OCCUPATIONAL HYGIENE
APPROVED INSPECTION AUTHORITY
STATISTICS REPORT 1 OCTOBER 2019 – 31 MARCH 2020

employment & labour

Department:
Employment and Labour
REPUBLIC OF SOUTH AFRICA

OCCUPATIONAL HYGIENE

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ABBREVIATIONS

CF	Compensation Fund
HBA	Hazardous Biological Agents
HCS	Hazardous Chemical Substances
IAQ	Indoor Air Quality
OH AIA	Occupational Hygiene Approved Inspection Authority
OHH	Occupational Health and Hygiene
OHS	Occupational Health and Safety
OEL	Occupational Exposure Limit
SANAS	South African National Accreditation System

1. PURPOSE

The purpose of this report is to inform the Chief Inspector: Occupational Health and Safety, of the analysis of the data received from the reports submitted by the occupational hygiene approved inspection authorities (OH AIA) at the end of March 2020. These include all monitoring conducted by OH AIA's from the 1st October 2019 to the 31st March 2020.

2. INTRODUCTION

The Department of Employment and Labour has approved 51 OH AIAs which are also SANAS accredited. One of the conditions of approval which is also monitored through SANAS assessments, is for the OH AIAs to report data from the monitoring they conduct biannually, at the end of March and September. The reporting time for the end of March is all monitoring conducted from the 1st October of the previous year to the end of March of the following year. The reporting time for the end of September is the from the 1st April to the 30th September.

3. BACKGROUND

OH AIAs have been required to report to the Department since the SANAS accreditation requirement came into effect in 2014. However, the previous reports submitted were not completed correctly and in a pdf version, making analysis of the data difficult. Consequently, in 2019, after a consultative process with the Occupational Hygiene Approved Inspection Authority Association, the Directorate: Occupational Health and Hygiene (OHH) developed a new, electronic reporting tool. The electronic reporting tool consisted of protected, drop-down options in cells. This allowed for all OH AIAs to only use the parameters provided and not their own parameters. This would make the compiling and analysis of the data easier.

3.1 OCCUPATIONAL STRESSORS

The reporting tool was modified to include reporting on specific occupational stressors. The occupational stressors included:

- Noise
- Illumination
- Heat stress
- Cold stress
- Ergonomics
- Indoor air quality (IAQ)
- Controls measures for HCS
- Hazardous chemical substances (HCS)
- Crystalline silica
- Asbestos
- Hazardous biological agents.

The OH AIA was required to select one of three options, in terms of exposure bands: below the action level, between the action level but lower than the occupational exposure limit (OEL), and equal to or more than the OEL. For illumination the options were: at the limit or more or less than the limit, and for control measures for HCS; within range or below range.

3.2 SECTORS

The sectors are based on the employer classifications used by the Compensation Fund (CF) in order to align with the data obtained on occupational diseases and injuries. Of the CF classifications, 21 were used in the reporting tool. The classifications pertaining to mining and related activities were not considered, as that sector does not fall under the jurisdiction of the Department of Employment and Labour. The 21 classifications listed in the reporting tools are:

- Agriculture, forestry, etc. (1)
- Fishing, etc. (3)
- Building construction, etc. (5)
- Foods, drinks, tobacco, etc. (6)
- Textiles, etc. (7)
- Wood industry, upholstery, etc. (8)
- Printing and paper industry, etc. (9)
- Chemical industries, rubber, oil, paint, etc. (10)
- Leather industry, etc. (11)
- Glass, bricks, tiles, concrete, etc. (12)

- Iron, steel, artificial limbs, galvanizing, garages, metals, etc. (13)
- Jewellers, diamonds, asbestos, bitumen, etc. (14)
- Trade, commerce, etc. (15)
- Banking, insurance, etc. (16)
- Air, road transport hauliers, etc. (17)
- Local authorities, divisional councils, power stations, etc. (18)
- Personal services, hotels, flats, etc. (19)
- Entertainment, sport, etc. (20)
- Medical services, animal hospitals, etc. (21)
- Educational services, etc. (23)
- Charitable, religious, political and trade organizations, etc. (24).

3.3 EMPLOYEES BANDS

The employee bands are divided into four bands: <10, 10≤99, 100≥500 and >500. This was to determine the size of the employer where monitoring is being conducted and who are making use of the OH AIA services.

3.4 SEX

The reporting tool also received comments from the World Health Organization. One of the comments incorporated was the gathering of data on males and females in the workplace. The OH AIA is required to indicate the number of both males and females at the employer where the monitoring is conducted.

4. FINDINGS

4.1 TOTAL MONITORING

During the reporting period of 1st October 2019 to the 31st March 2020, a total of 2909 employers were monitored by OH AIAs. **Figure 1** indicates the number of individual occupational stressors monitored during the same time period: noise (n=1150); illumination (n=1061); heat stress (n=504); cold stress (n=269); ergonomics (n=633); IAQ (n=766); control measures for HCS (n=455); HCS (n=989); crystalline silica (n=319); asbestos (n=845) and HBA (n=324). An OH AIA may monitor more than one occupational stressor at an employer.

In terms of the number of monitoring per sector, **Figure 2** indicates that the most monitoring was done in the Chemical sector (n=491), followed by Building and Construction (n=488), Iron, Steel and Manufacturing (n=365), Food, Drinks and Tobacco (n=309) and Air and Road Transport (n=285). The sectors where the least monitoring was conducted, was in the Entertainment, Sports (n=7) and Leather Industry sectors (n=6).

