

## Peace of mind. Guaranteed.

Continuous monitoring of ammonia, carbon monoxide, nitrogen dioxide and propane in ice rinks

Ice arenas have multiple gas hazards in various locations throughout the facility. Ammonia is commonly used in the ice chiller mechanical room and if a leak were to occur, it would become a corrosive, toxic gas.

At the ice surface level, gasoline, propane, natural gas (and sometimes diesel) powered equipment such as an ice resurfer and ice edger produce exhaust composed of carbon monoxide and/or nitrogen dioxide. Other fuel powered equipment such as floor sweepers, lift trucks and other vehicles idling in close proximity can add to the CO and NO<sub>2</sub> levels.

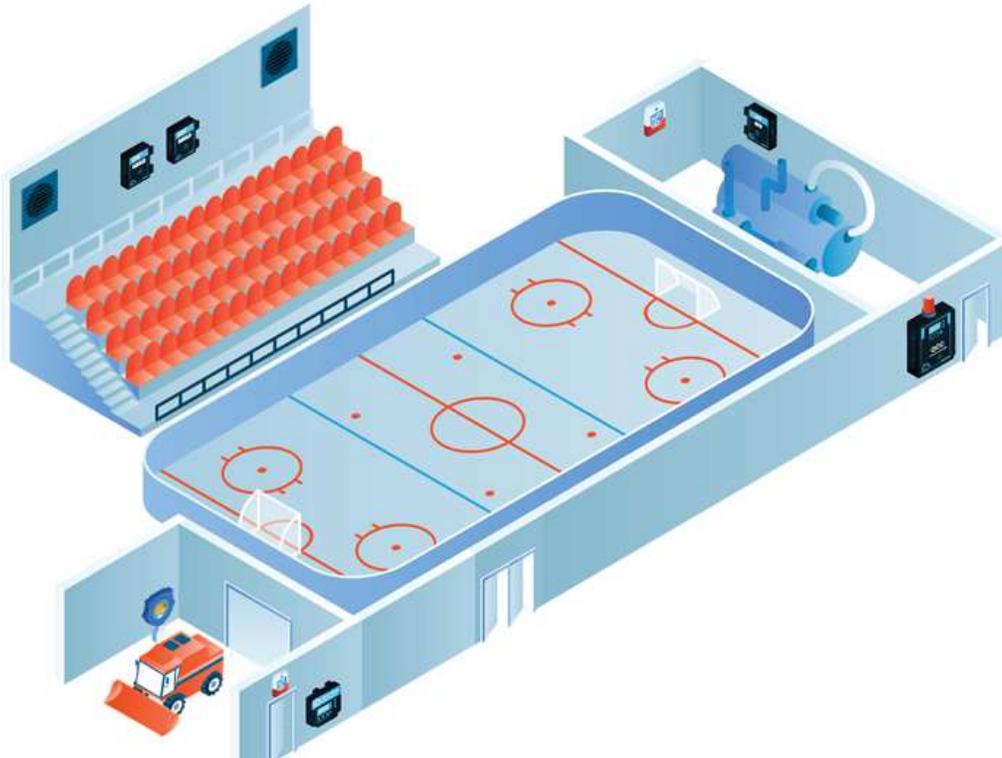
Using Critical Environment Technologies' **QCC** Quad Channel Controller with an **LPT-A** Analog Transmitter, **LPT-P** Digital Transmitter and **CXT** Explosion Proof Transmitter is the solution.

Strategic placement of the transmitters (gas detectors) provides continuous monitoring of potential leaks and the communication with the **QCC** Controller provides a status of the air quality conditions in all potentially hazardous areas.



## Continuous Monitoring of Ammonia ( $\text{NH}_3$ ), Carbon Monoxide ( $\text{CO}$ ), Nitrogen Dioxide ( $\text{NO}_2$ ) and Propane ( $\text{C}_3\text{H}_8$ ) in Ice Arenas

The LPT-A-NH<sub>3</sub> analog transmitter inside the chiller room should be mounted on or near the ceiling because Ammonia is lighter than air and will typically collect within 12 inches of the ceiling. There should also be a remote Strobe & Horn inside the room, configured to be activated by the LPT-A relay or one of the QCC relays. The two channel LPT-P-TCO-NO<sub>2</sub>B digital transmitter should be mounted atop the penalty box or score keepers box to monitor carbon monoxide and nitrogen dioxide



levels on the ice from resurfacing equipment. The CXT-A-IC3H8 Explosion Proof transmitter with an infrared propane sensor in the ice resurfacer parking area should be mounted 6 inches from the floor, preferably near the drain channel as propane is heavier than air and will accumulate in low lying areas. If the ice resurfacer is powered by natural gas, a CXT-A-ICH4 Explosion Proof transmitter should be used instead and mounted on or near the ceiling to monitor the levels of methane. Outside the door of the maintenance equipment room should be mounted a QCC-RDM Remote Display Module to provide a visual check of gas levels prior to entering the room.

The QCC Quad Channel Controller communicates with the LPT-A, LPT-P and CXT transmitters, providing a single point of access to view gas level readings and configure transmitter settings. Likewise, the QCC-RDM displays the information gathered from the QCC as another point of access to view the gas level readings. The QCC should be mounted outside the chiller mechanical room entry door to provide a visual check of the gas levels prior to entering the room. The QCC is pre-programmed and field adjustable. Configurable settings include relay assignment, time delays, logic control, sensor types and ranges, alarm set points, etc. There is a 4-line x 20 character backlit LCD display that actively scrolls through the programmed channels and displays the gas name, concentration and alarm status. The QCC has 3 relays that can be configured to activate the exhaust ventilation system, trigger onboard and remote alarms and other procedures as appropriate. The QCC can accept up to a total of four inputs, in combinations of 4-20 mA inputs and/or Modbus RS-485 digital inputs. An optional AO module is available that offers two 4-20 mA outputs and data logging.

The QCC should be equipped with a top mounted strobe and a manual shut off switch (meets B52 code requirements). At specified alarm levels, the ventilation system can be activated as well as any remote devices such as the Remote Strobe / Horn combo (RSH-24V-R or RSA-24V). The manual shut off switch can be used to shut off the chiller equipment.