INDOOR ENVIRONMENTAL QUALITY (IEQ)

By
Jawatan Kuasa Kerja Pengurusan Persekitaran Dalaman (JKKPPD)
Pembangunan Lestari JKR Malaysia

CAWANGAN KERJA PENDIDIKAN DAN PENGAJIAN TINGGI
MAJU TOWER 13-15 OKTOBER 2015

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Introduction

- This IEQ assessment was conducted on 13 – 15 October 2014 at Cawangan Pendidikan dan Pengajian Tinggi (CPPT), Maju Tower.

- This assessment was done as requested by the Senior Director, CPPT due to complaints from the occupants regarding indoor environmental quality at their workplace.

Objectives

- To **observe environmental** tobacco smoke, odour, component of furniture, acoustic comfort, visual comfort and glare control, daylighting and illuminance distribution.
- To determine the **air temperature, relative humidity and air movement** at the place of work.
- To determine **chemical contaminants**; CO, formaldehyde, ozone, respirable particulate and total volatile organic compound at the place of work.
- To determine **noise level** at the place of work.
- To determine **illumination level** at the place of work.
- To **evaluate the exposure** of the occupants to the indoor air contaminants either from indoor or outdoor sources
- To **recommend necessary action** to be taken to improve the indoor environmental quality at the place of work

IEQ Assessment Team

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- Dr. Nor Shahrene Mohd Ibrahim (CA)
- Mohd Firrdhaus Mohd Sahabuddin (CA)
- Norzamri Bin Husain (CKE)
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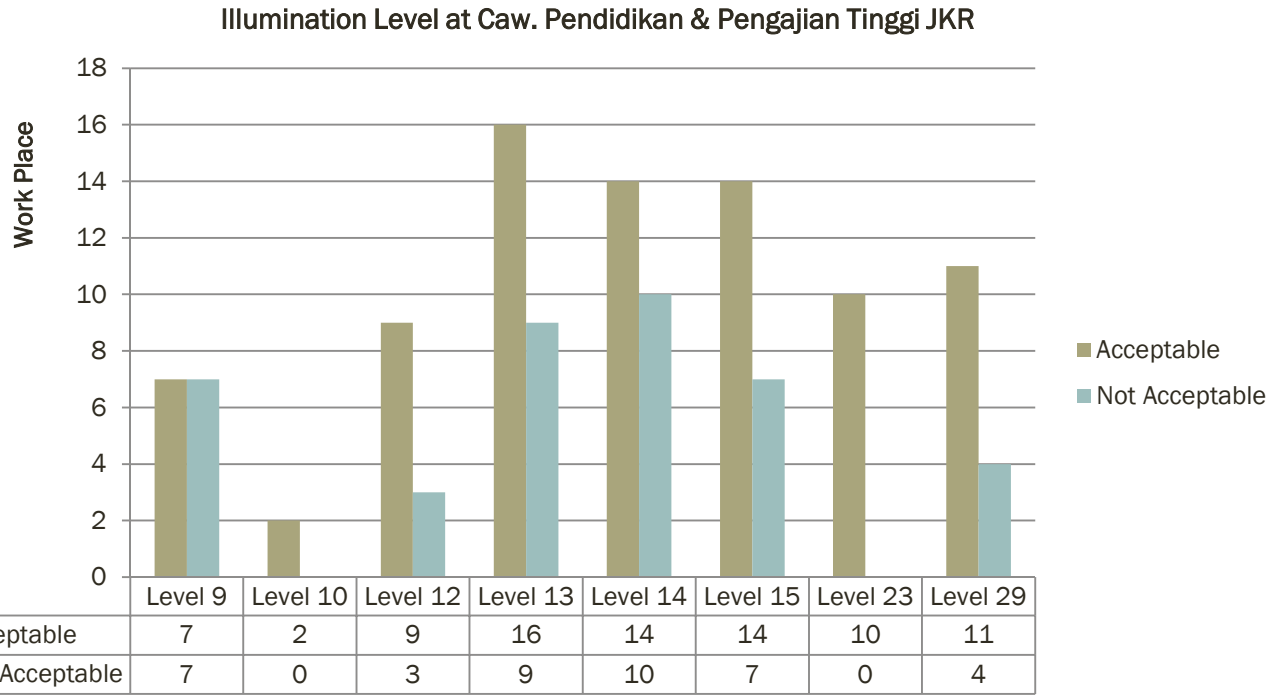
Findings

