



# CHEMICAL HEALTH RISK REASSESSMENT AT POLITEKNIK KOTA BHARU KELANTAN

Prepared by  
**NIOOSH MALAYSIA**

03-04/02/CHRA/2019/53

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## POLITEKNIK KOTA BHARU

SITE ADDRESS: KM 24, KOK LANAS,  
KOTA BHARU,  
16450 KELANTAN.

### CHEMICAL HEALTH RISK ASSESSMENT REPORT (REF. NO: HQ/17/ASS/00/00019 - 2019/0025)

|                    |                                |
|--------------------|--------------------------------|
| ASSESSOR'S NAME    | : MOHD AKHIR BIN AHMAD         |
| DOSH REGISTRATION  | : HQ/17/ASS/00/00019           |
| DATE OF ASSESSMENT | : 01 <sup>TH</sup> AUGUST 2019 |



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## EXECUTIVE SUMMARY

The initial Chemical Health Risk Assessment (CHRA) as required under the Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000 was conducted on the **1<sup>st</sup> OGOS 2019 at POLITEKNIK KOTA BAHRU located at Km 24, Kok Lanas 16450 Ketereh Kelantan.**

The primary objective of conducted CHRA is to enable the decision to be made on appropriate control measures; induction and training of workers; the necessity of exposure monitoring and medical surveillance programme at the workplace.

The assessment conducted is based on the DOSH recommended methods as documented in the "Assessment of the Health Risks Arising from the Use of Hazardous Chemicals in the Workplace" (A Manual of Recommended Practice. 3<sup>rd</sup> Edition). The assessment consists of interviews with the relevant personnel and review of relevant documentation.

**Four (4)** work units were assessed with a total number of chemicals are **36** chemicals. In assessing inhalation risk for chemicals used in the workplace, thirty five (**35**) chemicals were determined as high risk with action priority (**AP**) **1**. For dermal risk, no chemical with levels of risk were high and action priority **AP 1**.

The recommendations follow the preferential hierarchy of engineering controls required by DOSH with the highest preference on elimination and substitution of hazardous chemicals, followed by enclosure of process and system, isolation of the work area, modification of the process parameters, application of engineering control equipment, adoption of safe work systems and practices and provision of personal protective equipment. Also, administrative controls (such as personal hygiene), maintenance of control equipment, provision of information, instruction and training, air monitoring, biological monitoring, health surveillance, emergency procedures, and first aid shall be implemented concurrently with engineering controls.

Exposure to **Bitumen (Civil Department)** were determined as high risk and inadequately control. The management is recommended to provide suitable, storage cabinet example chemical cabinet, cleaning facilities must be under (Local Exhaust Ventilation (LEV), respiratory protection such as approved organic vapor respirator and waste water facilities. Existing respiratory protection provided is not standard and the effectiveness is questionable. Besides that, air monitoring and biological monitoring is required for some work unit (refer to 6.0 section)

The employer is recommended to provide suitable skin and eyes protection for student that done chemical handling activities. Cleaning activities might exposed worker to high risk for dermal route.

It is hoped that the recommendations help to create a better working environment, further improve the quality of work, health and safety standards in the company.

|                                                                                                                                                                           |                                                                                                                                                                                     |                                                                          |
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## 1.0 INTRODUCTION

### 1.1 Background

Occupational Safety and Health (Use and Standard of Exposure of Chemical Hazardous to Health) which was gazette on April 2000 or in short cut USECHH, employer is required to assess the risk to health arising from the use of chemical hazardous to health at work and to review it whenever there is any reasonable changes occur; to prevent or control the risk; to ensure that control measures are used and maintained; to monitor exposure and carry out the health surveillance when necessary; to inform, instruct and train employees about the risk and the precaution needed; and to keep record when required.

