IAEA INCIDENT AND TRAFFICKING DATABASE (ITDB)

Incidents of nuclear and other radioactive material out of regulatory control

2015 Fact Sheet

The IAEA Incident and Trafficking Database (ITDB) system is a unique asset that assists the IAEA’s Secretariat, participating States and selected international organizations in improving nuclear security. The ITDB staff maintain and analyze a growing collection of authorative information on the subject. This information is disseminated through the IAEA to Member States and certain international organizations. Reporting to ITDB is voluntary. As of 31 December 2014, 128 States participate in the ITDB programme (Annex). In the first three months of 2015, Cambodia, Guatemala, and Honduras, have joined the ITDB, raising the total to mid-year total to 131.

The ITDB is an essential component of the information platform that supports the implementation of the IAEA Nuclear Security Plan.

Scope of the ITDB

The ITDB System was established in 1995 to record and analyse incidents of illicit trafficking in nuclear and other radioactive material. It incorporates all incidents in which nuclear and other radioactive material is out of regulatory control.

In 2012 the title of the ITDB was aligned with the terms of reference which focuses on more than just ‘illicit trafficking incidents’ by explicitly including all nuclear and other radioactive material not under regulatory control. The name of Incident and Trafficking Database (ITDB): Incidents of nuclear and other radioactive material out of regulatory control, was agreed upon and has subsequently been adopted.

Communication with participating States is maintained through the network of national Points of Contact (POC). The ITDB System receives information from POCs on incidents ranging from illegal possession, attempted sale and smuggling to unauthorized disposal of material and discovery of lost radioactive sources.

The ITDB scope covers all types of nuclear material as defined by the Statute of the Agency (i.e. uranium, plutonium and thorium), naturally occurring and artificially produced radioisotopes and radioactively contaminated material, such as scrap metal. States are also encouraged to report incidents involving scams or hoaxes where material that is purported to be nuclear or otherwise radioactive, i.e. scams.

The Secretariat carries out analyses of all incidents in an attempt to identify trends and/or characteristics to assist in the prevention of misuse of nuclear or radioactive material.

Confidentiality and security of ITDB information

In order to protect the confidentiality of information reported by Member States, the ITDB upholds strict information classification and dissemination procedures. The information provided below represents a cross-section of the aggregated ITDB data that is available for the public domain.
ITDB highlights 1993–2014

Incidents reported to the ITDB show that problems persist with regard to illicit trafficking in nuclear and other radioactive material and with thefts, losses and other unauthorized activities and events.

As of 31 December 2014, the ITDB contained a total of 2734 confirmed incidents reported by participating States. Of the 2734 confirmed incidents, 442 incidents involved unauthorized possession and related criminal activities, 714 incidents involved reported theft or loss and 1526 incidents involved other unauthorized activities and events. In the remaining 86 cases, the reported information was not sufficient to determine the category of incident.

Unauthorized possession and related criminal activities, 1993–2014

Incidents included in this group involve the illegal possession and movement of nuclear material or radioactive sources and attempts to sell, purchase or otherwise use such material for illegal purposes. These incident reports indicate a continuing nuclear security concern.

Confirmed incidents involving unauthorized possession and related criminal activities, 1993–2014

The number of incidents reported to the ITDB involving unauthorized possession or other related criminal activities reached a peak in the early 1990s. However, the number of incidents of material out of regulatory control reported has subsequently remained relatively constant. It should be noted that due to a reporting time lag of 2–3 years, the total number of incidents recorded from 2012-2014 is likely to rise in line with previous years.

In the 1993–2014 period, group 1confirmed incidents included highly enriched uranium (13), plutonium (3), and plutonium beryllium neutron sources2 (5). Some of these incidents involved attempts to sell or traffic these materials across international borders.

A small number of these incidents involved seizures of kilogram quantities of potentially weapons-usable nuclear material, but the majority involved gram quantities. In some of these cases, there were indications that the seized material was a sample from a larger unsecured stockpile.

1 An incident may be categorized in more than one group—for example the theft and subsequent attempted sale of a radioactive source. Accordingly the sum of the incidents in the groups is greater than the total number of incidents.