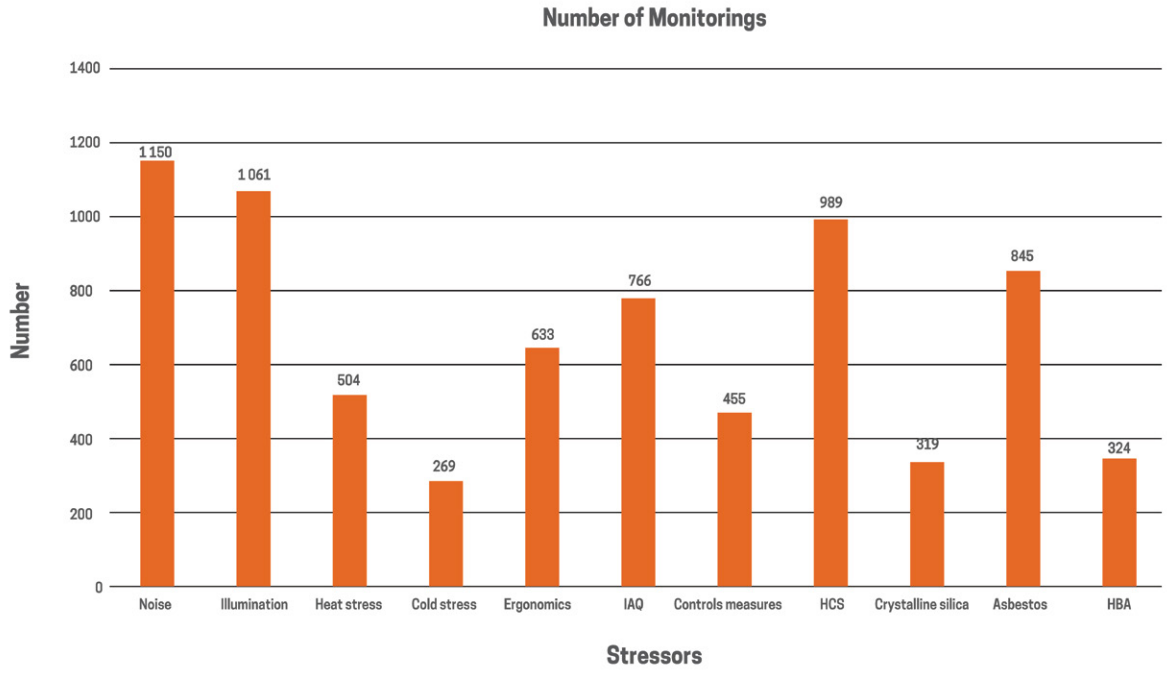
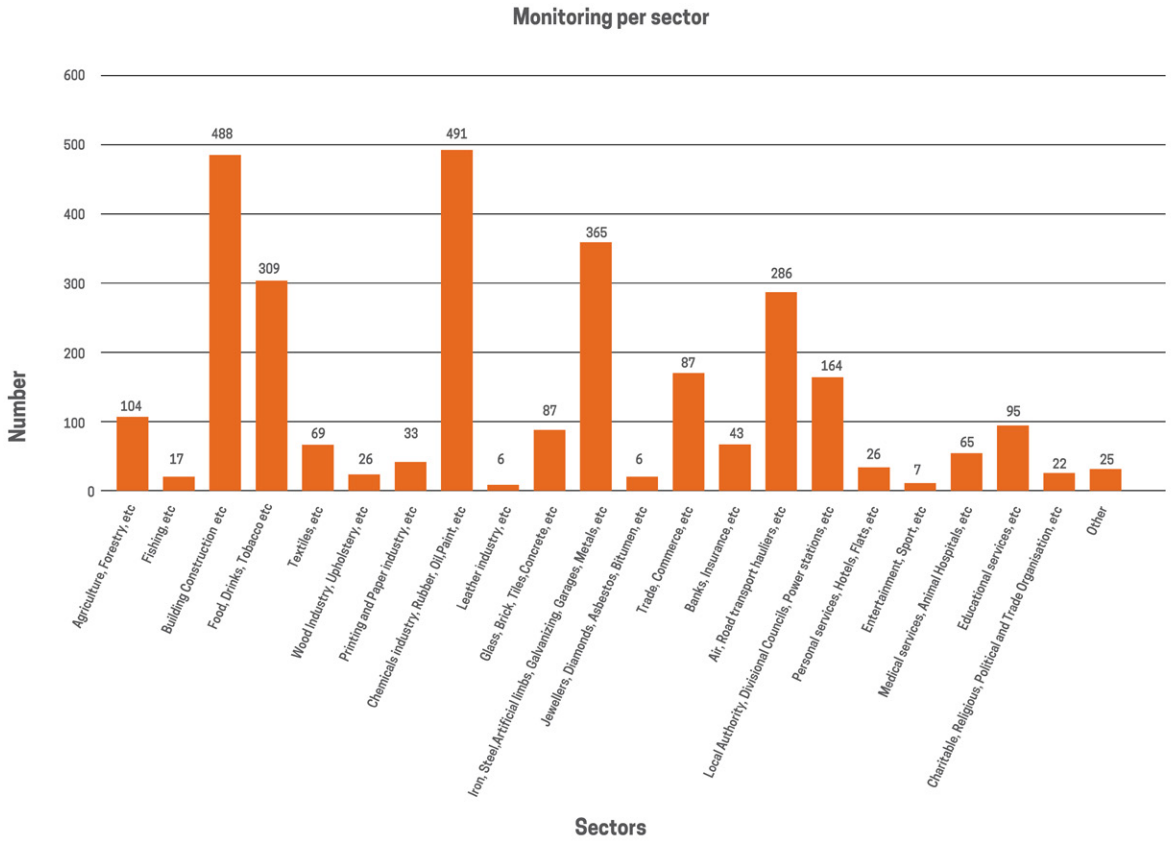


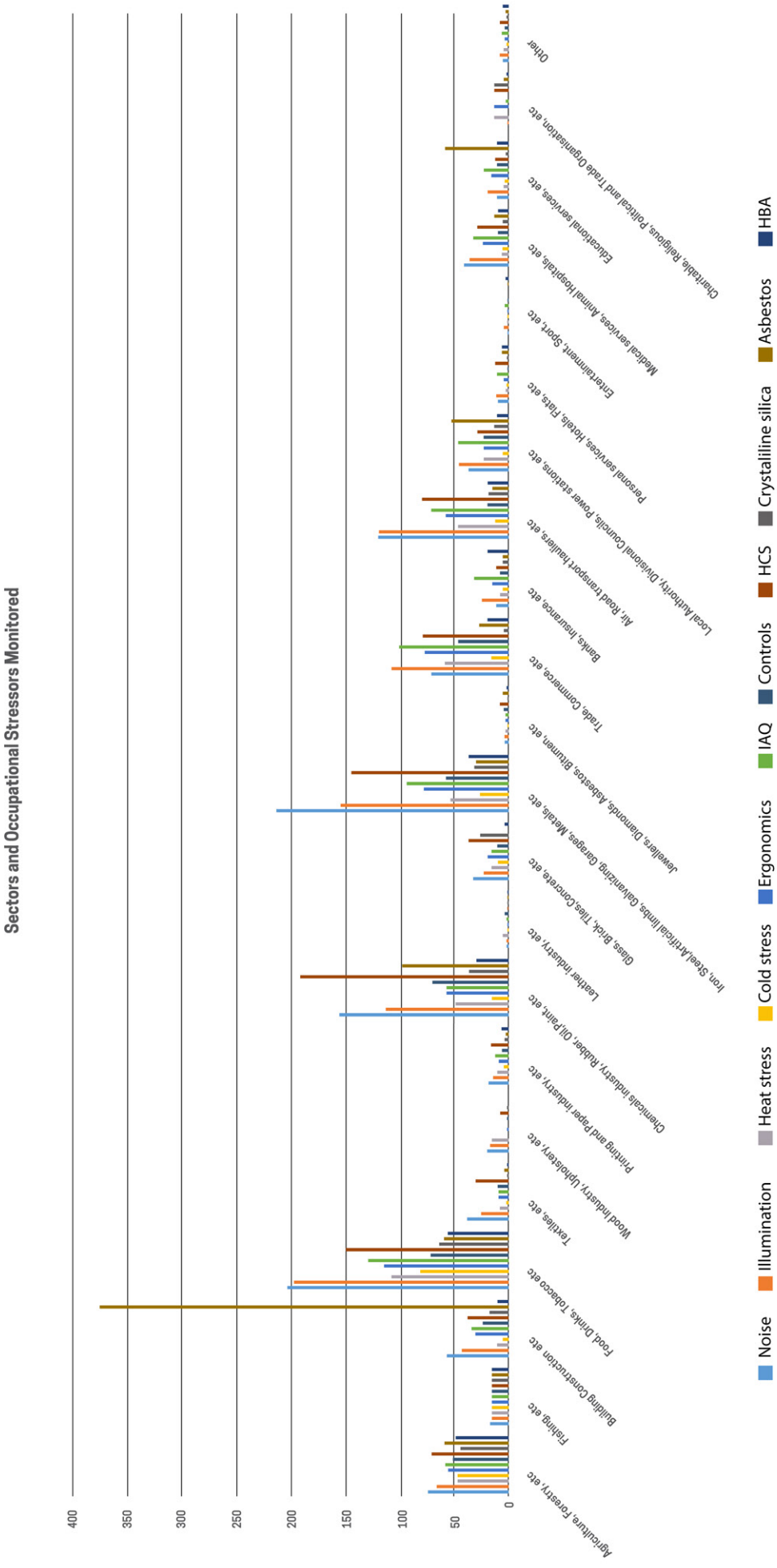
Figure 1: Total number of monitoring per occupational stressors.

Figure 2: Total monitoring per sector.



In **Figure 3**, the individual occupational stressors monitored are indicated for each of the 21 sectors. The figure indicates that asbestos monitoring in the Building and Construction sector was the dominant single occupational stressor monitored in all the sectors (n=378). Noise monitoring in the Iron, Steel and Manufacturing sector was the second most occupational stressor monitored (n=214). In other sectors, noise, illumination and HCS were monitored the most.