- Illumination Level

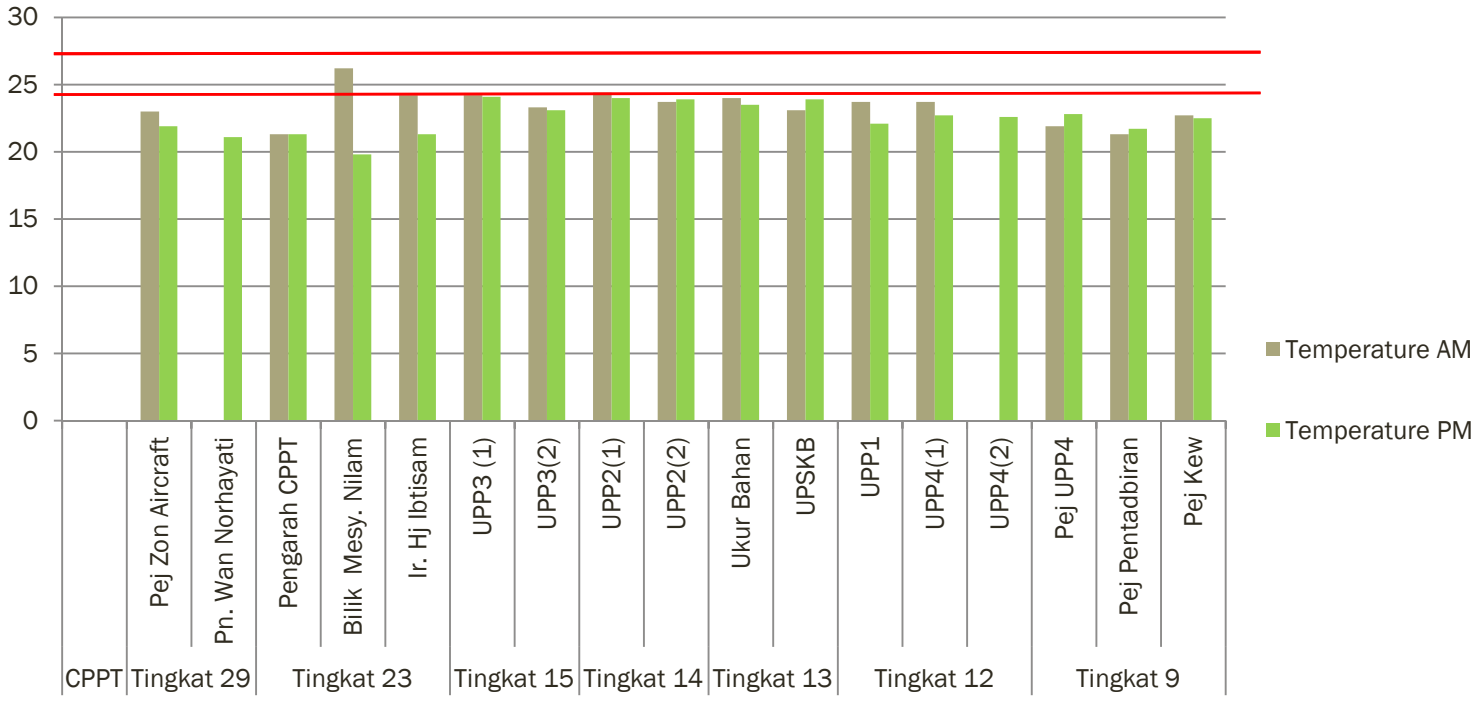


	Level 9	Level 10	Level 12	Level 13	Level 14	Level 15	Level 23	Level 29
Acceptable	7	2	9	16	14	14	10	11
Not Acceptable	7	0	3	9	10	7	0	4

Illumination level at 40 workplaces (32.52 %) has not achieved the minimum illumination level recommended by MS 1525:2014 and Panduan Teknik Rekabentuk Elektrik CKE 2008: Edisi 4

Findings

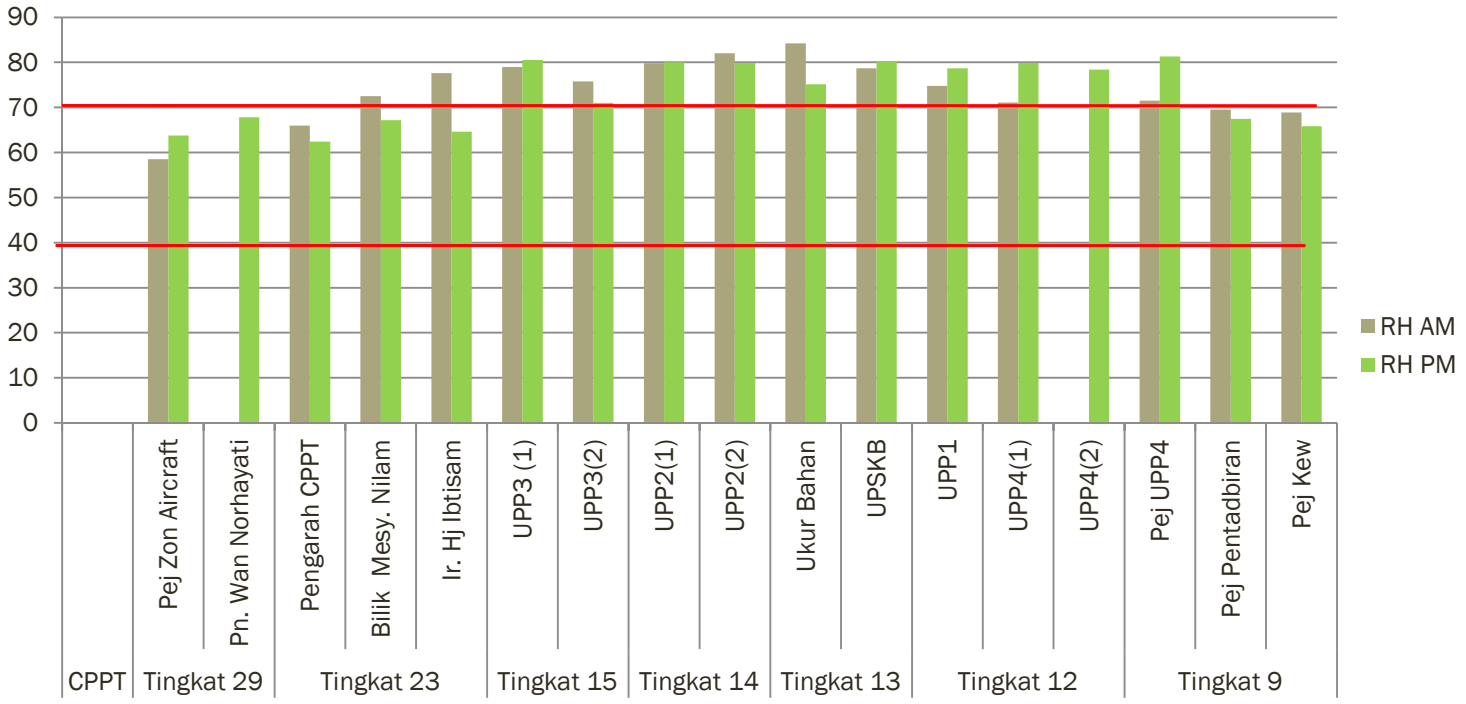
- Temperature (^{0}C)



