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Dear Mr. Gibson

Re: Confined Space Program and Assessment

Acute Environmental & Safety Services Inc. (ACUTE) is pleased to provide the attached Confined Space Entry Program and Assessment.

As discussed, ACUTE investigated multiple areas of the Symons Campus at Trent University (TRENT) to determine if they met the criteria of a confined space as defined in Section 119.1 of Regulation 851 (Regulation for Industrial Establishments) made under the Occupational Health and Safety Act (OHSA).

Confined Space: means a fully or partially enclosed space,
(a) that is not both designed and constructed for human occupancy, and
(b) in which atmospheric hazards may occur because of its construction, location or contents or because of work that is done in it.

The regulations make provisions for including multiple similar spaces in one Assessment or Plan. Confined Spaces "CS#" marked with an "*" indicate multiple spaces with similar configurations and attributes. An inventory of the numbers of these respective spaces must still be created. Based on ACUTE's assessment of the 14 types of spaces investigated, seven should be considered confined spaces, as follows:

- CS#1* : Electrical Boilers;
- CS#2* : Water Accumulators / Expansion Tanks
- CS#3* : Acid Neutralization Vessels;
- CS#4* : Sanitary Sewers
- CS#5* : Storm Sewers
- CS#6* : Utility Vaults and Valve Chambers
- CS#7* : River Water Chiller Pits

ACUTE

Environmental & Safety Services Inc.



Confined spaces were designated either **ENTRY PROHIBITED** or **ENTRY PERMITTED** (in accordance with the relevant plan).

ENTRY PROHIBITED spaces were designated as such due to the lack of any historical entries into these spaces. These spaces may be converted to **ENTRY PERMITTED** spaces with the development of adequate space specific Plans. Plan templates were not created for any entry prohibited spaces.

ENTRY PERMITTED spaces are confined spaces to which entry is anticipated by either TRENT personnel or contractors working on TRENT properties. Plan templates were created for these spaces.

With respect to *CS#1: Electrical Boilers*, it is ACUTE's understanding that the heat hazard can be eliminated by locking out the heating elements as well as locking out the heated water fed into the vessel(s). Chemical hazards can be controlled by locking out boiler chemical dosing apparatus. ACUTE recommends that a specific lockout procedure be developed to ensure that a zero-energy state can be achieved prior to entry into these vessels. The Ontario Ministry of Labour (MOL) Guideline¹ indicates that if measures are implemented to eliminate the possibility that any atmospheric hazard may occur in a space, then the confined space provisions would no longer apply. This does not however resolve the restricted access-egress issues associated with the small (11" by 15.5") elliptical access port that the vessel presents.

The seven remaining spaces or types of spaces, not identified as confined spaces were designated as restricted spaces because atmospheric hazards were not anticipated during normal entry, but access or egress to or from the space was limited due to the configuration of the space or obstacles in the space. Provisions for the rescue of an incapacitated worker still need to be taken prior to entry.

- RS#1: Champlain Residence Crawl Space
- RS#2: Lady Eaton Residence
- RS#3: Power Generation Fore-bays 1-3
- RS#4: Access Shafts (1-6) Old Science Building
- RS#5: Beta Library – Basement Crawl Space
- RS#6: Acid Neutralization Pit – Old Science Building

The large utility pipe chase with stairs access and ample overhead clearance was not considered to be either a confined nor restricted space.

These spaces may have to be designated confined spaces if hot work, chemical use or "out of the ordinary" situations arise. Atmospheric hazards may be created by work activities such as hot work or using solvent based cleaners or paints, etc.

¹ Ontario Ministry of Labour, Confined Space Guideline, September 30, 2006, Page 13,



Attachment A to this letter provides a summary of the types of confined spaces at Trent University. The results of ACUTE's confined space hazard assessment is summarized in the table **Attachment B**. **Attachment C** records the chemicals which may be taken into the spaces.

Separate more detailed Confined Space Hazard Assessments are also submitted with this letter. A Confined Space Entry Program, is included which provides written measures and assessment, plan and permit sample forms to be followed by persons who will work in the confined spaces on TRENT premises.

Should you have any questions regarding these documents, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read 'MG', with a horizontal line extending to the right from the end of the signature.

Mike Gutschon
Technical Services Director,
ACUTE Environmental & Safety Services Inc.