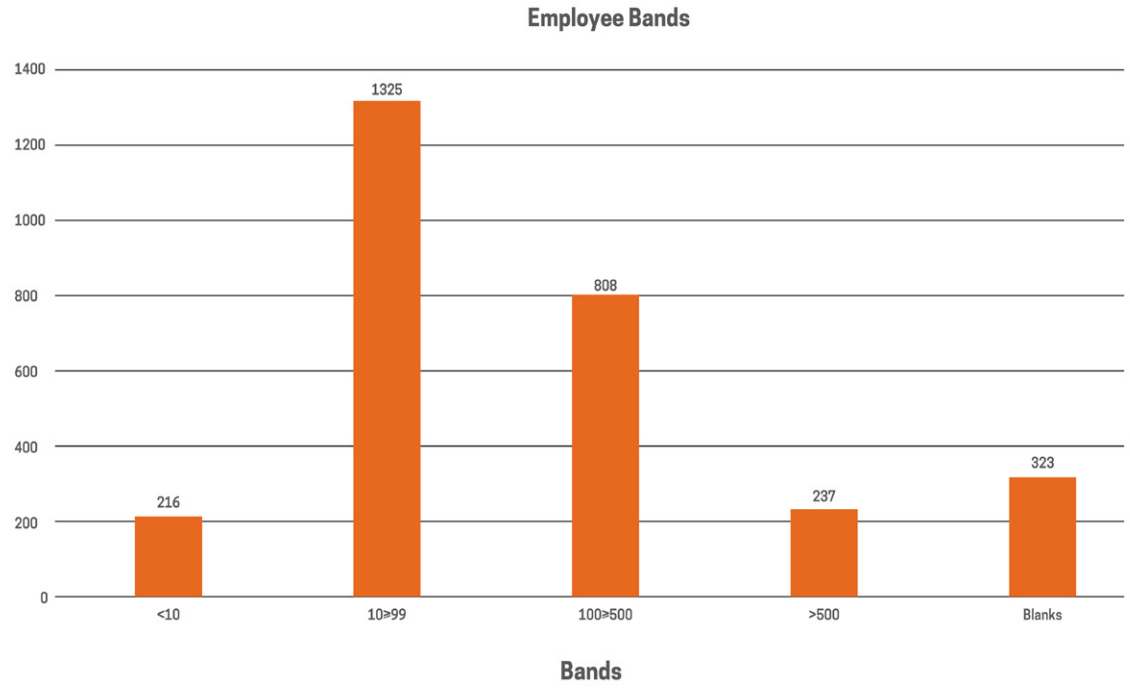
Figure 3: Occupational stressors monitored by sector.



4.2 EMPLOYEE BANDS

From the 2909 monitoring surveys conducted, most of the employers fell in the 10≤99 employees (n=1325) band. Second was employers in the 100 to 500 band (n=808), followed by >500 (n=237) and lastly, <10 (n=216).

Figure 4: Monitoring per employee band.



4.3 EXPOSURE BANDS

The exposure bands for the occupational stressors indicate a variety of outcomes from monitoring, in figures 5,6 and 7. The occupational stressor with the most results falling in the over exposure band was illumination, as indicated in Figure 6. More than 800 of the 1 150 illumination monitoring were either below or above the required illumination level. Most of the monitoring results for noise and control measures for HCS were also in the over exposure band. For heat and cold stress, HCS, crystalline silica, asbestos and HBA, most of the results were below the action level. IAQ and ergonomics were evenly spread between the three exposure bands.

Figure 5: Exposure bands per occupational stressor.

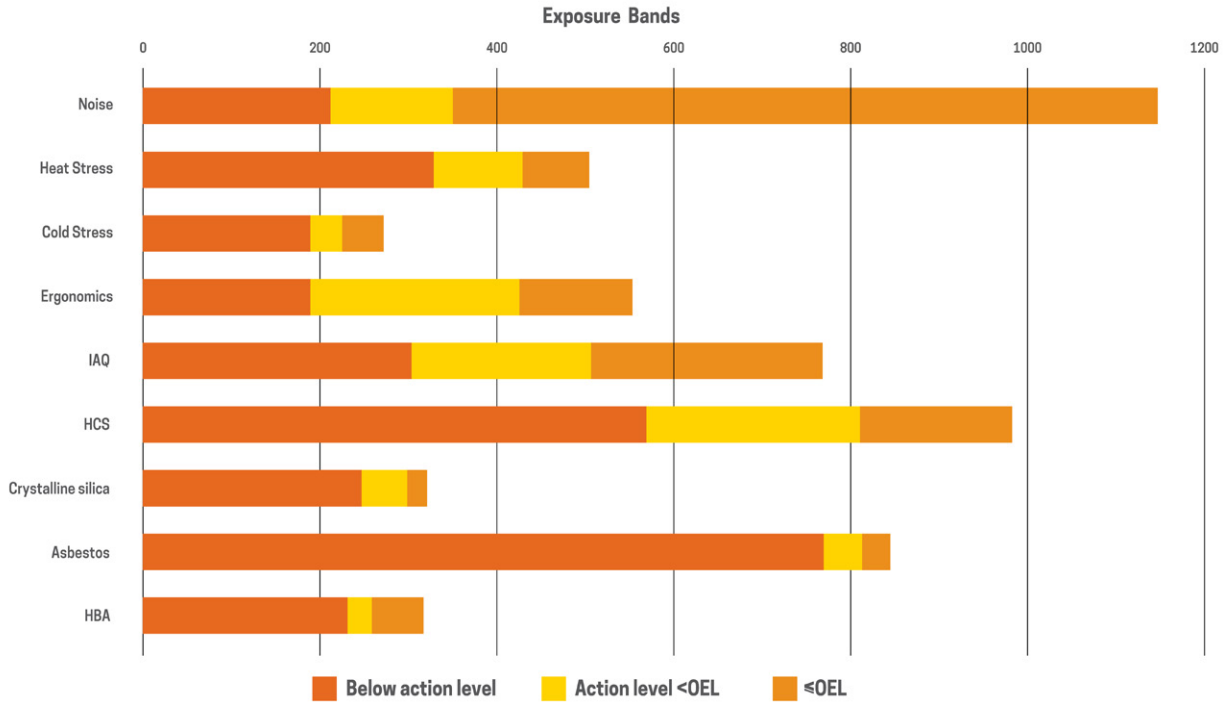


Figure 6: Exposure band for illumination.