Most of the workplace are **below acceptable limit** which is Temperature of 23^{0}C - 26^{0}C
According to ICOP by DOSH and JKR IEQ Guidelines 2013

Findings

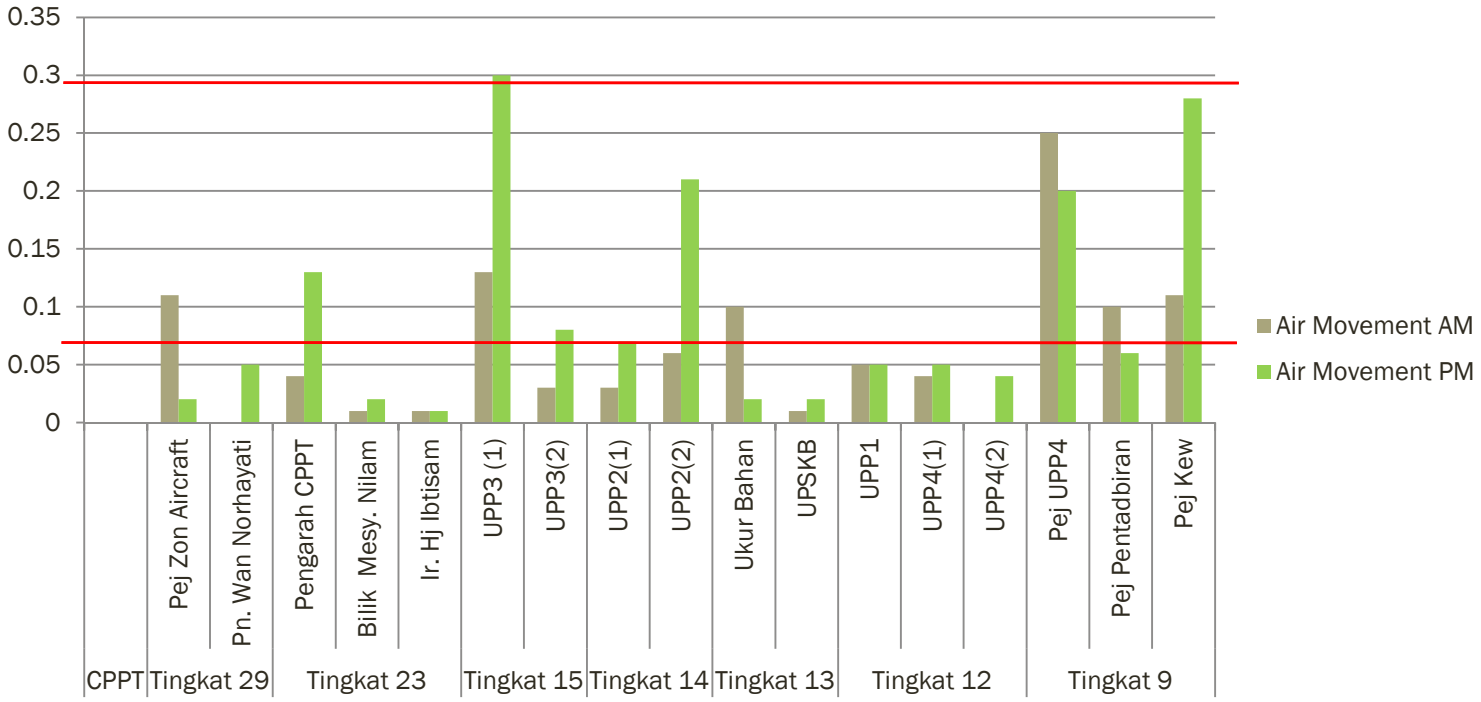
- Relative Humidity (%)



Most of the work places are **above acceptable limit.** Recommended RH comfort range is between 40%-70% for an office building

