Carbon Monoxide (CO): A Silent but Deadly Hazard

Carbon monoxide (CO) is a colorless, odorless, and tasteless gas that poses significant risks on construction sites. Here are the key points about carbon monoxide safety in NCC T&D workplaces:

Characteristics and Dangers

- Clear, colorless, odorless, and tasteless gas
- Interferes with the body's ability to use oxygen
- Can be lethal even in small doses
- Initial symptoms include headache and fatigue
- Higher exposure can quickly lead to unconsciousness and death

Common Sources on Construction Sites (but not limited to)

1. Gasoline-Powered Equipment: Tools such as generators, compressors, concrete cutters, and chainsaws produce CO when operated in confined or poorly ventilated areas.
2. Diesel Engines: Heavy machinery like excavators, bulldozers, forklifts, and cranes emit CO, especially if not properly maintained or used in enclosed spaces.
3. Fuel-Burning Heaters: Temporary heating systems using propane, kerosene, or natural gas are significant CO sources if used in enclosed or semi-enclosed spaces without adequate ventilation.
4. Welding Activities: Certain welding and cutting processes produce CO, particularly in confined spaces such as tanks, tunnels, or basements.
5. Vehicles: Construction vehicles idling near or inside work zones, especially in areas with limited airflow, can emit high levels of CO.
6. Compressed Air Tools: Pneumatic tools powered by internal combustion engines may release CO into the work environment.
7. Blasting Activities: Explosive materials used in demolition or rock blasting can generate CO during combustion.
8. Improper Ventilation: Work in confined or semi-confined spaces, such as trenches, shafts, or basements, can trap CO emissions from equipment or tools, increasing exposure risks.

Project Leaders Responsibilities

Project leaders must take reasonable measures to protect workers from CO exposure, including:

- Engineering controls
- Safe work practices
- Proper ventilation
- Gas detection and monitoring
- Personal protective equipment when necessary

Specific Requirements

Equipment and ventilation:

- Internal combustion engines must have adequate air supply
- Exhaust gases must be discharged outside
- Spaces must have proper ventilation

- Engines must be well-maintained to minimize CO emissions

Testing:

- Areas where fuel is burned must be tested for CO concentrations
- Testing strategy must be developed in consultation with health and safety representatives

Exposure Limits:

- Time-Weighted Average Limit (TWA): 25 parts per million (ppm)
- Short-Term Exposure Limit (STEL):
  - 75 ppm for any 30-minute period
  - 125 ppm at any time

Additional Precautions

- Extra care needed in enclosed or confined spaces
- Use of CO monitors/alarms in high-risk areas
- Training workers on CO hazards and symptoms
- Developing emergency response procedures for CO exposure

By following these guidelines and maintaining awareness of CO risks, people can significantly reduce the dangers associated with carbon monoxide exposure on job sites. For more information, refer to NCC T&D's relevant IMS procedures or consult our HSE Department for expert guidance and training resources aligned with Saudi Arabian regulatory requirements.