



اَوْنُوْ سِيُوْ تِيْكَوْلُوْ كِيْ مَارَا
UNIVERSITI
TEKNOLOGI
MARA



CHE 353 - INDUSTRIAL TRAINING

INTERNSHIP REPORT: FPG OLEOCHEMICALS SDN BHD

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Programme : EH110 – Faculty of Chemical Engineering

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LI Duration : 20 Weeks

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2.0 CONTENT

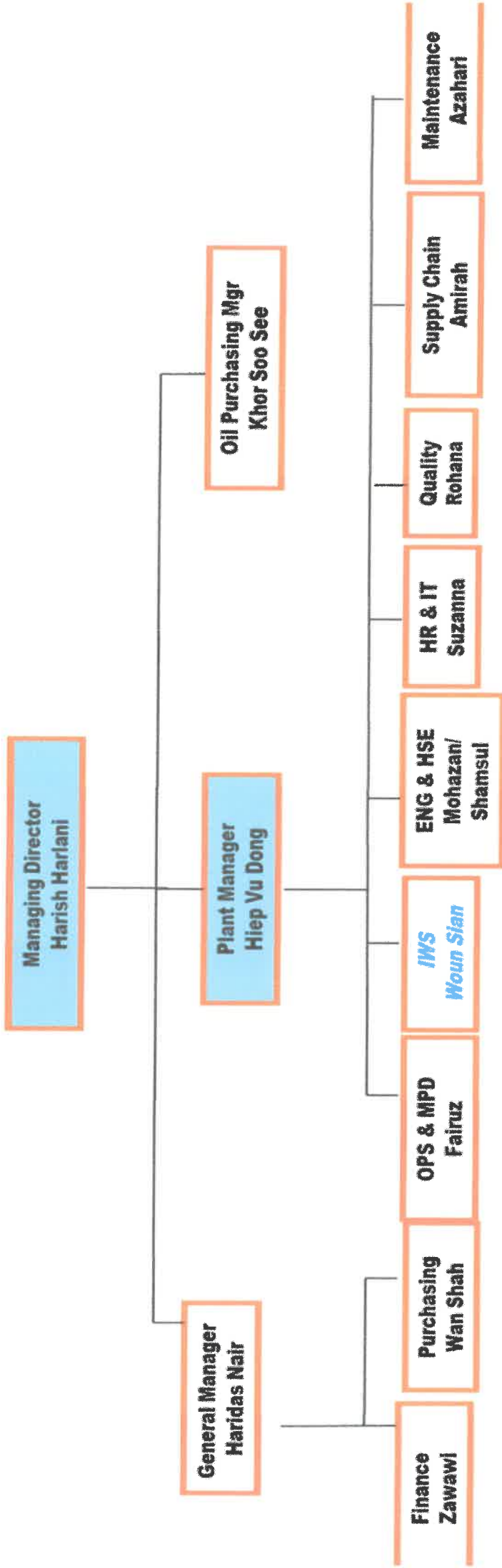
2.1.1 History of FPG Oleochemicals Sdn Bhd



Built in 1989 as a joint venture of two company, FGV Holdings Bhd and The Procter & Gamble Co. USA (P&G), FPG Oleochemicals Sdn Bhd is a company that produces natural-based oleochemicals products by using Refined, Bleached, Deodorized Palm Kernel Oil (RBDPKO) as principal feedstock since 1993. FPG Oleochemicals Sdn Bhd is located at Tanjung Gelang Kuantan Port industrial area in the state of Pahang, Malaysia. End products that are produced per year include natural-based Fatty Alcohol (80,000 tons/yr), Methyl Ester (300,000 tons/yr) and Refined Glycerine (36,000 tons/yr). they are shipped worldwide to various locations. FGV Bhd, one of the world's largest producers of palm oil, supplies a huge amount of the raw materials, i.e RBDPKO. Not only that, FGV Bhd which is located adjacent to FPG Oleochemicals helps in providing services to support its operations, including the refining of PKO and storage of raw materials and finished products. All of the main products are sold to P&G which is one of the largest consumer products company in the world