### 1.2 Content of Assessment

Under the sub-regulation 9 (2), the assessment mentioned in sub-regulation 9 (1) shall contain the following:

1. The potential risks to an employee as a result of exposure to chemicals hazardous to health
2. The method and procedures adopted in the use of the chemicals hazardous to health
3. The nature of the hazard to health
4. The degree of exposure to such chemicals hazardous to health
5. The risk to health created by the use and the release of chemicals from work processes
6. Measures and procedures required to control the exposure of an employee to chemicals hazardous to health
7. The measures, procedures, and equipment necessary to control any accidental emission of a chemical hazardous to health because of leakage, spillage, or process or equipment failure
8. The necessity for employee exposure monitoring program
9. The necessity for health surveillance program

### 1.3 Company Information

An assessment of chemical health risk was carried out from 1<sup>st</sup> OGOS 2019 at the workplace as follow: -

|                         |                                                 |
|-------------------------|-------------------------------------------------|
| <b>Name</b>             | <b>POLITEKNIK KOTA BAHRU</b>                    |
| <b>Address</b>          | <b>Km 24, Kok Lanas 16450 Ketereh Kelantan.</b> |
| <b>Type of Business</b> | <b>Academic Campus</b>                          |
| <b>Telephone</b>        |                                                 |
| <b>Fax</b>              |                                                 |

|                                                                                                                                                                          |                                                                                                     |                                                     |
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Established in **2012**, POLITEKNIK KOTA BAHRU. Through its subsidiary companies has been involved in education hub.

#### 1.4 Objective

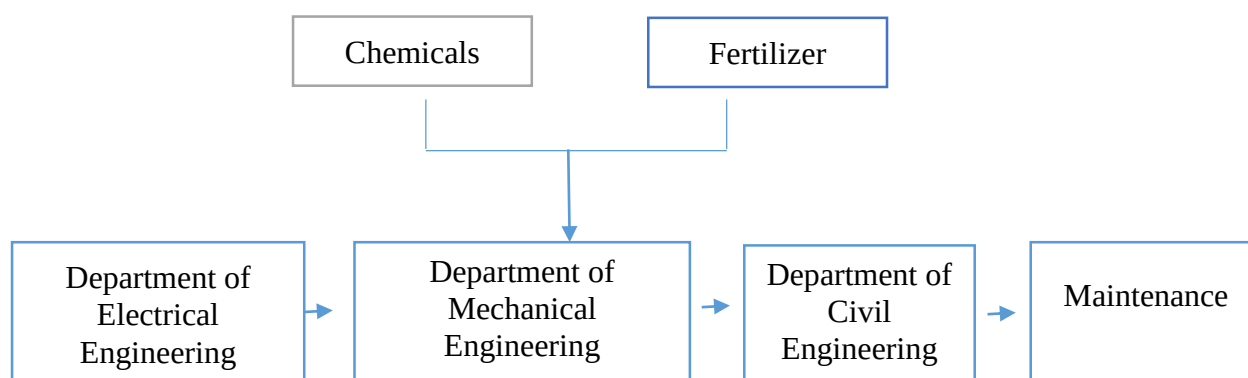
Chemical Health Risk Assessment is conducted with the purpose of enabling decision to be made on appropriate control measure, induction and training of employees, monitoring and health surveillance activities as may be required to protect the health of employees who may be exposed to chemicals hazardous to health at work

#### 1.5 Specific Objective

- 1) To identify the hazard posed by each chemical substance used, stored, handled or transported within the place of work.
- 2) To evaluate the degree of exposure of employee to chemicals hazardous to health used in various work units.
- 3) To evaluate the adequacy of existing control measures.
- 4) To conclude on the significance of the health risk posed using the chemicals in the various work unit (work areas).
- 5) To recommend further appropriate measure to prevent or reduce exposures as necessary as and when required.

## 2.0 PROCESS AND WORK UNIT DESCRIPTION

### 2.1 Overall process flow for POLITEKNIK KOTA BAHRU



**Figure 1: Basic process flow of POLITEKNIK KOTA BAHRU**

|                                                                                                                                                                          |                                                                                                     |                                                     |
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## 2.2 Description of the process which involves chemicals

The studies of process were done by walk through inspection and interview of relevant staff at each work unit. Work unit is defined as 'a group of employees exposed to similar health risk arising from the use of chemical hazardous to health'. The following work areas were determined as main source of chemical exposure:

Table 2.2: Description of processes in **POLITEKNIK KOTA BAHRU** which involving chemical hazardous to health

| NO. | WORK UNIT                         | PROCESS DESCRIPTION                                                                          | NO. OF WORKER |
|-----|-----------------------------------|----------------------------------------------------------------------------------------------|---------------|
| 1.  | Electrical Engineering Department | Education place for electrical courses and hand on practices of electrical engineering works | 4             |
| 2.  | Civil Engineering Department      | Education hub for civil courses and hand on practices of civil engineering works             | 4             |
| 3.  | Mechanical Engineering Department | Education place for mechanical courses and hand on practices of mechanical engineering works | 4             |
| 4.  | Maintenance                       | Maintenance works by in-house technician                                                     | 4             |

## 3.0 METHODOLOGY

Chemical Health Risk Assessment (CHRA) was conducted in accordance to the "Manual of Recommended Practice: Assessment of the Health Risk Arising from the Use of Chemical Hazardous to Health in the Workplace (3<sup>rd</sup> edition)" published by Department of Occupational Safety and Health (DOSH).

