

5.4: Environment

Ventilation

General

Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the Threshold Limit Values (TLVs) of airborne contaminants for construction specified in 1926.55(a).

When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.

System design

Local exhaust ventilation shall be designed to prevent dispersion into the air of dusts, fumes, mists, vapors, and gases in concentrations causing harmful exposure. Such exhaust systems shall be designed so that dusts fumes, mists, vapors, or gases are not drawn through the work area of employees.

System requirements

Exhaust fans, jets, ducts, hoods, separators, and all necessary appurtenances, including refuse receptacles, shall be so designed, constructed, maintained and operated as to ensure the required protection by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, vapors, or gases from said equipment or process, and to convey them to suitable points of safe disposal, thereby preventing their dispersion in harmful quantities into the atmosphere where employees work.

System operation

The exhaust system shall be in operation continually during all operations, which it is designed to serve. If the employee remains in the contaminated zone, the system shall continue to operate after the cessation of said operations, the length of time to depend upon the individual circumstances and effectiveness of the general ventilation system. According to the best medical opinion, dust capable of causing disability is of microscopic size, tending to remain for hours in suspension in still air, so it is essential that the exhaust system be continued in operation for a time after the work process or equipment served by the same shall have ceased, in order to ensure the removal of the harmful elements to the required extent. For the same reason, employees wearing respiratory equipment should not remove same immediately until the atmosphere clear.

Other environments

The 1926.57 Ventilation Standard also contains specific provisions for ventilation in and around abrasive blasting locations, grinding, polishing and buffing operations and spray finishing operations. These requirements should be reviewed if these types of operations are to be performed on the construction site.

Heat

Every year, dozens of workers die and thousands more become ill while working in extreme heat or humid conditions. There are a range of heat illnesses and they can affect anyone, regardless of age or physical condition. Employers are responsible for providing workplaces free of known safety hazards. This includes protecting workers from extreme heat. An employer with workers exposed to high temperatures should establish a complete heat illness prevention program to include:

- Providing workers with water, rest, shade if outdoors, cooling areas indoors.
- Allowing new or returning workers to gradually increase workloads and take more frequent breaks as they acclimatize, or build a tolerance for working in the heat.
- Planning for emergencies and training workers on heat illness prevention.
- Monitoring workers for signs of heat illness.

NIOSH has also introduced an [Heat Safety Tool App](#) that can be downloaded on smart devices which provides immediate guidance based on environmental conditions.

Illumination

Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table D-3 while any work is in progress:

Table D-3 – Minimum Illumination Intensities in Foot-Candles
Minimum Illumination Intensities

Foot-Candles	Area of Operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exit ways.
5	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, mess halls, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

Other areas or operations not covered in the table above, refer to the American National Standard All. 1965, R1970, Practice for Industrial Lighting, for recommended values of illumination.

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