Findings

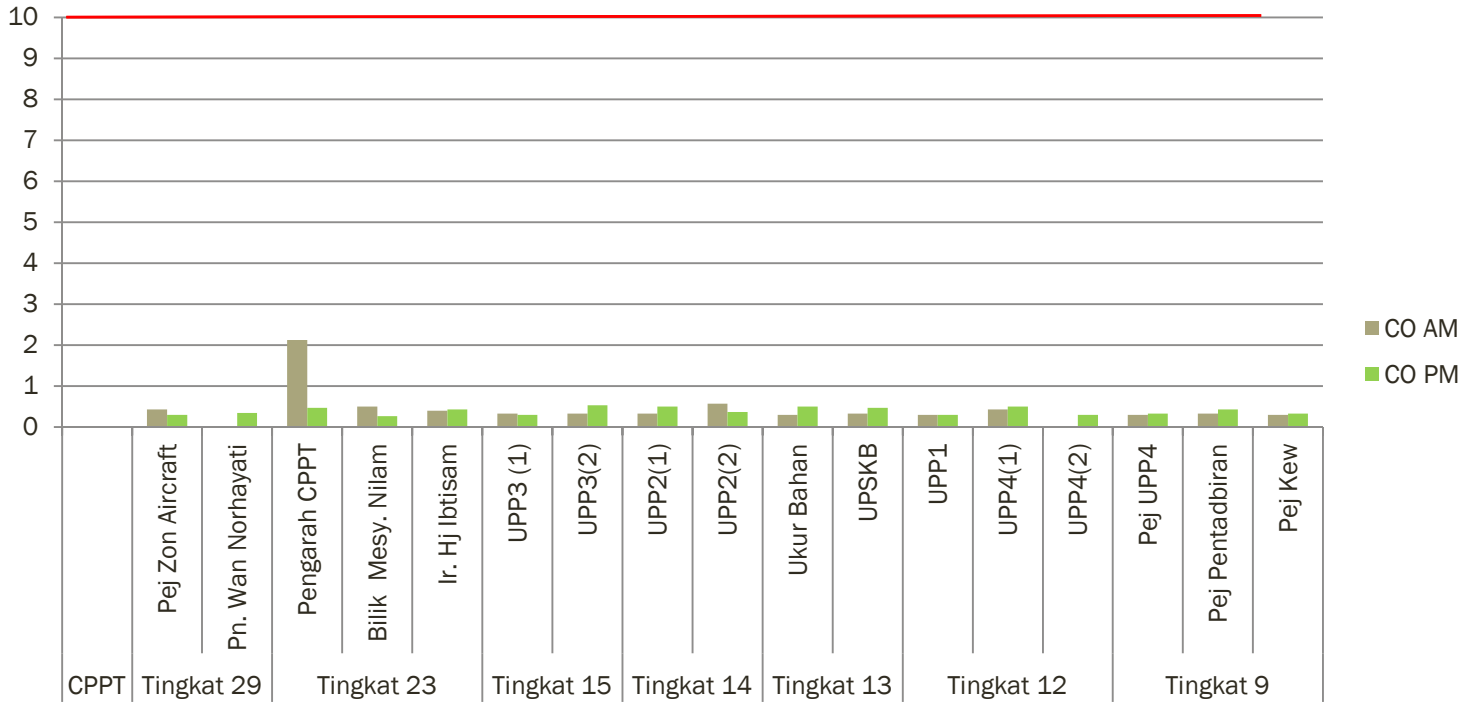
- Air Movement (m/s)



The indoor air movement at most of the sample points were **below acceptable limit.** Allowable limit is between 0.15m/s-0.5m/s at the work place.

Findings

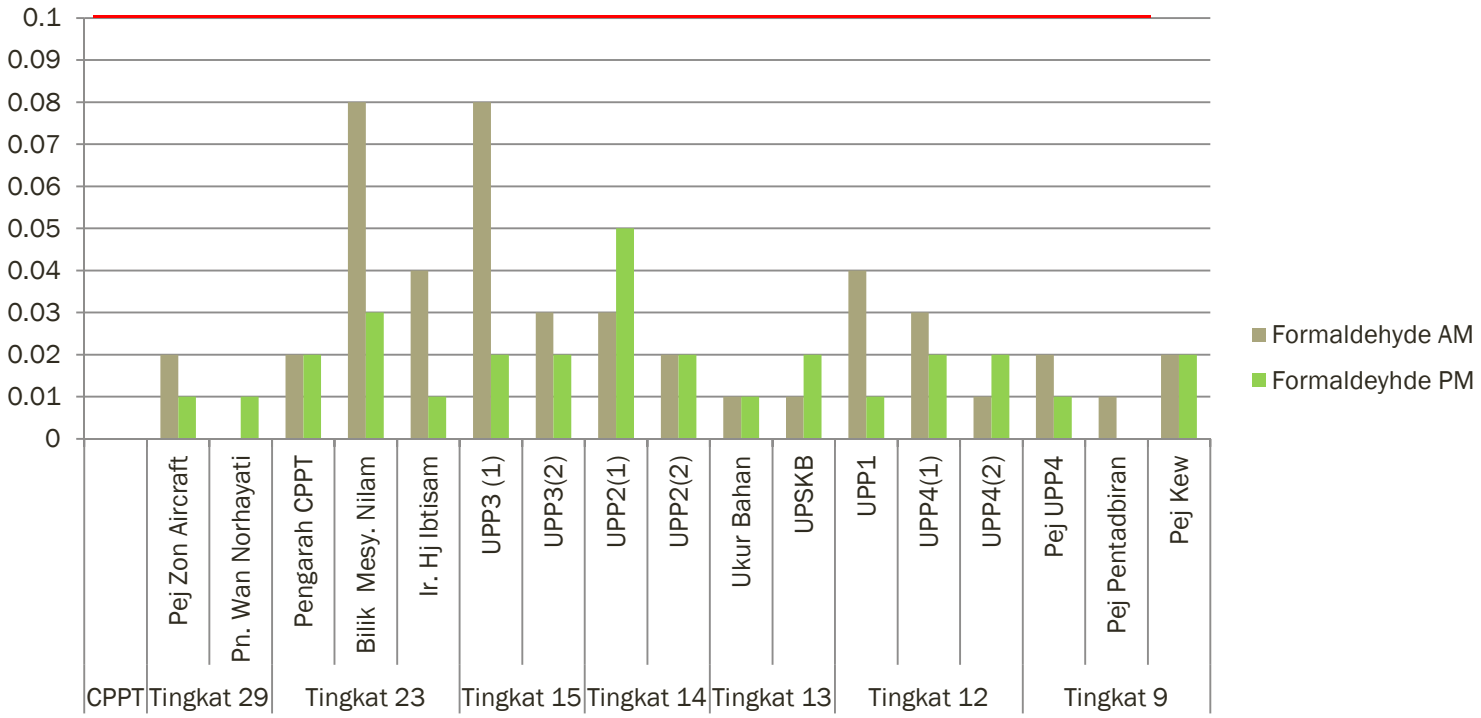
- CO (ppm)



