

	CONFINED SPACE HAZARD ASSESSMENT		HA # 6
	CONFINED SPACE NAME: Air Handling Units	ID # N/A	LOCATION: Gerry Brewer Building (5), City Hall (4), Library (2)

Confined Space?	YES	
YES ☒ NO ☐ Enclosed or partially enclosed?		
YES ☒ NO ☐ Limited or restricted entry/exit?		
YES ☐ NO ☒ Intended for continuous human occupancy?		
YES ☒ NO ☐ Large enough that a worker can enter?		

SPACE INFORMATION/DETAILS (IN OPERATION):			
SPACE DESCRIPTION: Air handling units are components of the overall heating ventilation and air conditioning (HVAC) systems and are utilized throughout the City's buildings providing fresh air to the occupants inside. All rooftop air handling units are identical (same make and model) and there are eleven units in total – five for the Gerry Brewer Building, four for City Hall and two for the Library.			
CONTENTS: Air, heating/cooling coils, filters (individual compartments exist inside the air handling unit to house the heating/cooling coils, filters, fan motors, etc), lighting <i>Equipment:</i> Fan motors (two for each unit)			
PROCESS/FUNCTION/USE DESCRIPTION: Provides clean respirable air at room temperature for the City's buildings.			
PHYSICAL CHARACTERISTICS: Rectangular box shaped – fans are located on top of each other in separate compartments			
DIMENSIONS: Air handling unit: approximately 8' (H) x 12' (L) x 5' (W) Fan motor compartment: approximately 4' (H) x 6' (L) x 5' (W)		VOLUME: 480 ft ³ 120 ft ³	
SPACE MATERIAL: Carbon steel			
ENTRY CHARACTERISTICS: 2 identical hatch doors on each unit for access to motor fans, access to other compartments (e.g., containing air filters) are of similar approximate size and entry door size			
LOCATIONS: 2 per unit (for fan motor compartment) - located at grade and 4' from grade		SIZE: 2' x 3'	
SECURING MECHANISM: Door handles			
ADJACENT VESSELS/SPACES/PIPING:			
<u>NAME OF SPACE/PIPE</u>	<u>CONTENTS</u>	<u>TEMPERATURE</u>	<u>PRESSURE</u>
Inlets (2' x 2') – air supply	Clean respirable air	No concerns	No concerns
Outlets (2' x 2') – HVAC plenum	Clean respirable air	No concerns	No concerns

SCOPE OF WORK:
This Hazard Assessment (HA) refers to entry for the purpose of visual inspection and manual tasks with manual tools such as fan motor replacements, checking temperature sensors and manually greasing fan motor bearings with a

HAZARDOUS ATMOSPHERIC RATING (LOW, MOD. HIGH)	Low	JUSTIFICATION: No contaminants present in the space and no contaminant generating tasks will occur during the entry (minimal to no vapours are expected during greasing applications).
COMPLETED BY:	Prepared by: Peter Bergholz, BSc, CIH, AMEC, November 2012 Reviewed by: Victor Leung, MSc, CIH, ROH, CRSP, AMEC, November 2012	INFO. SOURCE: Richard Howard & Paul Elsoff

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synthetic/sodium or lithium based grease (short duration task). The entry will occur with the entrant having to position their body approximately halfway into the fan motor compartment in order to access the fan motor and bearings. Tasks are expected to be greater than 15 minutes in duration.

A short duration task of changing the air filters is also conducted typically from outside the space via separate compartments than the fan motor compartments of the air handling unit (access to the air filters are located in the centre of the air handling units and the entry doors are of similar size and shape compared to the fan motor compartment entry doors).

Hot work and other atmospheric contaminant generating activities are not included in this Hazard Assessment.

