



اَوْبُو سَيِّدِي تَيْكُو لُو كِي مَارَا
UNIVERSITI
TEKNOLOGI
MARA



INDUSTRIAL TRAINING REPORT

AT

ENVOSHA SDN BHD

Duration of Training:

8/03/2021 – 15/07/2021

Submitted by:

[MUHAMMAD ARAFAT BIN JELANI]

Supervisor:

[DR HARI VIKNESS BIN NADARAJAN]

This Report is submitted to the Faculty of Chemical Engineering,

Universiti Teknologi Mara Kampus Pasir Gudang

In partial fulfilment of the requirements for the Diploma in Chemical Engineering

Faculty of Chemical Engineering,

Universiti Teknologi Mara Kampus Pasir Gudang (2021)

TABLE OF CONTENT

Industry's Declaration.....	2
Table Of Content.....	3
Acknowledgements.....	5
1.0 Overview Of Che353 - Industrial Training.....	6
2.0 Company Background	7
2.1 Organisation Of The Company	8
2.2 Envosha Client Base.....	9
2.3 Logo Of The Company	9
2.4 Mission Of The Company	9
2.5 Vision Of The Company	9
2.6 Job Scopes	10
2.6.1 Environmental Monitoring Service	10
2.6.1.1 Stack Monitoring Service	10
2.6.1.2 Ambient Air Quality Monitoring Service.....	10
2.6.1.3 Environmental Noise Monitoring (Boundary Noise)	11
2.6.1.4 Water Quality Monitoring And Assessment.....	11
2.6.2 Osha Assessment And Monitoring Service	12
2.6.2.1 Chemical Health Risk Assessment (CHRA).....	12
2.6.2.2 Chemical Exposure Monitoring (CEM).....	12
2.6.2.3 Local Exhaust Ventilation System Assessment (LEV)	13
2.6.2.4 Noise Risk Assessment (NRA).....	14
2.6.3 Other Services.....	15
2.6.3.1 Analytical Test Laboratories.....	15
2.6.3.2 Soil Testing Service	15
2.6.3.3 Environmental Consultancy Services	15
3.0 Flowchart Of Company.....	17

4.0 Overview Of Internship Experience (Activities)	19
4.1 Training And Seminar	19
4.2 Presentation	23
4.3 Site Visit	24
5.0 Description Of Task Assigned (Mini Project), Chra	27
5.1 Introduction Of Chra	27
5.2 Purpose And Objectives Of A Chemical Health Risk Assessment.....	28
5.3 Flowchart Of Chra.....	28
5.4 Assessment Method.....	30
6.0 Conclusion And Recommendation	35
6.1 Conclusion.....	35
6.2 Recommendation.....	35
7.0 References.....	36

ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious and the Most Merciful. All praises to Allah and His blessing for giving me the opportunity to complete my industrial training programme. I thank God for giving me this experience to completing my internship while in the middle of the pandemic as it is the requirement that need to be accomplish for the subject which is Industrial Training (CHE353).

First and foremost, I would like to express my sincere appreciation to Envosha SDN BHD for giving me the opportunity to conduct my industrial training program. and for the guidance to complete this internship while in the middle of pandemic which lasted for 19 weeks.

Throughout my internship, I am very grateful to my industrial training supervisor, Dr Hari Vickness Bin Nadarajan for his continuous guidance in assisting me to complete the tasks assigned. Moreover, I would also like to express my gratitude to the Mr. Alvin for the encouragements and opportunities given, which allow me to gain much experience that will be useful for my future career development. Besides that, I would like to extend my sincere thanks to my team leader, Miss Syahirah Nasuha who gives guidance, supports and advise me throughout my internship period at Envosha SDN BHD. Furthermore, I would also like to sincerely thank all the staff of Envosha SDN BHD who has taught me and their willingness to share their knowledge and experiences. Their kindness had helped me a lot in handling the obstacles encountered

Next, special thanks to my family member as they give me support and encourage me to complete my industrial training and also complete this semester. They really helping me mentally, physically and financially. Without them, I will not able to complete all of these things without this great people. Lastly, to those who had involved and contributed directly or indirectly during my internship, I feel very grateful for them for the effort and initiative that they have shown in order for me successfully completed my industrial training. I really appreciate all the help and contribution. This opportunity is a milestone forward in my professional growth. I will make every effort to put my newly acquired skills and knowledge to the best possible use, and I will continue to work on improving them in order to achieve my professional goals.

1.0 OVERVIEW OF CHE353 - INDUSTRIAL TRAINING

Industrial Training CHE353 is the final course subject in Diploma of Chemical Engineering at Universiti Teknologi MARA (UiTM). This industrial training is compulsory for Semester 6 students in order to complete their diploma studies. Industrial training is also an important component in engineering curriculum. Theories learnt in all the core and non-core courses will have to be applied into the real working environment in chemical industries. Prior to the actual training in industries, students are trained to make job applications before stepping into the real working environment.

The objective of this course programme is to give students exposure and opportunity for them to embark in the real-life working experience. This course is also beneficial for them as they get to expand their knowledge, learn more on the current chemical industries and apply the theories they have learned during their diploma into real-world scenarios.

At the end of this industrial training, students should be able to:

1. Identify the types of work that chemical engineers do in real engineering world and appreciate the theoretical knowledge learnt.
2. Perform basic engineering practices, including technical writing report, communication with colleagues, handling project and generating proposal for betterment of the industries.
3. Have higher level of integrity, ethical and accountability in practicing engineering.

Students are required to undergo this industrial training programme for a minimum of 17 weeks to fulfil a total of 7 credit hours. During my internship, industrial training has been conducted during pandemic Covid 19 which started in 8 March 2021 and end in 15 July 2020, a total of 19 weeks.