CO level **is below acceptable limit** which refer to ICOP and JKR IEQ Guidelines stipulate that CO level is 10ppm

Findings

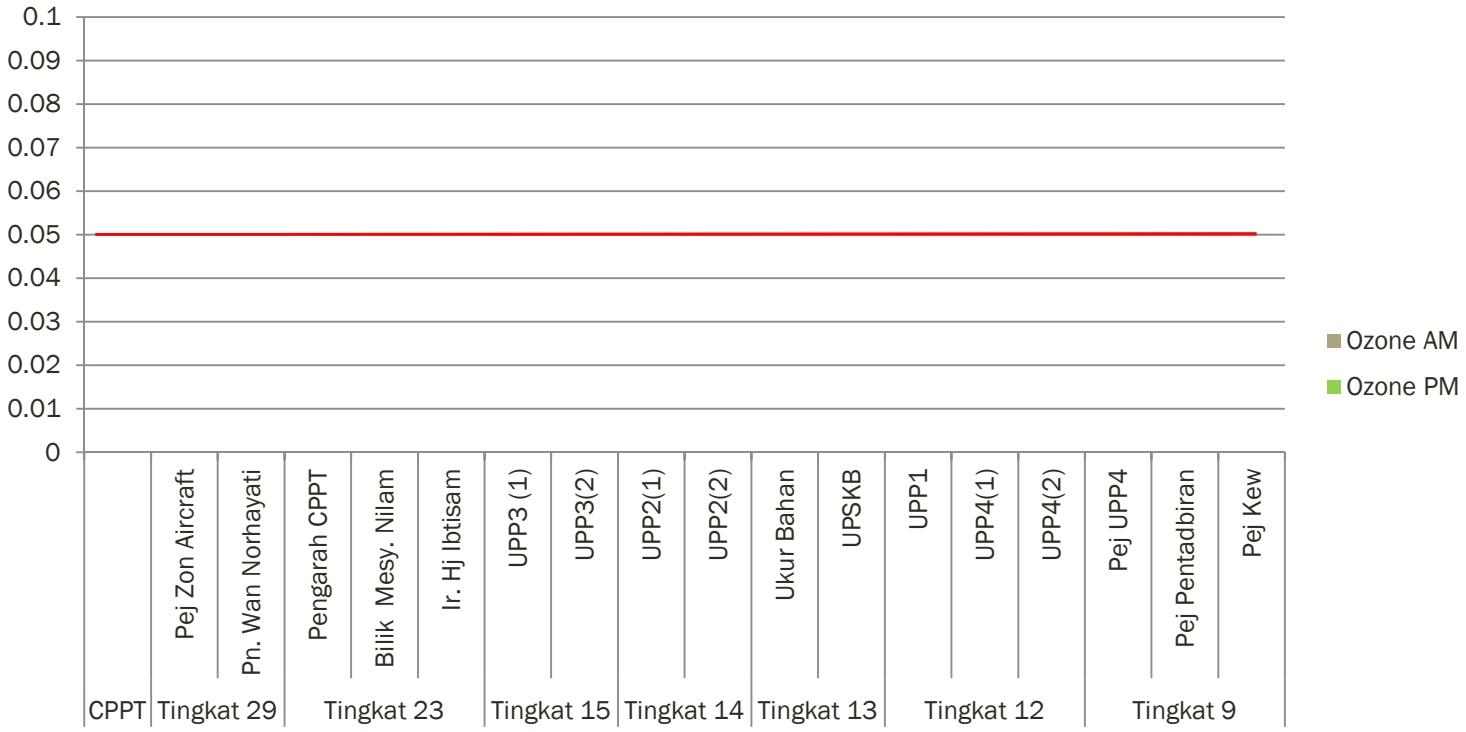
- Formaldehyde (ppm)



