

Carbon Monoxide Monitoring Procedures

By the Western National Loss Control Team



Minnesota Rule 5205.0116 Carbon Monoxide Monitoring

1. Internal combustion engine powered industrial trucks

The employer shall monitor environmental exposure of employees to carbon monoxide whenever internal combustion engine powered industrial trucks as defined in Code of Federal Regulations, title 29, section 1910.178(a)(1), are operated indoors to ensure that carbon monoxide levels do not exceed those given in Code of Federal Regulations, title 29, section 1910.1000, Table Z-1-A. The air monitoring shall be done at least quarterly and represent exposures during a day of highest usage in the areas where employee carbon monoxide exposure is most likely.

2. Tailpipe exhaust gas analysis

The employer shall ensure that powered industrial truck engine exhaust gases do not contain more than one percent carbon monoxide for propane fueled trucks or two percent carbon monoxide for gasoline fueled trucks measured at idle and at three-fourths throttle during final engine tuning in a regular maintenance program.

Diffusion

Diffusion tubes are simple air sample devices used to estimate contaminant levels in air. The tubes use diffusion rather than an air pump for sample collection.

Diffusion Tube Instructions

Diffusion tubes are used to get a time-weighted average of a worker's exposure and therefore will need to be placed on the worker for a period of time not less than 4 hours.

1. Open the box of tubes and read the directions carefully.
2. Take a tube out of the box and look for the red dot on one end of the tube. Snap the end off of the tube at the dot by breaking the tube with the dot pointing away from you.

3. Hang the tube on the collar of a worker in the area you want to sample. Use a tube holder or duct tape to hold the tube in place. Make sure the end of the tube is not obstructed. If the tube is hung in an area, it should be at approximately the same height as the breathing zone of a typical worker.
4. Sample for at least 4 hours. Read the concentration on the scale on the tube. The color change of the diffusion tube can appear as a light gray to a specific color indicated in the instructions. To calculate the concentration, take the reading from the tube and follow the instructions provided with the tubes. Actual concentrations are determined by dividing the tube reading by the total hours of sampling.
5. Record results on the attached log.

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