### 3.1 Summary of Methodology

Figure 3.1 describe the step of conducting CHRA. There are 10 steps involve which is start from gathering the info until report presentation. Table 3.1 shows the details of the steps in the assessment done in **POLITEKNIK KOTA BAHRU**.

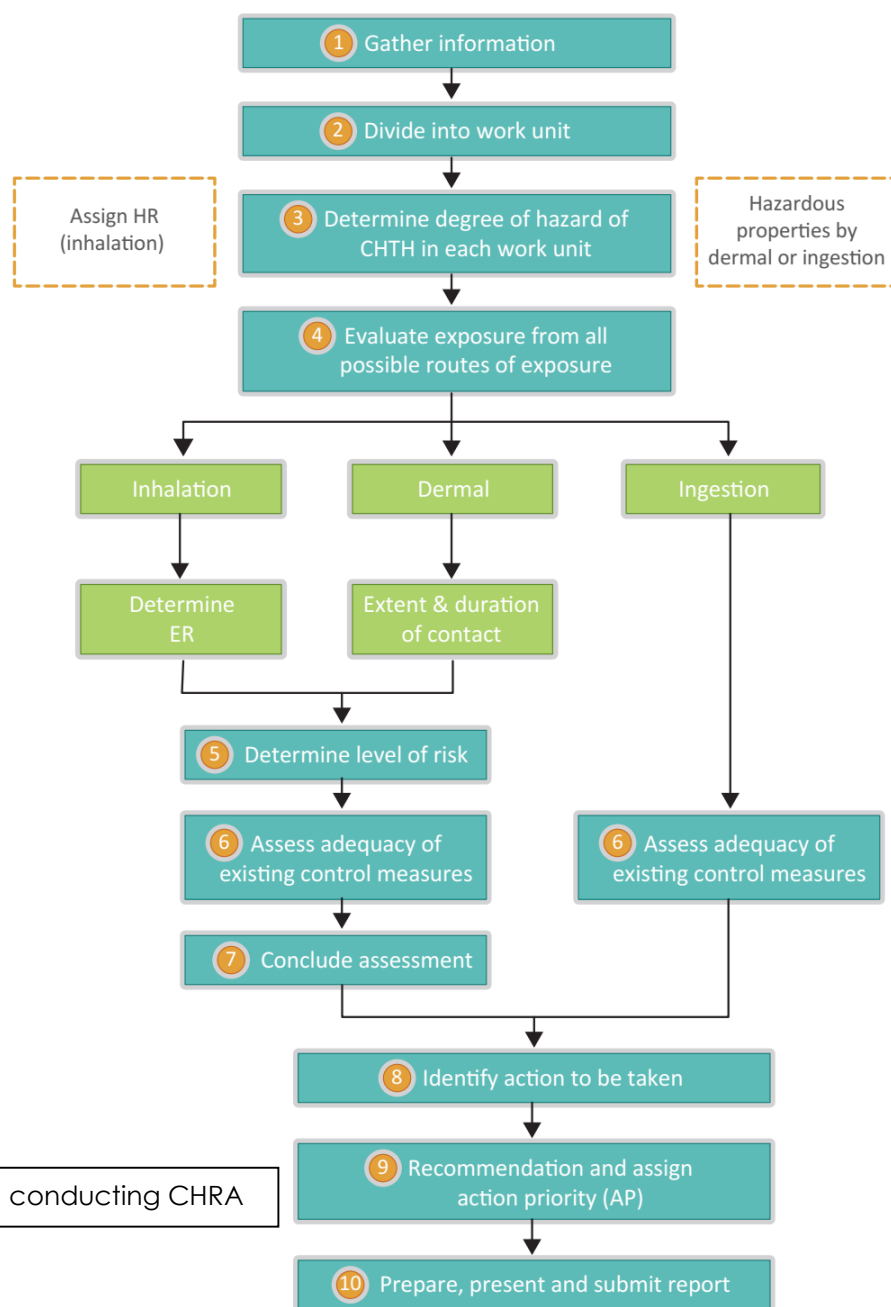


Figure 3.1: Step on conducting CHRA



**INITIAL CHEMICAL HEALTH RISK ASSESSMENT  
(CHRA)  
AT  
POLITEKNIK KOTA BAHRU KELANTAN**

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| STEP NO | STEP DESCRIPTION           | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Gathering Information      | <ul style="list-style-type: none"> <li>A visit to <b>POLITEKNIK KOTA BAHRU</b> was made on the 1<sup>st</sup> Ogos 2019 for the purpose of gathering information about the work and work practices involving chemicals hazardous to health.</li> <li>The walk-through survey, document review, interview and discussion with several supervisors, workers and relevant personnel from various sections were conducted to gather the following information</li> </ul>                                                                                                                                                                                                                                                                                              |
| 2       | Divide into Work Unit      | <ul style="list-style-type: none"> <li>Based on the information gathered, workers or person exposed to chemicals were divided into work units as followed: -               <ul style="list-style-type: none"> <li>Electrical Engineering Department</li> <li>Civil Engineering Department</li> <li>Mechanical Engineering Department</li> <li>Maintenance</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                  |
| 3       | Determine Degree of Hazard | <ul style="list-style-type: none"> <li>Hazard rating (HR) were assigned to each chemical based on the hazard information obtained from sources such as SDS according to Table 1: Hazard Rating for Inhalation Exposure Based on Health Effect, Hazard Classification, H-Code and Acute Toxicity Data and Table 2: Hazardous Properties Relevant to Dermal Exposure</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                     |
| 4       | Evaluate the Exposure      | <ul style="list-style-type: none"> <li>Exposure rating are evaluated by assessing the likelihood of contact of the workers in each work unit with the hazardous chemical; the way the chemical enters the body, the frequency or duration of exposure and the intensity of each exposure using the following table from the manual: -               <ul style="list-style-type: none"> <li>Table 5: Frequency Rating (FR)</li> <li>Table 6: Duration Rating (DR)</li> <li>Table 7: Frequency-Duration Rating (FDR)</li> <li>Table 8: Degree of Chemical Release</li> <li>Table 10: Degree of Chemical Inhaled</li> <li>Table 12: Magnitude Rating (MR)</li> <li>Table 14: Exposure Rating (ER)</li> <li>Table 15: Extent of Dermal Contact</li> </ul> </li> </ul> |

