

Geocology of Nuclear Power Engineering in the reflection of Chernobyl and Fukushima

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During the history of Nuclear Power Engineering (NPE) had been three gross accidents resulted in meltdown: Three Mile Island (1979), Chernobyl (1986) and Fukushima (2011). These disasters have not significantly affected the development of NPE (Fig. 1). Contrary to emergency of radioactive contamination NPE persists the most environmental friendly compared with other energy sources. Future development of NPE is constricted by attenuation of fuel source, limitation of modern reactor capacity, and social factors.

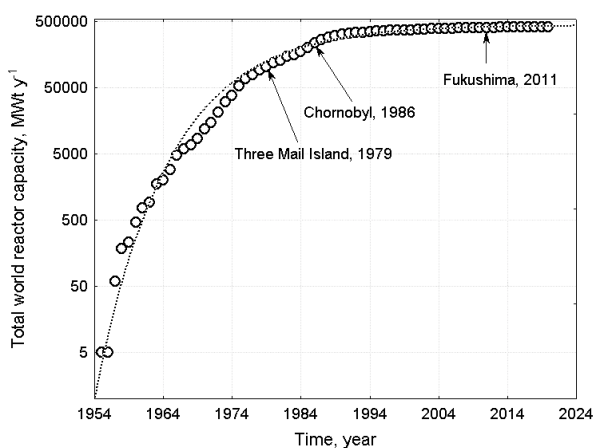


Figure 1: Development of World Nuclear Power Engineering (according to WNA Database)

Researches conducted during 30 years within abandoned Chernobyl zone had in fact shown the powerful ability of environmental self recovery. The rate of trophic levels self-clearing from radionuclides is substantially higher than velocity of natural attenuation and intrinsic bioremediation. The latter two processes depend on the surface run-off and descending migration, and are controlled by decay rate of ^{137}Cs and twice as fast as decay of ^{90}Sr . The intensity of self-clearing is 10 times exceeds the decay rate of ^{137}Cs and ^{90}Sr that corresponds to pace of radiation dose decrease for rural population of Ukraine. The recovery of landscape structure and biodiversity is more rapid and deep than man-caused conversion of the environment in past.