This section is left blank intentionally

2.0 COMPANY BACKGROUND

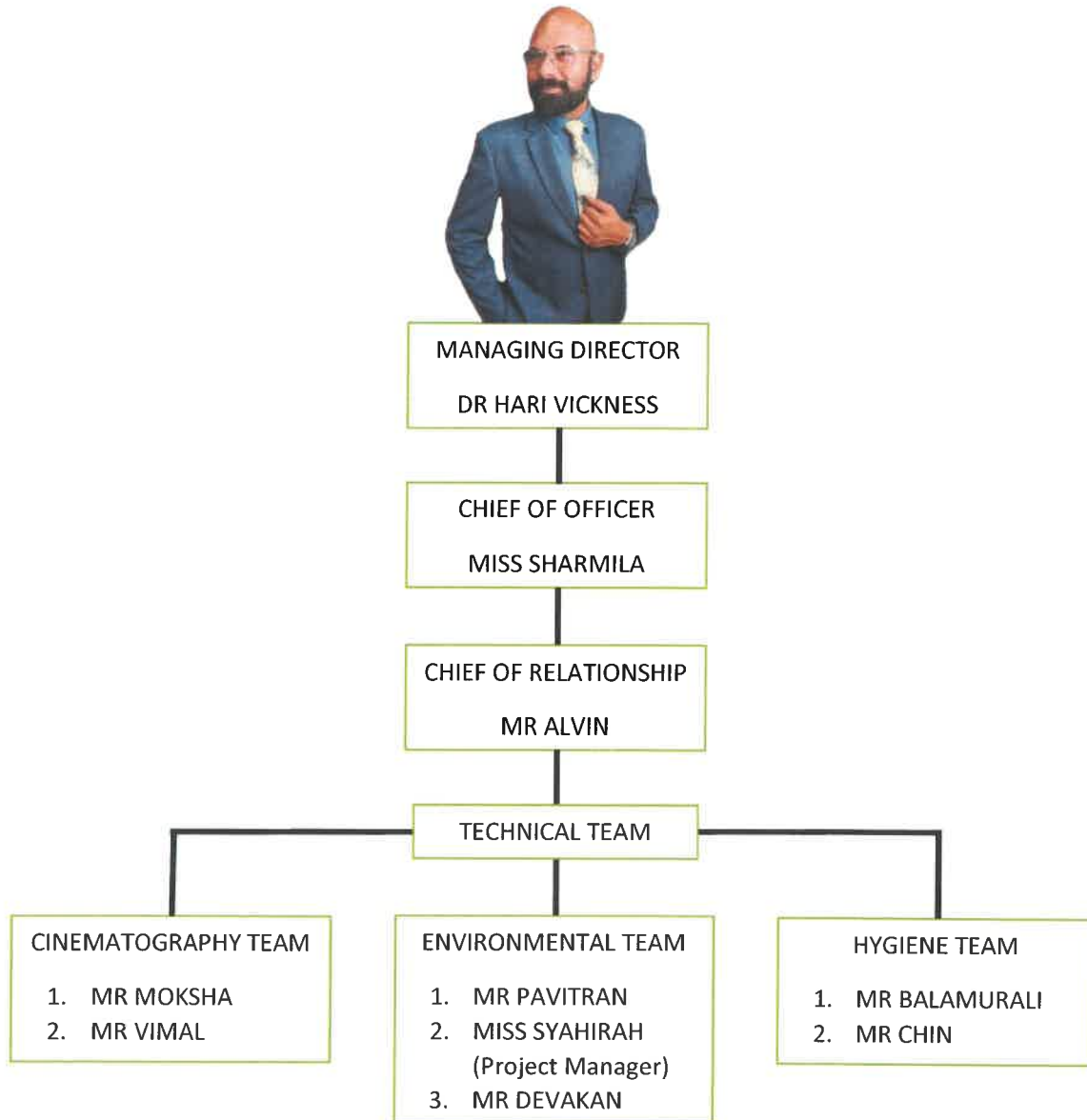
Envosha SDN BHD is an established Environmental and OSHA Monitoring company that is set to grow and develop into a dynamic corporation. Being established since 2006, the company has been striving ahead to be among the leaders in the business to assist our clients in meeting compliance in Environment and OSHA Regulations. The company is managed by Managing Director Mr. N. Hari Vicknes who is an Engineer and has 10 years of vast experience in this domain. Envosha is located in Centrepoint Business Park, Jalan Tanjung Keramat 26/35, Seksyen 26, 40000 Shah Alam, Selangor.



FIGURE 1: LOCATION OF ENVOSHA SDN BHD (CENTREPOINT BUSINESS PARK)

It is the prime duty of an employer to create a healthy and safe working environment for their employees. To ensure that all the businesses fulfil this responsibility, the government has passed many health and environmental regulations to ensure the safety of the employees. To help the government with such good cause, Envosha SDN BHD are offering sophisticated OSHA (Occupational Safety and Health Administration) and other environment monitoring services to the clients. These highly acclaimed services including Environmental Monitoring, OSHA Assessment & Monitoring, Ambient Air Monitoring Services, Industrial Hygiene Services, Chemical Exposure Monitoring, Noise Exposure Monitoring, Air Quality Monitoring, Heat Stress, Chemical Health Risk Assessment, and other allied services are performed by the qualified team. Envosha are working as a service provider in the market, but they also offer their clients with innovative, strong and highly reliable Air Pollution Control Equipment. Envosha wide assortment of these services and top-class equipment has made the company a well-recognized environment safety and health consultants of the market. Envosha plan to improve this image further by keeping enhancing the service quality and diversifying the equipment range more in the future.

2.1 ORGANISATION OF THE COMPANY



The organization structure of the company is comprised of Managing Director, Chief of Officer, Chief of Relationship and three technical team which consist of Cinematography team, Environmental team and Hygiene team. This whole organisation is led by the Managing Director, Dr Hari Vickness Bin Nadarajan. Envosha SDN BHD consists of almost 10 employees.

2.2 ENVOSHA CLIENT BASE

Since incorporation, Envosha SDN BHD has satisfy diverse requirements of their clients with absolute perfection. This has supported the company in gaining a huge customer base. The company unbeatable service quality and attentive customer support have also been a major reason behind the same. Furthermore, the company fair-trade policies and transparent dealing habits have also helped them in earning their patron's trust and loyalty. Envosha immense growth in the market would have been impossible without their constant support. These are some of the major clients that stood by Envosha throughout all the years: -

- | | |
|------------------------------|--------------------|
| 1. Western Digital | 8. Dialog |
| 2. Weir Mineral | 9. Metex Steel |
| 3. United Plantations Berhad | 10. Akzo Nobel |
| 4. Schneider | 11. Eversendai |
| 5. Tan Chong Motors | 12. Edra Power |
| 6. Pharmaniaga | 13. MCT Konsortium |
| 7. YTL Cement | |

2.3 LOGO OF THE COMPANY



FIGURE 2: LOGO OF ENVOSHA SDN BHD.

2.4 MISSION OF THE COMPANY

To offer the most cost-effective services while maintaining high quality and customer care support and to be a multinational organization that offers the best cost-effective solutions for EHS legal compliances.

2.5 VISION OF THE COMPANY

Provide guidance to our clients for maintaining clean, productive as well as safe operational environment in their factories, infrastructural bases and other work units.

2.6 JOB SCOPES

Envosha SDN BHD provides a variety of services for the convenience of their customers. Envosha major services can be categorised with 2 major services which is Environmental Monitoring Service and OSHA Assessment and Monitoring Service. Environmental Monitoring Service consist of 4 services which are: -

- Stack Monitoring Service
- Ambient Air Quality Monitoring Service
- Environmental Noise Monitoring (Boundary Noise)
- Water Quality Monitoring and Assessment

OSHA Assessment and Monitoring Service also consist of 4 services which are: -

- Chemical Health Risk Assessment (CHRA)
- Chemical Exposure Monitoring (CEM)
- Local Exhaust Ventilation System Assessment (LEV)
- Noise Risk Assessment (NRA)

Additionally, Envosha also provide other services such as Analytical Test Laboratories, Soil Testing Service and Environmental Consultancy Services

2.6.1 ENVIRONMENTAL MONITORING SERVICE

2.6.1.1 Stack Monitoring Service

Air Emission Monitoring on Stacks / Chimney is stated in Environmental Quality (Clean Air) Regulations 1978. This Stack Monitoring Service has become one of the essential tests to be carried-out by taking samples using isokinetic and non-isokinetic methods according to the demands of the clients. Envosha also provides Dark Smoke Observation test on the stack emission. It is provided to capture particulates that pass through a definite area without altering the travel paths. The gas velocity of the sampling probe's nozzle is equal to the moving stack gas velocity. It is disturbed as little as possible to make the particles go into the probe nozzle in the same amount.

2.6.1.2 Ambient Air Quality Monitoring Service

Ambient Air Quality Monitoring Service is provided to assess the quality of air in a particular area. This is perfect for examining the local ambient air quality that can be degraded by diesel vehicles, gas emissions and so on. Envosha offer these testing services at carefully selected places for evaluating the ambient air quality of any particular site. The company skilled

professionals assess the ambient air quality in any industrial site according to the norms of ISO 14001 Environmental Management System. The company have years of expertise in monitoring the ambient air quality, hence they carry-out different surveys on the parameters of Total Suspended Particulates (TSP and PM 10), heavy metals, H₂S, Cl₂, SO₂, NO₂, CO and many more. In addition to this, they also consider the other factors such as acid mists for example like HCl, HNO₃, H₃PO₄, H₂SO₄, H and so on. Volatile organic compounds like Benzene, toluene, temperature, humidity, wind speed, pesticides and Polychlorinated biphenyl (PCBs) and other species by request are also considered.