2.1.2 FPG Oleochemicals Organizational Chart



All 168 employees are recruited and developed by FPG

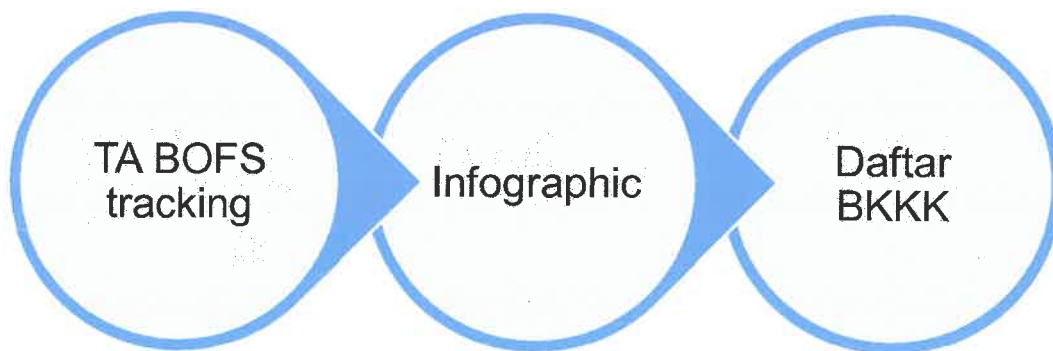
P&G Appointee

2.2 PROCESS FLOW

Internship application
got accepted by FPG
Oleochemicals Sdn
Bhd

Sorting out
working permit

Internship period:
3rd March to 15th
July 2021



HS&E department
weekly meeting

End of internship

ICC Masterlist

2.3 BRIEF DAILY WORK / ACTIVITY

2.3.1 TRANSWATER TEMPORARY WORKSHOP

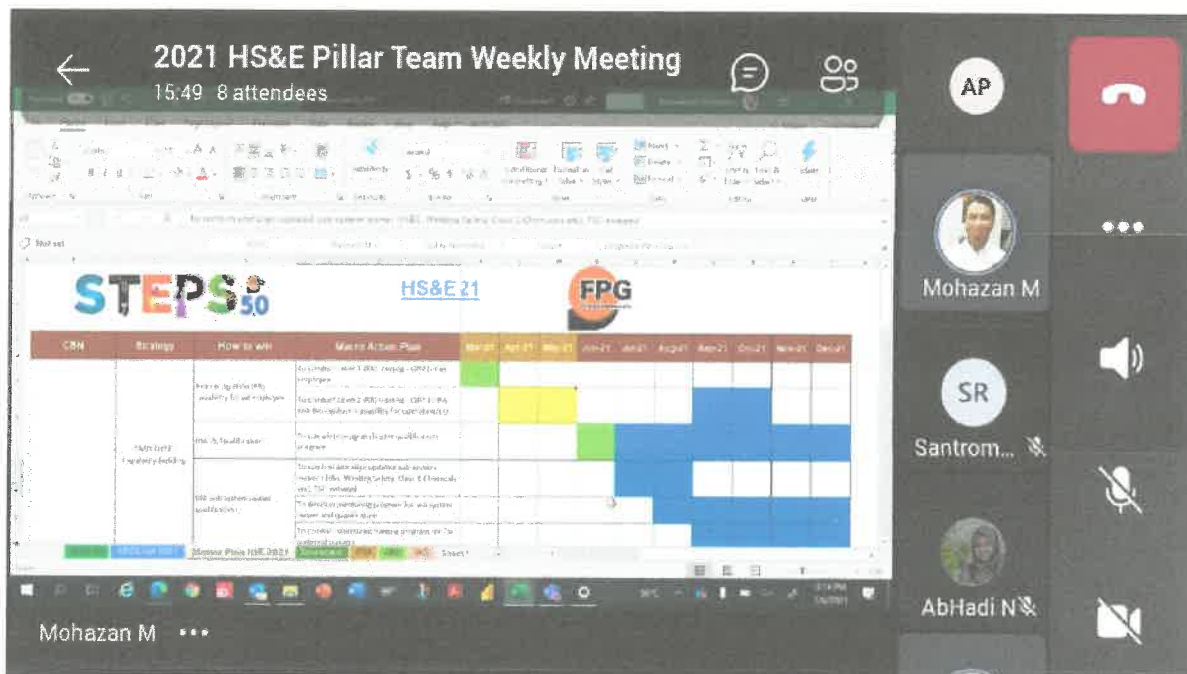
Transwater Api Sdn Bhd is a team of contractor that was invited to join FPG Oleochemicals plant during the major turnaround last March. Transwater Api Sdn Bhd provides many life-cycle services in helping plants to maximise the efficiency, capacity and reliability as well as minimise the risk of downtime as they have a team of outstanding and well-trained workers. They have extensive experiences in supporting plant turnaround services, plant retrofits, refurbishments, loop audit services and maintenance contracts in areas of Instrumentation and Control besides conventional product services and product diagnostic services. During the major turnaround at FPG plant, Transwater Api specifically worked on the safety valves available in the plant. They open, inspect, repair or replace and afterwards, reinstall all the safety valves. They had a bunch of tests for the safety valves such as the bubble and pop test to ensure that all valves were working efficiently and were safe to be used. During the internship, students got the golden chance to learn and experience the process of maintaining safety valves by visiting Transwater Temporary Workshop.



