

MITIGATION OF NEGATIVE IMPACT OF CEMENT PLANT ON THE ADJACENT GROUNDS

Krivileva S., Vlasenko V.

*National Technical University
«Kharkiv Polytechnic Institute», Kharkiv*

This work addresses the issue of mitigating the negative effects of the cement plant, which is inside the metropolis. This is done by purposefully forming green spaces, selecting the type of planting and selecting plant species. So isolating planting dense structure around the Kharkiv Cement Plant should create a mechanical obstacle in the path of the contaminated air stream. The obstacle will force the air stream to flow around the green mass, and will be able to reduce the impurity content by up to 35 % (at the expense of dispersion and deviation of the polluted air stream, as well as due to the absorbing effect of green spaces). Such landing should be located outside the territory of the sanitary protection zone (SPZ) in front of a residential microdistrict.

In SPZ it is necessary to form sparse plantings that will act as a biological filter, and will consist of dust-, gas-, smoke-resistant trees with a strong wax coating on the leaves. Of particular importance is the targeted selection of the species composition of plants. For example, one adult maple tree cleans up to 20,000 m³ of air, decomposing harmful substances with almost no harm to itself. The pyramidal poplar captures dust and moisturizes the air very well, and even better, lilac, acacia and unpretentious rosehip retain dust. In general, hardwoods are more resistant than conifers because they have a more pronounced ability to regenerate. Therefore, it is necessary to replace old trees with species that are highly resistant to dust and gas emissions and which have the highest index dust absorption in a single growing season. Such trees are box elder, Canadian poplar and pyramidal poplar. Their filtering effect during dust deposition during the growing season reaches 25 – 30 kg per tree per season. They can reduce gaseous emissions in the air by 30 – 35 % under normal weather conditions (at the expense of absorption, dispersion and deviation of the air stream).

For the simultaneous reduction of noise from cement plants, the correct spatial organization of green space is very important. It is necessary to plant trees between the cement plant and the residential microdistrict, and their crowns will absorb up to 25 % of sound energy. Soundwaves will strike trunks and change their direction of motion. They will point downwards into the ground and they will be assimilated by it. Noise protection functions are performed efficiently by spruce, red elderberry and red oak. Therefore, it is advisable to plant a number of spruces around the enterprise, and the next row (staggered) – maples.

It is necessary to sow the territory of the cement plant with a stable herbaceous perennial plant – a medical dandelion. As a result, the soil of adjacent territories will be protected from dust and pH changed.