2.6.1.3 Environmental Noise Monitoring (Boundary Noise)

Environmental Noise Monitoring or boundary noise is designed to set the noise level meter at the A-weighted scale to record noise level automatically that further integrated by the built-in electronic system in terms of LEQ. Envosha will ensure to calculate day and night boundary noise level, verify the source which contributing to the noise and comparing the boundary level. The company also prepare the complete Post-EIA Environmental Monitoring and Boundary Noise study report for submitting to the Department of Environment. These are type of places or application areas for Environmental Noise Monitoring: -

- Construction and maintenance
- Demolition work by land use
- Industrial sites and machines
- Land use for planning
- New development in high environmental noise climatic areas
- Railways including transits
- Road traffic
- Transportation vehicles
- Factory

2.6.1.4 Water Quality Monitoring and Assessment

Envosha have years of experience and expertise in carrying-out Water Quality Monitoring and Assessment services and implementing groundwater monitoring programs. The program includes water sampling, well purging, as well as analysing of comprehensive parameters. They also conduct sampling and analysis of soil samples for determining the soil profiles for different contaminants. The service is provided to remove the chances of contamination of groundwater to make it healthy and pure for further usage.

2.6.2 OSHA ASSESSMENT AND MONITORING SERVICE

2.6.2.1 Chemical Health Risk Assessment (CHRA)

As stated in Section 9 of Occupational Safety and Health Regulation 2000 (USECHH reg.2000), employer should create a written assessment of the risk caused by the chemical used in place of work. Based on USECHH Reg.2000, he or she (competent person) should carry-out the Chemical Health Risk Assessment (CHRA) for the chemicals that is hazardous to health. The Assessment should be conducted by a DOSH registered Assessor and create an Assessment Report that is valid for 5 Years. Envosha provide the best Chemical Health Risk Assessment Services to the clients by covering vast aspects of potential risk to workers, handling chemicals, nature of hazard, exposure degree and risk to health. In addition to this, they also conduct operations to control measures - engineering control equipment. The company will also ensure to meet the demands of chemical exposure monitoring and health surveillance program. Envosha comprehensive CHRA services ensure to provide complete guidance on enhancing the current control measure and developing a complete report as per the USECHH 2000.

2.6.2.2 Chemical Exposure Monitoring (CEM)

Employees can be exposed to chemical agents through three main routes: skin contact; ingestion; and inhalation. While exposures by skin absorption and ingestion are relatively easily recognised and controlled, the evaluation of inhalation hazards is more complex. Chemical exposure monitoring (of airborne vapours or particles of hazardous chemicals) will be required to confirm whether specific hazardous chemicals are present and to determine if the concentration presents a health risk to employees. According to USECHH regulation 2000, Part 1, under clause “Duty of Employer”, the employer should take necessary action to reduce and maintain the exposure level of employees to chemical hazardous to health to the lowest practicable level and below the permissible exposure limits.

Section 26 USECHH regulation 2000 stated that, monitoring is to be conducted on employee’s exposure to chemical hazardous to health listed in Schedule II of the USECHH Regulation 2000 and where CHRA recommend monitoring to be conducted in accordance with an approved method of sampling and analysis for the chemical hazardous to health. Workplace exposure monitoring also may be required for other reason such as:

- To ensure the employees’ exposure level are maintained below the Permissible Exposure Limits (PEL)
- To ensure the maintenance of adequate control measure

- To quantify exposure during new process set-up
- To assess the effects of a change in process specification
- To ensure that the risk assessment is still valid

Envosha offer a comprehensive monitoring service, tailored to meet any or entire above requirement. They can offer the best with the most up to date equipment and services in workplace. The monitoring must be carried out and shall repeated at interval of not more than six months. The chemical monitoring shall be conducted by Registered Hygiene Technician.

2.6.2.3 Local Exhaust Ventilation System Assessment (LEV)

Local Exhaust Ventilation System Assessment services are provided to protect the health of individuals by assessing hazardous materials. As per USECHH Regulation 2000, Part V, under clause “Action to Control Exposure”, a control measure by Application of Engineering Control Equipment needs to be maintained and tested at regular intervals for controlling the exposure effectively.

According to Section 17. USECHH Regulation 2000, a worker should inspect the General Exhaust Ventilation (GEV) and (Local Exhaust Ventilation) LEV once in a month. The system should be examined for effectiveness by Industrial hygienist once in a year. Envosha have experienced technicians that conduct every single task with unmatched excellence within the decided time-frame.

Assessment of LEV:

- Accurate assessment of control exercised level over airborne contaminants
- Comprehensive report detailing current legislation and recommendations are provided
- Different tests like vane and hot wire anemometers, smoke visualization tubes and pitot tubes are conducted
- Measurement of capture velocities
- Measurement of static pressure, face velocity, duct velocity as well as velocity pressure for examining the performance of the system
- Observation of operators to make them control measures correctly
- Smoke test for checking leakage in the system
- Test results are compared to original designs given in ACGIH
- Visual inspection of the system to determine physical conditions

2.6.2.4 Noise Risk Assessment (NRA)

Occupational noise-induced hearing loss is one of the most common occupational hazards. Exposure to high levels of noise may cause hearing loss, create physical and psychological stress, reduce productivity, interfere with communication, and contribute to accidents and injuries by making it difficult to hear warning signals.

Initial Noise Exposure Monitoring

The Section 9, Factories and Machineries (Noise Exposure) Regulations, 1989 (FMA 1989) requires employers to determine if employees are exposed to excessive noise in the workplace. If so, the employers must implement feasible engineering or administrative controls to eliminate or reduce hazardous levels of noise. Where controls are not sufficient, employers must implement an effective hearing conservation program. An employer shall carry out initial noise monitoring at workplace and must comply with the following limits which is Action level equal to 85 dB(A), PEL (Permission Exposure Level) equal to 90 dB(A) and Maximum at any Time equal to 115 dB(A).

Initial noise monitoring limited to one or more representative employee from group of employees performing same work. Envosha has highly qualified and experienced competent persons registered with the Department of Occupational Safety & Health to carry out occupational noise exposure assessment and monitoring that includes: -

- Measurement of noise emission from single noise source or combination of noise sources for example machinery, for noise abatement purposes.
- Noise mapping in the form of noise zones to identify area with high noise levels.
- Employee's noise exposure monitoring using integrated noise dosimeter.
- Provides recommendations on control and reduction of noise exposure and hearing conservation measures.

Positive Initial Monitoring

As stated in Section 10, FMA 1989. If Initial employee noise monitoring results shows the possibility of any employee exposure to noise level at or above action level. The employee shall determine noise exposure levels for employees engaged in same work within six months of date of receipt of the initial noise monitoring.

Negative Initial Monitoring

As stated in Section 11, FMA 1989. Whenever there are changes in production, process, equipment, control measures in the factory within six months from date of changes.

