LITHOSPHERE: INFLUENCE OF ELECTRICAL ENERGY ON SOILS

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Classical energy

By classical energy, we mean the use of typical types of electricity production. Namely, oil products, gas, solid fuel, etc.

Let's consider CHP and TPP

At thermal power plants, the main method of obtaining electricity is burning fuel and converting thermal energy into electrical energy. Coal, oil products or gas are used as fuel. The fact that such fuel is needed for their work already has an impact on the environment, including the soil. After all, before burning the fuel, it must be extracted and transported, which means an even greater volume of extraction.

Its extraction from the depths has negative consequences for the soil and the surface layer of the planet as a whole. If we consider the consequences of fuel burning for the lithosphere, the first thing that comes to mind is the effect on the atmosphere, due to which the rains become acid, and the soils absorb it all, and then give it to plants and living creatures.

Consider a nuclear power plant

In general, the impact from this type of power plant is similar to the impact from a TPP, but instead of liquid, gaseous or solid fuel, nuclear fuel – is used. During fission, it does not have the same impact as greenhouse gases, but radioactive waste and spent nuclear fuel must be disposed of and stored for a long time.

Since, unlike other types of fuel, nuclear can pollute the soils much more strongly, which makes their use without cleaning from radiation and other consequences - completely impossible. At nuclear power plants, as well as at TPP and CHP, water is heated with the help of fuel to convert thermal energy into electrical energy, but due to radiation, an artificial lake is created nearby for the nuclear power plant, a kind of sump where water cools, because of this, of course, the

soils suffer.

They get poisoned, and therefore agriculture near the station becomes impossible. Well, the worst thing is that there is always a threat of an explosion, no matter what, but such a situation creates the worst possible threat to all living things at a fairly large distance.

Let's consider the HPP

Of course, HPP has a greater influence on the Hydrosphere, but if you think about the fact that they are all connected, it becomes clear that any leakage from HPP will enter the rivers, which in turn will mix with groundwater and, surprisingly, the soils will be polluted, poisoned. At hydroelectric power stations, water flows are used to create the torque of the rotor, which generates electricity. Since the rotor rotates, it is not surprising that it needs lubricants to work. If somehow the gasket fails and lubricants gets into the river, it will be a disaster with massive effect (Solovei et al., 2011).

Renewable energy

Wind energy

In wind energy, wind turbines of various types are used, that is, wind energy converters of various shapes, types and capacities. In general, they do not have a colossal impact on the Lithosphere and soils, but if during the construction of such systems one does not anticipate and design a possible countermeasure against soil erosion, then this can become a big problem for people living nearby.

Since soil erosion is the process of destruction of the upper most fertile layer of the soil and the subsoil, the wrong design approach can lose the entire potential of the soil that could be used by people. Also, one of the problems of designing wind turbines is changes in the landscape; before construction, it is necessary to assess the impact on the surrounding landscape and minimize the risks of its destruction. (Kudrya, 2012).

References:

Kudrya, S. (2012). *Netradytsiyni ta vidnovlyuvani dzherela enerhiyi [Non-traditional and renewable energy sources]*. K.: NTUU "KPI".

Solovei, O., Lega, Yu., Rosen, V., Sytnyk, O., Chernyavskyi, A., & Kurbaka, G. (2007). *Netradytsiyni ta ponovlyuval'ni dzherela enerhiyi [Non-traditional and renewable energy sources]*. Cherkasy: ChDTU.