

CTMM POLICY ON VENTILATION

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A. POLICY

To provide for a safe and healthy workplace for all CTMM employees.

1. SCOPE

This policy is applicable to all departments / divisions within the CTMM.

2. OBJECTIVES

- 2.1 To ensure that internal air quality in workplaces at the CTMM meets acceptable standards and does not negatively effect worker health, safety and productivity.
- 2.2 To prevent the build-up of hazardous chemical substances through sufficient supply of natural and/or artificial ventilation.

3. REFERENCES

- 3.1 Occupational Health & Safety Act: Environmental Regulation 5
- 3.2 Occupational Health & Safety Act: General Safety Regulation 4
- 3.3 Occupational Health & Safety Act: Hazardous Chemical Substances Regulations
- 3.4 Occupational Health & Safety Act: Lead Regulations
- 3.5 SABS 0400 Part O: The application of the National Building Regulations
- 3.6 SABS 0119: Reduction of explosive hazards by segregation, ventilation and pressurisation of electrical equipment
- 3.7 SABS 0147: The testing of water cooled air conditioning systems
- 3.8 Mine Health and Safety Act, 29 of 1996, Regulation 9.2

4. DOCUMENTATION

- 4.1 Occupational Hygiene Report on Hazardous Chemical Substance Surveys.

5. DEFINITIONS

Health & Safety Representative: A departmental representative elected in terms of section 17 or appointed in terms of section 19 in the Occupational Health & Safety Act, 85 of 1993.

Occupational Safety Officer: A person employed in the Occupational Health & Safety Section of the CTMM, sub-section Occupational Safety.

6. RESPONSIBILITY

Prime: Head of Division Legal Services Division

Secondary: Deputy Manager: Occupational Hygiene.
Deputy Manager: Occupational Safety.

The execution of this policy is the responsibility of the Head of the Division which is in line with his obligations to provide and maintain a safe and healthy work environment as per the CTMM Health & Safety Policy.

The Head of Occupational Health and Hygiene shall provide an advisory service in line with this policy which may in some instances include the rendering of Occupational Hygiene measurements. Any costs incurred through the appointment of external consultants or analysis fees on samples taken will be for the specific department.

Any delegations made in respect of this policy by the Head of the Division to subordinates must be done in writing.

7. EXECUTION

- 7.1 All workplaces must be ventilated by natural or mechanical means in such a way to ensure internal air quality in the workplace meet acceptable standards by ensuring:
- a) Air breathed by employees does not endanger their health or safety
 - b) The time-weighted-average concentration of carbon dioxide therein, over an eight-hour period, may not exceed 0,5 % by volume of air
 - c) The carbon dioxide content thereof does not at any time exceed 3 % by volume of air.
 - d) The prescribed exposure limits for airborne Hazardous Chemical Substances, Lead and Asbestos therein are not exceeded.
 - e) The concentration of any explosive or flammable gas, vapour or dust does not exceed the lower explosive limit of that gas, vapour or dust.
- 7.2 While the Head of the Division ensures compliance with the abovementioned requirements, the input of the Head of Occupational Health and Hygiene must be obtained during the design of all new installations.
- 7.3 The Head of the Division responsible for conducting a task risk assessment in collaboration with the departmental health & safety committee shall forward the outcome thereof to the Head of Occupational Health and Hygiene. The severity of hazards identified in the task risk assessment, guided by the specific requirements set out in the Occupational Health & Safety Act, will determine the necessity of workplace indoor air monitoring. The Head of Occupational Health and Hygiene shall then draw up an Occupational Hygiene Survey Schedule which shall contain the frequency for ventilation surveys for each division. The mentioned surveys will be conducted by an Approved Inspection Authority
- 7.4 Any deviations identified on completion of Occupational Hygiene Surveys, during the Departmental Audits or otherwise will be rectified in accordance with the recommendations set out in terms of the Policy on Hazardous Chemical Substances.
- 7.5 Any room or enclosure used for the storage of flammable substances, must be:
- a. Separated by means of fire-resisting material with a fire-resistance of two hours from any room, cabinet or enclosure where these substances are utilised.
 - b. Constructed of fire-resisting material with a fire-resistance of two hours.
 - c. Constructed in such a way that, in case of spillage, the volume of the flammable liquid in question equal to the quantity of flammable liquid ordinarily kept in store plus 10 per cent of that quantity, can be contained.
 - d. Ventilated to the open air in such a manner that vapour cannot accumulate inside the store.

- e. Clearly marked with a sign indicating that it is a flammable substance store and also indicating the amount of flammable liquid which may be stored therein.

7.6 Any room or enclosure where flammable substances are used shall be of such a nature that:

- a) No fire or explosion hazard is created.
- b) No other workplace may be contaminated by vapour generated.
- c) Must be provided with an efficient intake and exhaust ventilation system to remove any vapour and to prevent its recirculation in a manner which may lead to the contamination of any other workplace.