2.3.2 WEEKLY SAFETY MEETING

Safety meetings help a lot in motivating the workers to take safety out of the theory to the field. This meeting can either be formal or informal as well as covers a wide range of topic. The difference of both formal and informal meetings are the duration and the topics mentioned or discussed in the meetings. In the formal meeting, the scope of topics discussed is more detailed and covers training issues, regulations, procedures and hazard protections. Meanwhile informal meetings are more effective to discuss about specific job or topic.

At FPG, weekly safety meeting is held every Tuesday at 10:00 a.m. This meeting is attended by all of the HS&E team, both head of department as well as the staff. Topics discussed include masterplan, ongoing project, project that is past due and upcoming project. Meetings were held physically for the first 10 weeks of internship but due to the MCO, it was then held virtually via Microsoft Teams.



2.4 DESCRIPTION OF TASK ASSIGNED

2.4.1 GENERAL WORKING PERMIT

General working permit is basically a form that need to be filled by the contractor supervisor before starting any work in FPG. First task assigned was to clean up the permit section. At first, it was a total mess as all the working permit are not sorted out according to their date and was not in proper arrangement. It took student three days to completely clean up the permit section and throw away the expired permit.

During shutdown, student was then assigned the next task which was to come out with a tracking of the non-compliances in filling general work permit. The tracking consists of the permit number, name of company, date and the non-compliances made. By having this tracking, it is easier to find the permit if there is any issue arise after the turnaround.



GENERAL WORK PERMIT.xlsx		Q Search					
File	Home	Insert	Draw	Page Layout	Formulas	Open in Desktop App	Search
Calibri	11	B				General	
89		(Section I : Task Information) Not mention equipment ID number					
90	General work permit: 27248	7/9/2021	OBDA	(Section V : Project/System Verification and Approval) No name and sign at Qualified Person (Section VI : Work Completion Verification) No name and sign at Project Owner			
91	General work permit: 27150	6/8/2021	COSINUS ENG SDN BHD	(Section I : Task Information) Not mention equipment ID number (Section I : Task Information) Not mention specific elevated place (Section I : Task Information) Not mention floor (Section III : Personal Protective Equipment (PPE)) Incomplete (Section V : Project/System Verification and Approval) No name and sign at project owner (Section VI : Work Completion Verification) No name and sign at Project Owner			
92	General work permit: 26080	7/9/2021	BUCIDA	(Section I : Task Information) Not mention specific elevated place (Section V : Project/System Verification and Approval) No name and sign at project owner (Section VI : Work Completion Verification) No name and sign at Project Owner			
93	General work permit: 26332	6/9/2021	BUCIDA	(Section I : Task Information) Not mention specific elevated place (Section V : Project/System Verification and Approval) No name and sign at project owner (Section VI : Work Completion Verification) No name and sign at Project Owner			
94	General work permit: 27223	7/9/2021	COSINUS ENG SDN BHD	(Section III : Personal Protective Equipment (PPE)) Incomplete (Section V : Project/System Verification and Approval) No name and sign at project owner (Section V : Project/System Verification and Approval) No name and sign at authorized person P2 (Section VI : Work Completion Verification) No name and sign at Project Owner			
95	General work permit: 27215	7/8/2021	MECH FPG	(Section V : Project/System Verification and Approval) No name and sign at Contractor SV (Section VI : Work Completion Verification) No name and sign at Contractor SV			
96	General work permit: 26506	5/9/2021	BUCIDA	(Section I : Task Information) Not mention specific elevated place (Section V : Project/System Verification and Approval) No name and sign at project owner (Section VI : Work Completion Verification) No name and sign at Project Owner			

