1 Purpose
The purpose of this procedure is to ensure that Department of Physical Plant personnel safely and effectively respond to reports of natural gas leaks.

2 Scope
This procedure applies to all Physical Plant personnel who respond to reports of natural gas leaks.

3 Introduction

3.1 Properties of Natural Gas
- Colourless
- Odourless — however, to increase detectability, a mercaptan odourant is added at the local distribution station, which gives natural gas its characteristic “rotten egg” smell.
- Non-toxic
- Lighter than air (vapour density between 0.59 and 0.72).
- Combustible

3.2 Hazards of Natural Gas

3.2.1 Explosive Hazard
Natural gas is composed primarily of the hydrocarbons methane, ethane and propane, which can become highly explosive when combined with air and an ignition source. The Lower Explosive Limit (LEL) for natural gas is 3.9% - 4.5% while the Upper Explosive Limit (UEL) is 14.5% - 15%.

3.2.2 Oxygen Displacement Hazard
While natural gas is not toxic, at high concentrations it will displace oxygen, which could lead to asphyxiation.

3.2.3 Migration Hazard
Since natural gas is lighter than air, it has the potential to create an explosive or oxygen displacement hazard a great distance away from the source of the leak. Indoors, natural gas can migrate upwards in a building through a service chase or wall cavity. Outdoors, natural gas leaking from an underground pipe typically permeates the ground and rises harmlessly into the air. However, if the ground is frozen or covered with impermeable concrete or pavement, the gas will begin to migrate laterally until it finds a channel to follow. This channel could be a sewer line, conduit or even the loosely compacted trench in which the gas line itself is buried. If the channel leads into a confined space such as a vault or basement, natural gas concentrations could rise high enough to create an explosive or asphyxiation hazard.

4 Buildings with Natural Gas Service
The following buildings are serviced by the campus natural gas distribution system:

1 Tory Building
2 Stealth Building
3 Maintenance Building
4 Athletics Building
5 University Center
6 Gymnasium
7 Residence Commons
8 Athletics Building
9 Maintenance Building
10 Mackenzie Building
11 Healthy Building
12 Stacie Building
13 Herzberg Building
14 Gymnasium
15 Tennis Centre
16 Leeds House
17 St. Patrick’s Building
18 Social Science Research Building
19 Maintenance Landscaping Building
20 Child Care Centre
21 Social Science Research Building
22 Architecture Building
23 St. Patrick’s Building
24 Social Science Research Building
25 Child Care Centre
26 Leeds House
27 Prescott Residence
28 Field House
29 Social Science Research Building
30 Leeds House
31 Prescott Residence
32 Field House
33 Alumni Hall & Sports Center
34 Prescott Residence
35 Field House
36 Alumni Hall & Sports Center
37 Field House
38 Alumni Hall & Sports Center
39 Maintenance Landscaping Building
40 Tennis Centre

5 Procedures
The Carleton University emergency procedure “When in Doubt – Get Out!” directs building occupants to leave a building immediately if they feel their health is in danger from contaminants, fumes, odours or dusts. In addition,
the procedure instructs the occupants to call the Department of University Safety at 4444 and states that University Safety will evacuate the building if necessary.

The Carleton University “Building Evacuation Procedure” indicates that staff in the Department of University Safety will receive the first calls about a problem and will call in additional resources such as the fire department or police services.

Given these existing university procedures, the Department of Physical Plant will respond to reported natural gas leaks as follows:

6 Buildings with Natural Gas Service

6.1.1 Call University Safety
Call University Safety at 4444 to relay all pertinent information about the leak. University Safety will initiate emergency procedures as required.

6.1.2 Call Enbridge
Call the Enbridge Gas Distribution emergency number at 1-866-763-5427 immediately and report details of the leak.

7 Buildings without Natural Gas Service

Dispatch a Plumber
Dispatch a plumber immediately to investigate the source of the odour. If the plumber believes the odour is not caused by sewer gas but is caused by natural gas migrating into the area, then follow the response detailed above for buildings serviced with natural gas. If the plumber does not locate a source of sewer gas but the odour persists, then initiate an Indoor Air Quality Complaint Report and dispatch the appropriate Physical Plant personnel to investigate.