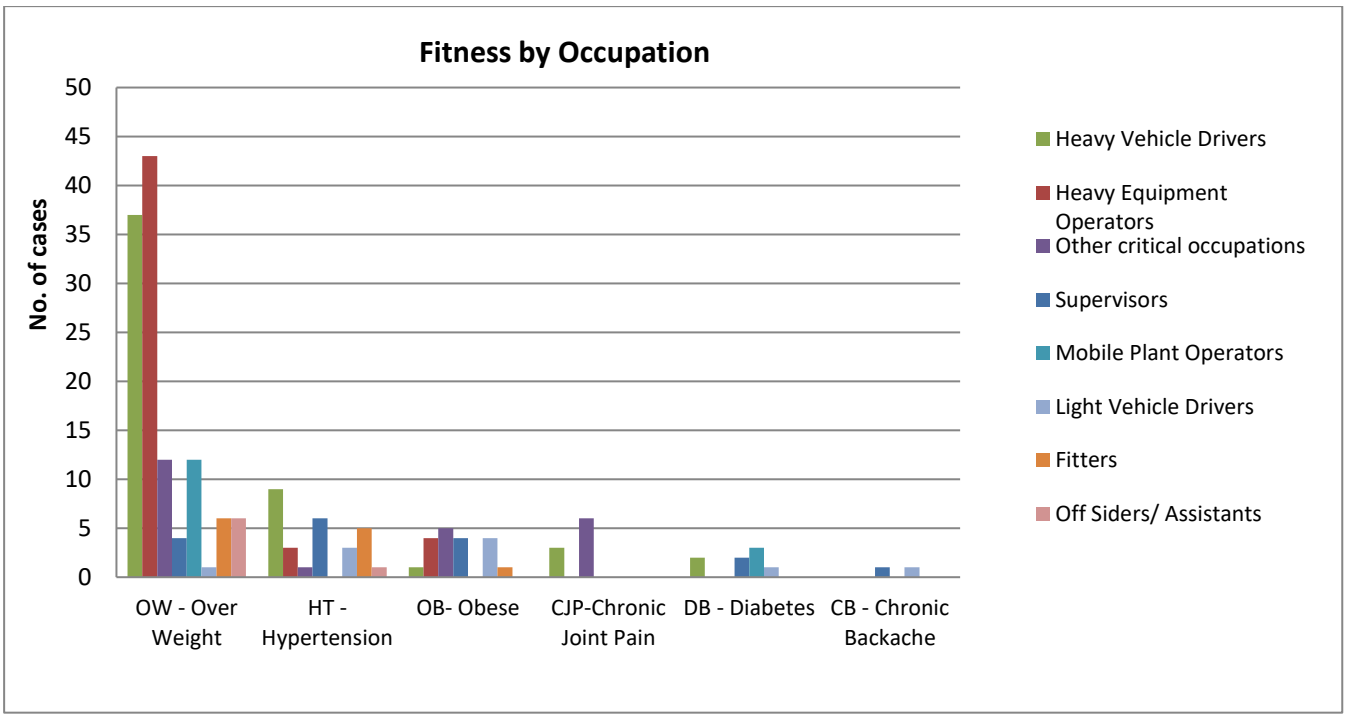


Figure 26: Fitness by Occupation

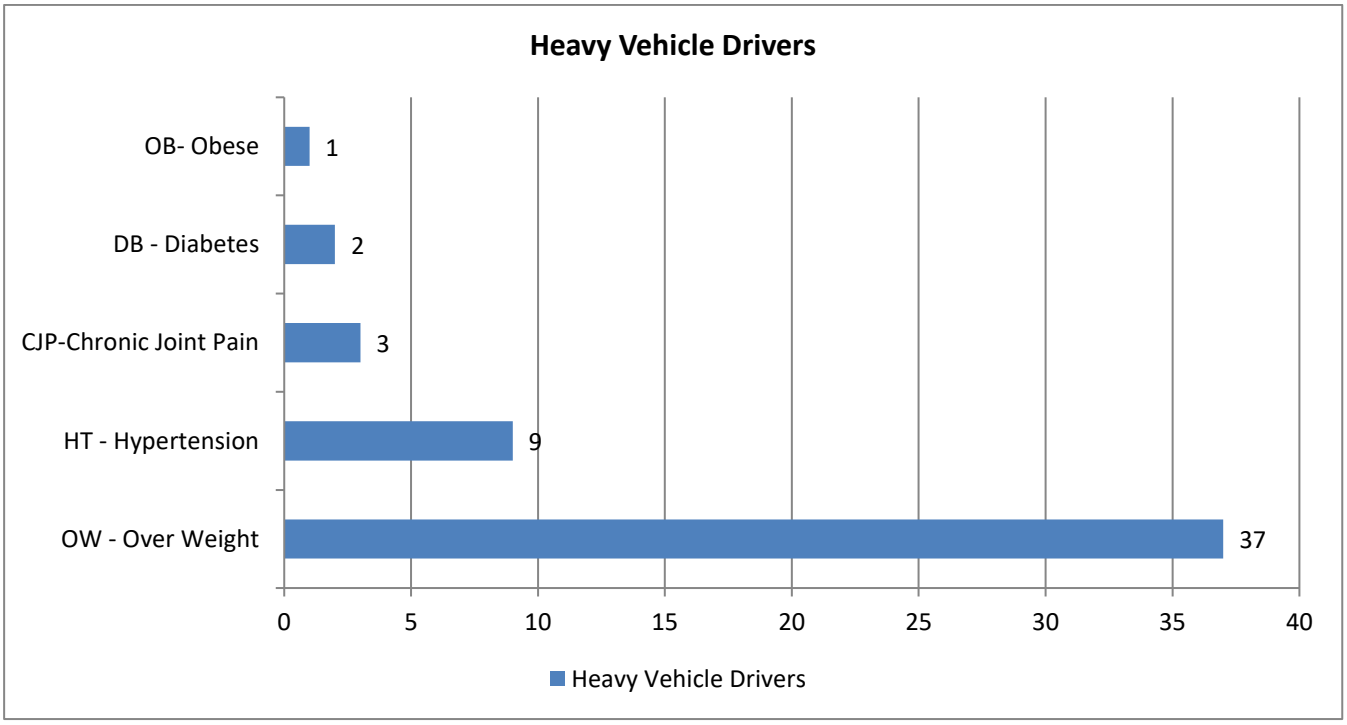


Figure 27: Fitness Classification of Heavy Vehicle Drivers

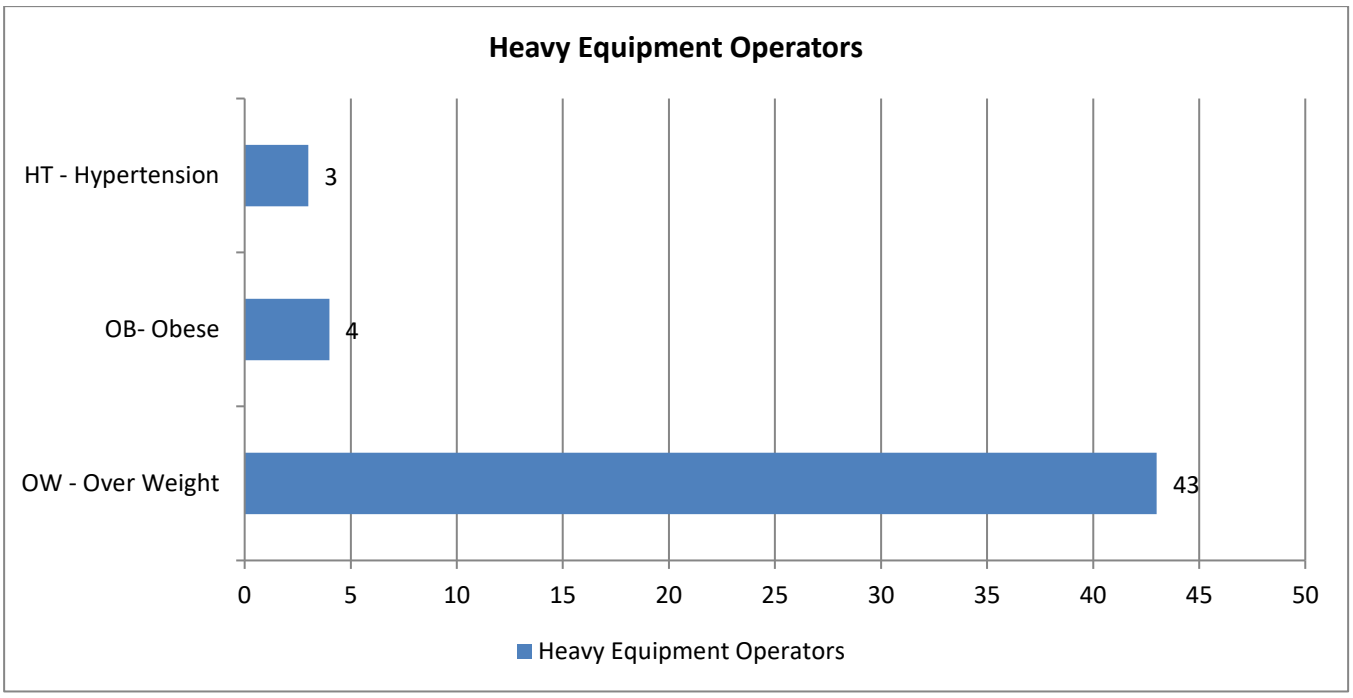


Figure 28: Fitness Classification of Heavy Equipment Operators

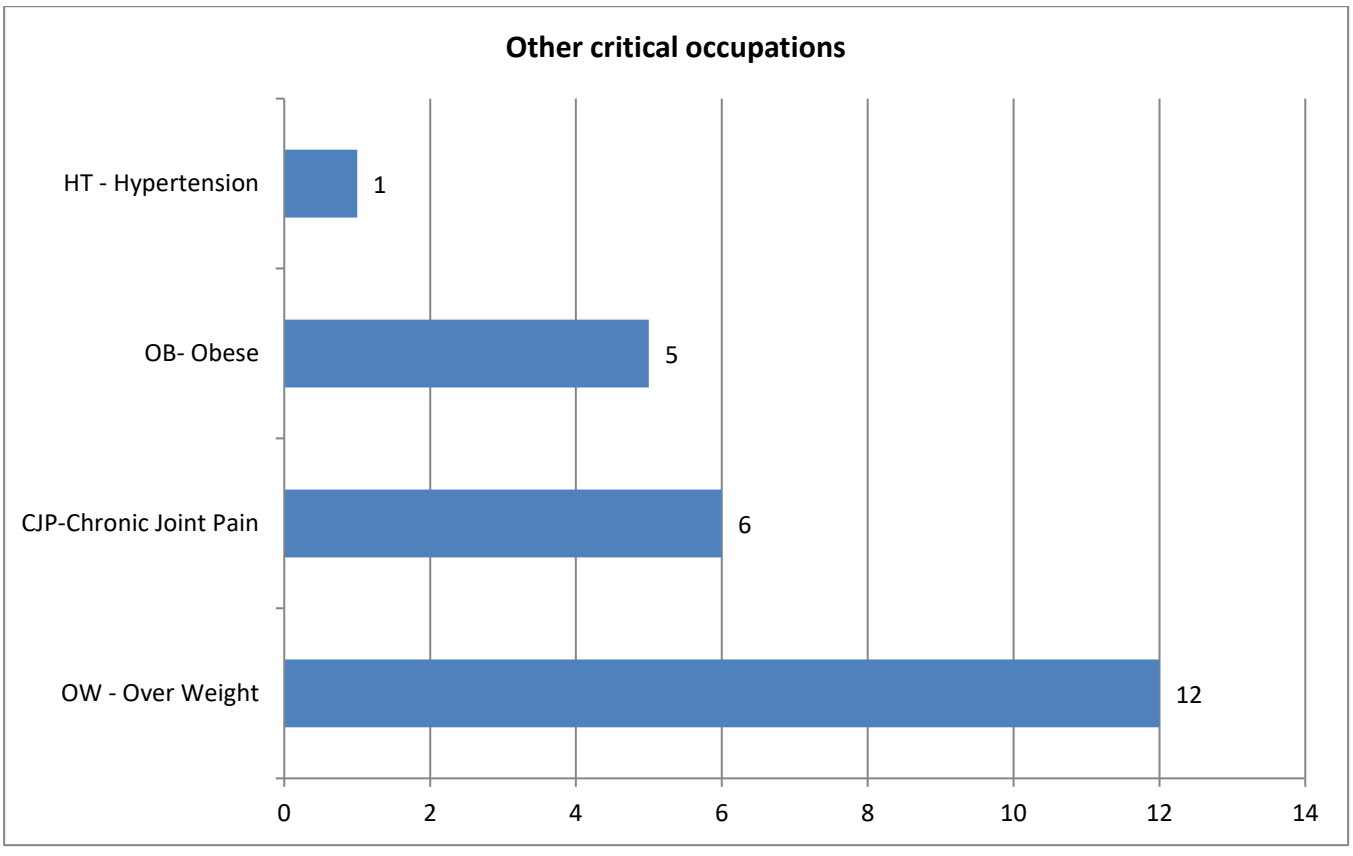


Figure 29: Fitness Classification of other Critical Occupations

7.4 Key Health and Fitness Initiatives undertaken during the quarter

Below is a list of significant Health & Fitness Initiatives that were carried out during the quarter. Most of these programs were focused on lifestyle diseases affecting the livelihoods of individuals at the workplace.

7.4.1 Health Awareness

Health monthly themes for the quarter covered range of topics;

- TB Health and Educational Awareness
- Cyanide Awareness
- Worksite Health Promotion
- Health and Hygiene
- Soft Tissue Injury Prevention
- Malaria and Dengue
- Snake Bite First Aid

