

## AIR POLLUTION CAUSES DISTURBANCE OF ECOLOGICAL BALANCE

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Air pollution is one of the main causes of ecological imbalance and, as a result, has the greatest impact on the health of the majority of the population. Currently, a pressing issue is the problem of air pollution by fine particles, which is directly related to air pollution and the impact on human health. Much attention is paid to studying the impact of suspended particles on the human body, in particular on the respiratory system and the cardiovascular system.

The study of fine particles in preschool educational institutions is relevant, since many chronic diseases begin to develop in childhood. In most kindergarten premises, dust is formed from a combination of household, construction and biological particles. Of these, mineral (inorganic) dust is the source of which is construction and finishing materials. Outdoor dust – containing quartz particles, cement, gypsum, clay, concrete particles, sand – comes in the form of small fractions (PM10 and PM2.5) that easily penetrate the respiratory tract, which is dangerous for the mucous membranes, especially in children with allergies and asthma.

There is also organic dust - sources include furniture, textiles, carpets, paper, plants, it contains fibers of cotton, wool, synthetics, cellulose, microparticles of paint and varnish, it may contain allergenic substances and chemical residues (formaldehyde, phenols, surfactants).

Biological (microbiological) dust – originating from people, animals, plants, and food, contains mold spores, fungi, pollen, skin particles (epithelium), hair, dander, bacteria, and viruses. This type of dust causes allergies, respiratory infections, and fungal infections.

Atmospheric dust – brought in from the street, the source is exhaust gases, road dust, tire particles, metal, soot, which contain carbon, heavy metals (lead, zinc, cadmium), are toxic microparticles with high penetrating ability (PM2.5).

Secondary dust (suspended particles during cleaning) occurs during dry cleaning, furniture movement, ventilation, danger: increases the concentration of small particles that remain in the air for a long time.

For the first time in Europe, guideline concentrations for PM10 were set by the European Commission Directive 1999/30/EC in 1999. They were based on recommendations from the World Health Organization.

According to data for the Republic of Uzbekistan: the official standard for PM2.5 has not yet been established as a generally accepted standard. However, the official statement of the sanitary rules and regulations of the Republic of Uzbekistan No. 0350-17 “Sanitary norms and regulations for the protection of atmospheric air of the population of the Republic of Uzbekistan” states: the average annual level for PM2.5 is 0.035 mg/m<sup>3</sup> (that is, 35 µg/m<sup>3</sup>), the daily level is 0.06 mg/m<sup>3</sup> (60 µg/m<sup>3</sup>). For children's and educational premises, the following values are usually accepted: PM2.5 ≤ 10–15 µg/m<sup>3</sup>, PM10 ≤ 30–50 µg/m<sup>3</sup>. The



regulatory document also notes that maximum permissible concentration standards for pollutants are established over time: one-time, daily, monthly average, and annual average.