2.4.2 TA BOFS TRACKING

Turnaround is an event where an entire process unit of an industrial plant is taken off stream for an extended period for revamp and/or renewal for a certain period. This includes inspection and testing for all equipment, safety devices and systems. Many heavy machineries and equipment were used during the shutdown, as well as the manpower. Ensuring the safety of employees, contractors and visitors at the plant are very crucial. During the shutdown, there are numerous challenges and hazard that workers are exposed to. For instance, slip and fall, electrical hazard and equipment collapse. These hazards are extremely dangerous and can lead to death or any trauma incident.

Behaviour Observation Form Survey (BOFS) are handed to all contractors with the ratio of 10 workers to 1 complete form. This form consists of a list of possible unsafe act or environment that might be created by the situation or the workers itself. As an illustration, section A comprises of checklist about permit system to make sure that all works are checked, verified and approved by the system owner. This can avoid illegal work to be done and more detailed outcomes can be obtained. Next, checklists for hot work such as welding, the standby of water hose or the presence of fire watch can help in reducing the risk as well as preparing for the worst-case scenario.

During the shutdown, student was asked to do the tracking for BOFS. This was done daily throughout the shutdown period. Student got to enhance the analysing skills and increasing the creativity in creating an interesting tracking.

	DATE	2/8/2021	2/9/2021	2/22/2021	2/4/2021	3/1/2021	3/2/2021	3/3/2021	3/6/2021	3/7/2021	3/8/2021	3/9/2021	3/10/2021	3/11/2021	3/12/2021	3/13/2021	3/14/2021	3/15/2021
12	Number of BOF submitted	1	1	1	1	2	2	1	5	10	10	8	6	5	2	4	3	
14	A - Permit System																	
15	a- Work Permit verified and endorsed by Two Persons																	
16	b- All the permits checklist at the back is checked and verified																	
17	c- Valid Permits is posted within the work area																	
19	B - Confine Space Entry																	
20	a- Standby person is present and at the safe area																	
21	b- Continuous Mechanical Ventilation or continuous atmospheric monitoring																	
22	c- 1 Unit of SCBA Equipment available within work area																	
23	d- JSA / rescue plan reviewed and approve																	
25	C - Hot work																	
26	a- Area clear of flammable and Combustible source - radius of 35ft (11m)																	
27	b- Wet down area with running water hose																	
28	c- Non smoking/working fire watch is present																	
29	e- Fire trap laid for work above ground level																	
31	D - High Pressure Jet Wash / Air Distribution Hoses																	
32	a- Safety cover installed at rear end																	
33	d- Air Hose / Lance hose is not punctured or broken																	
34	e- Operator wear hard hat with safety glasses and face shield																	
35	f- Air/Water hose quick coupler with secured pin lock																	
37	E - Crane Operation																	
38	a- Area barricaded when work in progress																	

2.4.3 DAFTAR BKKK

Daftar BKKK is the list of all chemicals hazardous to health used in certain area in the plant such as at the laboratory, store and maintenance. It is compulsory that every plant and laboratory to have their very own chemical inventory which include details of the chemicals used or stored. The format of this spreadsheet complies to the Use and Standard of Exposure Chemical Hazardous to Health (USSECHH) regulation 2000. Not every chemical is hazardous and toxic but most of them are. Different chemicals portray different hazards including explosions, leaks, fires as well as adverse health effects. By having an organised chemical inventory management, it helps in identifying potentially toxic or harmful substances in the facilities. Information such as in the Safety Data Sheet (SDS) is needed to prevent accidents and injuries and also give safer alternatives to frequently used chemicals.

