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Tanishev, A.O., Tarasova, E.S.

Nuclear Contamination

National Research Tomsk Polytechnic University.

Nuclear contamination (or sometimes it's called nuclear pollution) is a presence of radioactive substances on environment. It's the presence of radioactive substances on surfaces or within solids, liquids or gases (including the human body), where their presence is unintended [2]. Of course it's very harmful for our organism and for all living creatures that inhabit our planet. The environmental impact of nuclear power results from the nuclear fuel cycle, operation, and the effects of nuclear accidents.

The routine health risks and greenhouse gas emissions from nuclear fission power are small relative to those associated with coal, oil and gas. However, there is a "catastrophic risk" potential if containment fails which in nuclear reactors can be brought about by overheated fuels melting and releasing large quantities of fission products into the environment. The public is sensitive to these risks and there has been considerable public opposition to nuclear power [4].

Nuclear Contamination is pollution caused by nuclear waste which is generated from the unusable radioactive products from different fields. Unfortunately, humans are polluting the Earth… and radiation, which is dangerous, though there in nature.

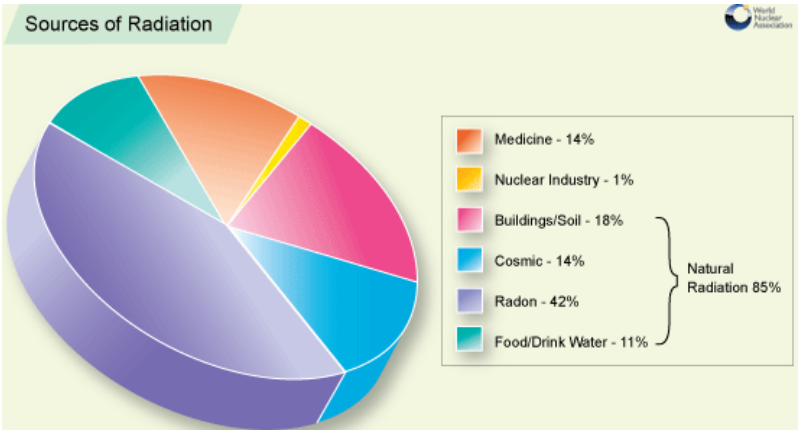

Fig.1 (left). "Sources of Radiation" diagram [6].

If radioactive material is not in a sealed source container, it might be spread onto other objects. Contamination occurs when material that contains radioactive atoms is deposited on materials, skin, clothing, or any place where it is not desired. It is important to remember that radiation does not spread or get "on" or "in" people; rather, it is radioactive contamination that can be spread. A person contaminated with radioactive material will receive radiation exposure until the source of radiation (the radioactive material) is removed [3].

Water is needed to cool the reactors in nuclear power plants. Cold water from lakes and rivers is used for this process. As a result of this a lot of hot water is generated. It's called thermal pollution since organisms die when temperatures rise [1].
Low-level radioactive waste is waste, which is spent nuclear fuel or highly radioactive waste produced if spent fuel is reprocessed. High levels of radioactive contamination – unlike low levels – may pose major risks to people and the environment. People can be exposed to potentially lethal radiation levels [5].

Figure 1 shows a diagram "Sources of Radiation". As can be seen, nuclear industry which is yellow – only 1% of the global pollution. The most – is radon (42%). But others sources wasn't considered in this paper.

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Tarasenko, S.S., Shestakova, V.V., Chesnokova, I.A.

Employing electric resonance for reducing transmission losses

National Research Tomsk Polytechnic University

Abstract

The subject of the paper is power transmission losses caused by reactance losses. Possible solution to the problem with resonance-based equipment is considered and necessary calculations are presented.

Key words: resonance, transmission losses, power line, reactive impedance, compensation, frequency, reactive impedance, capacitor bank, overvoltage, shunt reactor, power line phases.

Introduction

Reducing power transmission losses is one of the most important issues of modern power engineering. There are different reasons for transmission losses, one of which is reactance losses, causing hazardous overvoltage. To solve this problem various devices have been developed and resonance-based equipment is considered to be one of the most efficient and promising.

Theoretical foundation.

Resonance is a sharp increase in the amplitude of forced oscillations when impressed frequency is close or equal to the natural frequency of the oscillatory system. Resonance can be of two types: mechanical resonance and electric resonance.

Mechanical and electrical resonance have some common features: in both cases resonance occurs when impressed frequency coincides with fundamental frequency of the system. Impressed frequency is equal to the source frequency, while natural frequency of any electric system depends on the relation between inductance and circuit capacitance. Electric resonance is divided into acceptor resonance and parallel resonance. In case of acceptor res-