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|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>5</b> Level of Risk                    | <ul style="list-style-type: none"> <li>Risk rating are evaluated using Table 16 for inhalation hazard and Table 17 for dermal exposure. Risk level were divided into 3 categories; low, moderate and high risk.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>6</b> Assess Adequacy of Control       | <ul style="list-style-type: none"> <li>The assessment of adequacy of control measure can be evaluated by inspection, checking records on control equipment and procedure including the use and maintenance of engineering control equipment and PPE. Measures were evaluated for each work unit based on suitability, use, effectiveness and maintenance of the control measures</li> </ul>                                                                                                                                                                                                                                                                            |
| <b>7</b> Conclude Assessment              | <ul style="list-style-type: none"> <li>The assessment is concluded by indicating the level of risk and the adequacy of existing control measures as following: - <ul style="list-style-type: none"> <li>High risk and adequately controlled</li> <li>High risk and inadequately controlled</li> <li>Moderate risk and adequately controlled</li> <li>Moderate risk and inadequately controlled</li> <li>Low risk and adequately controlled</li> <li>Low risk and inadequately controlled</li> </ul> </li> </ul>                                                                                                                                                        |
| <b>8</b> Identify Action to be Taken      | <ul style="list-style-type: none"> <li>Based on the finding of the assessment, the required action to be taken by the employer shall be carried out based on recommendation from this assessor on: - <ul style="list-style-type: none"> <li>Measures and procedures required to control exposure to CHTH;</li> <li>Measures, procedures and equipment necessary to control any accidental emission of CHTH as a result of leakage, spillage, process or equipment failure;</li> <li>Necessity for worker exposure monitoring programme and medical surveillance programme; and</li> <li>Requirement for the training and retraining of workers.</li> </ul> </li> </ul> |
| <b>9</b> Assign Action Priority (AP)      | The employer should use the action priority assigned in preparing the action plan for the implementation of the identified control measures by using table 18: Action Priority (AP) Determination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>10</b> Prepare, Present, Submit Report | All the assessment shall be in report and presented to <b>POLITEKNIK KOTA BAHRU</b> within the appropriate time frame                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 4.0 ASSESSMENT FINDINGS

