HYGIENIC JUSTIFICATION OF FINE PARTICLES IN THE AIR OF GROUP CELLS IN PRESCHOOL EDUCATIONAL INSTITUTIONS

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Fine dust (fine aerosols) are dust particles that remain suspended in the air for a long time and can penetrate deep into the human respiratory tract. In kindergarten premises, especially in group rooms where children spend most of their time, control of such dust levels is very important.

Fine dust includes: PM10 - particles up to 10 microns in diameter (retained in the upper respiratory tract); PM2.5 - particles up to 2.5 microns in diameter (penetrate the lungs and bloodstream).

In Uzbekistan, sanitary standards are regulated by the following documents: sanitary rules and regulations 0350-17 - "Hygienic requirements for the microclimate of industrial and public premises"; sanitary rules and regulations 0293-11 - "Sanitary rules and regulations for the maintenance of premises of preschool institutions". Although there are no specific standards for PM2.5 and PM10 for kindergartens in Uzbekistan, they are guided by international and WHO standards for indoor air: indicator average daily norm WHO (2021) permissible level (approximately for indoor use) PM2.5 ≤ 15 μg/m³ to 15–25 μg/m³, PM10 ≤ 45 μg/m³ to 45–50 μg/m³. For children's institutions, it is recommended to maintain PM2.5 levels no higher than 10–15 μg/m³, and PM10 no higher than 30–40 μg/m³.

Potential sources of dust in kindergartens:

1. Mineral dust – from construction and finishing materials (plaster, cement, floor dust).
2. Organic dust – from fabric fibers, paper, hair, leather.
3. Outdoor dust – from ventilation or on shoes.
4. Household dust – from soft toys, carpets, and furniture.

The aim of the study was to identify the level of dust with a diameter of PM10 and PM2.5 in group cells of preschool educational institutions in winter and summer periods. The objects were preschool institutions of the state and private type. Dust was measured using a MODEL GT-331 dust analyzer. Model GT-331 is a laboratory instrument designed for measuring the viscosity of liquids. It uses a rotating mechanism to determine a liquid's resistance to flow, providing a quantitative measurement of its viscosity. PM10, PM2.5 - suspended particles with a size of less than 10 μm and 2.5 μm, which can easily penetrate into the human lungs and accumulate in them.

During the study of group cells of the State Preschool Educational Institution, the results showed that the level of dust particles PM10 (ppm) was 124.5±7.80, with dust particles PM2.5 (ppm) about 64.3±6.13 in winter. In summer, PM10 (ppm) was 132.3±7.13, PM2.5 (ppm) 66.1±4.48. In a private preschool institution, dust levels of

PM10 (ppm) were 102.6±0.23, PM2.5 (ppm) 91.1±0.36 in winter, and in summer, PM10 (ppm) was 105.5±1.12, PM2.5 (ppm) 83.7±3.05. Because the study was conducted while the children were active, the readings were slightly elevated. No toxic or poisonous substances were detected in the dust.

Measures to reduce dust concentrations: use air purifiers with HEPA filters; daily wet cleaning (at least twice a day in groups); avoid carpeting and soft toys that accumulate dust; ventilate through windows with screens or filters; regularly clean ventilation and air conditioning units.