

Siting Gas Detectors


Gas detectors usually fall into two groups for placement

1. Plant Protection. Typically flammable gas detectors fall into this category. Aside from asphyxiation flammable gases are typically not directly toxic and so detectors are placed strategically where the gas is expected to accumulate based on its relative density to air (lighter or heavier)

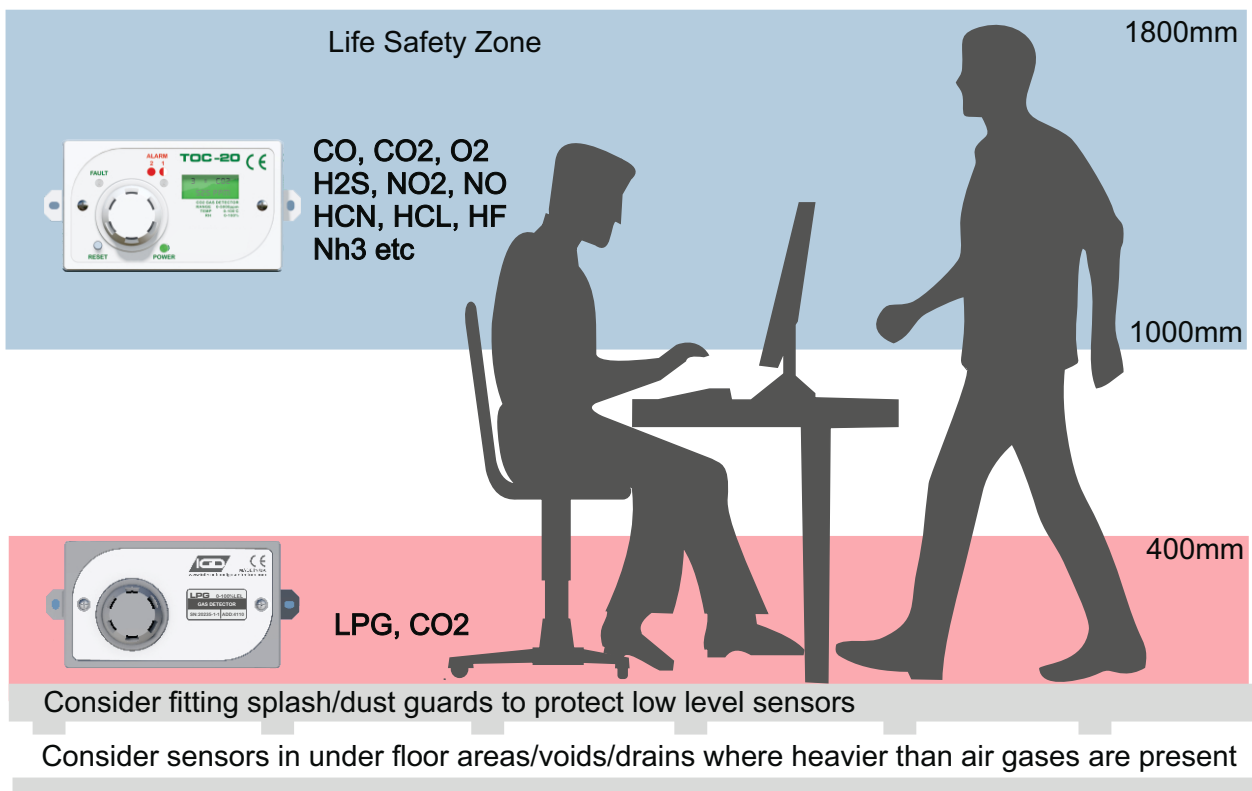
2. Life Safety Systems. Here the concern is that a toxic or asphyxiant gas is directly hazardous to personnel and so the gas detection is placed based on the normal operating zone for the people present

Note that in many cases both life safety and plant protection sensors may be appropriate on a site. For example a plant using liquid helium may have plant protection sensors at high level to ventilate roof spaces in the event of leaks. However in the event of ventilation failure Helium could accumulate down towards the zone where personnel operate. In this case a second set of life safety sensors would be appropriate.

Each site should be surveyed and assessed on its own merits. This document presents general guidance only.