### 4.1 Summary of findings

Summary finding of assessment were detailing in table 4.1

Table 4.1: Summary findings of CHRA in **POLITEKNIK KOTA BAHRU**.

| Work Unit                                    | Chemical              | ROE                  | Action<br>Priority (AP) |
|----------------------------------------------|-----------------------|----------------------|-------------------------|
| <b>Electrical Engineering<br/>Department</b> | Ferric Chloride       | Inhalation           | 1                       |
|                                              | Universal Developer   | Inhalation           | 1                       |
|                                              | Negative Developer    | Inhalation           | 1                       |
|                                              | Positif Developer     | Inhalation           | 1                       |
|                                              | Stripper              | Inhalation           | 1                       |
| <b>Civil Engineering<br/>Department</b>      | Portland Cement       | Inhalation<br>Dermal | 1                       |
|                                              | Minyak Hitam Terpakai | Inhalation<br>Dermal | 1                       |
|                                              | Grease                | Inhalation<br>Dermal | 1                       |
|                                              | Kapur Motar           | Inhalation<br>Dermal | 1                       |
|                                              | Bitumen (Tar)         | Inhalation           | 1                       |
|                                              | Sabun Basuh           | Inhalation           | 1                       |
|                                              | Gloss Paint           | Inhalation           | 1                       |
|                                              | Shellac               | Inhalation<br>Dermal | 1                       |
|                                              | WD 40                 | Inhalation<br>Dermal | 1                       |
|                                              | Lacquer               | Inhalation<br>Dermal | 1                       |
|                                              | Dunlop Glue           | Inhalation<br>Dermal | 1                       |
|                                              | Wood Sealer           | Inhalation<br>Dermal | 1                       |

|                                                  |                     |                      |   |
|--------------------------------------------------|---------------------|----------------------|---|
|                                                  | Turpentine          | Inhalation<br>Dermal | 1 |
|                                                  | Wood Gum            | Inhalation<br>Dermal | 1 |
|                                                  | Dye Bond            | Inhalation<br>Dermal | 1 |
|                                                  | Minyak Pelincir     | Inhalation<br>Dermal | 1 |
|                                                  | PVC Gum             | Inhalation<br>Dermal | 1 |
| <b>Mechanical<br/>Engineering<br/>Department</b> | Engine Oil          | Inhalation<br>Dermal | 1 |
|                                                  | Hydraulic Oil       | Inhalation<br>Dermal | 1 |
|                                                  | Grease              | Inhalation<br>Dermal | 1 |
|                                                  | Diesel              | Inhalation<br>Dermal | 1 |
|                                                  | Thinner             | Inhalation<br>Dermal | 1 |
|                                                  | Gloss Paint         | Inhalation<br>Dermal | 1 |
|                                                  | Spray Paint         | Inhalation<br>Dermal | 1 |
| <b>Maintenance<br/>Department</b>                | Petrol              | Inhalation           | 1 |
|                                                  | Diesel              | Inhalation           | 1 |
|                                                  | Spak (Racun Rumpai) | Inhalation<br>Dermal | 1 |
|                                                  | Minyak Hitam        | Inhalation           | 1 |
|                                                  | Power Pine Gel      | Inhalation           | 1 |
|                                                  | Oxy Bleach          | Inhalation<br>Dermal | 1 |
|                                                  | Multi-Purpose       | Inhalation<br>Dermal | 1 |

|                                                                                                                                                                          |                                                                                                                                                                                     |                                                                            |
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## 5.0 DISCUSSION

### i) Electrical Engineering Department

There are one store in the Electrical Engineering namely as chemical store. Chemicals in the stores are well organized except Ferric Chloride. There is a warning sign in front of the store. All stores use natural ventilation. The chemical store was quite foul.

