



The Use of Tritiated Wastewater from NPP Cernavoda in Agigea Black Sea Area

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Danube-Black Sea Channel is situated in the south east part of Romania. It takes its waters from Danube upstream of Cernavoda town, and flows into the Black Sea at Agigea. The main uses of the channel are numerous, but it can be mentioned navigation and nuclear power generation - Cernavoda Nuclear Power Plant. Maximum weigh carrying of the canal is 70 million t/year. Agigea is the most important harbor of the Channel and due to intensive activity the accidents can happened any time.

In this study we propose to use tritiated liquid effluents from CANDU type NPP Cernavoda as a tracer, to study dilution factor between fresh water of the canal and the Black Sea waters. Tritiated water can be used to simulate the transport and dispersion of solutes in Danube-Black Sea Channel because they have the same physical characteristics as water. Measured tracer-response curves produced from injection of a known quantity of soluble tracer provide an efficient method of obtaining necessary data. We established tritium level in monitored zone Agigea-Black Sea by monthly samples and precipitation during may 2005- may 2006. The average tritium concentration for Black Sea near Agigea location was 12.5 +/- 2.2 TU. During the NPP evacuation we establish inside Agigea canal lock a well mixed tritium concentration of 174.07 +/- 6.2 TU. Using waters lock as a tracer we establish dilution factor of 1: 4.28 inside Agigea harbor, and dilution factor of 1:2.17 in open sea. This experimental parameter can be used in dispersion simulation for Agigea - Black Sea area.