

VENTILATION:

Ventilation simply means the free flowing of air or circulation of air that freshens the environment & enhances the healthy atmosphere for dwellers.

Cross ventilation of the houses is major engineering strategy that keeps away bad odors & respiratory illnesses from people.

→ Standards of Ventilation →

1. Recommended Cubic Space → As per experts' recommendations the min. fresh air supply required by a person/hour ranges b/w 300-3,000 c.ft. Average person lets out 0.6 c.ft of CO_2 /hr.
2. Required Air change → The living rooms should have 2-3 air changes/hr. Around 4-6 air changes are advised for work rooms & assembly halls. Considering this 1000-1200 c.ft space is advised per individual.
3. Required floor space → Floor space is another important recommendation under ventilation. The recommended optimum floor space/person vary from 50-100 sq. ft.

→ Types of Ventilation:

There are 2 types of ventilation:

1. Natural ventilation

2. Mechanical / Artificial ventilation.

1. Natural ventilation:- It is the simplest means of ventilation & effectively adopted in small houses & working places. This is brought about by certain forces & operate in nature.

(i) Wind:- The wind is a great force in nature which brings about natural ventilation by its movement from one place to another. The process of entry or flow of wind takes up various names like:

- Perflation:- The blow of air through a room, it is up perflation.

- Aspiration:- Wind's suction actⁿ at its tail end, when it passes or blows through an obstruction is up aspiration.

- Cross ventilatⁿ:- It is facilitated naturally by placing windows & doors facing each other.

(ii) Diffusion:- This is a property of all gases; diffusion or spreading out, is rather a slow process. By this property, air enters even through the smallest openings.

(iii) Temperature:- This works based on the dense of the air inside & outside the house. Air moves from high density to low density. Whenever there is temp difference, there is movement of air - from the hotter regions, moving towards the cooler regions.

Natural ventilatⁿ is brought about in tropics chiefly through doors & windows.

2. Artificial Ventilation:- It uses mechanical means like exhaust fans & plenum exhaust or remove the vitiated air. These machines are run by electricity. There are diff. types of mech. ventilation.

(i) Exhaust ventilation: Exhaust means send out. The air is exhausted by special fans known as "exhaust fans". These fans are driven by electricity. Vacuum that is been created as a result of exhaust facilities the entry of fresh air through the purposefully built structures like doors & windows & others.

(ii) Plenum ventilation: In plenum ventilatⁿ, the pressure is created by blowing fresh air using centrifugal fans. This pressure moves out the vitiated air. It is found to be used in air conditioned buildings & factories.

(iii) Balanced ventilation: This is a combinatⁿ of plenum & exhaust system of ventilation. Here the blowing fan balances the exhaust fan.

(iv) Air conditioning: It is becoming popular in this country. It takes a control on physical & chemical qualities of atmospheric air of a confined room or space. The air conditioner provide comfort zone for living by filtering & removing the excess humidity from the air of the confined area like air in a room. It is a widely accepted & popular means of comfort measures used in houses, big halls, auditoriums etc.

→ Effects of ventilatⁿ on Health:

- Ventilation controls the pathogens in the air by diluting it.
- Provides humidity-free environment there by stops the multiplicatⁿ & survival of pathogens.
- Provision of comfortable environment increases the work efficiency.

→ Health Problems due to Poor ventilatⁿ:

- Poor ventilatⁿ increases the chances of getting respiratory allergic diseases. Pneumonia, asthma, confusion, headaches, dryness of eyes, fatigue, nausea & vomiting are some of the diseases caused as a result of poor ventilation.

→ Effects of Poor ventilation on Employees:

- Increased level of CO_2 & low levels of O_2 induced fatigue in employees.
- Headache, nasal congestⁿ, dizziness, dyspnea, allergies & nausea are found to be common when the indoor air quality is poor.
- If adequate no. of air changes are not met temp. reach higher levels causing fatigue, confusion, discomfort & distress.
- Low humidity levels lead to dry skin & throat irritatⁿ whereas high humidity enhances the growth of mo's.
- Poor ventilatⁿ causes intolerable odors that affect the worker's efficiency.
- Poor ventilatⁿ causes "sick building syndrome". In this conditⁿ, the person may have irritatⁿ of throat, nose, & eyes, headaches, fatigue & susceptible to colds & flu.