Stores worker is provided with nitrile gloves and eye safety protection while performing their duties. SOP of chemical handling also not available and no training records related to the safe chemical handling attended by stores worker.

### ii) Civil Engineering Department

Workers at workshops are mostly exposed to carcinogen due to Bitumen exposure and irritating chemicals. No exposure monitoring was conducted for Bitumen, n-hexane and dust monitoring. No engineering control, maintenance and safe handling of chemicals training records. Besides that, the respirator provided is not suitable for civil engineering activities.

### iii) Mechanical Engineering Department

In this work unit, diesel is distribute from diesel container to vehicle and generator set by container. Local Exhaust Ventilation (LEV) has not been inspected by Hygiene Technician 2 every year as per requirement under USECHH Regulation 2000 for welding workshop and no SOP of chemical handling and training records related to the safe chemical handling attended by chemical handler.

### iv) Maintenance

Worker in this work unit exposed to diesel from unleaded gasoline during refilling the chemicals into mechanical equipment such as grass cutter machine and poison exposure for pets control activity and herbicide activity. It was found that PPE is provide to workers is not suitable for this of exposure. SOP of chemical handling is not available and training records related to the safe chemical handling attended by worker also is not available.

|                                                                                                                                                                           |                                                                                                     |                                                     |
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## 6.0 RECOMMENDATION

| Description               | Chemical Register                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Findings</b>           | Chemical register available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Work Unit Involved</b> | All                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Recommendation</b>     | <ol style="list-style-type: none"> <li>1. Employer ensure shall identify and record in a register all chemicals hazardous to health used in the place of work</li> <li>2. The register shall be maintained in good order and condition and be updated from time to time and shall contain the following information:               <ol style="list-style-type: none"> <li>a) A list of all chemicals hazardous to health used;</li> <li>b) The current chemical safety data sheet for each of the chemicals hazardous to health except for pesticides;</li> <li>c) The average quantity used, produced or stored per month or per year whichever is applicable for each of the chemicals hazardous to health;</li> <li>d) The process and work area where the chemicals hazardous to health are used; and</li> <li>e) The name and address of the supplier of each of the chemicals hazardous to health.</li> </ol> </li> <li>3. The register shall be accessible to all employees at the place of work who may be exposed or are likely to be exposed to chemicals hazardous to health</li> </ol> |

| Description               | Control Measures (Engineering Control)                                                           |
|---------------------------|--------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 15 |
| <b>Findings</b>           | 1. Lacking of ventilation in Chemical storage area                                               |
| <b>Work Unit Involved</b> | 1. JKE, JKA & JKM                                                                                |

|                                                                                                                                                                          |                                                                                                     |                                                     |
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| Description           | Control Measures (Engineering Control)                                                                                |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Recommendation</b> | 1. To provided additional ventilation at storage chemical.<br>2. Chemical cabinet must be provided for all department |

| Description               | Safety Data Sheet (SDS)                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 24 & 25                                                                                                                                             |
| <b>Findings</b>           | 1. SDS not available (refer appendix).<br>2. SDS not following CLASS 2013 formatting (refer appendix)<br>3. SDS not kept in the store                                                                                                             |
| <b>Work Unit Involved</b> | JKE, JKM, JKA and maintenance                                                                                                                                                                                                                     |
| <b>Recommendation</b>     | 1. To obtain SDS from supplier.<br>2. Employer shall ensure SDS following the required format – CLASS 2013.<br>3. Kept in a conspicuous place close to each location where that chemical is used, and shall be easily accessible to the employees |

| Description               | Personal Protective Equipment (PPE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 16                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Findings</b>           | 1. Improper selection of respirator and glove<br>2. Improper practice of PPE storage<br>3. Absence of training and maintenance records of PPE                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Work Unit Involved</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Recommendation</b>     | 1. To <b>replace existing dust mask to proper respirator against nuisance levels of dust</b> for manuring operator.<br>2. To replace existing dust mask to <b>proper organic vapor respirator (such as 3M 6001 / 3M 8247)</b> for volatile chemical such as solvent and poison handler<br>3. To provide suitable hand protection such as <b>nitrile glove</b> for those handling solvent<br>4. To provide proper storage of PPE<br>5. The management is recommended to ensure the implementation of procedures and records on the issuance, |