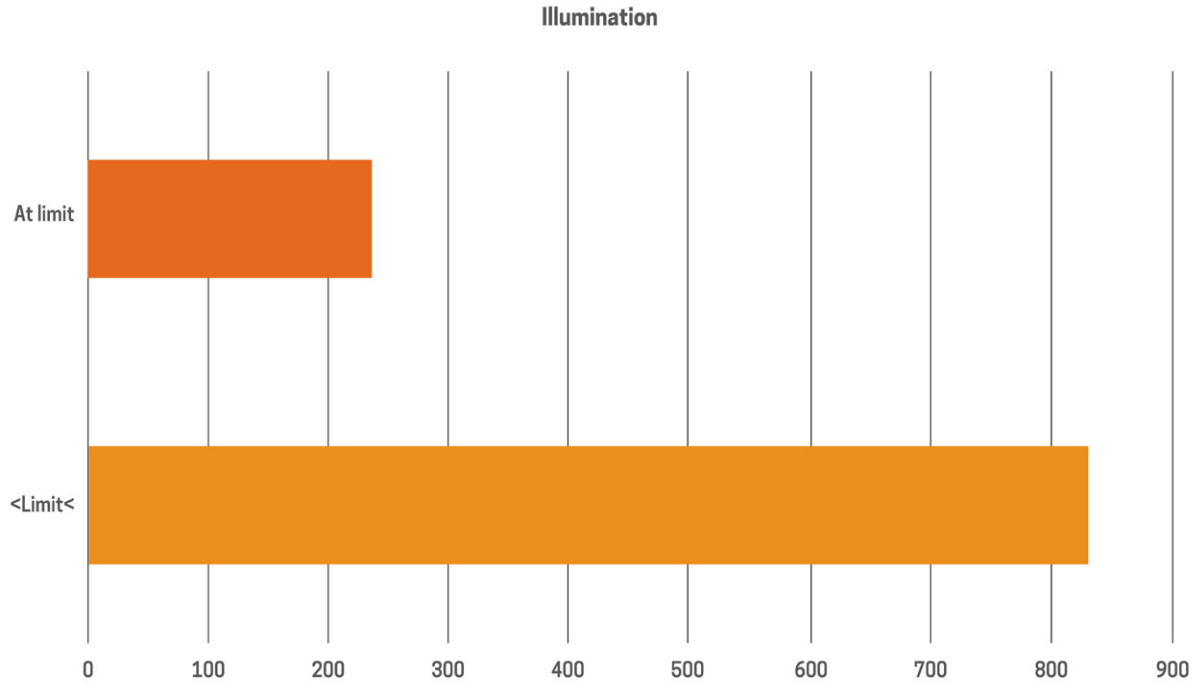
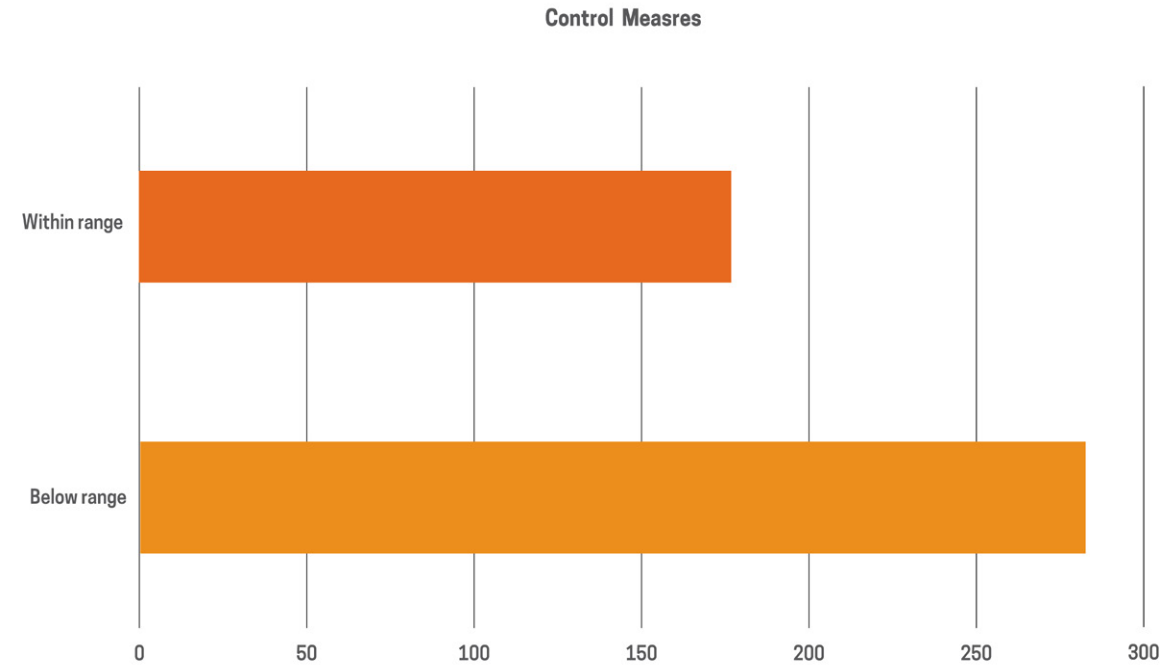


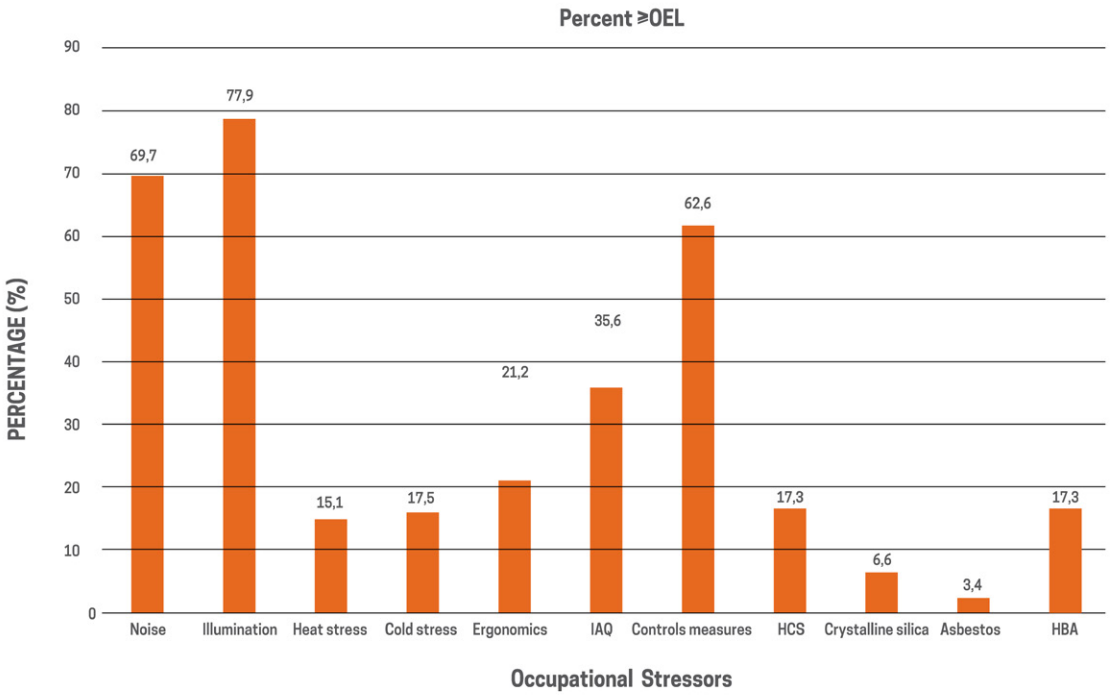
Figure 7: Exposure band for control measures.



4.4 MONITORING AND OEL

Figure 8 indicates the occupational stressors with the highest percentage of results at or over the legislated amount was illumination with 77,9%. This was followed by noise at 69,7% and control measures for HCS at 62,6%. The occupational stressor with the most compliant percentage of results was asbestos at 3,4% and crystalline silica with 6,6%.

Figure 8: Percentage of monitoring equal to or more than OEL of occupational stressor.

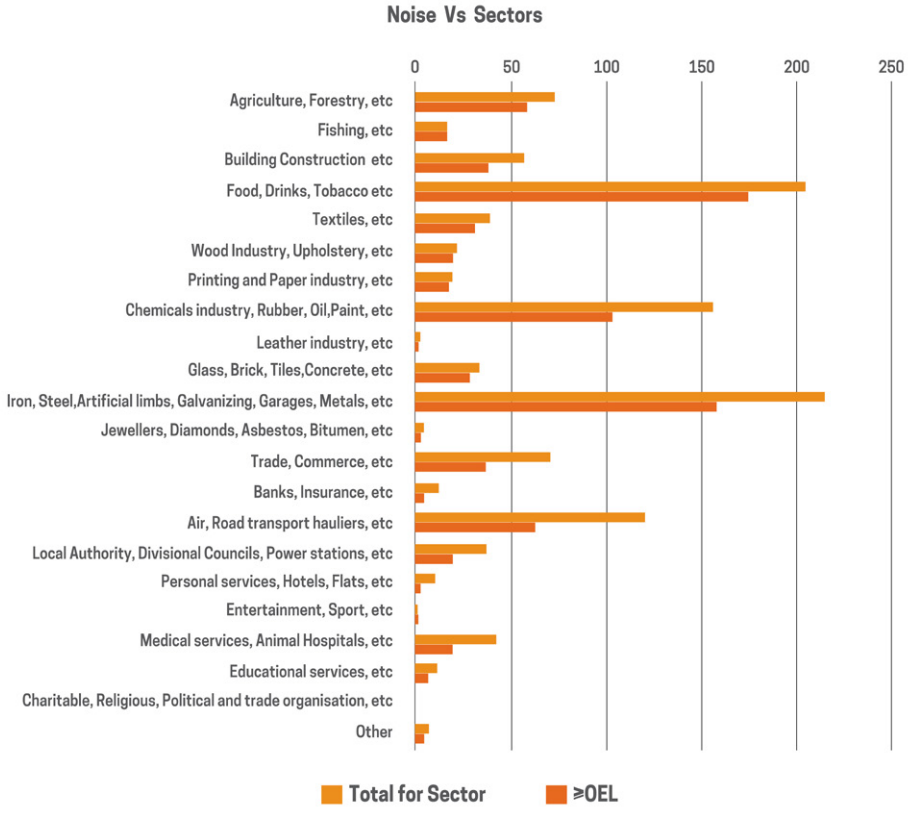


4.5 INDIVIDUAL OCCUPATIONAL STRESSORS PER SECTOR

4.5.1 NOISE

Figure 9 indicates the sectors where noise monitoring was conducted and how many of the results were at or above the noise-rating limit of 85 dBA. The sectors where the most noise monitoring was conducted was in the Iron, Steel sector (n=214), Food, Drinks sector (n=204) and Chemical Industries sector (n=156). Most of the results of the noise monitoring were at or above the noise-rating limit.