2.6.3 OTHER SERVICES

2.6.3.1 Analytical Test Laboratories

Analytical Testing Laboratories are provided to ensure material testing services to meet the needs of clients, markets and sectors. Envosha provide modern analytical laboratory techniques, instrumentation as well testing methods to render the critical analysis information. The company meet the demands of trouble-shooting, quality control, research and so on by offering value-added services. In addition to this, they also render crucial laboratory support to the patrons for meeting different business and research requirements. Envosha have been providing the best services at affordable prices to ensure complete client satisfaction.

2.6.3.2 Soil Testing Service

Soil Testing Service is offered to provide accurate and effective analysis of soil. This service is provided for estimating the plant-available concentrations to estimate plant nutrients. It is conducted to determine the recommendations of fertilizer in agriculture. This is provided for geochemical, engineering (geotechnical) or ecological investigations. This service is provided to enable the clients to maintain the soil health and quality. It is provided to measure the ability of soil for supplying essential nutrients and enhance other important factors. This service is ideal to estimate pH, nutrient deficiencies, organic matter and other contents.

2.6.3.3 Environmental Consultancy Services

We from Envosha, serves our clients in consultancy in legal requirements and standards. Envosha list of Environmental & OSH Consultancy Service is listed below:

- Application for Initial Site Survey (Penilaian Awal Tapak - PAT).
- Application for Conditional Approval Letter (Kebenaran Bertulis - KB) for Chimneys Stacks.
- Environmental Impact Assessment (EIA)
- Draw up Environmental Management Plan (EMP) for projects.
- Environmental Audits.
- Supply of Environmental Officers / Supervisors for project site management.
- Preparation of Material Safety Data Sheet for various chemical substances.

- ISO 14001 Environmental Management System Consultancy & Evaluation.
- Formulation of Safety Management System (SMS) for various industry types.
- Draw up OSH Management Plan for industries.
- Accident Investigation.
- Hazard Identification Risk Assessment and Determining Control (HIRADC).
- OSH Audit.
- OHSAS 18001 OSH Management System Consultancy & Evaluation.
- MS 1722 Malaysian Standard OSH Management System Consultancy and Evaluation.
- Supply of Safety Supervisors, Officers Managers for Project Site.
- Major Hazard Assessment (CIMAHA)

This section is left blank intentionally

3.0 FLOWCHART OF COMPANY

This company does not have specific process flow as it is not a production company. Envosha SDN BHD is a based Eco-friendly business providing the OSHA and environment monitoring services to the client. Their engineer will prepare the services based on the demand of their client. Process flow below showed flow on how does the engineer prepare concluded and their reporting task: -

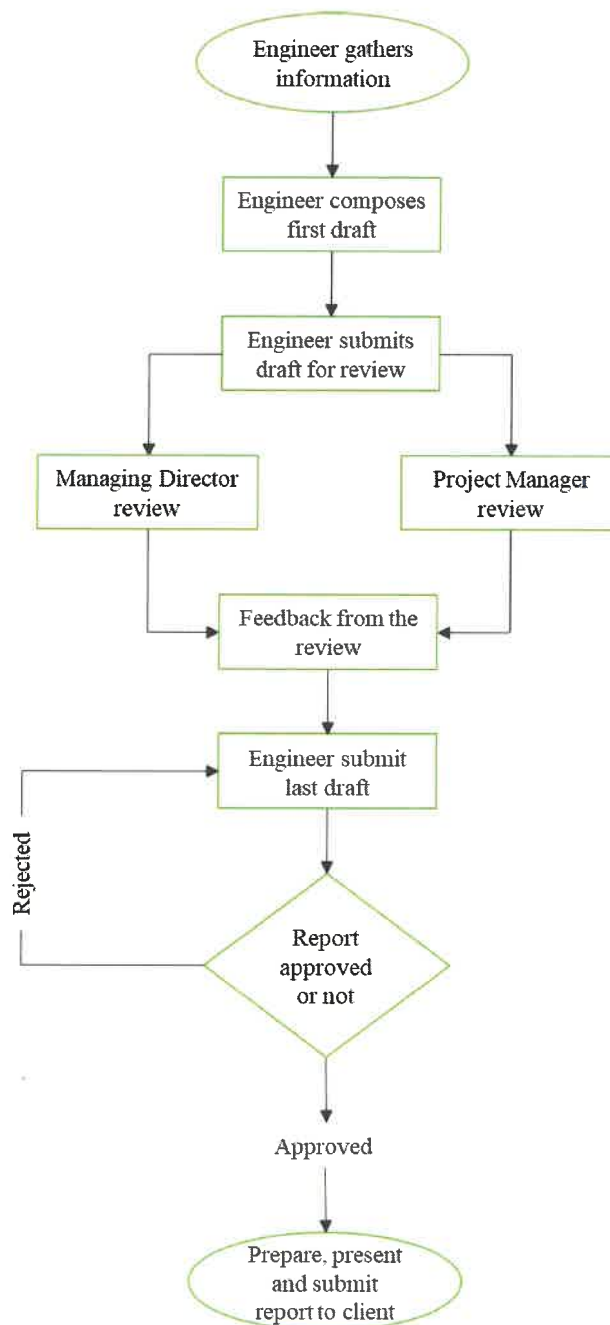


FIGURE 3: FLOWCHART ENGINEER SUBMITTING REPORT AT ENVOSHA

Before engineer can proceed with the task, there are several steps that need to be done. Below are the steps on how does the company manage their business with the client regarding the demanded services.

1. Client contacting the company.
2. Set a meeting between the client discussing the business.
3. Gather information from the client regarding the services needed.
4. Chief of officer informed managing director.
5. Company will set a session discussing the project with other teams that will be in charge.
6. Project manager set a date between client and person in charge so the assessment can be done.
7. Person in charge gather all information from the site visit in client company.
8. Start reporting

This section is left blank intentionally

4.0 OVERVIEW OF INTERNSHIP EXPERIENCE (ACTIVITIES)

4.1 TRAINING AND SEMINAR

1. On 3 March 2021, Seminar KKP Negara 2021 have been organised by Universiti Teknologi Malaysia (UTM) with collaboration of Unbox Resources. KPP stand for Jabatan Keselamatan Dan Kesihatan Pekerjaan or Department of Occupational Safety and Health (DOSH). This seminar used ZOOM cloud meeting as their platform and started at 8.30 am until 5.30 pm. Figure 4 shows the poster and tentative of the seminar. Figure 5 is the screenshot of the seminar on the zoom platform.



FIGURE 4: POSTER OF THE SEMINAR

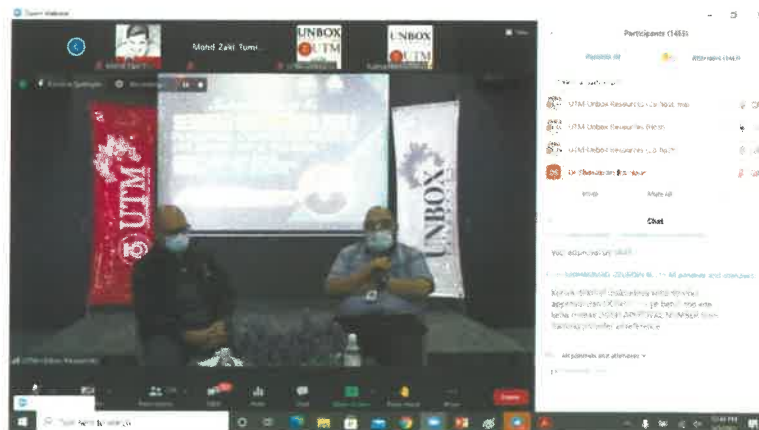


FIGURE 5 SCREENSHOT OF SEMINAR

2. On 9 March 2021, Chemical Health Risk Assessment (CHRA) training was organised by Envosha. The training was held in office company and duration of the training is from 9 am to 5 pm. The speaker for the training is Mr Chin Tuck Peng, an experience assessor who have been involve many years in doing CHRA assessment. This training has given all the participant a lot knowledge about CHRA. Figure 6 shows the first page of the training slide that was given to participant.