During the internship, student was given access to the documents and soft copy of Daftar BKKK. Student was required to go to the laboratory and store to check and list out all chemicals available. Not only that, details in SDS must be checked, that include date, manufacturer, hazard and PPE or safety measures. All the data obtained must be keyed in a spreadsheet, Daftar BKKK. This task was completed in three weeks as soft copy of the SDS must be found and included as well. From this task, student got to enhance the soft skill as there were intra department engagements occurred and increase the analysing skills as well as general knowledge in rules and regulations.

A	B	C	D	E	F	G	H	I	J	K
NO	Product name	Physical form	CAS no	Active ingredient	SDS	CLASS	Label	SDS EXPIRY DATE	MANUFACTURER: NAME OF COMPANY ADDRESS TEL NO E-MAIL	
1	Methyl alcohol	L	67-56-1	Methyl alcohol	Y	Y	Y	30/11/2023	N - Avantor Performance Materials A - LLC 100 Matsonford Rd, Suite 200 Radnor, PA 19087 T - 855-282-6867 E - info@avantormaterials.com	
2	Ethanol absolute	L	64-17-5	Ethanol absolute	Y	Y	Y	24/12/2022	N - VWR International Ltd. A - Hunter Boulevard, Magna Park, Lutterworth, LE17 4XN T - 0800223344 E - SDS@vwr.com	
3	Toluene	L	108-88-3	Toluene	Y	Y	Y	27/11/2024	N - Avantor Performance Materials A - LLC 100 Matsonford Rd, Suite 200 Radnor, PA 19087 T - 855-282-6867 E - info@avantormaterials.com	
	Propanol-n	L	71-23-8	Propyl alcohol	Y	Y	N	12/10/2019	N - Avantor Performance Materials A - LLC 100 Matsonford Rd, Suite 200 Radnor, PA 19087 T - 855-282-6867 E - info@avantormaterials.com	

2.4.4 OCCUPATIONAL SAFETY & HEALTH REGULATIONS – INFOGRAPHIC

There are many rules that need to be strictly followed by all workers. By authorizing enforcement of the standards developed under the act, safe and healthful working conditions can be assured. During the internship, supervisor lend student a book which comprises of rules and regulations such as CIMA 1996, NADOPOD 2004, USSECHH 2000, NOISE 2019 and Safety and Health Committee 1996. Student was asked to go through and understand the rules and regulations and make mind maps out of the rules. Mind maps were mad and later was asked to transform the mind map into infographics. By creating this infographic, student indirectly got to enhance her creativity and IT skills as well as adding more inputs about rules and regulations. It is very crucial for people in industry to know about the rules apply as rules are there for reasons. Here are some examples of the infographic produced.



USECCH 2000

APPLICATION



APPLIES TO **ALL** WORKPLACE
WHERE CHEMICALS
HAZARDOUS TO HEALTH ARE
USED **EXCEPT**:

Chemicals that are:

- Defined as **radioactive materials** under Atomic Energy Licensing Act 1984
- **Foodstuffs**
- **Hazardous to health**, solely by their flammable or explosive properties or when they are at high or low pressure
- **Pharmaceutical** products

ACTION TO CONTROL EXPOSURE



CONTROL MEASURES

Employer should control chemicals hazardous to health by:

- a) Elimination of the chemicals
- b) Substitute to less hazardous chemical
- c) Total enclosure
- d) Isolation
- e) Modification
- f) Engineering control
- g) Practice
- h) Personal protective equipment (PPE)

MONITORING OF EXPOSURE AT THE WORKPLACE



Exposure of chemicals to the employee should be **monitored** in accordance with an **approved method** of monitoring and analysis

HEALTH SURVEILLANCE



Health surveillance programme should be **carried out** by an **occupational health doctor**

Purpose: For the protection of the health of employee exposed to chemicals hazardous to health.

MEDICAL REMOVAL PROTECTION



Employee should be **removed** from any work that may expose the employee to the chemicals if he/she is **detected with medical condition** that will increase the risk of material impairment to health.