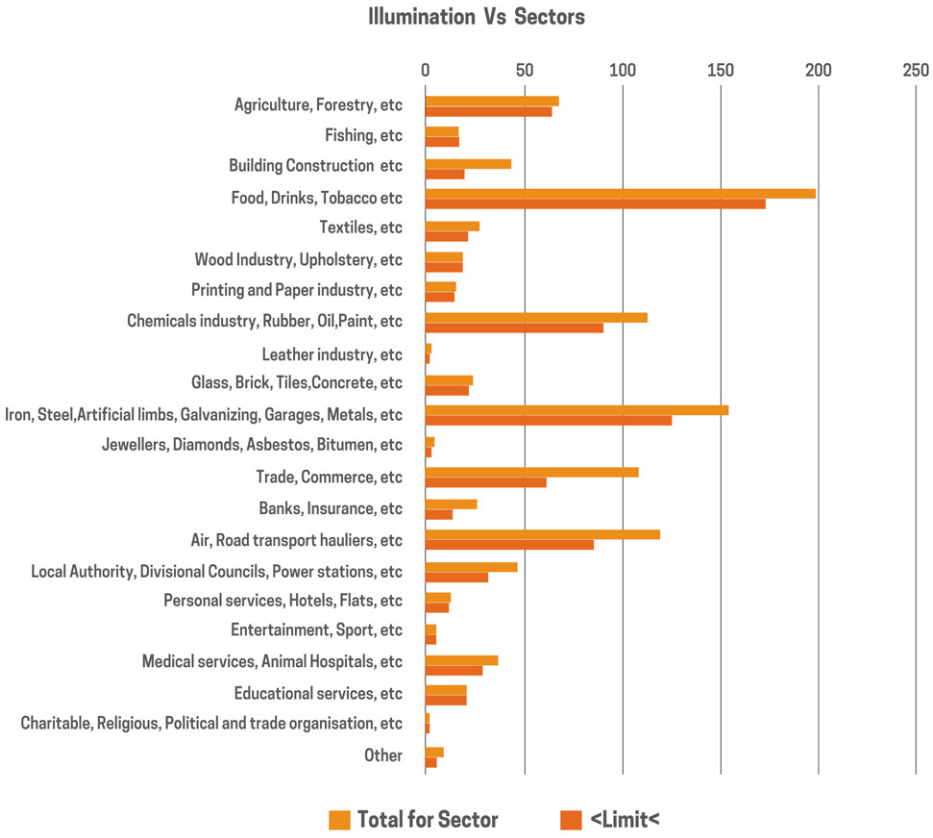
Figure 9: Noise monitoring per sector.



4.5.2 ILLUMINATION

Figure 10 indicates the sectors where illumination monitoring was conducted and how many of the results were either below or above the legislated minimum level. The most illumination monitoring was conducted in the Food, Drinks sector (n=199), followed by the Iron, Steel sector (n=154) and Air, Road Transport sector (n=119). As with noise, most of the results for illumination were either below or above the required limit.

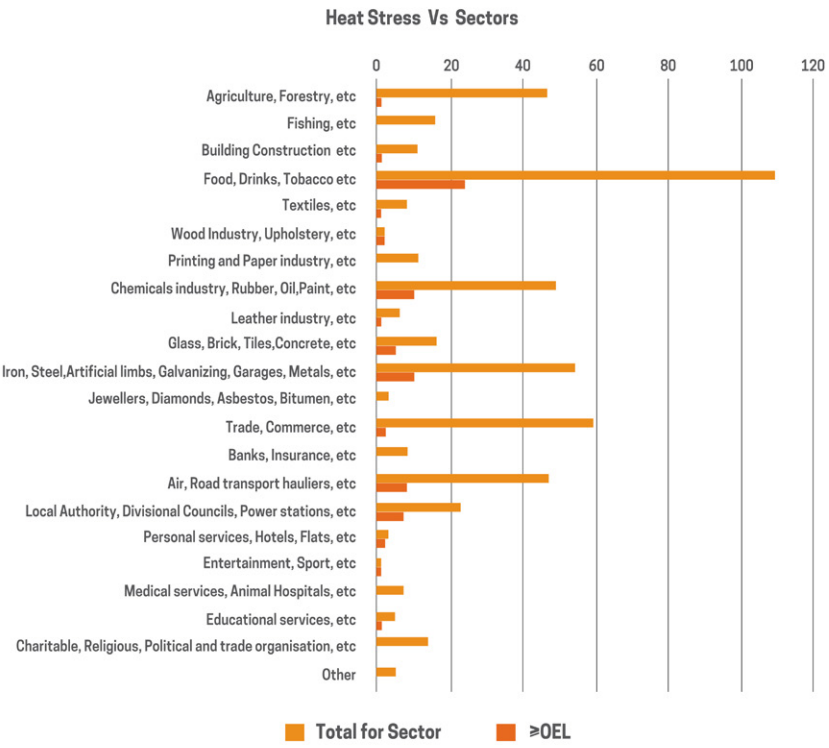
Figure 10: Illumination monitoring per sector.



4.5.3 HEAT STRESS

Figure 11 indicates the sectors where heat stress monitoring was conducted and how many of the results were below the Wet Bulb Globe Temperature (WBGT) limit of 30. The most monitoring was conducted in the Food, Drink sector (n=109), followed by Trade, Commerce sector (n=59) and Iron, Steel sector (n=54). The results in **Figure 11** indicate that most of the results of the monitoring are below the WBGT limit of 30.

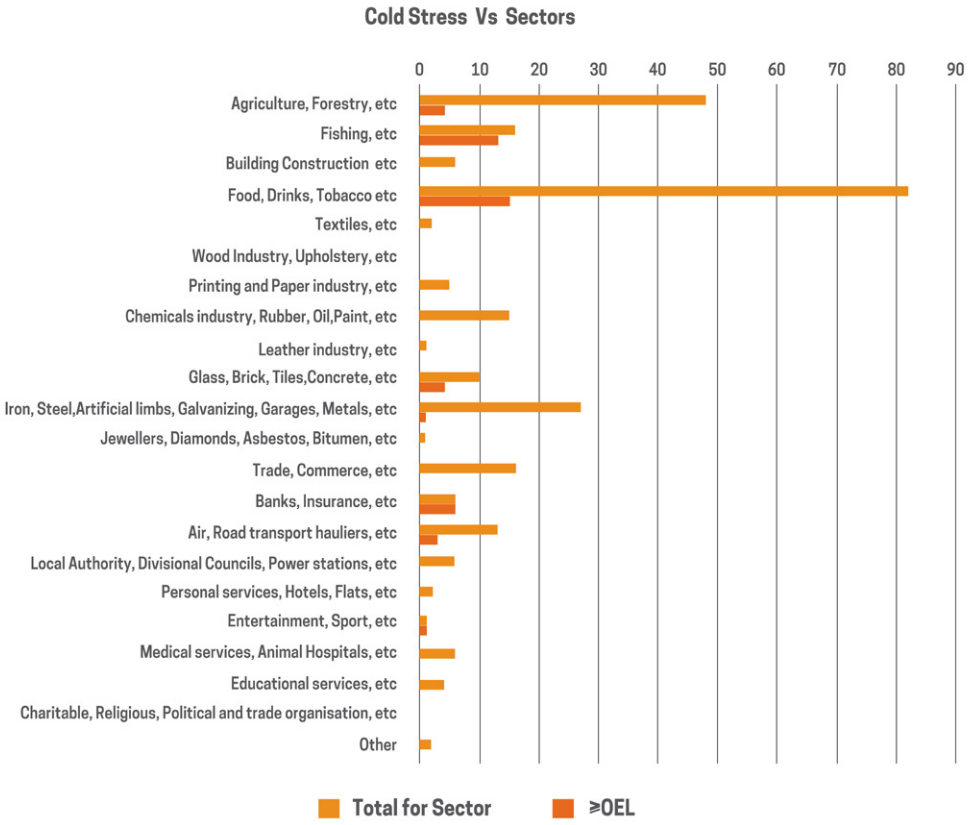
Figure 11: Heat stress monitoring per sector.