Consider ceiling divisions, follow rules for smoke detectors
Lighter than air gases, detectors placed at highest ceiling points
Consider fitting collector cones at lower level for gas bottle stores boiler plant and gas meters (see separate application note).
Methane, Helium, Hydrogen, Ammonia etc



Life Safety Zone

1800mm

1000mm

400mm

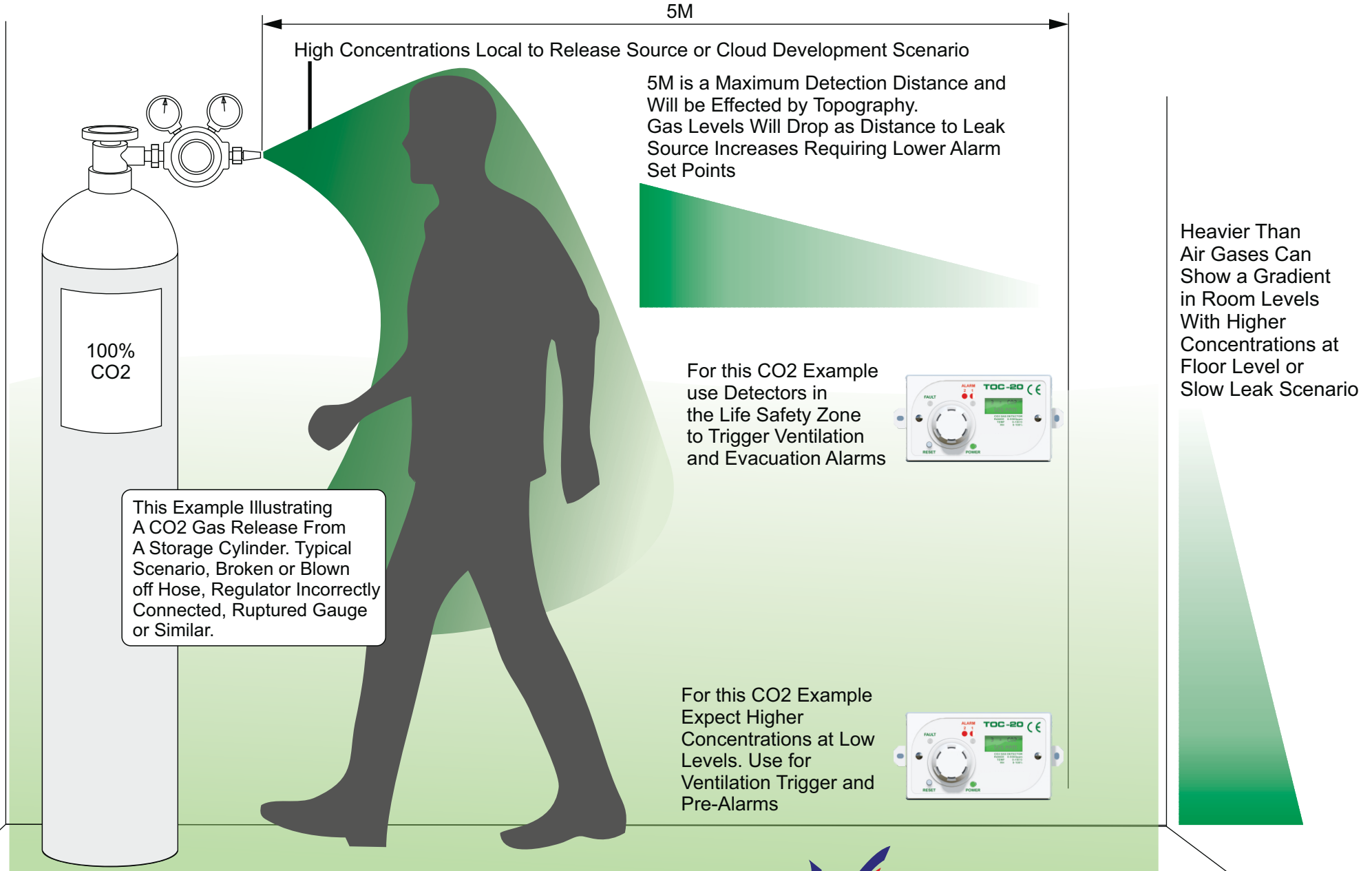
CO, CO2, O2
H2S, NO2, NO
HCN, HCL, HF
Nh3 etc

LPG, CO2

Consider fitting splash/dust guards to protect low level sensors
Consider sensors in under floor areas/voids/drains where heavier than air gases are present



