Indoor Air Quality Procedure

INTRODUCTION

Indoor air quality (IAQ) refers to the condition of air within an enclosed workplace. IAQ is a function of a number of parameters including outdoor air quality, the design of enclosed workspaces, the design, operation and maintenance of ventilation systems, the number of occupants in a room or building, occupant activities and the presence of contaminant sources.

With respect to assessing the quality of the indoor environment as it relates general parameters such as temperature, relative humidity and carbon dioxide, Humber follows the guidelines set out by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards.

OBJECTIVES

 The objectives of this practice are to:

1. establish a mechanism by which IAQ concerns are to be reported, investigated and resolved, and
2. establish responsibilities for maintaining acceptable indoor air quality parameters.

Applicable Legislation:

* Occupational Health and Safety Act, R.S.O., 1990, Chapter 0.1 as amended
* Regulations for Industrial Establishments, R.R.O. 1990, Reg. 851 as amended
* Control of Exposure to Biological or Chemical Agents, R.R.0. 1990, Reg. 833 as amended

Applicable Standards:

* American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standards; “Ventilation for Acceptable Indoor Air Quality” and “Thermal Environmental Conditions for Human Occupancy”.

Related Environmental Health and Safety Policies and Procedures (Humber):

* Temperature Extremes in Work/Learning Areas Policy and Procedure

SCOPE

This practice applies, in its entirety, to the Rowan\Salisbury school system.

REPORTING AND RESPONSE PROCEDURE

A. BUILDING SYSTEMS / MAINTENANCE CONCERNS

Building system concerns are those that relate to the functioning and maintenance of a building’s mechanical heating, ventilation and air conditioning (HVAC) system. Occasionally problems may also arise due to custodial issues.

Examples include :

* heating, cooling or ventilation malfunctions during regular operating hours (i.e. too hot, too cold, no flow through supply air diffuser)
* broken thermostats
* malfunction or failure of a local exhaust system (e.g. fume hood or other exhaust hood)
* odors due to construction/renovation projects in or around the building
* odors due to dried out floor drain traps due to evaporation.
1. Employees aware of a building system/maintenance problem are to report the concern to their supervisor/manager and maintenance department.
2. School site Management will place a work order for repairs. Maintenance director will advise the supervisor of the outcome of any action taken.

B. SPECIFIC OR ON-GOING AIR QUALITY CONCERNS

Specific or on-going air quality concerns are those that do not appear to be due to any obvious breakdown or malfunction of a building’s HVAC system, alone. For example, they may include concerns about specific chemical contaminants or growth. Typically these concerns are more complex in nature and therefore require more in-depth investigation.

1. Employees with a concern of this type should notify their supervisor/manager who should in turn contact maintenance department..
2. Maintenance director will gather more detailed information regarding the concern by meeting with the supervisor/manager and employees involved.
3. Maintenance director will review this information with Facilities Management and seek input from Facilities Management regarding the design and maintenance of the HVAC system, possible sources of IAQ problems and any remedial actions taken to date.
4. If specific expertise is required to address the issue, the maintenance director will enlist the services of an external consultant experienced in occupational hygiene investigation.
5. The results of an investigation of this type will be shared with Facilities Management for consideration of the best course of follow-up action, if required.

RESPONSIBILITIES

EMPLOYEES

Employees are responsible for:

* reporting IAQ concerns to their supervisor and the Maintenance department Work Order System
* ensuring work area is clean and properly maintained
* keeping air supply diffusers and return grills free of obstructions
* reporting any damaged or malfunctioning ventilation equipment (e.g. local exhaust hood not functioning) to their supervisor
* properly using local ventilation systems (e.g. fume hoods) if applicable to their work activity/work area

SUPERVISORS / MANAGERS

 Supervisors / Managers are responsible for:

* responding to IAQ concerns raised by employees
* reporting IAQ concerns to the maintenance department.
* ensuring proper control measures (e.g. local exhaust hoods) are in place and employees are trained in their proper use
* ensuring proper storage of chemicals in keeping with applicable Acts and standards
* reporting damaged or malfunctioning ventilation equipment to maintenance department for repair
* advising/seeking advice from maintenance department prior to the start of any unusual/non-routine activity that may affect the IAQ, to determine what steps may be taken to mitigate the adverse effects .

MAINTENANCE DEPARTMENT

maintenance department is responsible for:

* ensuring building ventilation systems are properly maintained and serviced
* following ASHRAE recommended guidelines, to the extent feasible, within budget constraints
* responding to IAQ concerns and conducting initial investigations
* working with upper management and outside contractors to investigate and resolve more complex IAQ concerns
* ensuring own department and contractors follow dust control practices
* notifying departments/areas of maintenance or renovation activities that may adversely affect IAQ in their area (e.g. roofing, painting, floor refinishing, shut-down of ventilation system for repair), whenever possible
* investigating proposed changes to building layouts to ensure proper air circulation and satisfactory IAQ in renovated areas
* maintaining blueprints/drawings of ventilation systems
* maintaining housekeeping requirements, including floor and carpet cleaning, to control dust levels, while working within budget constraints
* investigating specific or on-going IAQ concerns.
* upon approval, enlisting the help of external consultants to resolve complex or unresolved IAQ concerns

Indoor Air Quality Guidelines – Carbon Dioxide (CO2)

Carbon dioxide concentrations are commonly used as an indicator of whether there is adequate ventilation within an occupied area. Human occupants exhale carbon dioxide and produce water vapor, particulates, biological aerosols and other contaminants.

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standard recommends that indoor carbon dioxide levels should be kept below the total of the outside CO2 level in parts per million (ppm) plus 700 ppm. That is, if carbon dioxide levels are kept below this combined value then it is likely that there is an adequate supply of outdoor air to sufficiently dilute odors and other contaminants commonly found in the occupied area.  This guideline is not based on the toxicity of carbon dioxide, but rather as carbon dioxide being used as a surrogate measure for the adequacy of ventilation rates and occupant comfort. Typically outdoor CO2 levels are near the 400 ppm mark. Thus the combined value would be approximately 1,100 ppm.