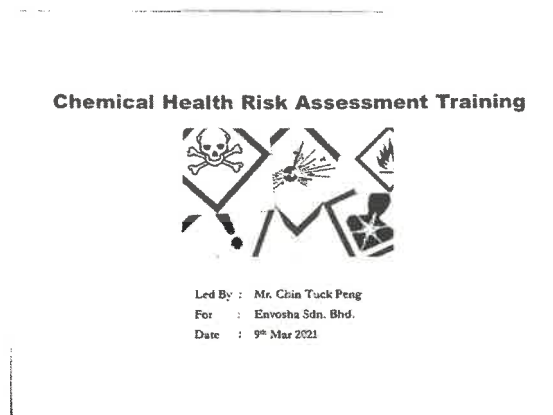


FIGURE 6: CHRA SLIDE

3. On 26 March 2021, ISO training was organised by Envosha. The training was held in office company and duration of the training is from 9 am to 5 pm. The speaker for the training is Mr Soh Beng Hok. ISO stand for International Organization for Standardization. In this training, the participant has been given a knowledge of 3 type of ISO which is ISO 9001, ISO 14001 and ISO 45001. ISO 9001 stand for quality management system, ISO 14001 for environmental management systems and ISO 45001 is used for Occupational Health and Safety Management Systems. Figure 7 shows the first page of each training slide.



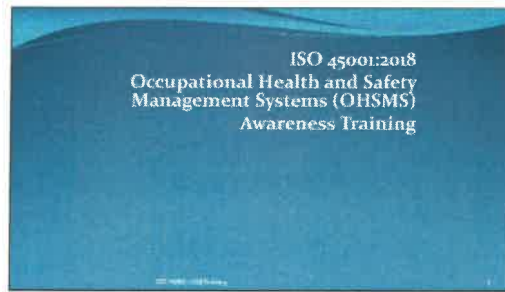


FIGURE 7: ISO SLIDE

4. On 28 March 2021, a financial seminar entitled “WHERE IS MY MONEY” was organised and held in Bandar Parkland, Klang, Selangor. The duration of the training is from 9 am to 4 pm. The speaker for the seminar is Mr Kannathasan Punnyan, a register financial planner. This training has given all the participant a lot knowledge on how to correctly manage our money. Figure 8 shows the seminar poster.

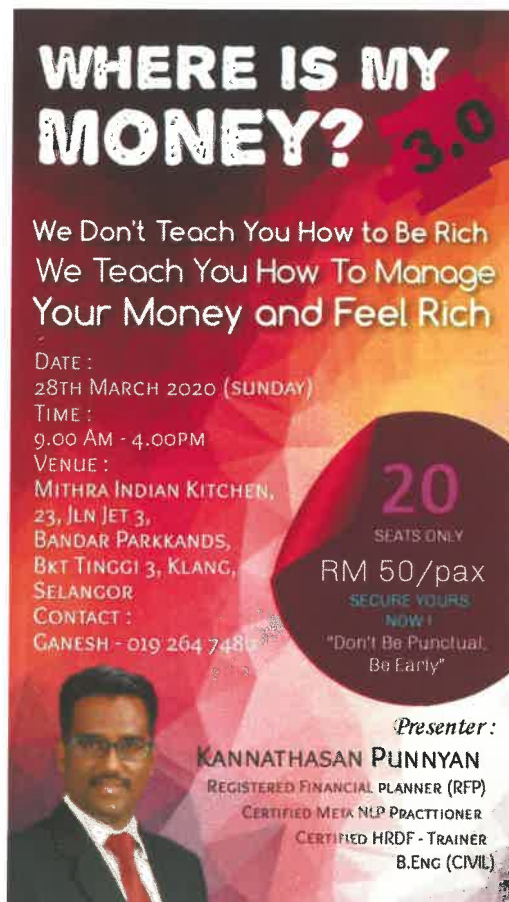


FIGURE 8: POSTER OF THE SEMINAR

5. On 29 March 2021, a training on rain water monitoring was held in the office. This training was the preparation for an actual rain water monitoring that was held on 31 March 2021. This training was given from Envosha project manager, Miss Syahirah Nasuha. The rain monitoring will take place in two places, MRT Sierra 16, Persiaran Sierra Utama, Bandar 16 Sierra, 47110 Puchong, Selangor and MRT Bandar Malaysia, Jalan Lapangan Terbang Lama Pengkalan Tentera Udara Diraja Malaysia 50460 Kuala Lumpur. Figure 9 shows the information of rain water monitoring.

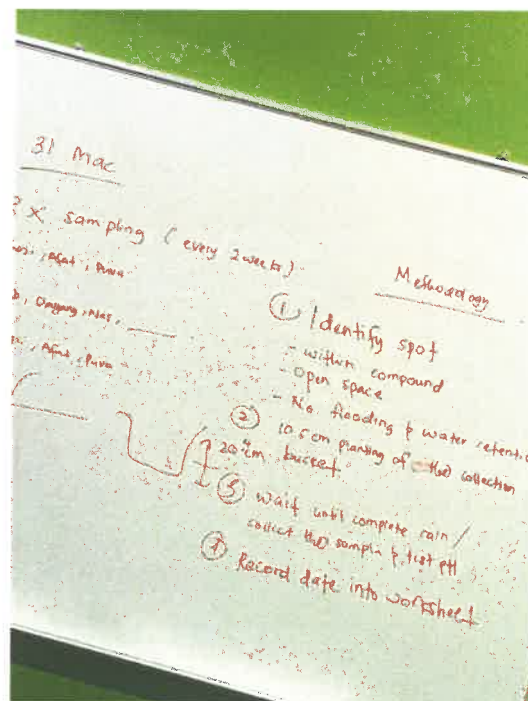


FIGURE 9: INFORMATION OF RAIN WATER MONITORING

6. On 7 April 2021, a training on Noise Risk Assessment (NRA) and boundary noise was held in the office. This training was the preparation for the actual NRA that was held on 8 April 2021 at Jimah East Power Sdn Bhd that located in Port Dickson, Negeri Sembilan and boundary noise that was held on 3 May 2021 until 4 May 2021 at Guocera Tile Industries (Kluang) Sdn. Bhd that located in Kluang, Johor. This training was given from Envosha Managing Director, Mr Hari Vickness. Figure 10 shows the picture of the training given by Mr Hari Vickness.

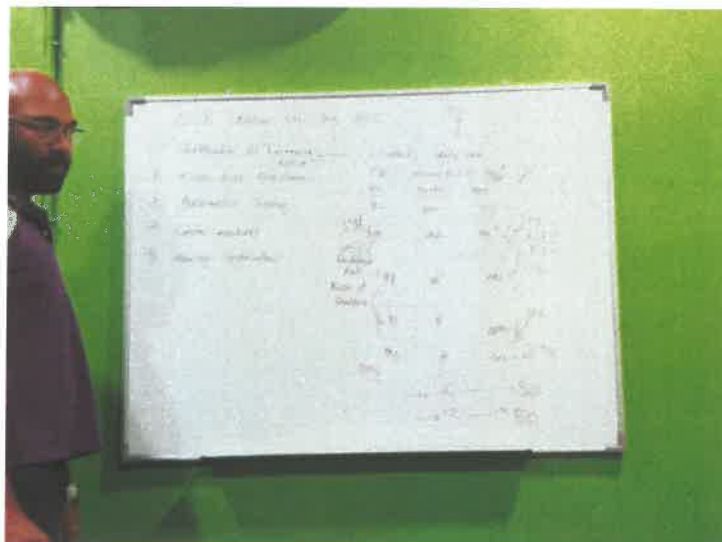


FIGURE 10: PICTURE OF TRAINING

4.2 PRESENTATION

1. On 17 March 2021, a presentation of Chemical Health Risk assessment process flow was presented by me and my group member to Envosha managing director, Mr Hari Vickness. Figure 11 shows the flow of CHRA on the presentation day.

