Indoor Air Quality Assessment Report
CRM Number

On behalf of

Client

At

Building Name

INDEX

Section

Section 1: Preface

Customer:	Customer
Site Address:	Site Address
Hydro-X Account Manager:	Account Manager
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Hydro-X Email Address:	info@hydro-x.co.uk
Hydro-X Operatives Carrying Out Works:	Site personnel name
Date of Assessment:	Date

Any further information concerning this assessment should be requested by contacting the above-named Hydro-X Account Manager.

Section 2: Introduction

The following report relates to the indoor air quality and the potential impact that it can have on the health and wellbeing of employees and users in the workplace.

The purpose of this survey is to ascertain the health and thermal comfort effects within the workplace environment. The importance of the built environment in health and wellbeing is increasing recognized by Government and facilities managers alike, especially as occupational risks from poor air quality is among the ten highest risks factors for death and disability.

Employee or occupant satisfaction are important factors in the cognitive performance and productivity within the workplace and as such needs to be addressed as part of an employer's duty under health and safety legislation.

To achieve this, several variables are measured at 10 locations to determine an overview of the thermal comfort & IAQ conditions found over a representative number of test locations in the workplace.

Analytical data is collected from the representative points throughout the subject area to include:

- Temperature
- Relative humidity
- Carbon dioxide
- Carbon monoxide concentrations.
- Airborne Microbial concentrations for Fungal & Bacterial activity and
- Dust particulate levels in 3 different particle masses.

This survey is by no means exhaustive but is designed to indicate the efficiency of current ventilation system and highlight specific areas of concern covering a 'middle ground' approach to best practice in the operation of the building which can support health, comfort and cognitive performance.

Section 3: Legislation, Standards & Guidelines

What the Law Requires You to Do

The Health and Safety at Work etc Act 1974

Employers have a duty under the Health and Safety at Work etc Act 1974 to ensure, so far as reasonably practicable, the health, safety, and welfare of their employees at work. People in control of nondomestic premises have a duty towards people who are not their employees but use their premises. The Regulations expand on these duties and are intended to protect the health and safety of everyone in the workplace and ensure that adequate welfare facilities are provided for people at work.

The Workplace (Health, Safety and Welfare) Regulations 1992 – ACOP & Guidance

The Workplace (Health, Safety and Welfare) Regulations 1992 cover a wide range of basic health, safety and welfare issues and apply to most workplaces (with the exception of those involving construction work on construction sites, those in or on a ship, or those below ground at a mine – see regulation 3).

Requirements under these Regulations

Employers have a duty under the Health and Safety at Work etc Act 1974 to ensure, so far as reasonably practicable, the health, safety and welfare of their employees at work. People in control of nondomestic premises have a duty towards people who are not their employees but use their premises. The Regulations expand on these duties and are intended to protect the health and safety of everyone in the workplace and ensure that adequate welfare facilities are provided for people at work.

Duties under these Regulations

People other than employers also have duties under these Regulations if they have control, to any extent, of a workplace. For example, owners, landlords or managing agents of business premises should ensure that common parts, common facilities, common services and means of access within their control comply with the Regulations.

Risk assessment

As part of managing health and safety you must control the risks in your workplace. This document will help you to do this. You need to think about what might cause harm to people and decide whether you are doing enough to prevent that.

Regulation 5: Maintenance of workplace, and of equipment, devices and systems

Regulation 5

1) The workplace and the equipment, devices, and systems to which this regulation applies shall be maintained (including cleaned as appropriate) in an efficient state, in efficient working order and in good repair.
2) Where appropriate, the equipment, devices, and systems to which this regulation applies shall be subject to a suitable system of maintenance.
3) The equipment, devices, and systems to which this regulation applies are –
    a. equipment and devices a fault in which is liable to result in a failure to comply with any of these Regulations.
    b. mechanical ventilation systems provided pursuant to Regulation 6.
    c. equipment and devices intended to prevent or reduce hazards.

Approved Code of Practice (ACOP 5)

41. An 'efficient state' means that the workplace and the equipment, devices and systems mentioned in these Regulations should be free of faults likely to affect the health, safety or welfare of workers and provide an adequate level of hygiene. If a potentially dangerous defect is discovered, the defect should be rectified immediately, or steps should be taken to protect anyone who might be put at risk.
42. Equipment that could fail and put workers at serious risk should be properly maintained and checked at regular intervals, as appropriate, by inspection, testing, adjustment, lubrication, repair, and cleaning.

Regulation 6 Ventilation

1) Effective and suitable provision shall be made to ensure that every enclosed workplace is ventilated by a sufficient quantity of fresh or purified air.
2) Any plant used for the purpose of complying with paragraph (1) shall include an effective device to give visible or audible warning of any failure of the plant where necessary for reasons of health or safety.

