



**Monthly Topic: Parking Garages**

- Parking garages are areas that can accumulate toxic and deadly gases, becoming harmful to the humans present. There are three main gases found in this type of application: Carbon Monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>), and gasoline vapors.
- Cars, trucks and other gasoline engines produce fumes such as carbon monoxide (CO). CO is an odorless, tasteless and colorless gas the can reach toxic levels when not ventilated properly. Effects of CO poisoning include but are not limited to headaches, nausea and fatigue, or at elevated levels, confusion, heart palpitations, unconsciousness, or even death.
- Any vehicle using diesel as a primary gas will form Nitrogen Dioxide (NO<sub>2</sub>). NO<sub>2</sub> is a reddish-brown gas with a strong odor that has several health effects including eye, nose and throat irritation as well as impaired lung function. Extremely high doses may lead to pulmonary edema and severe lung injuries.
- Gasoline produces gasoline vapors that are heavier than air and collect in low lying areas. Gasoline is a volatile flammable liquid whose vapors may travel to an ignition source and flash back. Typically, gasoline contains more than 150 chemicals, including small amounts of benzene, toluene, xylene and sometimes lead.
- There are three important benefits from installing a gas detection system in parking garage - safety, savings and noise reduction.
  - **Safety** – Macurco 6- and 12-Series provide automatic fan control to draw in fresh air as well as control of louvers or doors to help disperse vehicle exhaust.
  - **Savings** – Fans, louvers and other exhausting equipment will only be used when dangerous levels are detected, reducing the amount of electricity and HVAC costs. Systems like these generally pay for themselves within a year.
  - **Silence** – Reduces unwanted or disturbing noise from exhaust fans running constantly. This provides tenant and occupant satisfaction, improving mental health for many people.



**SAVINGS DATA** – Macurco has published data on one retrofit which provides an empirical check on these figures. A 46,000 square foot parking garage in Bloomington, MN was retrofitted with CM-21A detector/controllers. The hours of operation for the fans and energy use were measured for a two month period in the same season before and after the retrofit. The run time for the fans was reduced by 97.5%! During the test, an independent testing company monitored the carbon monoxide levels for 5 days continuously. The time weighted average CO concentration was 20 parts per million, well within established guidelines. Energy consumption during the test period demonstrated a payback of both material and installation of less than a year.

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**Macurco Gas Products**

- [CM-6](#)
- [TX-6-ND](#)
- [GD-6](#)
- [12 Series](#)

**Control Panel Products**

- [DVP-120](#)
- [DVP-120M](#)
- [MRS-485](#)
- [Parking Garage Guide](#)

**Gas in the News**

- [Indiana Poisoning](#)
- [71 Children Hospitalized](#)
- [Chicago Schools Systems](#)
- [Keyless Ignition Hazards](#)

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