Formaldehyde level is **below acceptable limit** of 0.1ppm set by ICOP and JKR IEQ Guidelines

Findings

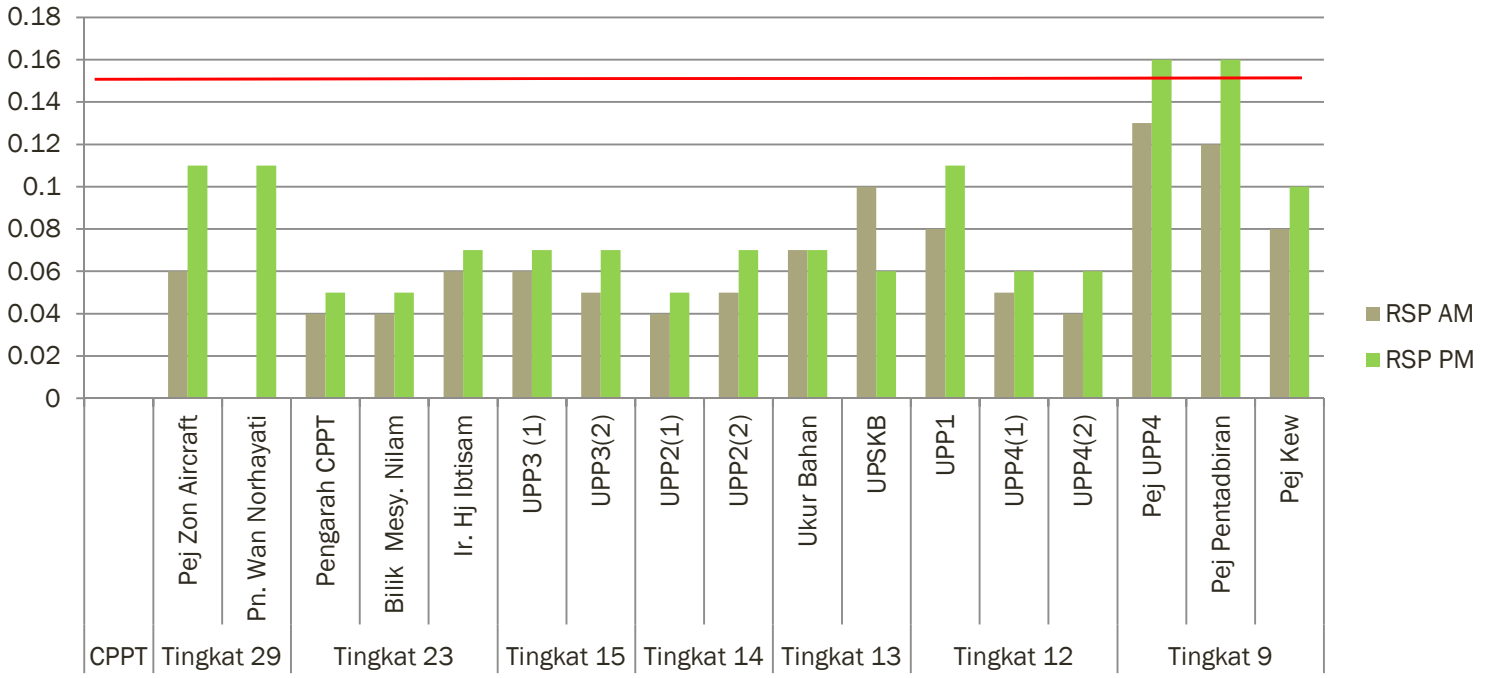
- Ozone (ppm)



Ozone level is below acceptable limit 0.05ppm recommended by ICOP and JKR IEQ Guidelines