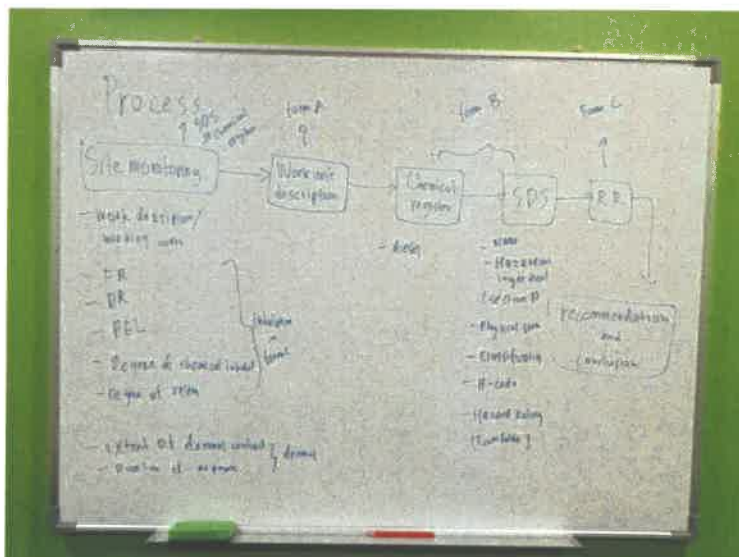


FIGURE 11: FLOW OF CHRA

2. On 15 April 2021, a presentation of Chemical Health Risk Assessment on Lahad Datu company, our first CHRA task was presented by me and my group member to Envosha managing director, Mr Hari Vickness. Figure 12 shows the first page of our presented slide on the presentation day.

LAHAD DATU CHRA REPORT

NO.	NAME
1	MUHAMMAD ARAFAT BIN JELANI
2	PUVANESH A/P SUBBUODAYAR
3	DAYANG NUR SYIDATUL AFSAH

FIGURE 12: FIRST SLIDE OF PRESENTATION

4.3 SITE VISIT

1. On 31 March 2021, rain water monitoring was conducted in MRT Sierra 16, Persiaran Sierra Utama, Bandar 16 Sierra, 47110 Puchong, Selangor and MRT Bandar Malaysia, Jalan Lapangan Terbang Lama Pengkalan Tentera Udara Diraja Malaysia 50460 Kuala Lumpur. The assessment was led by Miss Syahirah Nasuha. Me and other internship students was in charge in setting up the equipment for the monitoring. Figure 13 shows the set-up equipment for the monitoring.



FIGURE 13: RAIN WATER MONITORING.

2. On 5 April 2021, me and other internship students was in charge to pick up the water rain sample at MRT Sierra 16, Persiaran Sierra Utama, Bandar 16 Sierra, 47110 Puchong, Selangor. Then, the sample was sent to Envichem Consults Sdn. Bhd that located in Klang, Selongor for pH testing. Figure 14 shows the picture of collecting the rain water sample from the pail.



FIGURE 14: RAIN WATER SAMPLE COLLECTION IN MRT SIERRA 16

3. On 6 April 2021, me and other internship students was in charge to pick up the water rain sample at MRT Bandar Malaysia, Jalan Lapangan Terbang Lama Pengkalan Tentera Udara Diraja Malaysia 50460 Kuala Lumpur. Then, the sample was sent to Envichem Consults Sdn. Bhd that located in Klang, Selongor for pH testing. Figure 15 shows the picture of collecting the rain water sample from the pail.



FIGURE 15: RAIN WATER SAMPLE COLLECTION IN MRT BANDAR MALAYSIA

4. On 8 April 2021, Noise Risk Assessment was conducted in Jimah East Power Sdn Bhd that located in Port Dickson, Negeri Sembilan. The assessment was led by Mr Balamurali. Figure 16 shows picture of Stesen Janakuasa Jimah.



FIGURE 16: STESEN JANAKUASA JIMAH.

5. On 3 May 2021 until 4 May 2021, Noise boundary assessment was conducted in Guocera Tile Industries (Kluang) Sdn. Bhd that located in Kluang, Johor. The assessment was led by Miss Syahirah Nasuha. Me and other internship students was in charge in setting up the equipment for the assessment. Figure 17 shows the set-up equipment for the monitoring.



FIGURE 17: NOISE BOUNDARY

5.0 DESCRIPTION OF TASK ASSIGNED (MINI PROJECT), CHRA

During my internship, me and my teams was given a short project to be completed. My teams have a total of 4 members and we have receiving guidance from an experience assessor. The project assigned was to do Chemical Health Risk Assessment (CHRA) for ST Micro Company that located in Muar, Johor. There consists of 668 chemicals and divided into 23 work units. This project basically requires a site visit to the company. However, due to this pandemic and Control Movement Order (MCO), the company does not encourage us to perform the site visit. So, me and my teams has been in charged in the reporting task.

Before I was ready to do the Chemical Health Risk Assessment, I was taught on methods to do this assessment. I involve in CHRA training conducted by trainer in the office. I have learnt on how to access the information that required from Safety Data Sheet (SDS). I understand that the information is crucial to carry out the assessment. I was also taught on how to use the information to give comments and recommendations if required. To highlight, I joined more training on chemical health risk assessment where I learned in detail on how to access information of SDS and how to apply to do the report.

Objective of this task is to apply the knowledge and experiences gained throughout the training and implement it to CHRA assessment. Before attempting this task, I prepared myself in various ways to completely understand about Chemical Health Risk Assessment. The detail of the report cannot be shared as it is confidential between company. However, the steps of doing the assessment can still be access based on the manual that can be download from Dosh website. Explanation of CHRA will be further explain more in the next part.

5.1 INTRODUCTION OF CHRA

Protecting workers from the adverse effects of chemicals is one of the primary duties of an employer under the Occupational Safety and Health Act 1994. To perform this duty, an assessment of all chemicals used in the workplace must be carried out in order to identify, evaluate and control any health risk associated with work activities involving the use of the chemicals. Under the USECHH Regulations, employers are not permitted to carry out any work which uses any Chemicals hazardous to health (CHTH) unless the assessment has been conducted. Therefore, the employer has a duty to perform an assessment of the potential health risks arising from the use of CHTH at the place of work. The requirement is applicable to the production, processing, handling, storage, transport, removal, disposal or treatment of any CHTH at the place of work. An assessment of risk to health is the evaluation of how CHTH

are used at work and the health risks involved. The decision about appropriate action to control workers' exposure will depend on the degree of risk to health that arises from the use of CHTH in particular work activities. This manual has been designed to provide guidance on procedure to conduct full assessment of risk to health using a Chemical Health Risk Assessment or in short, CHRA method by going through a step-by-step procedure and using prescribed techniques and format.