|                                                                                                                                                                           |                                                                                                     |                                                     |
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| Description | Personal Protective Equipment (PPE)                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>maintenance, inspection and training in the use of the personal protective equipment's (PPE). Appropriate program should include the following item:</p> <ul style="list-style-type: none"> <li>a. Respirator selection</li> <li>b. Fit testing</li> <li>c. Medical evaluations</li> <li>d. Use (Routine &amp; Emergency)</li> <li>e. Maintaining respirators</li> <li>f. Proper air quality</li> <li>g. User training</li> <li>h. Program evaluation</li> </ul> |

| Description               | Training                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Findings</b>           | All chemical handler need to undergo proper training                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Work Unit Involved</b> | JKE, JKM, JKA and maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Recommendation</b>     | <ol style="list-style-type: none"> <li>1. The employer shall review and conduct the training programme;               <ol style="list-style-type: none"> <li>i. at least once in <b>two years</b>;</li> <li>ii. if there is a change in the hazard information on the chemicals hazardous to health, safe work practices or control measures; or</li> <li>iii. each time employees are assigned to new tasks or new work areas where they are exposed or likely to be exposed to chemicals hazardous to health.</li> </ol> </li> <li>2. All training programmes shall be documented and kept for inspection</li> </ol> |

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| <br><b>NIOOSH</b><br><small>National Institute Of Occupational Safety And Health</small> | <b>INITIAL CHEMICAL HEALTH RISK ASSESSMENT<br/>(CHRA)<br/>AT<br/>POLITEKNIK KOTA BAHRU KELANTAN</b> | <b>REPORTING DATE:<br/>1/09/2019<br/>REV: FINAL</b> |
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| Description               | Labelling and Relabeling                                                                                                                                                                                                       |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 20 & 21                                                                                                                          |
| <b>Findings</b>           | Label not following Classification, Labeling and Safety Data Sheet (CLASS) 2013 regulation for some of chemicals.                                                                                                              |
| <b>Work Unit Involved</b> | JKE, JKM, JKA and maintenance                                                                                                                                                                                                  |
| <b>Recommendation</b>     | Employer shall ensure that all chemicals hazardous to health supplied or purchased by him and used in the place of work are labelled according to CLASS 2013 and that the labels are not removed, defaced, modified or altered |

| Description        | Monitoring of Exposure                                                                                                                                                                                                                                                             |                                         |                  |                                             |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------|---------------------------------------------|
| Regulation         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000 <ul style="list-style-type: none"><li>- Regulation No. 26</li></ul>                                                                                                                                      |                                         |                  |                                             |
| Findings           | <ul style="list-style-type: none"><li>1. No record of monitoring of exposure was conducted.</li><li>2. Moderate &amp; high risk for certain chemicals, therefore monitoring of exposure shall be conduct for baseline data to very worker exposure not exceeding the PEL</li></ul> |                                         |                  |                                             |
| Work Unit Involved | <ul style="list-style-type: none"><li>- JKA</li></ul>                                                                                                                                                                                                                              |                                         |                  |                                             |
| Recommendation     | To conduct monitoring of exposure for listed chemicals. Monitoring shall be conduct by Industrial Hygiene Technician I.                                                                                                                                                            |                                         |                  |                                             |
|                    | <u>Air Monitoring</u>                                                                                                                                                                                                                                                              |                                         |                  |                                             |
|                    | Work Unit                                                                                                                                                                                                                                                                          | Chemicals                               | Rec. Method      | PEL                                         |
|                    | JKA                                                                                                                                                                                                                                                                                | Bitumen                                 | NMAM 1501        | MEL (1.5 ppm)                               |
|                    | JKA                                                                                                                                                                                                                                                                                | Respirable & Inhalable Dust             | NMAM 0500 & 0600 | 8H TWA Resp. (3 mg/m³), Inhalable (10mg/m³) |
|                    | <u>Biological Monitoring</u>                                                                                                                                                                                                                                                       |                                         |                  |                                             |
|                    | Work Unit                                                                                                                                                                                                                                                                          | Chemicals                               | Reference BEL    |                                             |
| JKA                | Bitumen                                                                                                                                                                                                                                                                            | Guidelines of Medical Surveillance 2001 |                  |                                             |

