Collect
Recycle
Innovate

National Waste
& Recycling Association™

First Responder Guide - Waste Collection

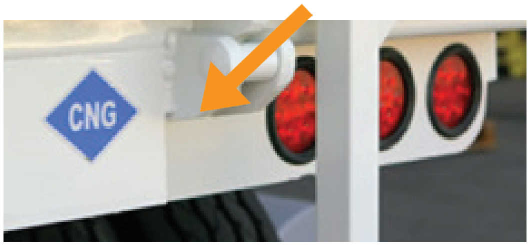
CNG VEHICLE FUEL SYSTEMS

INTRODUCTION

This brief guide is for public safety personnel and first responders who encounter emergencies regarding waste collection vehicles powered by Compressed Natural Gas (CNG) fuel systems.

IDENTIFICATION OF COMPRESSED NATURAL GAS

Before responding to a vehicle fire, ask dispatch for information on the fuel type so you can prepare accordingly, otherwise you will need to gain this information on the scene. The United States Department of Transportation (USDOT) requires vehicles equipped with natural gas fuel systems to have a blue diamond shaped decal affixed on the back of the vehicle identifying the vehicle as powered by CNG. Additional CNG decals may be affixed to the front and sides of the vehicle, on the fuel storage cabinet or CNG fuel management module.



CYLINDERS AND MOUNTING

- Types of cylinders:
  1. Type 3 (metal liner with carbon-fiber over-wrap)
  2. Type 4 (plastic liner with carbon-fiber over-wrap) are most used.
- Cylinders are mounted on **side rails, behind the cab, on the roof, or tailgate.**

COMPRESSED NATURAL GAS (CNG) EMERGENCY RESPONSE FOR FIREFIGHTERS

PRESSURE RELIEF DEVICES (PRDs)

(red capped vent tube)

- PRD function is crucial to CNG vehicle safety by allowing fuel pressure to escape.
- PRDs activate at 212°F to 220°F to vent gas. Vent lines are identified by red caps.
- PRDs vent at system pressure equal to 3600 psi (250 bar) and higher. **Venting gas may ignite, become a jet fire, extinguish itself and reignite several times.**

EMERGENCY RESPONSE

1. Gas Leak

- Do not light road flares. Avoid turning on any lights or electronics in the vehicle which may create a spark.
- Determine if ignition is off, parking brake is set, and manual shutoff valves are closed. If it is safe to do so, close the 1/4-turn manual shutoff valve, close individual cylinder valves.
- Use a gas meter to monitor leaks and ventilate the area. Check the fuel system near the damaged area for leaks. If it is safe to do so, open vehicle doors to introduce fresh air to prevent natural gas accumulation. Residual gas may still leak from the storage system even after the ignition switch is off and manual shutoff valves are closed.
- Advise towing and wreckage storage operators the vehicle is fueled with CNG.

2. Fire Emergency

- Always refer to the latest version of USDOT Emergency Response Guide (ERG) Section 115.
- Establish a 330-ft perimeter. DO NOT light road flares.
- **DO NOT apply water to CNG cylinders** because this will prevent the PRDs from activating and can result in a catastrophic cylinder failure (high pressure gas rupture).
- If the CNG cylinders are not involved in the fire, the fire on the vehicle may be extinguished with normal response tactics. For example, small blazes such as brake fires and electrical fires.
- If fire is impinging on the CNG cylinders, if cylinders are on fire, or if the fire is fueled by an active leak, DO NOT APPROACH THE VEHICLE. Allow the fire to burn while watching for secondary hazards.
- When a PRD activates, the result is often a jet fire which may go out and re-ignite several times.
- If it is safe to approach the vehicle, always approach at a 45-degree angle.
- If it is safe to do so, chock vehicle wheels to prevent accidental movement.
- Advise towing and wreckage storage operators the vehicle is fueled with CNG.

TRAINING AND REFERENCES

- Hexagon Agility offers training courses for first responders. https://hexagonagility.com/fleetcare/customer-care-training
- Refer to USDOT Emergency Response Guide
- Always consult the National Fire Protection Association (NFPA) "Alternative Fuel Vehicles Training Program for Emergency Responders"