5.2 PURPOSE AND OBJECTIVES OF A CHEMICAL HEALTH RISK ASSESSMENT

Purpose of conducting CHRA is to enable decisions to be made on:

- appropriate control measures;
- induction and training of workers;
- the necessity of exposure monitoring programme; and
- the necessity of medical surveillance programme;

as may be required to protect the health of workers who may be exposed to CHTH at work.

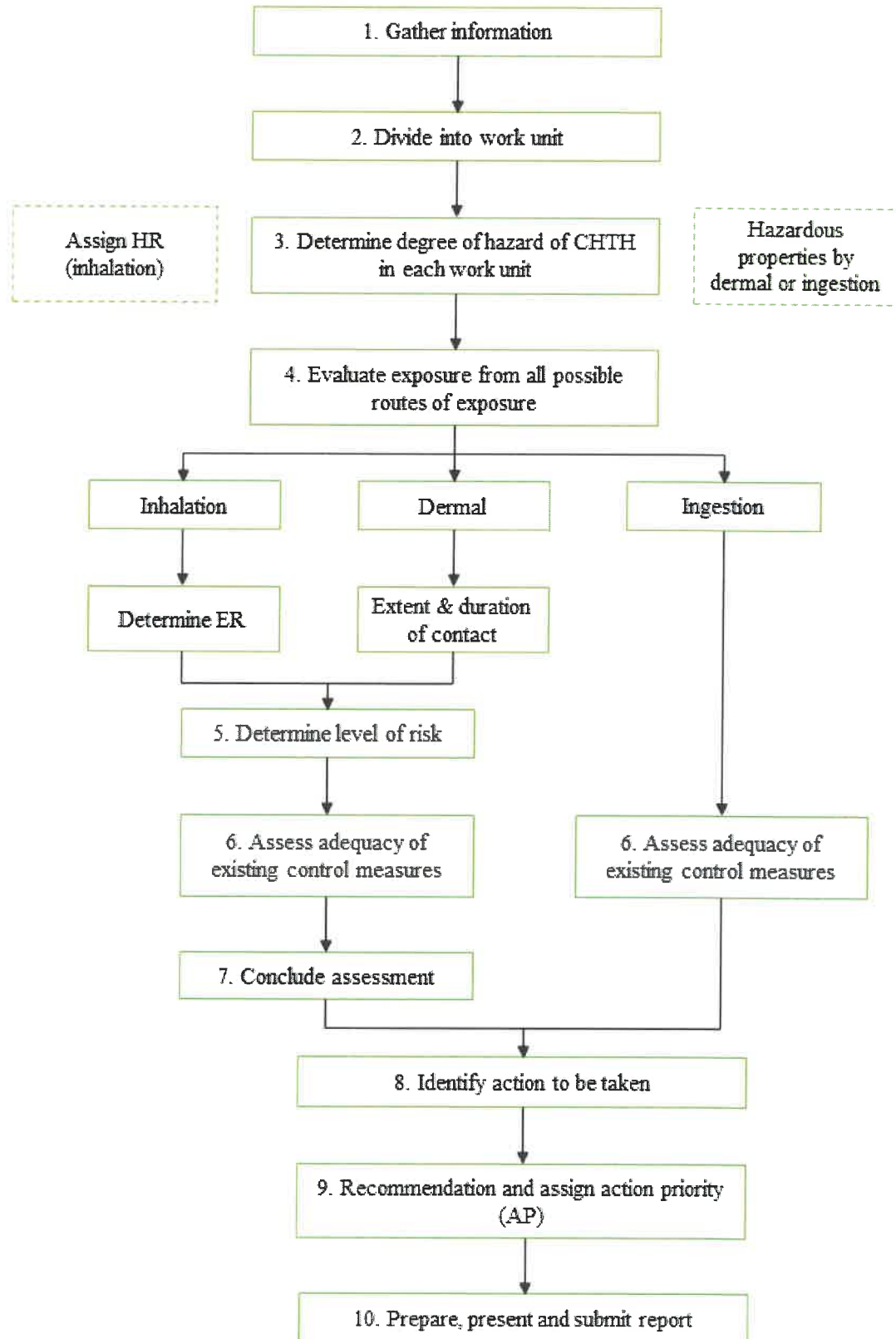
Objectives of CHRA are:

- To identify the health hazards posed by chemicals stored, handled, used and transported at the workplace by referring and analysis of Safety Data Sheet (SDS).
- To evaluate the degree of exposure of employees to chemicals either through inhalation, skin absorption, contact and or ingestion by conducting walk through inspection, interviews of employees and actual job observation.
- To evaluate the adequacy of existing control measures by comparing actual practices against recommendation proposed in the SDS.
- To make a conclusion of risk whether it is significant or not significant to employees' health.
- To recommend further appropriate control measures for work units identified as having significant risks.

5.3 FLOWCHART OF CHRA

The procedure in carrying out a CHRA consists of 10 steps and is summarized in Figure 18 in the next page.

Figure 18: Steps in conducting CHRA



5.4 ASSESSMENT METHOD

The steps in doing the chemical health risk assessment were in accordance with the DOSH CHRA Manual, 2017 i.e., “Manual for the Assessment of the Health Risks arising from the use of Hazardous Chemicals in the Workplace: 3rd Edition” where involves the following:

1. Initial Visit

For the purpose of gathering the initial information and identifying the work units namely:

- Inspection of work areas where chemicals are used, handled, stored or released.
- Identify Personnel Exposed to Hazardous Chemicals
- Familiarization with process area and storage facilities
- Conduct walks through inspection
- Gathering information on work practices and procedures
- Determining the work units

2. Determining the Degree of Hazard

All chemicals hazardous to health were identified and confirmed with the management, supervisors and workers during site visit. Degree of hazard of each chemical was determined based on the health effect, hazard classification, H-code, acute toxicity data (for inhalation exposure) and hazardous properties (for dermal exposure). All data above are obtained from SDS, observations and information from workers during the interview session. This step is to determine the Hazard Rating for inhalation exposure and Hazardous Properties for dermal exposure of a chemical. For route of exposure through inhalation, degree of hazard is rated on a scale of 1 to 5. Rating of 1 implying least adverse health effects and a rating of 5 implying most severe adverse health effects. For route of exposure through dermal, degree of hazard is categorized by the effect of chemicals to dermal (skin and eyes) based on the hazardous properties which are irritation, corrosion, sensitization or skin-absorption and other properties.

3. Evaluate Exposure

The exposure to chemicals for each work unit was assessed by interviews and observation using the methods, tables and risk and exposure rating recommended in the DOSH guidelines on CHRA. Chemical exposure monitoring was not conducted prior the assessment, therefore the method used for this assessment was qualitative evaluation based on site visit, inspection, record and document review.

In this step, degree of exposure is evaluated for route of exposure through inhalation and route of exposure through dermal. For route of exposure through inhalation, degree of exposure is ER, Exposure Rating. Degree of exposure for inhalation is rated on a scale of 1 to 5. Rating of 1 implying least adverse health effects and a rating of 5 implying most severe adverse health effects by using Exposure Rating Table in aforementioned guidelines which involved Frequency Rating, Duration Rating and Magnitude Rating.

The ER is relying on the Frequency Rating, Duration Rating and Magnitude Rating. The Frequency Rating (FR) is referred to how frequent the workers exposed to chemical, for example, once a year or once per shift. The more frequent workers exposed to chemical, the higher the rating (scale 1 to 5, rating of 1 implying least).