7.4.2 Health Programs

Health programs included;

- Ongoing Healthy Living Program – Health and Lifestyle consultations continue.
- Counseling sessions and ongoing rehabilitation for employees
- Daily Fitness Circuit classes

7.4.3 Health Surveillance

Occupational Health Surveillance;

- Medical Examinations – Periodic health checks conducted to monitor employee health and wellbeing
- Ongoing monitoring of individual exposure to noise, radiation, dust, gases & fumes, heavy metals, heat stress, etc.
- Constant monitoring of employees on return to work plan
- Blood Pressure Wellbeing Screening

8 Abbreviations and Definitions

8.1 Abbreviations

- F – Fatality
- PII – Permanent Incapacitated Injury
- LTI – Lost Time Injury
- RWI – Restricted Work Injury
- MTI – Medical Treatment Injury
- FAI – First Aid Injury
- HPI – High Potential Incident
- NM – Near Miss
- FFR – Fatality Frequency Rate
- SIFR – Serious Injury Frequency Rate
- TIFR – Total Injury Frequency Rate
- SR – Severity Rate

8.2 Definitions

Fatality (F) –Death of a person

Permanent Incapacitated Injury (PII) – The loss of a bodily function or amputation of a body part.

Days lost- All rostered shifts that a worker is unable to work as a consequence of an injury or an unsafe event, not including the day of the injury. This also includes days lost because of recurrences of injuries from previous periods and days on alternative duties after returning to work. A fatal injury is treated as 220 days lost.

Shift length - 12 hours of work within a 24 hour period including travel time.

Lost Time Injury (LTI) – An accident resulting in a; fatality, permanent disability or Injuries which restricts the person; from performing his/her routine work in the following rostered shift of work.

Restricted Work Injury (RWI) – Injury which temporarily restricts the person from performing his/her routine work whilst the person is able to attend to an alternate work in his/her rostered shift of work.

Medical Treatment Injury (MTI) - Injury which temporarily restricts the person from performing his/her routine work for the rest of the shift but does not restrict the person to return to his/her routine work in the following rostered shift of work.

First Aid Injury (FAI) – Injury which does not restrict the person from performing his/her routine work for the rest of the shift.

High Potential Incident (HPI) – An incident that results in loss or damage to property without injuring a person.

Near Miss (NM) – An incident that neither results in any loss or damage to the property nor injuring a person.

I do believe that your journey through this bulletin may have been quite satisfying and rewarding. However, to enable us enrich it further, I would very much appreciate and welcome your valued comments and suggestions which you may like to forward to me on my email: lmichael@mra.gov.pg