



Chemical Work Environment Measurement (WEM) in Ensuring Workers' Safety

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INTRODUCTION

Chemical exposure in hospitals is a significant health and safety concern for workers, causing headaches, dizziness, and fatigue depending on the chemical exposure. The work environment must be monitored and maintained to promote worker comfort and safety. The Chemical Work Environment Measurement (WEM) activity at Makati Medical Center (MMC) ensures workers' safety by measuring indoor air quality and ensuring it falls within the allowed Occupational Exposure Limits (OEL), which are standard/regulatory values for safe levels of exposure to chemical substances. This activity ensures workers are not exposed to harmful chemicals and promotes a comfortable and healthy work environment.

AIM

Chemical WEM is done through the initiative of the Occupational Safety & Health (OSH) Committee of MMC in collaboration with the Facilities Management & Engineering Division (FMED) and identified hospital departments/units which are active users of the identified chemical hazards (Table 1). This activity aims to assess the work conditions and recommend necessary control measures to minimize hazards and maintain a comfortable and healthy work environment.

METHOD

Chemical WEM in MMC was first conducted in 2018 and annually thereafter. The planning process started with assessing the hospital's hazardous materials inventory and conducting a physical walkthrough. This data identified ten (10) priority areas and ten (10) chemical hazards. Preparation was done in close coordination with a third-party service provider. Steps, sampling methodologies, and schedule were finalized. Chemical air sampling on nineteen (19) sampling points was conducted on June 2018.

CONCLUSIONS

This activity enables the organization to identify points for improvement, re-evaluate its existing processes and procedures, and avoid potential health risks from overexposure to safeguard the well-being of the workers.

ACKNOWLEDGEMENT

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REFERENCES

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Makati Medical Center – Occupational Safety and Health Committee. **Chemical Work Environment Measurement. 2018 – 2021 Reports**. 2018-2021

RESULTS

Chemical WEM was conducted in the following areas with the identified Chemical Hazards:

Table 1

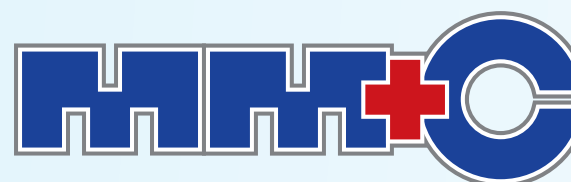
AREAS	CHEMICAL HAZARDS
1. Main Lobby	1. Total Volatile Organic Compounds (TVOC)
2. Laboratory	2. Acetone
3. Basement Parking	3. Ethanol
4. Cellular Therapeutics Center	4. Formaldehyde
5. Anatomic Histopathology	5. Methanol
6. Hematology	6. Xylene
7. Microbiology	7. Hydrochloric Acid
8. Immunochemistry	8. Chlorine Gas
9. Housekeeping Dilution Room	9. Carbon Monoxide
10. Hazardous Materials Storage Room	10. Carbon Dioxide

Table 1. Chemical WEM Areas & Chemical Hazards

In 2018, results showed that 19 out of 19 (100%) measured sampling points have passed (not exceeding the specified OEL). However, the TVOC level in Hazmat Storage Room was noted as "marginal" which led to the improvement of the area's ventilation. Additionally, the room's access policy, the worker's length of stay, and the use of Personal Protective Equipment (PPE) were reviewed to lessen the risk of worker exposure.

The effect of implemented improvement activities was reflected in 2019. With the same testing parameters and areas, all sampling points were measured below OEL. Due to the pandemic, no activity was conducted in 2020. In 2021, 18 out of 19 (94.74%) sampling points passed. The air concentration of Hydrochloric Acid (HCl) in the Immunochemistry area exceeded the allowable standard of 5 ppm. The cause of the high concentration was reviewed, and corrective action was recommended. Preventive maintenance (PM) on the Immunochemistry area's fume hood, where HCl is being prepared, was conducted to improve airflow (exhaust). This strategy lessened the air concentration below OEL, decreasing workers' risk of overexposure. Chemical WEM was also conducted in October 2022 with the same testing parameters and areas. Corrective actions will be strategized and implemented upon the release of results.

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