Risk perception and social representation on radioactive waste: a case study with students of IPEN

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INTRODUCTION AND OBJECTIVES

Proper management of radioactive waste in teaching and research laboratories involves not only techniques and procedures for the treatment, storage and disposal of these materials but also the responsibility of all those who handle them. Responsibility begins with with methods that generate less waste and with the correct segregation of contaminated materials prior to disposal. In this context, the present study aimed to know, identify, understand and analyze the perception of risk and social representations about radioactive waste and its management by students and researchers of the Nuclear and Energy Research Institute.

According to Renn (1992), two of the approaches to risk perception are cultural and sociological, which served as the basis to the present study. Within this analysis, the concept of risk is understood as a phenomenon and, therefore, the phenomena experienced by the individuals are related to their life histories, social relations, religious beliefs and academic formation, elements that interfere in the perception of risk (Di Giulio et al. 2015).

MATERIALS & METHODS

The method used to collect data was free evocation (Abric, 2001), with participants receiving the following instructions: "Please write five words that pop up into your mind when you listen to the words radioactive waste and, sequentially, write a sentence using these words." All participants received instructions of the voluntary character of the participation and of the confidentiality of the data. A total of 73 students and researchers were interviewed, including scientific initiation, master's degree, doctorate and postdoctoral researchers. 353 words were mentioned, of which 209 were different from each other. After analyzing the sentences, the words were inserted in 12 categories and later analyzed in the software INVOCADO, which provides a diagram with the possible structure of the social representations of the group studied.

RESULTS

The four-quadrant diagram representing frequency and order of evocation.

Minimum frequency of evocation = 5

	Mean order of evocation < 3.12			Mean order of evocation ≥ 3.12		
Frequency ≥ 31.73	Central Core			First periphery		
		Frq	Mean order		Frq	Mean order
	Radioactive elements	33	2.82	Radioactive waste management	38	3.26
	Examples of radioactive waste	35	2.74	Security	67	3.21
	Technology	40	3.08			
	Risk	66	2.74			
Frequency < 31.73	Contrasting elements			Second periphery		
		Frq	Mean order		Frq	Mean order
	Environment	21	2.33	Legislation	5	3.80
	Health	30	2.83	Accident	6	4.00
				Others	8	3.50

CONCLUSIONS

The analysis of the four-quadrants and their categories, as well as the mentioned words that compose them, are therefore consistent with the universe of the public analyzed. While it is not the totality of students dealing with radioactive materials, in general these individuals understand the importance of technology and that the adoption of safe practices ensures the successful development of research.

FUTURE DEVELOPMENTS

- Analyze quantitatively and qualitatively the other questions of the questionnaire.
- Analyze the data and information obtained from the participant observation, which consisted of a follow-up of three students in their laboratory practices.
- Propose to the institute a manual of good practices that can be used by the students in their laboratory practices.

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