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# Developing the design of the national nuclear detection architecture for material out of regulatory control using roadmap model

The growing concern of the international community relating to the security of nuclear and radioactive material after September 11th, 2001 resulted in a strengthening, at world level, of the application of nuclear security measures through the adoption of new parameters and methodologies for the design and implementation of effective nuclear security detection architecture (NSDA). The risk of that nuclear material or other radioactive material be used in terrorist acts is considered a serious threat to international peace and security and cannot be overlooked in the current global situation. IAEA keeps a data base of incidents and illicit traffic, containing confirmed reports on nuclear and radioactive materials detected out of regulatory control. These materials, a.k.a. MORC (Materials Out of Regulatory Control) may be used on criminal or terrorist acts. States have responded to this risk making a collective commitment to strengthen the security and control of this material in order to protect people, property, society and the environment from the harmful consequences of a nuclear security event. Therefore, State should design and develop a national NSDA to integrate nuclear security systems and measures needed to achieve goals of the national strategy for the detection of nuclear and other radioactive material out of regulatory control with sufficient and sustained resources for the various competent authorities to enable them to carry out their assigned functions, including establishing and maintaining systems and measures to detect, manage information assessment from instrument alarms, information alerts, qualitative and quantitative information concerning the alarm or alert, and information from other sources and initial assessment of the alarm or alert. Currently, Brazil doesn't have a national strategy defined for the detection of nuclear and other radioactive material out of regulatory control, not having, for example, a minimal radiation detection capability at all points of entry, such as, seaports, airports and border crossings. This paper shows an efficient and visual tool, of easy understanding to develop a NSDA, based on the international recommendations, using the roadmap model, so as to make its adoption easier in Brazil. The challenge is even greater considering Brazilian territorial dimensions. Brazil has:

• Land borders with ten countries, totaling 16,885 kilometers with 36 formal international border crossings, representing the world's third longest land border;

• Maritime border from north to south, totaling 7,367 kilometers with 44 seaports;

• 30 international airports.

It becomes important to promote, in the scope of the Brazilian nuclear security regime, a greater awareness on this matter, making it possible, specifically: to provide for the security of nuclear and other radioactive material and associated facilities and activities; to ensure the security of such material in use, storage or in transport; to combat illicit trafficking and the inadvertent movement of such material; and to be prepared to respond to a nuclear security event. Considering the national context regarding the country´s borders dimensions, stakeholder involvement and legal support in force, this work concludes that Brazil needs urgently to develop a NSDA based on a national strategy with well-defined scope and goals, to better follow the current world situation of radiological threats, and the best practices adopted internationally,

## Gender

Male

## State

Brazil

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