Approved Code of Practice (ACOP 6)

47. Enclosed workplaces should be sufficiently well ventilated so that stale air, and air which is hot or humid because of the processes or equipment in the workplace, is replaced at a reasonable rate.
48. The air, which is introduced should, as far as possible, be free of any impurity which is likely to be offensive or cause ill health. Air which is taken from the outside can normally be considered to be 'fresh'. However, air inlets for ventilation systems should not be sited where they may draw in contaminated air (for example close to a flue, an exhaust ventilation system outlet, or an area in which vehicles manoeuvre). Where necessary, the inlet air should be filtered to remove particulates.
49. In many cases, windows or other openings will provide sufficient ventilation in some or all parts of the workplace. Where necessary, mechanical ventilation systems should be provided for parts or all of the workplace.
51. In the case of mechanical ventilation systems which recirculate air, including air conditioning systems, recirculated air should be adequately filtered to remove impurities. To avoid air becoming unhealthy, purified air should have some fresh air added to it before being recirculated. Systems should therefore be designed with fresh air inlets, which should be kept open.
52. Mechanical ventilation systems (including air conditioning systems) should be regularly and adequately cleaned. They should also be properly tested and maintained to ensure that they are kept clean and free from anything which may contaminate the air.

Guidance 6

57. The fresh air supply rate should not normally fall below 5 to 8 litres per second, per occupant. When establishing a fresh-air supply rate, consider the following factors:
    - the floor area per person.
    - the processes and equipment involved.
    - whether the work is strenuous.
58. Some ventilation systems are water based. Any water system where water is used or stored, and where there is a means of creating and transmitting water droplets that may be inhaled, can create a foreseeable risk of exposure to legionella. Guidance on the necessary measures to prevent or adequately control this risk is available on the HSE website and relevant ACOP and also from CIBSE.

COSHH

The Control of Substances Hazardous to Health Regulations 19991 (COSHH) regulations 6,7 and 8 require that you undertake a risk assessment and prevent or control the exposure of your employees to substances hazardous to health by using suitable control measures which includes general ventilation. Maintenance, examination and testing of the control measures (for example general ventilation to meet the requirements of regulation 7 are covered by regulation 9.

Acknowledgements

- The BESA TR/19 Guide to Good Practice 'Internal Cleanliness of Ventilation Systems
- CIBSE TM26:2000 Hygienic Maintenance of Office Ventilation Ductwork.
- CIBSE TM40:2020 Health and wellbeing in building services
- Health Technical Memorandum 03-01 'Specialised ventilation in healthcare premises.

Legislation

Relevant Legislation, Guidance and Standards include but are not restricted to the following: -

- Health and Safety at Work Act 1974.
- The Workplace (Health, Safety and Welfare) Regulations 1992.
- The Control of Substances Hazardous to Health (COSHH) Regulations.
- The Occupiers' Liability Act 1984.
- Legionnaires Disease –The HSE Approved Code of Practice L8.
- The Management of Health & Safety at Work Regulations 1999, regulation 3.

GUIDELINES

In assessing the test data, the limits shown below have been used. However, it should be noted that whilst the EH40 exposure gives limits for carbon dioxide (CO2) as 5000ppm for 8-hour period and 15,000ppm for 15-minute exposure, current best practice now accepts 850-900ppm for 'medium air quality' or 700-750 for 'high air quality' for periods not exceeding 20 consecutive minutes. CO2 levels are a good indicator as to whether there is sufficient outdoor air supply within the workplace.

OSHA recommendations give carbon monoxide (CO) occasional exposure limit at 35mg/m3 or 50ppm over an 8-hour period.

For temperature there are no set legal limits however, for sedentary occupations it is normally accepted that a range between 23-260 C in the summer and from 20 – 23.50 C in the winter will be sufficient.

There are small variations in the range of relative humidity (RH) levels but, current studies have shown that in helping to limit the spread of viruses a range of 40-60% RH is effective and provides acceptable comfort.

For airborne particulate matter there is no known safe level for PM10 or PM2.5 size particulates. However, CIBSE recommend 50µm/m3 (0.05ppm) for PM10 and 25µm/m3 (0.025ppm) for PM10.

CIBSE TM26 sets benchmarks for airborne microbial activity as follows:

Low Category - <100 colony forming units per cubic meter (cfu/m3)

Medium Category - >100 but <1000 cfu/m3

High Category - >1000 cfu/m3

Section 4: Executive Summary

Thermal Comfort Test Data

Test Point	Location	Temp (˚C)	RH (%)	CO (ppm)	CO2 (PPM)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Qualitative Test

Test Point	Location	PM 1.0 (mg/m^3)	PM 2.5 (mg/m^3)	PM 10 (mg/m^3)	Bacteria (mg/m^3)	Fungal (mg/m^3)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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22						

Conclusions