4.5.4 COLD STRESS

Figure 12 indicates the sectors where cold stress monitoring was conducted and how many of the results were below the cold stress OEL of 6 °C. The most monitoring was conducted in the Food, Drink sector (n=82), followed by Agriculture, forestry sector (n=48) and Iron, Steel sector (n=27). As with heat stress, most of the results indicate that sectors are complying with the OEL.

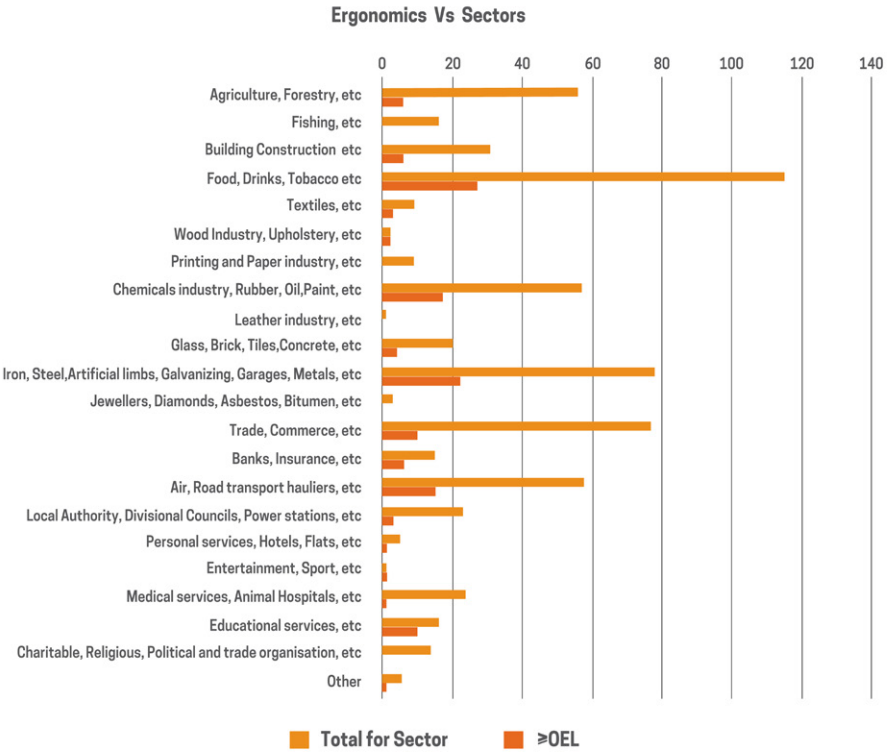
Figure 12: Cold stress monitoring per sector.



4.5.5 ERGONOMICS

The sectors where ergonomics monitoring was conducted, are indicated in **Figure 13**. The most monitoring was conducted in the Food, Drink sector (n=115), followed by Iron, Steel sector (n=78) and Trade, Commerce sector (n=77). The results indicate that most of the monitoring results are in compliance with recognised ergonomics exposure limits.

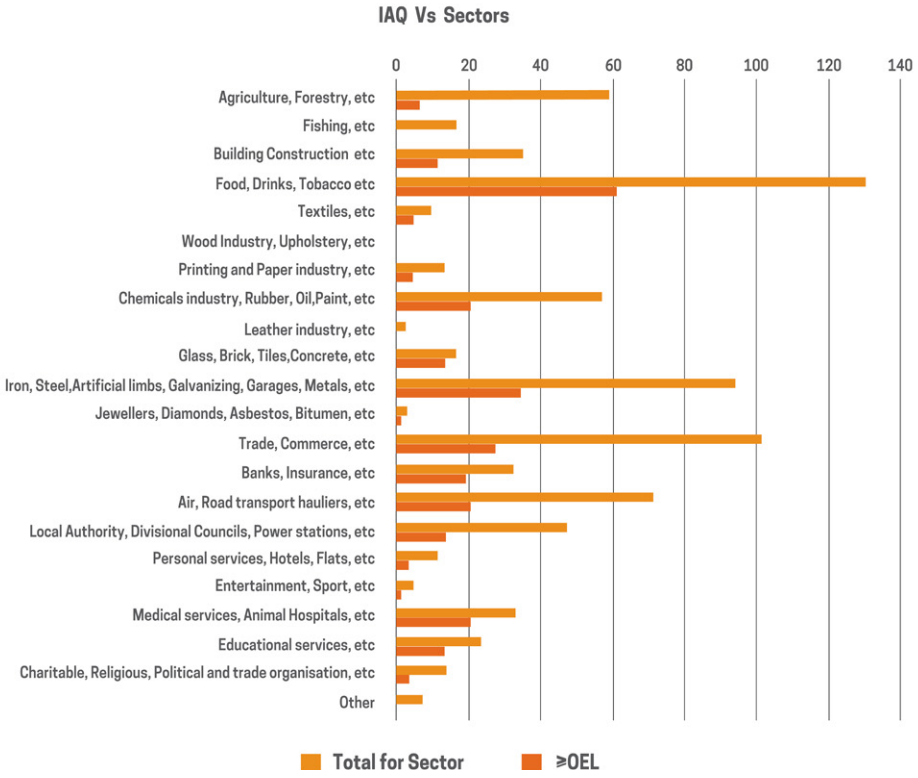
Figure 13: Ergonomics monitoring per sector.



4.5.6 INDOOR AIR QUALITY

The sectors where IAQ monitoring was conducted, are indicated in **Figure 14**. The most monitoring was conducted in the Food, Drink sector (n=130), followed by Trade, Commerce sector (n=101) and Iron, Steel sector (n=94). The results indicate that most of the monitoring results within the recommended parameters for IAQ, with only five sectors with the majority of the results outside of parameters.

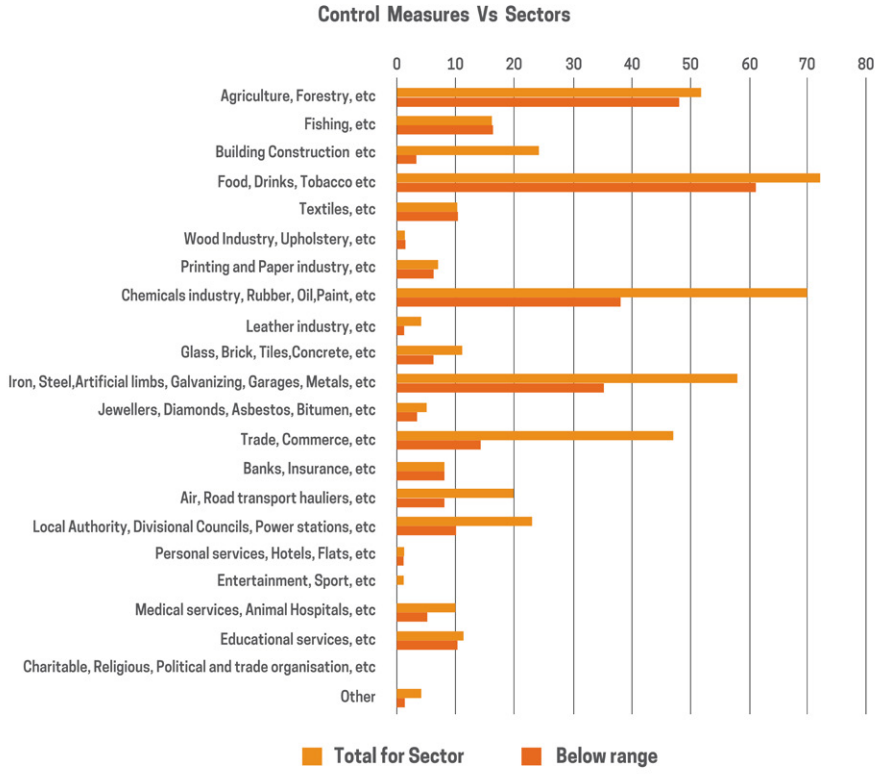
Figure 14: IAQ monitoring per sector.