Findings

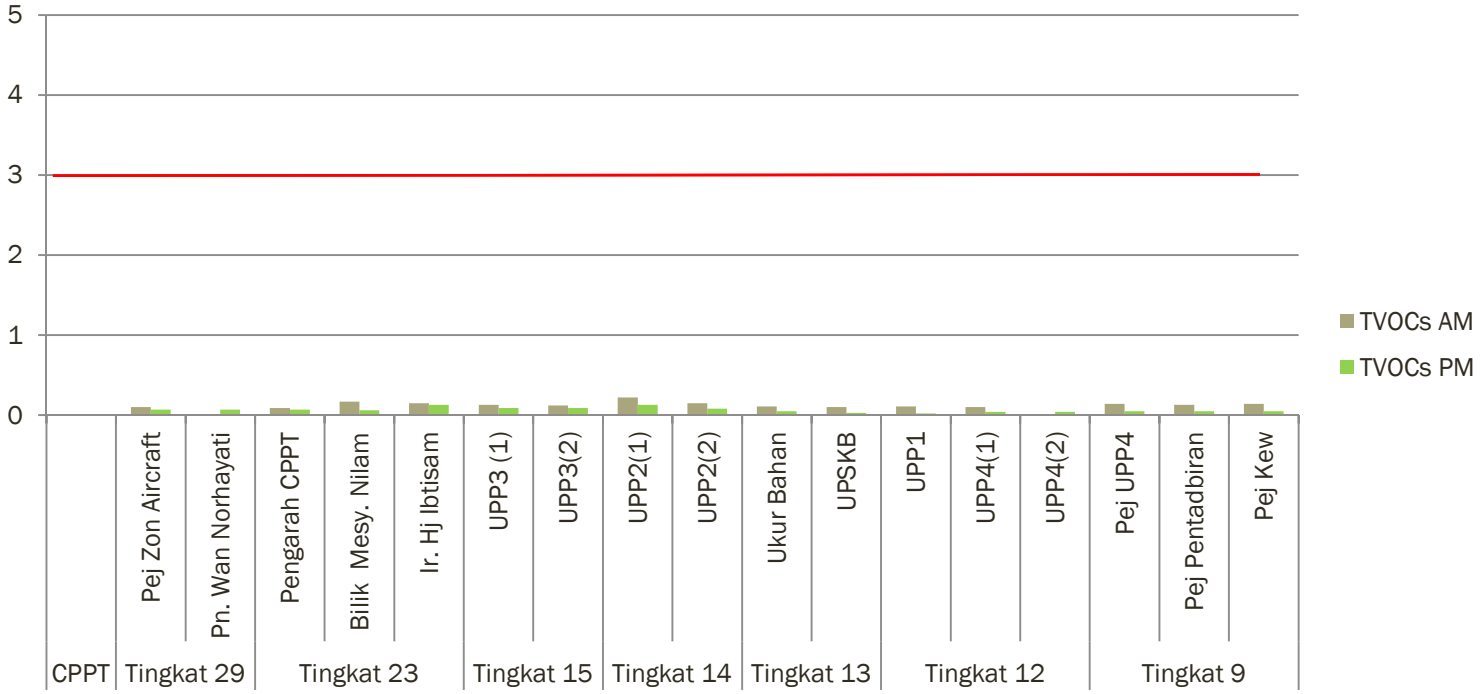
- Respirable Particulates (ppm)



Respirable particulate are still within acceptable limits 0.15mg/m3 recommended by ICOP and JKR IEQ Guidelines

Findings

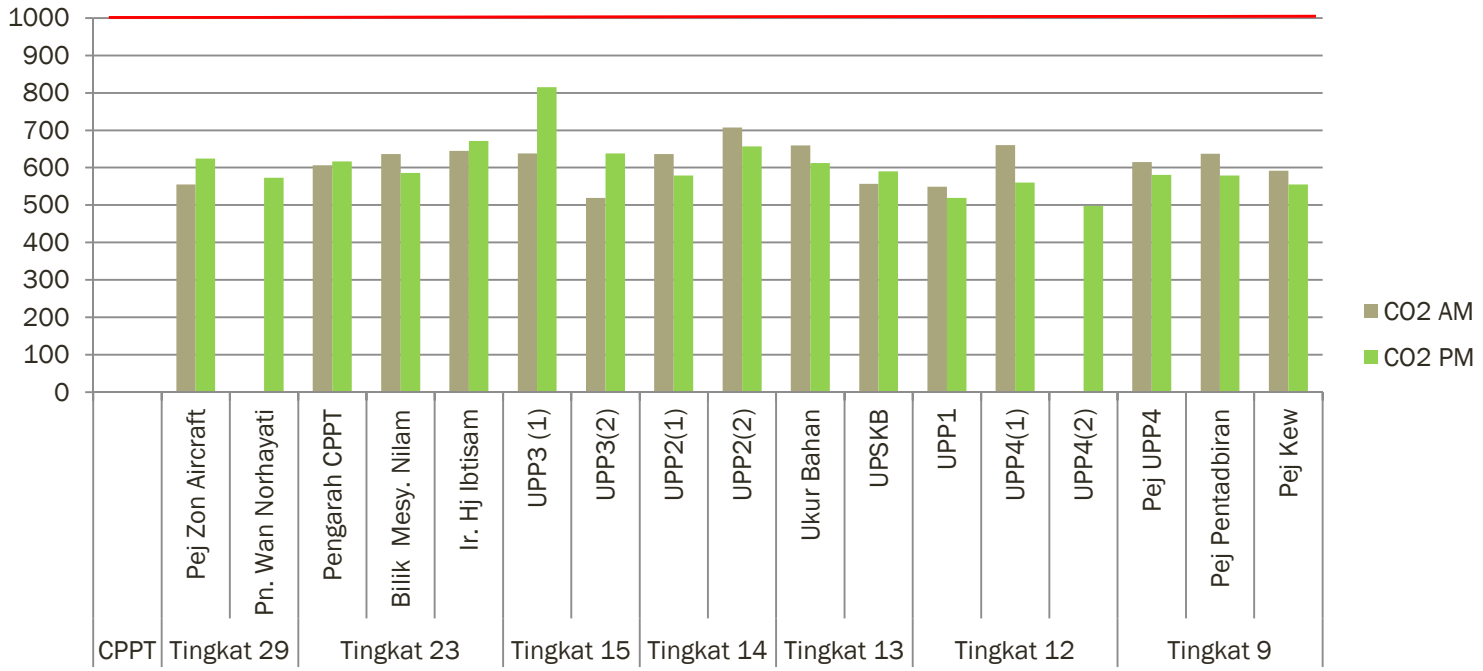
- Total VOC (ppm)



