THE INTERACTION AND IMPACT OF ENERGY OBJECTS WITH THE ENVIRONMENT

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Traditional energy should be understood as energy generating capacities that were built during the Soviet era and will remain for another 20-50 years. However, the current problem related to power generating plants: power plants, heating and heating and production boilers, as the main sources of energy supply, is relevant today. These types of power plants affect the environment in different ways. Summarizing the effects of energy objects on the biosphere, we can identify several groups of the most important interactions [1].

Here are the most important of them:

- Water consumption and water use, which causes changes in the natural material balance of the aquatic environment (transfer of salts, nutrients, etc.)
- Sedimentation on the water surface of solid emissions from the atmosphere caused by the combustion products of fossil fuels; it changes the properties of water, its color, albedo, etc.
- Precipitation of products of emissions into the atmosphere, in particular acids and acid residues; metals and their compounds, carcinogenic substances in the form of solid particles and liquid solutions.
- Disposal directly on the surface of land and water of combustion products of solid fuels (ash, slag), as well as products of purging, cleaning of heating surfaces (soot, ash).
- Emission of liquid and solid fuel on the surface of water and land during transportation, processing, reloading.
- Discharge of solid and liquid radioactive waste, characterized by the conditions of their distribution in the hydro and lithosphere.
- Heat release, which can result in: a constant local increase in temperature in the reservoir; temporary increase in temperature; changes in ice conditions, winter hydrological regime; floods; change in the distribution of precipitation, evaporation, fog.
- Creation of reservoirs in river valleys or with the use of natural surface relief, as well as the creation of artificial cooling ponds, which causes: changes in the qualitative and quantitative composition of river runoff, changes in the hydrology of the water basin; increase in pressure on the bottom, penetration of moisture into fractures of the crust and changes in seismicity; changes in fishing conditions, development of plankton and aquatic vegetation; changing the microclimate, recreation, sports, balneological and other factors of the aquatic environment.
- Landscape change due to the construction of heterogeneous energy facilities, consumption of lithosphere resources, in particular: deforestation; withdrawal of arable lands and meadows from agricultural turnover; interaction of shores with reservoirs.
- The impact of emissions, removals and the altered nature of the interaction of water basins and land on the structure and properties of the continental shelves.

Among the main factors of influence of energy objects on the atmosphere, hydrosphere, lithosphere are:

1. Thermal power plants:

atmosphere: oxygen consumption; emissions of NO_x, SO_x, H_2O, particulate matter, aerosols; thermal pollution; hydrosphere: water consumption; wastewater emissions; thermal pollution; lithosphere: removal of territories; waste pollution; landscape change);

2. Nuclear power plants:

atmosphere: emissions of gaseous waste; hydrosphere: water consumption; discharge of radioactive waste; thermal pollution; lithosphere: removal of territories; disposal of radioactive waste; change of landscape);

3. Hydraulic power plants:

atmosphere: evaporation of moisture from the surface of reservoirs; hydrosphere: change in the qualitative and quantitative composition of river runoff; hydraulic changes in reservoirs; lithosphere: withdrawal of territories; change in landscape; deforestation;

4. Transformer substations:

atmosphere: electromagnetic fields; hydrosphere: formation of zones of high magnetic field voltage near the water surface; lithosphere: withdrawal of territories; change of landscape; deforestation; formation of stray currents.

Impurity pollution can have a total effect on the natural cycle and material balances of certain substances between hydro, summer and atmosphere. Common to all energy sources, both traditional and non-traditional, is the problem of thermal emissions. All of these interactions are interrelated, and each cannot be considered in isolation. In addition, the mechanism of interaction in any of the groups is based on heterogeneous physical and physicochemical processes and phenomena.

The variety of such factors, their relationship with the air environment and the surface and subsoil of the planet necessitates a multifaceted analysis, taking into account data from geography, meteorology, climatology and other scientific disciplines. And this requires a generalized systematic approach to the problem of energy impact on the environment, based on a careful analysis of all components of this process.

Bibliography

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