

# Minimization of the occupational doses during the liquidation of the radiation accident consequences

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## Abstract

As known the accident on the Chernobylskaya NPP is the heaviest one in the nuclear energy history. It showed how considerable can be radiation levels on the breakdown nuclear facility. Nevertheless Russian specialists on radiation protection worked out and successfully realized a conception of the working in such conditions during the liquidation of the accident consequences. The conception based out on using ALARA principle, included the methods of radiation fields structure analysis and allowed to minimize of the occupational doses at operations of the accident consequences liquidation.

The main idea of the conception is in strongly dependence between the radiation dose of the personnel performing the liquidation operations and concrete sequence of these operations.

Also it is necessary from time to time to receive the experimental information about radiation situation dynamics on the breakdown facility and to make variant calculations for optimizing for the successful implementation of such approach.

The structure of these calculations includes variable fraction for the actual state of the facility before the accident and after one and not variable fraction depend on the geometric and protection characteristics of the facility. And the second part is more complicated and bigger. Therefore the most part of these calculations required for the any successful liquidation of the accident consequences can be made on the facility projecting stage. If it will be made the following tasks can be solved in case of the accident:

- to estimate a distribution of the contamination source using the radiation control system indications;
- to determine a contribution from each source to the dose rate for any contaminated area;
- to estimate the radiation doses of the personnel participated in the accident consequences liquidation;
- to select and to realize the sequence of the liquidation operations giving the minimal doses.

The paper will overview the description of this method and its application example.

**KEYWORDS:** *radiation accident, consequences liquidation, radioactive contamination, occupational dose.*

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