

# Nine Actions to reduce carbon monoxide (CO) and nitrogen dioxide (NO<sub>2</sub>) in your arena

## For owners and operators

To control the levels of CO and NO<sub>2</sub> inside arenas from internal propane/gasoline/natural gas or diesel powered ice resurfacing equipment, we strongly recommend the following actions be taken:

- 1. Service** the ice-resurfacing equipment regularly:
  - ❖ Tune up after every 100 hours of use and test for CO and NO<sub>2</sub> in the engine exhaust to make sure it is properly tuned.
- 2. Make sure** the arena is well ventilated:
  - ❖ Open doors or turn on the exhaust fans and vents before operating the ice-resurfacing machine, as well as during and after the time the resurfacing machine is in use.
  - ❖ Leave the doors open around the ice surface while resurfacing to help air movement.
- 3. Install** a three-way catalytic converter on the ice resurfer.
- 4. Extend** the exhaust pipe of the ice-resurfacing machine so it is at least 30 cm higher than the top of the rink boards and glass protectors.
- 5. Purchase accurate measurement devices or install** CO detectors near the ice surface and test them regularly.
- 6. Make sure** vehicles parked outside the building are not idling near an air intake or door.
- 7. The CO level** should not exceed **12.5ppm at the ice level** while it is used by the public. The **NO<sub>2</sub> level** should not exceed **0.25 ppm at ice level** while it is used by the public. Contaminant concentration exceeding these values **should** trigger an **immediate response** that consists of:
  - ❖ **Stopping all sport activities,**
  - ❖ **Ventilating the arena,**
  - ❖ Re-sampling should be carried out before activities resume,
  - ❖ **Initiating steps 1 and 2 above. Steps 3 and 4 should also be carried out without any delay.**
- 8. Incidents** among skaters or spectators that are similar to those caused by **CO and NO<sub>2</sub>** should trigger an **immediate response** that consists of:
  - ❖ **Stopping all sport activities,**
  - ❖ **Ventilating the arena,**
  - ❖ Advising affected individuals to seek medical attention,
  - ❖ Initiating a full investigation,
  - ❖ Contacting the Emergency Services and the Regional Public Health office to report the incident. Contact information is at the bottom of this poster.
- 9. All employees** should be trained to understand measurement devices results and to recognize symptoms of high CO and NO<sub>2</sub> exposure.

## Contact Information

### During regular hours:

In case of illness in your arena, please **dial 911 first**, then call your Regional Health Protection Branch Office (numbers are listed below) to report the incident or evacuation.

For routine questions or concerns during regular hours, call your Regional Health Protection Branch Office:

#### Central Region

Fredericton..... 506-453-2830  
Perth-Andover..... 506-273-4715  
Woodstock.....506-325-4408

#### South Region

Saint John.....506-658-3022  
St. Stephen.....506-466-7615  
Sussex.....506-432-2104

#### North Region

Bathurst..... 506-549-5550  
Campbellton.....506-789-2549  
Caraquet.....506-394-4728  
Edmundston..... 506-737-4400  
Grand Falls..... 506-737-4400  
Shippagan.....506-394-4728  
Tracadie-Sheila.....506-394-4728

#### East Region

Moncton.....506-856-2814  
Miramichi..... 506-778-6765

### After Hours:

In case of illness in your arena, please **dial 911 first** and then report the incident or evacuation to **811** afterwards.

Please refer to the guidelines entitled:  
"New Brunswick Arenas indoor Air Quality Recommended Guidelines" for more details.  
Office of the Chief Medical Officer of Health