| Description        | Medical Surveillance                                                                                                                          |                |                                                                                      |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------|
| Regulation         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000 <ul style="list-style-type: none"><li>- Regulation No. 27</li></ul> |                |                                                                                      |
| Findings           | Moderate & high risk for certain chemicals                                                                                                    |                |                                                                                      |
| Work Unit Involved | - JKE, JKM, JKA and maintenance                                                                                                               |                |                                                                                      |
| Recommendation     | To conduct medical surveillance for listed chemicals if certain requirement fulfill.                                                          |                |                                                                                      |
|                    | Work Unit                                                                                                                                     | Chemicals      | Requirements                                                                         |
|                    | JKA                                                                                                                                           | Bitumen        | If the results of air monitoring / biological monitoring exceed the 50% MEL & BM>BEL |
|                    | JKA                                                                                                                                           | Inhalable dust | If results of air monitoring exceed 50% 8H TWA / MEL                                 |

| Description               | Warning Sign                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000<br>- Regulation No. 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Findings</b>           | 1. Warning Sign not adequate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Work Unit Involved</b> | - JKE, JKM, JKA and maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Recommendation</b>     | <p>1) Where a chemical hazardous to health is used in any area in any manner that is hazardous to the health of any person who may be in that area or who may be or is likely to be at risk of being affected by the chemicals hazardous to health, the employer shall ensure that -</p> <p>a) warning signs are posted at a conspicuous place at every entrance of the area to warn persons entering the area of the hazards; and</p> <p>b) other relevant information are given to persons who may be or are likely to be at risk of being affected by the chemicals hazardous to health.</p> <p>2) Warning signs required are illuminated and cleaned as necessary so that the legend is readily visible</p> |

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| Description | Warning Sign                                                                                                                                                                                                                                    |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | 3) The warning shall - <ul style="list-style-type: none"> <li>a) give warning of the hazards;</li> <li>b) be written in the national language and English language; and</li> <li>c) be printed in dark red against white background.</li> </ul> |

| Description               | Emergency Equipment                                                       |
|---------------------------|---------------------------------------------------------------------------|
| <b>Regulation</b>         | Use and Standard Exposure of Chemical Hazardous to Health Regulation 2000 |
| <b>Findings</b>           | 1) No spillage kit at store<br>2) There is emergency eye wash             |
| <b>Work Unit Involved</b> | JKE, JKM, JKA and maintenance                                             |
| <b>Recommendation</b>     | 1) To provide basic spillage kit i.e. sand at chemical store              |

| Description               | Schedule Waste Card                                                   |
|---------------------------|-----------------------------------------------------------------------|
| <b>Regulation</b>         | Environmental Quality (Scheduled Wastes) Regulations 2005             |
| <b>Findings</b>           | Waste Card not available                                              |
| <b>Work Unit Involved</b> | All (including washing chemical drum water)                           |
| <b>Recommendation</b>     | To produce waste card for schedule waste generated by the plantation. |

## 7.0 LIMITATION

Exposure concentrations or trends depends on many factors such as the production rate, the efficiency of control measures in place, work activities near the sampling locations, the atmosphere condition including the weather condition and the work procedure used by the

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employees, based on these factors, it is expected that the employees' exposure would vary from day to day and from one employee to another.

Since the assessment was conducted over a relatively short period, assessor determinations are solely based on observation on the assessment day.

## 8.0 CONCLUSION

Chemical Health Risk assessment has been conducted at **POLITEKNIK KOTA BAHRU** workplace located at **Km 24, Kok Lanas 16450 Ketereh Kelantan.**

This assessment enabled the organization to make appropriate decisions on action to be taken to minimize further the worker's exposure to chemicals hazardous to health used in the work place. Although the result of the assessment showed there are significant health risks for some of the work units as discussed, they could be further minimized and controlled. Various recommendations which are deemed appropriate by the assessor have been laid down in the report. It is hoped that the recommendations will help to create a better working environment, further improve the quality of work, health and safety standards in the company. In conclusion, this assessment has successfully met its objectives

## REFERENCES

1. Department of Occupational Safety & Health, Ministry of Human Resources, Malaysia (2018); Assessment of the health risks arising from the use of hazardous chemicals in the workplace (A manual of recommended practice. 3<sup>rd</sup> Edition)
2. PPEs issuant record
3. OSHA Act 1994, Department of Occupational Safety & Health, Ministry of Human Resources, Malaysia
4. SDS from company