

## **INITIATIVES BY THE INTERNATIONAL ATOMIC ENERGY AGENCY TO PREVENT RADIOLOGICAL TERRORISM**

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The General Conference of the International Atomic Energy Agency (IAEA) meeting the week after September 11, 2001 requesting the Director General to identify possible threats from acts of nuclear terrorism and to propose what the IAEA might do to help prevent them. Accordingly a new Nuclear Security Plan of Action was developed and approved with work in eight areas:

1. Physical protection of nuclear material and nuclear facilities.
2. Detection of malicious activities involving nuclear and other radioactive materials.
3. State systems for nuclear material accountancy and control.
4. Security of radioactive material other than nuclear material.
5. Assessment of safety/security related vulnerability of nuclear facilities.
6. Response to malicious acts, or threats thereof.
7. Adherence to and implementation of international agreements, guidelines and recommendations.
8. Nuclear security co-ordination and information management.

Activities under topic area four are the main of this paper.

Security of radioactive material is about preventing loss of control of the material. Loss of control can either be inadvertent or intentional. Serious consideration of intentional loss of control of other than nuclear material is relatively new for the IAEA. The strategy that was used for addressing the radiological terrorism problem was to first evaluate the possible radiological threats and postulate scenarios; then from these determine which radiation sources are most 'desirable' from a terrorists perspective. An assessment is then made as to where these sources are located and how terrorists might acquire them. Prevention or minimization tasks logically follow from this analysis. The first thing one can do is to try and prevent acquisition of desirable sources by those with malevolent intent. Failing this, efforts should be made to at least try to delay acquisition in order to allow law enforcement time to respond, or to quickly recognize the material loss. Assuming that radiation sources have been acquired, the next actions are those that attempt to prevent the use of any such sources. Finally, if this fails, then one must try to minimize the effectiveness or consequences of any such use.

Many scenarios require the acquisition of radioactive materials. There are several ways in which 'desirable' radioactive sources can be acquired. These include legal purchase, black market purchase and theft. Preventing the legal purchase of significant radioactive materials by terrorists is not simple but there are some measures that can be taken. These include performing background checks on those requesting licenses, and reviewing purchase orders for radioactive material for consistency with a stated purpose. It would also be appropriate to question whether the isotope and activity are appropriate for the industry or for the use stated in the request as well as to increase administrative controls such as accounting and tracking of radioactive material.

The prevention of illegal purchase on the black market boils down to detecting and finding radioactive material that may already be out of regulatory control. For this purpose it is appropriate to use standard intelligence methods to trace radioactive sources in a similar manner to those used for nuclear materials. Monitoring for radiation at appropriate locations such as at certain border crossings also has its place. Finally, trying to dry up the financial resources of the terrorists will hinder their purchase of black market materials because of the high prices usually demanded.

Clearly, theft of radioactive sources is easiest from locations where security is weaker, such as at hospitals and universities. There might also be some concern about security during transport and in those countries that do not have the desired level of security in place. There would appear to be a need for some increase in the level of physical security for 'desirable' sources. It is also logical to promote the collection and removal of disused sources, especially those that are in vulnerable locations.

Once the radioactive material is already on the black market or in hands of terrorists, then the strategy comes down to trying to prevent the use of any material that they may have. To this end, it is beneficial to identify countries, or areas where the sources are most likely to be and to focus detection activities in those countries. The benefit of standard intelligence activities should not be underestimated, since they have had a major role at finding nuclear materials.

If one fails to prevent terrorists acquiring material, or to prevent them using it, then all that is left is to fall back on minimizing the consequences of that use. To this end, improvements in the emergency response capabilities of Member States could be made, especially those that are in higher risk areas or where existing capability is poor. Similarly, there are always ways in which the IAEA's ability to assist Member States can be improved.

All of the possible actions identified in the analysis above are incorporated into existing, modified or new IAEA activities. For example, the Safety Guide on Safety and Security of Radiation Sources will now incorporate considerations of the terrorist threat. A Technical Document (TECDOC) on National Strategies for Detection and Location of Orphan Sources and their Subsequent Management will provide helpful ways for Member States to develop their own national action plans. The Code of Conduct for the Safety and Security of Radioactive Sources will be reviewed. The IAEA is also about to publish three helpful TECDOCs on prevention, detection and response to illicit trafficking of radioactive materials.

In the radioactive sources area, there are two major thrusts to the new work: a) to remediate existing disused and orphan sources; and, b) to prevent more sources becoming orphaned. In order to regain control over existing orphan sources, and to ensure appropriate disposal of disused sources, there is a need to develop criteria for the prioritization of assistance to countries. This is simply because resources are limited and search campaigns are both time-consuming and expensive. The IAEA can assist Member States with the development of their own national strategy action plans to locate and recover large orphan sources. Once national plans of action have been developed then the IAEA could help implement these plans as resources allow.

To help prevent future sources becoming orphaned or stolen guidance on security requirements for radioactive sources is being developed. Once published, training on these requirements and an appraisal service for security of sources can be offered. Additional actions to minimize the radiological terrorism risk could involve brokering agreements with suppliers and regulators on necessary controls and checks to ensure the validity of purchase orders for significant radioactive sources. Similarly, there is a need for the development of criteria for the design of certain sources in order to minimize their attractiveness for terrorist use. Finally, a number of emergency response activities are being undertaken by the IAEA to minimize the consequences of radiological terrorism.