The Duration Rating (DR) is referred to how long the period workers exposed to chemical, for example, less than an hour or more than 7 hours per shift. The longer period workers exposed to chemical, the higher the rating (scale 1 to 5, rating of 1 implying least). Frequency-Duration Rating (FDR) is assigned to further determine ER after the FR and DR are determined.

Magnitude Rating (MR) is relying on Degree of Chemical Release or Presence and Degree of Chemical Inhaled. For MR, rating of 1 implying least and a rating of 5 implying most. For both Degree of Chemical Release or Presence and Degree of Chemical Inhaled, degree of Low, Moderate or High will be evaluated. All rating above is determined by using Degree of Chemical Release Table, Presence and Degree of Chemical Inhaled Table and Magnitude Rating Table in aforementioned guidelines.

For route of exposure through dermal, Extent of dermal contact and duration of contact will be evaluated. Extent of dermal contact is referred to large area skin contact or small skin contact. Duration of contact is referred to Short term (<15 min/shift) or long term (>15 min/shift). All evaluation above is carried out by using aforementioned guidelines.

4. Determining the Risk

Risk Determination is done for inhalation exposure and dermal exposure respectively. For inhalation exposure, Risk Rating (RR) is assigned by using the Hazard Rating (HR) and Exposure Rating (ER). The RR is determined using the following equation:

$$RR = HR \times ER$$

By using the Level of Risk Determination Table in the aforementioned guidelines, the level of risk is determined based on the result of RR which are:

Low Risk: RR = 1 to RR = 4

Moderate Risk: RR = 5 to RR = 12

High Risk: RR = 15 to RR = 25

For dermal exposure, the Level of Risk is determined based on the information of the Hazardous Properties, Observation on Extent of Contact and Duration of Exposure. Risk Matrix for Dermal Exposure Table in the aforementioned guidelines is used to determine the Level of Risk. The level of risk for dermal exposure is categorized into three categories of risk which are:

1: Low Risk

2: Moderate Risk

3: High Risk

5. Adequacy of Control Measures

This was done simultaneous with the exposure evaluation by inspection, checking records on control equipment and procedures including the use and maintenance of PPE. Also checked were equipment maintenance records and records of incidents/accidents. The existing technical controls (TC) are evaluated which are Isolation or Enclosed, Engineering Control & Ventilation and PPE.

6. Conclusion of Assessment

- a) For each chemical listed (used) in each work unit the Level of Risk for inhalation exposures and Level of Risk for dermal exposures are determined after the steps of determining the degree of hazard, evaluate exposure and determining the risk.
- b) A final Action Priority (AP) of 1 – 3 is determined based on the Level of Risk for inhalation exposures, Level of Risk for dermal exposures and Adequacy of Existing Control Measures. Table 1 below in the aforementioned guidelines is referred to determine the AP:

Level of Risk	Adequacy of Control	Action Priority (AP)
High	Inadequate	1
HR or ER could not be determined	-	
Moderate/Low	Inadequate	2
High/Moderate/Low	Adequate	3

TABLE 1: ACTION PRIORITY DETERMINATION

This section is left blank intentionally

TABLE 2: EXAMPLE OF TABLE OF CONTENT FOR CHRA REPORTING

	Page
Part 1 Executive Summary	
1.1 Main Activities Carried Out	
1.2 Findings and Conclusions	
Table S1: Summary of Action Priority for Different Work Units	
Table S2: Action Priority Determination	
Part 2 Background	
2.1 Introduction	
2.2 The Purpose and Objectives of Assessment	
2.3 Description of the Company and Work Site	
2.4 Process and Work Unit Description	
Table 2.1: Work Units Description	
Part 3 Assessment Method	
Part 4 Findings	
4.1 List of Chemicals Identified during on Site Assessment at Company A Sdn. Bhd. on Work Units	
Table 4.1: List of Chemicals Identified in the Work Unit	
Table 4.2: List of Chemicals Identified in the Work Unit	
Table 4.3: List of Chemicals Identified in the Work Unit	
4.2 Result of Hazard Determination, Exposure Assessment, Risk Rating for the chemicals used / exposure to and Conclusion for each work unit	
4.2.1 The Chemicals Assigned with Action Priority (AP) 1	
4.2.2 The Chemicals Assigned with Action Priority (AP) 2	
4.2.3 The Chemicals Assigned with Action Priority (AP) 3	
4.2.4 The Chemicals with Ingestion Hazard	
4.2.5 The Chemicals Not Classified under CLASS Regulation 2013	
4.3 Level of Risk and Conclusion of Adequacy of the Existing Control	
4.4 Action Priority Decisions	
Part 5 Discussion	
5.1 Adequacy of Existing Control Measures	
Part 6 Conclusion	
6.1 Summary of Recommendations	
Part 7 Source of References	
Part 8 Appendices	
Appendix 1: Form A - D	
Appendix 2: Assessor Certification	
Appendix 3: Process Flow Chart	
Appendix 4: Plant Layout	
Appendix 5: Classification under 2013 CLASS Regulations	
Appendix 6: Sample of Label	

6.0 CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

In conclusion, 19 weeks internship program at Envosha Sdn Bhd served as a platform for me to develop and increase myself worth. I am able to polish my technical and soft skills through the experience I gained during the training. I was trained to be independent especially when finding solutions out of the box for most of the task. From the practice given, I learned that creative and innovative thinking are important when finding solutions for any problems. The knowledge and skills I have received during the industrial training period has helped me to develop into a real working scenario specializing in safety and health industry.

During my internship period, I have gained a lot of new knowledge. One of the most valuable skills I learned is the ability to speak with people in a professional setting where I understand that discussion with bosses and co-workers are different from discussion with lecturers or fellow students. Besides, I also learned on how to write a professional email and what the proper contents to be addressed are. During my internship period, there are times where I need to make my own decisions and do things on my own which was a great learning experience to make me more independent. On the other hand, I learned to accept constructive criticism well.

All in all, Envosha Sdn Bhd is a good platform to gain knowledge and experience. By being an industrial trainee, I have been provided direct exposure to the work environment which provides valuable experience for a future career. Besides, I was also able to link and learn to apply the knowledge I gained in university and practice it in completing the tasks or projects assigned in work.

6.2 RECOMMENDATION

Overall, after undergoing industrial training at Envosha Sdn Bhd, I am very satisfied and grateful for being given the opportunity to conduct my internship here. The relationship between the supervisor and the staff of the company is also good and close because of the nature of mutual respect regardless of age. As interns are new to working field, they definitely seek for a friendly company culture. Therefore, the working environment should be friendly that can always make interns feel safe and happy and also make them confident to seek for a help. Finally, firms must provide opportunities for students to be able to go for any site visits in order for them to experience a real project environment for their better understandings.

7.0 REFERENCES

1. Envosha Sdn Bhd official website
<https://www.envosha.net/company-profile.html>
2. Department of Environment | Ministry of Environment and Water. (2019, December). Guidelines for Environmental Noise Limits and Control Third Edition.
<https://www.doe.gov.my/portalv1/wp-content/uploads/2013/01/Guidelines-Noise-2019.pdf>
3. Department Of Occupational Safety and Health Malaysia. (2018). A Manual of Recommended Practice on ASSESSMENT OF THE HEALTH RISKS ARISING FROM THE USE OF CHEMICALS HAZARDOUS TO HEALTH AT THE WORKPLACE.
<https://www.dosh.gov.my/index.php/legislation/guidelines/chemical/2874-01-a-manual-of-recommended-practice-on-assessment-of-the-health-risks-arising-from-the-use-of-chemicals-hazardous-to-health-at-the-workplace-3rd-edition/file>