

## AVAILABILITY OF SEMIPERMEABLE MEMBRANES SEPARATION TECHNIQUES FOR THE TREATMENT OF LIQUID RADIOACTIVE WASTE

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**Rezumat.** Tehnicile de separare prin membrane semipermeabile (ca: microfiltrarea, ultrafiltrarea și osmoza inversă) se aplică unui domeniu larg de deșeuri radioactive, inclusiv unor soluții care în mod obișnuit pun probleme serioase în timpul operațiilor de tratare. Un exemplu relevant este oferit de deșeurile rezultate din operațiile de decontaminare care au un conținut ridicat de detergenți și agenți de complexare. Lucrarea prezintă câteva teste experimentale cu tehnici membranare realizate pe un dispozitiv pilot, la Institutul de Cercetări Nucleare Pitești. Scopul studiului experimental a fost elaborarea și evaluarea unei tehnologii adecvate pentru tratarea deșeurilor radioactive lichide cu conținut scăzut de săruri utilizând membrane semipermeabile indigene.

**Abstract.** The semipermeable membranes separation techniques (like: microfiltration, ultrafiltration and reverse osmosis) concern a wide range of radwastes that includes solutions, which are usually putting serious problems during treatment operations. A relevant example is given by the wastes issued from the decontamination operations which contain large quantities of detergents and complexant agents. The paper presents several experimental tests by membrane techniques carried out on a pilot scale device at Institute for Nuclear Research Pitești. The purpose of the experimental study was to elaborate and evaluate an adequate technology for treatment of low salt content liquid radioactive waste, by using indigenous semipermeable membrane.

**Keywords:** semipermeable membranes, decontamination, radioactive waste

### 1. Introduction

The nuclear industry generates a broad spectrum of low and intermediate level liquid radioactive wastes (LRWs). These liquid wastes may be produced continuously or in batches and may vary considerably in volume, radioactivity and chemical composition. A wide range of treatment methods has been used throughout the industry to treat these wastes. In recent decades various membrane separation processes have been developed and utilized in the field of potable

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