

# 11. Electro-Ionic Microclimate

# Electro-Ionic Microclimate

- **Electro-ionic microclimate** is a component of the internal environment created by **positive and negative ions** in the atmosphere that act on humans and shape their overall state.
- **Ion** is an electrically charged particle that originates from an electrically neutral atom or molecule by adding or removing electrons while retaining the original number of protons.
- **Aeroion** is a complex of 10 to 30 molecules that is formed by joining electrically charged particles with neutral atoms.

# Sources of Ionization Energy

- The ions are formed by the **action of an electric field, ionizing and ultraviolet radiation**, and so called **Lenard effect**.
- The **Lenard effect** (Also called spray electrification, waterfall effect) occurs when water is sprayed into the air or cracked gas bubbles on the water surface, creating positive and negative ions by separating small particles from the water surface. The whole fluid is therefore divided into small negative particles and larger positive drops.

# Effects of Ions on Human Organism

- **Aeroions** primarily serve to accelerate biochemical reactions. Small or even negative ions are positive for the organism.
- **Negative ions** (anions) in the body to cause an increase in blood pH, decrease blood pressure, decrease in oxygen consumption, increase metabolism of water soluble vitamins, increase of mucosal secretory activity and increase resistance to viral diseases.
- **Positive ions** (cations) cause a decrease in blood pH, increase in blood pressure, decrease in cholesterol levels, drying of mucous membranes.

# Optimization of Electro-Ionic Microclimate

- Optimization of electro-ionic microclimate can be done either **intervention to the source** or **intervention in the transmission field**.
- Occurrence aeroions significantly influences and used building materials and surface finish.
- One way to prevent aeroion destruction is to limit transmission activities.
- The second option is to install aerosol ionizers. For practical use, hydrodynamic, corona discharge and ceiling electrode ionizers are currently being manufactured.