7.7 For any room or enclosure where spray painting is done, the Head of the Division must provide and maintain a ventilation system conforming to the following requirements:

- a. If the air supply and extraction is horizontal, the average air speed measured at a level of 1.5 meters above the floor, or at the level of the platform, on which persons stand to work, shall not be less than 0.5 meters per second.
- b. If the air supply is vertical and the extraction thereof is done through slits or a grill along the side walls at floor level, the average air speed measured as a level of 1.5 meters above the floor, or at the level of the platform on which persons stand to work, shall not be less than 0.4 meters per second.
- c. If the air supply is vertical and the extraction thereof is done through a grill over the whole of the floor area, the average air speed measured at a level of 1.5 meters above the floor, or at the level of the platform, on which persons stand to work, shall not be less than 0.3 meters per second.

7.8 Any room or enclosure used for the storage of hazardous chemical substances, including pesticides (and related poisons) shall be of such a nature that:

- a) No fire or explosion hazard is created.
- b) No other workplace may be contaminated by vapour generated.
- c) Must be provided with an efficient intake and exhaust ventilation system to remove any vapour and to prevent its recirculation in a manner which may lead to the contamination of any other workplace.

7.9 The following rules must also comply with regards to all workplaces:

- a. Discarded cotton waste, cleaning rags or similar material to be removed daily and safely disposed of.
- b. Only that quantity of flammable liquid needed for work on one day to be taken into or kept in such room, cabinet or enclosure. Provided that partially consumed stock may be stored in a properly marked, fireproof wall cabinet inside the work place.
- c. All drums, cans, canisters or similar containers holding flammable liquids are to be kept tightly closed when not in actual use and after their contents have been used, removed from the workplace and safely disposed of on a daily basis.
- d. Every such room, cabinet or enclosure to be kept clean and all fans, ducts, trunks and enclosures of the ventilation system contemplated in par. 7.6 to be kept clean and in good working order. Provided that any cleaning, scraping or scouring shall be done with implements that cannot cause sparking if the concentration of the vapour exceeds 25 per cent of the lower explosive limit of that vapour.

7.10 Any local extraction ventilation system used for the control of airborne contaminants must comply with the following requirements:

CAPTURE VELOCITIES

Release rate of contaminant	Process Examples	Velocity
Released with practically no velocity into quiet air.	Evaporation from tanks, degreasing.	0.25 – 0.5 m/s ⁻¹
Released at low velocity into moderately still air.	Spray booths, intermittent container filling, low speed conveyor transfers, welding, plating, pickling.	0.5 – 1.0 m/s ⁻¹
Active generation into zone of rapid air motion.	Spray painting in shallow booths, barrel filling, conveyor loading, crushers.	1.0 – 2.5 m/s ⁻¹
Released at high initial velocity into zone of very rapid air motion.	Grinding, abrasive blasting, tumbling.	2.5 – 10 m/s ⁻¹

TRANSPORT VELOCITIES

Contaminant	Examples	Velocity
Vapours & Gases	Acid baths, electro plating baths.	5 – 6 m/s ⁻¹
Fumes	Zinc & aluminium oxide fumes.	7 – 10 m/s ⁻¹
Very fine particles	Cotton lint, wood flour, litho powder.	10 – 12.5 m/s ⁻¹
Dry dusts & powders	Fine rubber dust, Bakelite moulding powder dust, jute lint, cotton dust, shavings (light), soap dust, leather shavings.	12.5 – 18 m/s ⁻¹
Average industrial dust	Sawdust (heavy and wet), grinding dust, buffing lint (dry), wool jute dust (shaker waste), coffee beans, shoe dust, granite dust, silica flour, limestone dust, packaging and weighing asbestos.	18 – 20 m/s ⁻¹
Heavy dusts	Metal turnings, foundry tumbling barrels and shakeout, sand blast dust, wood blocks, hog waste, brass turnings, cast iron dust, lead dust.	20 – 23 m/s ⁻¹
Heavy or moist dust	Lead with small chips, moist cement dust, asbestos chunks from transit pipe cutting machines, buffing lint (sticky), quick-lime dust.	23 – 30 m/s ⁻¹

DUCT WALL THICKNESS*

Duct diameter	Thickness / mm		
	Mm	Light	Medium
0 – 200	0.8	0.8	1.2
200 – 450	0.8	1.0	1.2
450 – 800	1.0	1.2	1.6
800 – 1200	1.2	1.6	2.0
1200 – 1500	1.6	2.0	2.5

* Galvanised sheet steel ductwork.

Light duty : Non-abrasive materials (spray painting, wood, pharmaceuticals, food products).

Medium Duty : Non-abrasive in high concentrations, abrasive in low concentrations.

Heavy Duty : Highly abrasive materials (sand, grit, rock, ore, fly-ash).

7.11 Any ventilation system supplying air to a building must be supplied with an efficient air filtering system to prevent dust and other contaminants from reaching the workplace air.

- a) Such filtering system must be maintained in accordance with the maintenance schedule (filters must be cleaned at least 3 monthly).
- b) Any filtering system utilised must be able to effectively filter out all contaminants with a 90% efficiency rate at 5 micron.
- c) Filters used in such a system must be replaced at least annually with new filters.
- d) Any openings to a ventilation room or ceiling must be effectively sealed to prevent rodents and other animals from taking up residence in such areas. Any dust, faeces and other contaminants (including bird feathers) must be thoroughly removed to prevent serious respiratory diseases.

7.12 Responsibility for the provision of ventilation suitable to in-house activities and the maintenance thereof in terms of this policy must be clearly indicated in all lease contract agreements concluded by the Legal Services Division of the CTMM.

8. APPENDICES

Nil