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RADIOACTIVE SOURCE SECURITY: WHY DO WE NOT YET HAVE A GLOBAL PROTECTION SYSTEM?

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Security of radioactive sources has been an issue since the earliest days of safety regulation of such materials. Since the events of September 11 2001, some governments and regulatory bodies have been much more focussed on these issues and have introduced extensive and enhanced security arrangements. International organisations like the IAEA and WINS have worked hard to help States in this regard. However, only a minority of States have implemented statutory security systems for radioactive source security.

Why have so many States still to take action? What can be done to encourage and support these changes? This paper will offer some possible explanations for the lack of action in so many States and some potential answers to these questions.

KEYWORDS : Radioactive Source; Security; Improving; Global Protection System

1. INTRODUCTION

This paper is intended to provide a global perspective on a global issue: the protection of radioactive sources from theft from the premises where they are normally kept, or from sabotage *in situ* or from their malicious use at some other location that meets the objectives of an adversary. It is not a commentary on the situation in any single State; it is more an attempt to describe what the term "radioactive source security" means and to highlight the fact that relatively few States have taken action to provide what I would argue is adequate security for these items.

Since the terrible events of 11 September 2001, the prospect of potential "dirty bombs" has been looming over society. Dirty bombs are a significant threat because although they are relatively simple to create and transport, the consequences of their deployment (clean-up of contamination, denial of use of the affected area etc) create strong propaganda images that engender the fear that gives the adversary political influence. In addition, recovery costs are disproportionately large compared to the value and technological level of the weaponry involved (1).

Some governments see their nations as "target States" so they are more concerned about these issues than others. As a result, they have put in place a series of security measures to protect radioactive sources from theft and misuse as weapons. But in Europe the number of States that have taken these steps is actually very low, perhaps only 20 per cent of the total number of States in the European Union (2).

Obtaining the data from which this conclusion was made was not straightforward, and it has proved even more difficult to obtain it for the wider world. Professional judgement (based on business intelligence gleaned from international meetings, journals and electronic media) suggests that if anything, the proportion of States who have taken positive steps to secure radioactive sources is even lower in other continents than in Europe. This raises the question: why? That is, why have not more States taken precautions to minimise the probability of a successful diversion of a radioactive source to malicious uses? This question is discussed in this paper.

1.1 The Meaning of the Term "Security of Radioactive Sources"?

Before going further, it is appropriate to say a word about the terms used in this paper. "Safety" and "security" have been defined and discussed at some length elsewhere (3). A convenient summary (with new emphases) is:

"***Safety*** *is about protecting people from radioactive sources;*
Security *is about protecting radioactive sources from people.*"

To make this even clearer, the following table (Table 1) lists some elements of radioactive source security so as to show how administrative safety measures shade into

Table 1. The Distinction between Some Safety Measures Some-times Presented as Security Measures and Some Measures that More Convincingly Represent the Effective Implementation of Radioactive Source Security in a State

Component	Safety Relevant	Security Relevant
Sign up to the IAEA CoC	√	√
Sign up to the Import/ Export Guidance	√	√
Implement a national registry of sources	√	√
Undertake a Design Basis Threat Assessment		√
Adopt IAEA NSS & especially RS-G-1-9		√
Define national standards on physical protection		√
Implement legislation requiring operators to keep sources secure		√
Use trained Inspectors to assess security compliance of operators		√

tangible security measures including physical protection and effective regulation.

The intention of this table is to try to define what is meant by the term "security" in real life practical terms. This is necessary because there exists a spectrum of measures from the administrative to the use of hardware and other recognised security measures and it is essential to understand this. It is possible to claim that radioactive source security is in place in a State which has only signed up to the IAEA Code of Conduct or created a national inventory of radioactive sources. These measures are worthwhile, but are only a part of the story – they are only the first steps towards establishing an effective and comprehensive system to ensure the security of radioactive sources.

Table 2 is an attempt to provide an "at a glance" summary of a more meaningful definition of the term security, in order to help distinguish these things from actions taken for the purposes of safety. The lightly shaded area of the body of the table highlights what constitute security measures rather than safety measures. It should be noted that the intellectual distinction between safety and security of radioactive sources is difficult to explain. Simple demonstrations like Table 2 that convey the ideas that are involved in "security" as distinct from "safety" should not be dismissed. Instead, every effort should be made to clarify the possible threat, the consequent needs and the practical implementation of radioactive source security, to those for whom it is not familiar.

2. THE IMPORTANCE OF A GLOBAL PROTECTION SYSTEM

There are two complementary strands of thought about why radioactive source security matters. The first strand concerns the potential consequences of radioactive materials by an adversary. It is not proposed to provide a summary of the potential consequences of such an attack here, but IAEA reports on radiological accident response (4,5,6) demonstrate some of the consequences of accidents. Such accidents may be used as analogues of deliberate attacks. This is because, although the causes may be different, the consequences will be very similar. It is reasonable to expect that deliberate and well thought-through use of radioactivity as a weapon will have similar radiological, social, psychological and economic consequences. If the scenarios in these reports are unfamiliar, it should be emphasised that the consequences are very significant: a few deaths, very many other casualties of differing degrees of severity and other long-lasting consequences (including disproportionately large recovery costs and radioactive