IDENTIFICATION OF CHEMICALS HAZARDOUS TO HEALTH



IDENTIFY AND RECORD

All chemicals hazardous to health used at work must be identified and recorded

- a) List of chemical
- b) Chemical SDS
- c) Details of supplier
- d) Quantity and process where the chemicals are used

PERMISSIBLE EXPOSURE LIMIT



Employer must ensure that employees do not exceed the **CEILING LIMIT** specified for the chemicals.

CEILING LIMIT:

The airborne concentration that shouldn't be exceeded during any part of the working day.

ASSESSMENT OF RISK TO HEALTH



Employee which (may or is likely) to be exposed to chemicals hazardous to health cannot carry out the work **UNLESS** written assessment about the risk created to health is made by the employer.

LABELLING & RELABELLING



EVERY chemicals used or purchased must be **labelled** & are not removed, defaced, modified or altered.

Otherwise it has to be **relabelled**.

INFORMATION, INSTRUCTION & TRAINING



Employees should be provided with:

Information: Risk to health and precautions steps

Training: At least once in 2 years.

CLASSIFICATION, LABELLING, AND
SAFETY DATA SHEET OF
HAZARDOUS CHEMICALS
(REGULATIONS 2013)

CLASS 2013

CLASSIFICATION

Chemicals should be classified as a hazardous chemicals according to the list of specified chemicals and it should be recorded.

PACKAGING

Requirements of the packaging:

- Container must be designed to ensure that the chemicals cannot escape unless a safety device is fitted.
- Strong packaging to retain the chemicals.

SAFETY DATA SHEET

- A SDS should be given to the chemical recipient for each chemical and any chemical mixture containing hazardous substance exceeding the cut-off value.
- Safety data sheet should contain the relevant information relating to the hazardous chemical supplied (supplier info, hazard, etc...)

CONFIDENTIAL BUSINESS INFORMATION

- Supplier can omit the name and composition of hazardous chemical if it leads to confidential business information.
- Director General, occupational health doctors, or a person who handles the hazardous chemicals may request for the disclosure of the information.
- Supplier shall disclose the information.
- Information gained should only be used for the purpose of protection of safety and health of the employee.

CONFIDENTIAL

APPLICATIONS

- Applies to chemicals used at work.
- Shall not apply to chemicals classified as radioactive material, scheduled waste and a cosmetic.
 - Chemicals used for R&D which is not for sale.
 - Part II, III, IV, VI shall not apply to chemical that is pesticide.

LABELLING

- Information needed at the packaging of every chemicals:
- Product identifier
 - Supplier identification
 - Signal word
 - Hazard statement
 - Hazard pictogram
 - Precautionary statement
 - A statement which read "read SDS before use" (packaging 125 ml and below)

INVENTORY OF HAZARDOUS CHEMICAL

Importer or manufacturer should prepare an inventory of hazardous chemicals for each chemicals supplied 1MT and above per year.

- Infos needed for inventory:
- Product identifier
 - Name of hazardous chemical
 - composition
 - Hazard classification
 - Total quantity

3.0 CONCLUSION

In general, this internship program has benefited students in many ways and the aim of this subject which was the course learning outcome has been successfully achieved. It was a very useful experience for students and can be used in the future. By completing this internship programme, students got to experience the real working environment as well as wider field of work. Moreover, most of the things that students have learnt in university was applied in this working phase. There were huge differences between being at the university as a student and being an employee at the workplace namely the communication skills. Students got to enhance soft skills by having engagements with colleagues and this could help in producing high quality graduates and might be a bonus point in seeking for jobs in the future.

In addition, student got to apply the theoretical or practical knowledge gained from the previous studies in university. Nevertheless, in the real workplace, the speed, efficiency, skills and competence of implementing a project efficiently is an aspect that is seen in an employee. Quality of work is assessed for its effectiveness, whether or not it meets its function optimally. During the 20 weeks experience as an intern, student was exposed to many departments and various type of jobs. This can help in moulding a multi-talented graduate who is expert and capable in doing many jobs efficiently.

In conclusion, industrial training is indeed a very good programme and can help in building a dynamic person who is more qualified to work in the future. All the knowledge applied and learned throughout the training will be used wisely for future endeavour.