Cc: Ron Campbell



ATTACHMENT A



CONFINED SPACE INVENTORY

- **CS#1: Electrical Boilers** – These horizontally situated vessels store heated domestic water and heating water throughout Trent University campus mechanical rooms. They are supplied with hot water by gas fired boilers. Most electrical heating elements in the vessels are out of service. Some are used to maintain temperature in the vessels. These vessel vary in size. **ENTRY PROHIBITED**
- **CS#2: Water Accumulators / Expansion Tanks** – Water accumulators / Expansion tanks generally vertically situated vessels that accommodate surplus water and overflow from boilers. **ENTRY PROHIBITED**
- **CS#3: Acid Neutralization Tanks** – The larger of the two vessels located in the acid neutralization pit could be entered in the process of replacing limestone media. **ENTRY PROHIBITED**
- **CS#4: Sanitary Sewers** – Sanitary sewers are located through out the campus to accommodate sanitary sewage. These spaces are accessed through 24” manholes located at grade through the facility grounds. **ENTRY PERMITTED in accordance with the Plan**
- **CS#5 Storm Sewers** – Storm sewers are located through out the campus to accommodate storm water runoff. These spaces are accessed through rectangular storm grates located at grade through the facility grounds. **ENTRY PERMITTED in accordance with Plan**
- **CS#6 Utility Vaults and Valve Chambers** – are located through out the campus to accommodate communications and electrical installations as well as potable water valves. These spaces are accessed through a variety of openings located at grade through the facility grounds. **ENTRY PERMITTED in accordance with Plan**
- **CS#7 River Water Chiller Pits** – These pits are used to draw river water to aid in cooling refrigerant in condensers. These pits can be accessed by removing secured steel “checker plate” panels. **ENTRY PROHIBITED**



CONFINED SPACE SUMMARY TABLE – Attachment B

	CS #1	CS #2	CS #3	CS #4	CS #5	CS #6	CS #7
Details of Space Investigated	Electric Boilers	Expansion Tanks	Acid Neut. Tanks	Sanitary Sewers	Storm Sewers	Utility Vaults	River Water Chiller Pit
Fully or Partially Enclosed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Not both designed and constructed for continuous human occupancy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Possibility for an atmospheric hazard?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can the possibility for an atmospheric hazard be eliminated?	No	No	No	No	No	No	No
Difficult access or egress?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Confined Space (Yes / No):	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hazard Description	Electric Boilers	Expansion Tanks	Acid Neut. Tanks	Sanitary Sewers	Storm Sewers	Utility Vaults	River Chiller Pit
Possible stratified Atmosphere?	No	No	Yes	Yes	Yes	Yes	Yes
Oxygen Deficiency Atmosphere – Normal Circumstances	Possible	Possible	No	Yes	Yes	Yes	Yes
Oxygen Enriched Atmosphere– Normal Circumstances	No	No	No	No	No	No	No
Flammable/Combustible Atmosphere (methane, propane, etc.)	No	No	No	Yes	Yes	Possible	Possible
Common Toxics in Atmosphere (CO, H ₂ S)	No	No	Possible	Yes	Yes	Possible	Possible
Other Toxics in Atmosphere (see attached MSDSs)	No	No	No	Possible (waste)	Possible (waste)	Possible	No
Chemical/Biological Exposure due to liquids or solids	Possible	Possible	Possible	Yes	Yes	Possible	Possible
Fall Hazards	Yes	Yes	No	Yes	Yes	Yes	Yes
Slip/Trip Hazards	Yes	Yes	No	Yes	Yes	Yes	Yes
Temperature Hazards (Heat or Cold): Heat	Yes	Yes	No	No	No	No	Yes
Mechanical Hazards (gears, conveyors, etc.,)	No	No	No	No	No	No	Yes
Radioactivity Hazards	No	No	No	No	No	No	No
Asbestos	No	No	No	No	No	No	No
Noise	No	No	No	No	No	No	Yes
Engulfment Hazards	No	No	No	Yes	Yes	No	Yes
Electrical Hazards	Yes	Yes	No	No	No	Yes	Yes
Other Hazards	None known	None known	None known	None known	None known	None known	None known



CONFINED SPACE CHEMICALS – Attachment C

MSDS Chemical Name	Affected Confined Space	Comments
	Electric Boilers	• Boiler Water Additive
	Expansion Tanks	• Boiler Water Additive
	Acid Neutralization Tank	• Neutralizing Media / Discharged Acids / Chemicals
	Utility Vaults	• Penetrating Oil / Lubricants / Torches
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