


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of:	Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)
	ASLBP #: 07-858-03-LR-BD01
	Docket #: 05000247 05000286
	Exhibit #: NYS000254-00-BD01
	Admitted: 10/15/2012
	Rejected:
Other:	Identified: 10/15/2012
	Withdrawn:
	Stricken:

NYS000254

Submitted: December 21, 2011

<http://www.ncbi.nlm.nih.gov/pubmed/21799347>

Assessment of (90)sr and (137)cs penetration int... [Health Phys. 2011] - ...

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Health Phys. 2011 Sep;101(3):311-20.

Assessment of (90)sr and (137)cs penetration into reinforced concrete (extent of "deepening") under natural atmospheric conditions.

Farfán EB, Gaschak SP, Maksymenko AM, Donnelly EH, Bondarkov MD, Jannik GT, Marra JC.

Savannah River National Laboratory, Aiken, SC 29808, USA. Eduardo.Farfán@srl.doe.gov

Abstract

When assessing the feasibility of remediation following the detonation of a radiological dispersion device or improvised nuclear device in a large city, several issues should be considered, including the levels and characteristics of the radioactive contamination, the availability of resources required for decontamination and the planned future use of the city's structures and buildings. Currently, little is known about radionuclide penetration into construction materials in an urban environment. Knowledge in this area would be useful when considering costs of a thorough decontamination of buildings, artificial structures and roads in an affected urban environment. Pripyat, a city substantially contaminated by the Chernobyl Nuclear Power Plant accident in April 1986, may provide some answers. The main objective of this study was to assess the depth of (90)Sr and (137)Cs penetration into reinforced concrete structures in a highly contaminated urban environment under natural weather conditions. Thirteen reinforced concrete core samples were obtained from external surfaces of a contaminated building in Pripyat. The concrete cores were drilled to obtain sample layers of 0-5, 5-10, 10-15, 15-20, 20-30, 30-40 and 40-50 mm. Both (90)Sr and (137)Cs were detected in the entire 0-50 mm profile of the reinforced cores sampled. In most of the cores, over 90% of the total (137)Cs inventory and 70% of the total (90)Sr inventory was found in the first 0-5 mm layer of the reinforced concrete. Strontium-90 ((90)Sr) had penetrated markedly deeper into the reinforced concrete structures than (137)Cs.

PMID: 21799347 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

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