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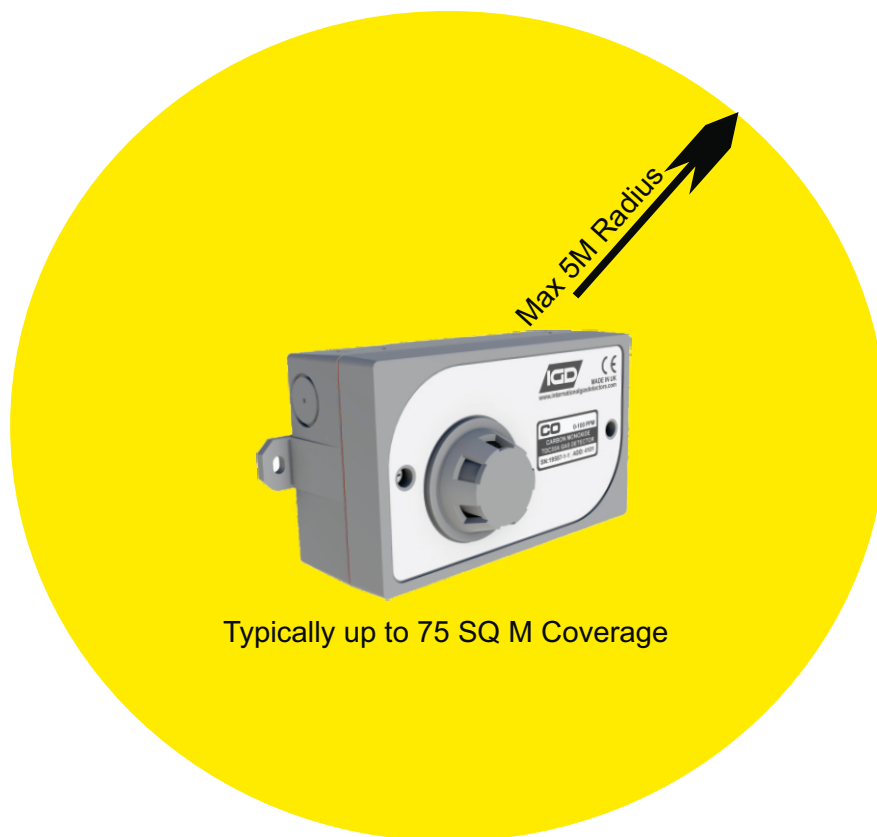
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Cryogenic Gas Detection

Applications involving Cryogenically cooled gases such as liquid Nitrogen or Helium need careful consideration for gas detection. On initial release as cryogenically cooled gases can typically be at lower temperature and high density than their surroundings they will behave differently than when in their gaseous state. In such cases it should be considered if two sets of detection is required, one for the life safety zone and one for low level detection in the gases cooled state. Applications involving such gases are recommended to be surveyed.

Area Coverage for Gas Detectors

In a similar manner to smoke detectors, a gas detector can provide up to 75SQ M area coverage based on a 5M radius of operation. There are many factors affecting this, geometry of a room, equipment in the area, gas characteristics, ventilation air flows etc. IGD can support throughout the survey, design and installation process to ensure the best possible result on site.



Calibration and service Requirements for Gas Detection Systems

All gas detection systems require regular checking and calibration to be in compliance with the UK factories act. The service and calibration period will be a function of the application based on environmental in service conditions. It is extremely important to ensure a service plan is in place for any gas detection system installed as part of a site safety system. IGD can work with operators to provide advice, service and spares to ensure an appropriate level of cover.



Siting System Components



Control Panels:

These should be located outside of the area protected by its connected gas detectors.

The control panel should be accessible such that in the event of an alarm the area can be evacuated and gas levels viewed from the controller.

Consider the use of mimic panels, HMI panels or GSM options available from IGD to provide additional remote indication/alarm



Audio-Visual alarms

As a general rule if there is gas detection fitted to an area then there should be an audio-visual alarm (beacon sounder) to alert personnel who may be in the same area. Typically these will be standard beacon sounders where the sounder can be silenced from the control panel once an alarm is accepted. Standard LED beacon sounder modules are available from IGD and can be run from addressable I/O points to minimise cabling. Another option is to fit IGD's range of annunciators.



Annunciators

Annunciators are addressable devices typically fitted at door entry points. They provide a clear audible visual alarm in the event of a gas alarm to warn persons from entering an area where a gas hazard could be present.

They offer many advantages over standard beacon sounders. They can be fitted to standard dado trunking systems; cannot be confused with other alarms; the displayed alarm message and flashing colour display is unambiguous; they can be fitted with slam switches.



Gas Collector Cones and splash Guards

Where detectors are located above gas plant such as boilers or meters in rooms with high ceilings then consider the use of gas collector cones. These are fitted to detectors sited just above gas plant to enhance the detectors capability to detect gas leaks (see separate application note)

For detectors fitted at low level, fitting splash guards may be appropriate to protect sensors from dust, rain splash, floor washing etc.

