

## ABSTRACT

The thesis is presented on 65 pages. It contains 2 appendixes and bibliography of 27 references. Twenty five figures and two tables are shown in the thesis.

The goal of the thesis is to develop a mathematical model of formation of internal radiation dose of the population due to the Chernobyl accident based on neural networks.

In the thesis, existing solutions are analyzed, such as decision trees, support vector machines, regression methods, neural networks, random forests. On the basis of defined criteria for the solution of the problem the neural network was chosen.

A system that implements the chosen method was developed and tested. Input data for the system was provided by the Department of Radiology from Institute of Agroecology and Environmental Management of National Academy of Agricultural Sciences of Ukraine.

Keywords: artificial neural networks, supervised learning, internal radiation dose, machine learning, data preprocessing, multilayer perceptron, plural nonlinear regression.