4.5.7 CONTROL MEASURES OF HAZARDOUS CHEMICAL SUBSTANCES

The sectors where control measures for HCS monitoring was conducted, is indicated in **Figure 15**. The sector where the most monitoring was conducted in, was the Food, Drink sector (n=72), followed by Chemical Industries sector (n=70) and Iron, Steel sector (n=58). The results indicate that most of the monitoring results fall outside of the recommended parameters for the installed control measures, with 14 sectors results below the required parameters.

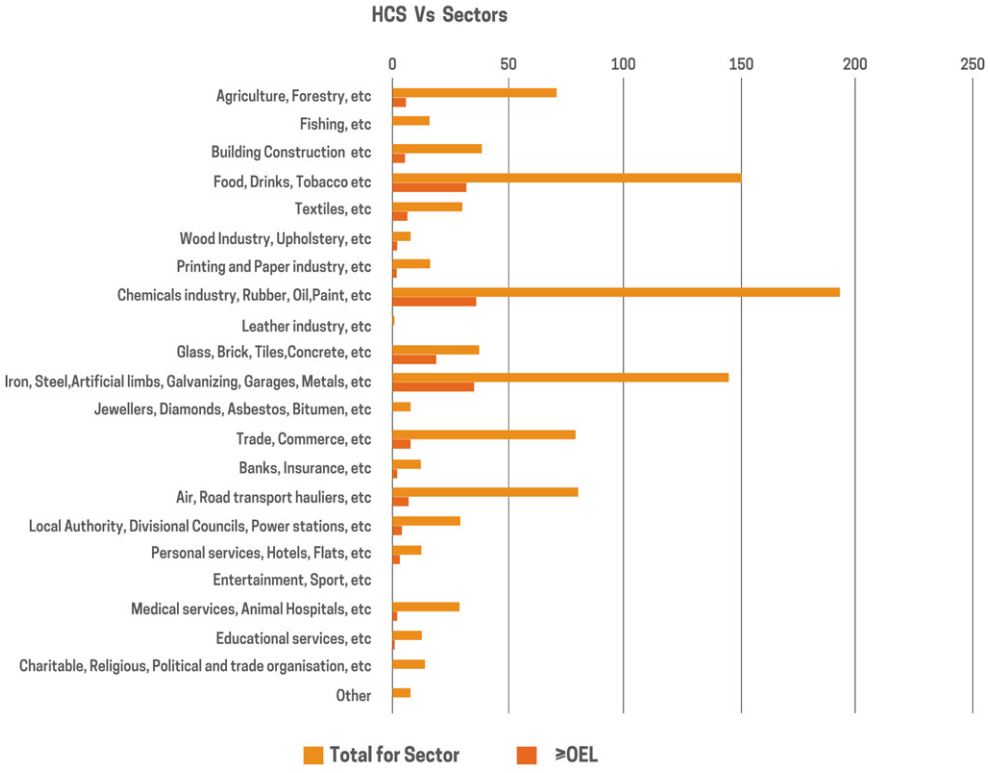
Figure 15: Control measures for HCS monitoring per sector.



4.5.8 HAZARDOUS CHEMICAL SUBSTANCES

HCS were monitored the most in Chemical Industries sector (n=192), followed by Food, Drinks sector (n=150) and Iron, Steel sector (n=145), as indicated in **Figure 16**. The results indicate that most of the monitoring were below the OEL for the HCS monitored by the OH AIAs, with only the Glass, Bricks Tiles sector having more results at or above the OEL.

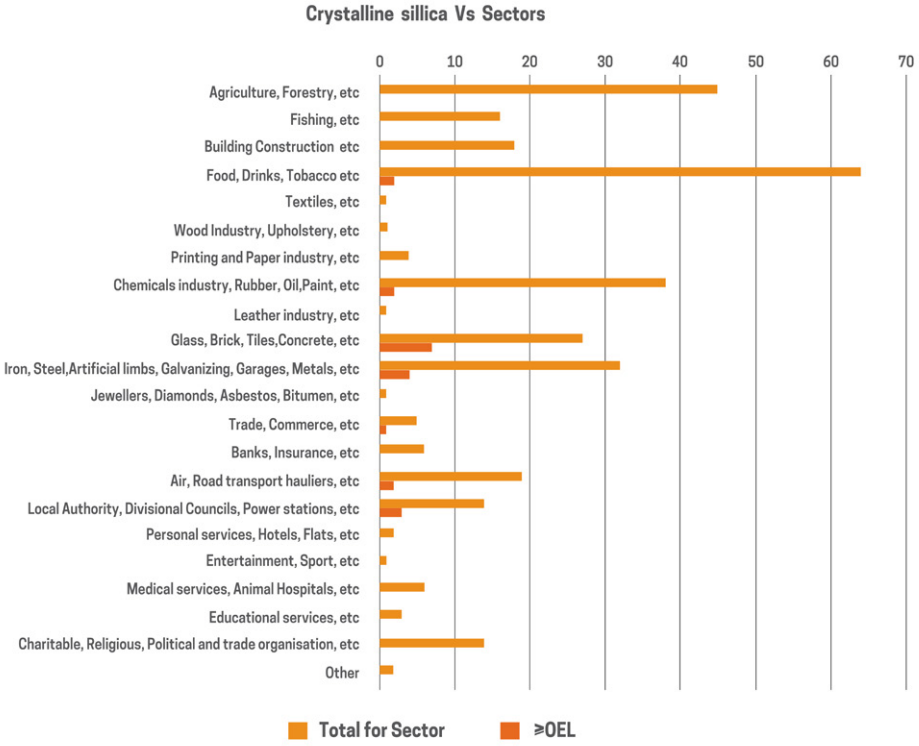
Figure 16: HCS monitoring per sector.



4.5.9 CRYSTALLINE SILICA

Crystalline silica was monitored the most in Food, Drinks sector (n=64), followed by Agriculture, Forestry sector (n=45) and Chemical Industries sector (n=38), as indicated in **Figure 17**. There were only 16 employers monitored in the Building, Construction sector. The results indicate that most of the monitoring were below the OEL for crystalline silica.