Total VOC level is below acceptable limit compliance with ICOP and JKR IEQ Guidelines is 3ppm

Findings

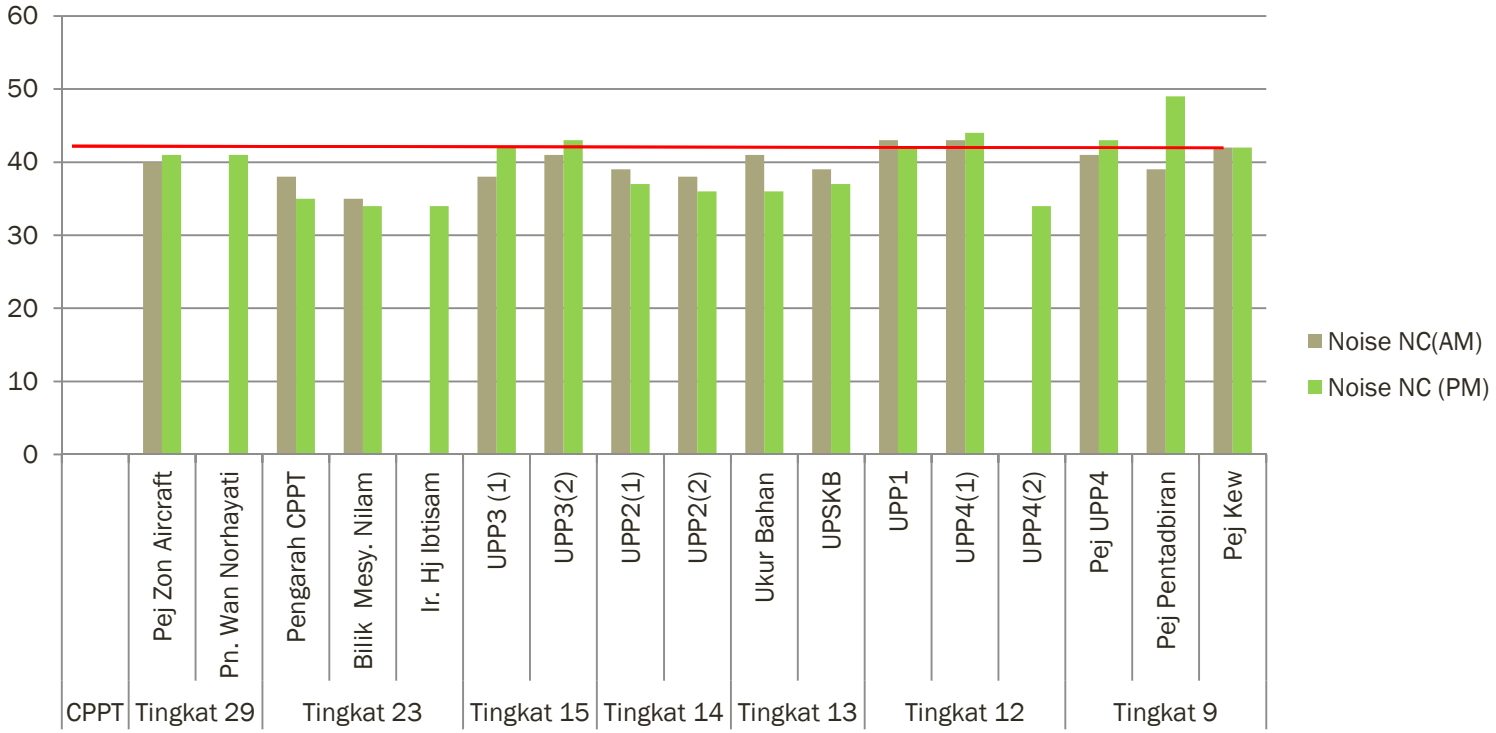
- CO_2 (ppm)



CO_2 level inside this building were within the ceiling limit of 1000ppm as recommended by ICOP and JKR IEQ Guidelines

Findings

- Noise (NC)



Noise level in CPPT, Maju Tower is unsatisfactory. Certain workplaces are at beyond the acceptable limit range ICOP and JKR IEQ Guidelines which 40NC

Recommendations

- It is strongly advisable to the Building Management to up keep and maintains the indoor environmental quality within the building areas as specified in the Industry Code of Practice 2010 by DOSH. As overall finding indicated that the indoor environmental quality is satisfactory but certain issues should be taken with necessary actions.

  - High Level of Relative Humidity
    - MVAC Maintenance
    - Bacterial and Fungal Count
  - sound insulation is provided within the AHU room
  - conduct robotic duct inspection at the MVAC ducting
  - improve the illumination level

References

- *Industry Code of Practice on Indoor Air Quality 2010, Department of Occupational Safety and Health, Ministry of Human Resources Malaysia*
- *Guidelines on Indoor Environmental Quality (IEQ) for Government Office Building 2013, Jabatan Kerja Raya Malaysia*
- *Indoor Air Quality: A System Approach, Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA)*
- *MS 1525:2014: Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Building (First Revision)*
- *Panduan Teknik Rekabenuk Elektrik CKE 2008: Edisi 4*
- *Daylighting Design Guidelines for Office Buildings in Malaysia, 2012. Cawangan Arkitek, Jabatan Kerja Raya Malaysia.*