HAZARDS		UNDISTURBED SPACE POTENTIAL HAZARDS	WORK TASKS POTENTIAL HAZARDS	CONTROL MEASURES
ATMOSPHERE	Oxygen (O ₂) Deficiency	No	No	
	O ₂ Enrichment	No	No	
	Chemical	No	No Inhalation of vapours from short term duration grease application (synthetic, sodium or lithium based greases) is not expected to be an inhalation hazard or irritation (minimal or no irritation) at room/ambient temperature application due to the low volatility of the greases – information is based on typical grease MSDS available from an internet search. Minimal vapours present will be further reduced via continuous ventilation during entry.	Continuous ventilation during entry
	Biological	No	No	
	Fire/Explosion	No	No	
SAFETY	Structural Hazard	No	No	
	Engulfment	No	No	
	Entrapment	No	No	
	Electrical	Yes Fan motors are 600 Volts	No	Space must be locked out prior to entry
	Access/Egress	Yes Top fan motor compartment is located approximately 4 feet from grade	No	Step ladder may be required - tie off step ladder and/or have stand-by person hold and support the step ladder.
	Fall	No	No	
	Slip/Trip	No	No	
	Visibility/Light Level	No	No	

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HAZARDS		UNDISTURBED SPACE POTENTIAL HAZARDS	WORK TASKS POTENTIAL HAZARDS	CONTROL MEASURES
PHYSICAL	Baffles/Internal Arrangement	No	No	
	Floor Openings in Space	No	No	
	Noise/Vibration	Yes Space is loud in operation (each motor is 6360 CFM)	No	Space must be locked out prior to entry
	Temperature	Yes Entry into space may occur during hot/cold weather conditions (spaces are located outside).	No	Wear General PPE and dress appropriate for outside weather conditions. Provide heat stress awareness sessions to work crews if working during hot summer days. Heating/cooling coils do not exist inside fan motor compartments (space will also be isolated and locked out).
	Non/Ionizing Radiation	No	No	
	Laser	No	No	
	Ingestion/Skin Contact Hazard	No	Yes Potential eye and skin irritation from grease application	Wear work gloves (chemical resistant gloves such as nitrile gloves) and safety glasses during grease application – based on MSDS internet search information.
	Mechanical Hazard	Yes Fan motors present	No	Space must be locked out prior to entry
OTHERS	Traffic Hazard	No	No	
	Ergonomics	No	Yes The entry will occur with the entrant having to position their body approximately halfway into the fan motor compartment with some twisting of the upper torso. Entry will also occur in the top motor compartment and require similar body postures.	Work with care during entry. During entry into the top level fan motor compartment tie off step ladder and/or have stand-by person hold and support the step ladder.
	Hydraulic/Pneumatic Hazard	No	No	

CONTROL MEASURES REQUIRED:	
Confined Space Permit:	Yes
Atmospheric Testing:	Gas monitor with sensors for O ₂ , LEL, CO & H ₂ S - where tasks are greater than 15 minutes in duration as per OHSR 9.31
Ventilation Requirements:	Provide mechanical ventilation (minimum 160 CFM) through the opening. Minimum ventilation requirements are based on achieving 20 air changes per hour.
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This Hazard Assessment (HA) pertains to the activity and confined space listed above. This hazard assessment is required to be reviewed within 3 years of preparation; any change in activity requires a review of this HA and a completion of a HA for the specific activity (especially when contaminants will be generated by an activity such as welding, radiation or chemical usage).

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CONTROL MEASURES REQUIRED:	
PPE Requirements:	General PPE: Safety boots, work gloves (chemical resistant gloves such as nitrile gloves for grease application), and safety glasses with side shields.
Lockout/Isolation:	Space must be isolated and locked-out prior to entry. See space specific lockout and isolation document.
Standby Person:	Yes, located on-site.
Communication Procedures:	Radio, voice
Rescue Procedures:	Standby person calls 911 and calls Entry Supervisor. Entry Supervisor will respond to scene. Self rescue (if possible) or manual rescue.
Required Rescue and Safety Equipment	Two-way radio, cellular telephone
Other:	Step ladder may be required - tie off step ladder and/or have stand-by person hold and support the step ladder. Wear General PPE and dress appropriate for outside weather conditions. Provide heat stress awareness sessions to work crews if working during hot summer days. Wear work gloves (chemical resistant gloves such as nitrile gloves) and safety glasses during grease application During entry into the top level fan motor compartment tie off step ladder and/or have stand-by person hold and support the step ladder.

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