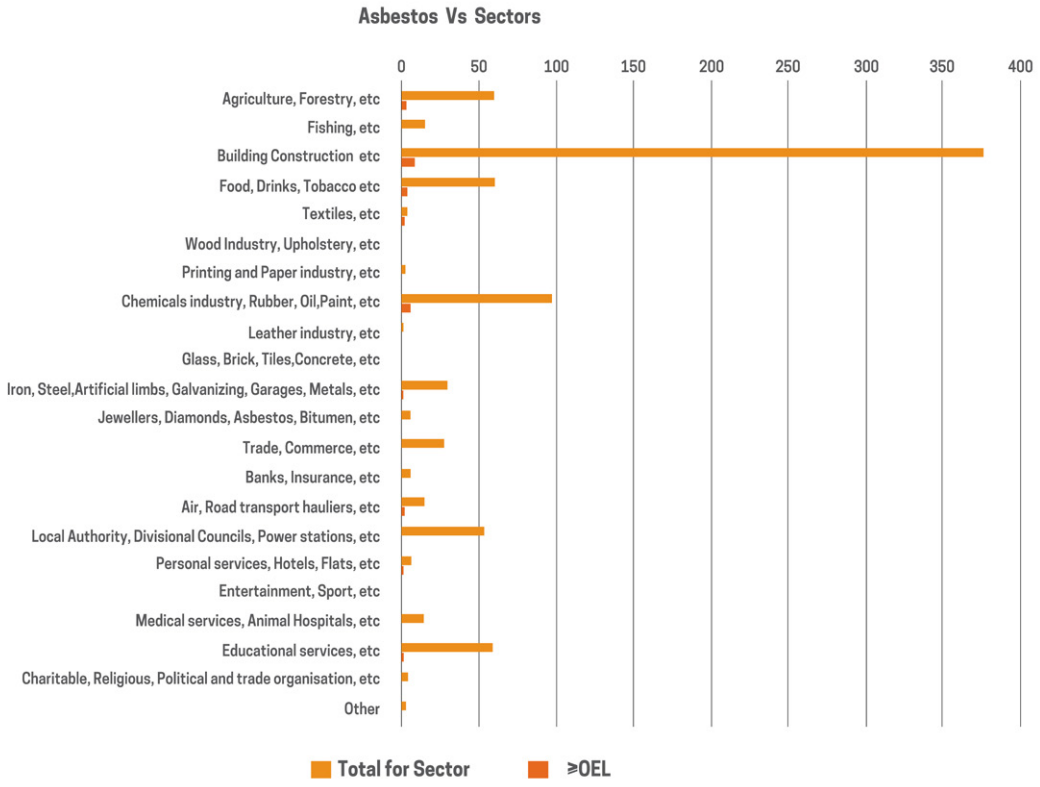
Figure 17: Crystalline silica monitoring per sector.



4.5.10 ASBESTOS

The asbestos monitoring results in **Figure 18**, are dominated by the Building, Construction sector, with 376. The next highest is Chemical Industries sector (n=98). However, the compliance with OEL for asbestos was very high in all the sectors where asbestos was monitored.

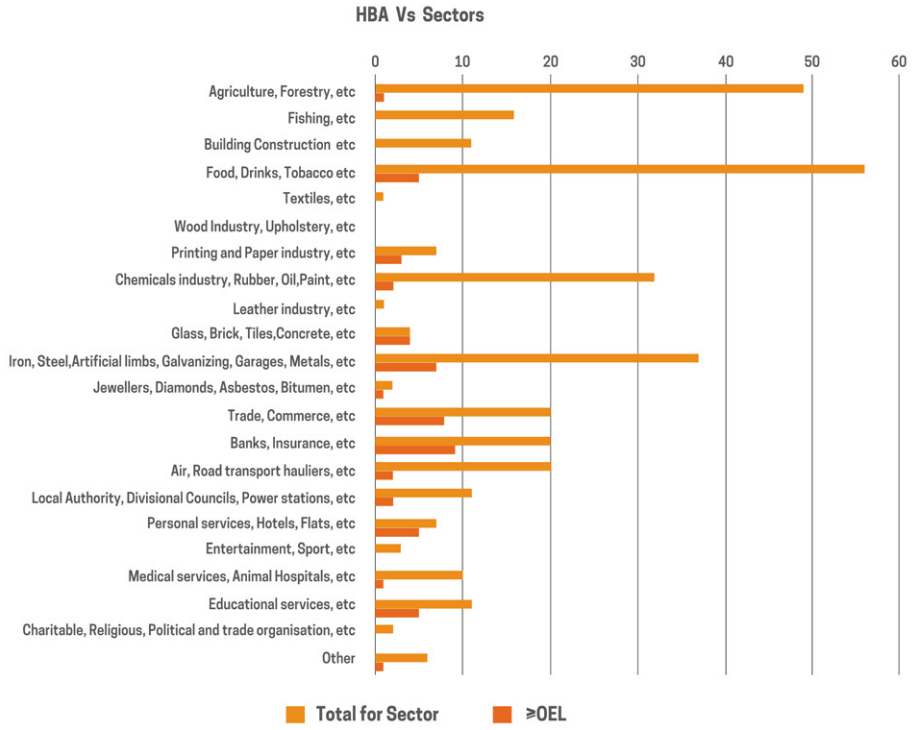
Figure 18: Asbestos monitoring per sector.



4.5.11 HAZARDOUS BIOLOGICAL AGENTS

The sectors where HBA monitoring was conducted, is indicated in **Figure 19**. The most monitoring was conducted in the Food, Drink sector (n=56), followed by Agriculture, Forestry sector (n=49) and Iron, Steel sector (n=37). The results indicate that most of the monitoring results are compliance with recommended HBA exposure limits.

Figure 19: HBA monitoring per sector.



5. DISCUSSION

5.1 OCCUPATIONAL STRESSORS

The results indicate that there is a problem with noise, illumination and control measures for HCS and measures should be introduced by the Department to focus resources, paying particular attention to these occupational stressors.

Illumination had the highest percentage of results, which were either below or above the legislated illumination levels. The results indicate that employers are either; not maintaining or cleaning luminaires or have not increased the number of luminaires to produce the required amount of illumination in the workplace.

Noise is of particular concern in the Iron, Steel, Chemical Industry and Food, Drinks sectors. Due to the nature of the tasks performed in these sectors, noise exposure would be expected. However, noise requires a combination of the controls of the hierarchy controls, and not just relying on hearing protection devices (HPD) to reduce exposure.

The monitoring of control measures for HCS focuses on extraction systems installed in the workplace, particularly local extraction systems (LEV). The LEVs are important as they remove the HCS from the source of exposure, therefore eliminating the hazard before it reaches the employees breathing zone. If the LEVs are not maintained, then employees would have to rely on additional measures, such as administrative controls and personal protective equipment (PPE), to reduce their exposure. In relation to the hierarchy of controls, engineering controls, when maintained, are more effective at removing hazards from the workplace.

5.2 SECTORS

There is not an even spread of occupational stressors monitored across the sectors as not all the sectors have the same occupational stressors. Employees in the Building, Construction sector may be exposed to the majority of occupational stressors; noise, heat and cold stress, ergonomics, HCS, crystalline silica, asbestos and HBA, due to the nature of tasks performed in the sector. However, the results for the Building, Construction sector indicate that the majority of monitoring conducted in that sector was for asbestos. While there was comparatively few monitoring for the other occupational stressors. For example, there was only 18 monitoring results for crystalline silica, 57 for noise and 31 for ergonomics in the Building, Construction sector. This may confirm that the Building, Construction sector is mainly focused on safety related hazards, while paying less attention to all hazards.

5.3 DEMOGRAPHICS

The data shows that small companies are using the services of OH AIA the least, when compared to the four employee brands. This could be due to a number of factors including: financial constraints, lack of knowledge of the required use of OH AIAs to monitor regulated occupational stressors or very little inspections and advocacy by Inspectors of the Department of Employment and Labour.

For employers with more than 500 employees, the reason for the low number of monitoring conducted may indicate that there are few employers in South Africa, which employ large numbers of employees.

No data was analysed for male and female employee populations, as too few of the OH AIA reports had completed the information requested.

6. CONCLUSION

The data provides information on what are the problematic sectors, occupational stressors and which employers are not making use of OH AIA services. The new OH AIA reporting has made both the reporting by OH AIAs and the compiling and analysis of the results an easier process, with the tool providing valuable data which can focus the Department's resources. However, as this was the first time the tool was used, further consultation will be held with the OH AIA Association to determine how the tool may be improved.

7. RECOMMENDATIONS

The following recommendations are recommended:

Department of Employment and Labour OHS Inspectors:

- to conduct inspections on employers where there are less than 10 employees
- to pay particular addition on noise, illumination and LEV when conducting inspections
- Principal Inspectors for OHH should also conduct inspections in the Building, Construction sector to determine compliance with the OHH Regulations
- Provinces to report to the Directorate: OHH on asbestos work and crystalline silica notifications received. monthly; and
- The Directorate: OHH to further consult with OH AIA on ways to improve the reporting tool and challenges.

It is hereby certified that this Occupational Hygiene Approved Inspection Authority Statistics report

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