2 Plutonium smoke detectors were separately reported and totaled 17 in Group 1.
Incidents involving attempts to sell nuclear or other radioactive material indicate that there is a perceived demand for such material. The number of successful transactions is not known and therefore it is difficult to accurately characterize an ‘illicit nuclear market’. Where information on motives is available, it indicates financial gain to be the principal incentive behind the majority of events. Many trafficking incidents could be characterized as ‘amateur’ in nature, as demonstrated by ad-hoc planning and a lack of resources and technical proficiency. However, there are a few significant cases that appear more organized, better resourced and that involved perpetrators with a track record in trafficking nuclear/radioactive material.

**Thefts and losses, Group 2, 1993–2014**

Incidents included in this group involve the theft or loss of nuclear material or radioactive sources from facilities or during transport. Theft can mark the beginning of an illicit trafficking incident. Thefts and losses are also indicative of vulnerabilities in security and control systems at the originating facility. These incident reports indicate a continuing nuclear security concern.

**Confirmed incidents involving theft or loss, 1993–2014**

![Figure 2. Incidents reported to the ITDB involving theft or loss, 1993–2014.](image)

The number of incidents reported to the ITDB involving the loss or theft of material has steadily increased from the late 1990s. In the 1993–2014 period, confirmed incidents included highly enriched uranium (3) and plutonium neutron sources (3). Some of these incidents involved attempts to sell or traffic these materials across international borders.

The majority of thefts and losses reported to ITDB involve radioactive sources that are used in industrial or medical applications. Devices containing radioactive sources can be attractive to a potential thief as they may be perceived to have a high resale or metal scrap value.

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3 It should be noted that the sharp increase in 2006 is related to a change in reporting procedures, rather than an actual change in the incident numbers. As with the previous incident category, the apparent drop from 2010 is a regular phenomenon that has been previously been attributable to a reporting time lag of 2–3 years.

4 Plutonium smoke detectors were separately reported and totaled 6 in Group 2.
The majority of industrial sources that are reported stolen or lost are those used for non-destructive testing and for applications in construction and mining. The majority of such devices use relatively long lived isotopes such as iridium-192, caesium-137 and americium-241. Those incidents reported to the ITDB in 2013 range from potentially lethal Category 1 to less hazardous Category 5 sources. The ITDB categorizes sealed radioactive sources, in accordance with IAEA Publication RS-G-1.9, from 1-5. The exposure of only a few minutes to a Category 1 source can be fatal. Category 5 sources can give rise to significant doses if not properly controlled.

The information received underscores the need to improve security measures for such sources as well as enhance the regulatory arrangements governing their use, storage, transport and disposal.

Medical facilities also use a wide range of radioactive sources. A significant proportion of incidents reported to the ITDB related to the loss of sources used in diagnostic and radiotherapy applications. These are generally the less dangerous Category 5 sources that when encapsulated pose a relatively low hazard to human health. Many hospitals also house and use high activity Category 1 sources, such as those used in radiotherapy treatment; however, it is rare to receive a report of an incident involving a source that has been used for these applications.

The recovery rate for Category 1-3 radioactive sources is high due to the concerted effort made by the authorities to recover them. The majority of incidents relating to Categories 4 and 5 radioactive sources do not have a follow-up report confirming their recovery.

**Other unauthorized activities and events, 1993–2014**

Incidents included in this group primarily involve various types of material recovery, such as discovery of uncontrolled sources, detection of materials disposed of in an unauthorized way and detection of inadvertent unauthorized possession or shipment of nuclear or other radioactive material. These incident reports indicate a continuing nuclear security concern.

**Incidents involving other unauthorized activities and events, Group 3, 1993–2014**

![Figure 3. Other unauthorized activities and events, 1993–2014.](image)
The majority of incidents involving ‘other unauthorized activities or events’, fall into one of three categories: the unauthorized disposal (e.g. radioactive sources entering the scrap metal industry), unauthorized shipment (e.g. scrap metals contaminated with radioactive material being shipped across international borders) or the discovery of radioactive material (e.g. uncontrolled radioactive sources). The occurrence of such incidents can indicate deficiencies in the systems to control, secure and properly dispose of radioactive material.

The reporting of these incidents, especially ‘unauthorized disposal’ and ‘unauthorized shipment’ has risen steadily since 2003. There is evidence that this rise is related to the increased number of radiation portal monitoring systems that have been deployed at national borders and scrap metal facilities.

Since 2009, the ITDB has received reports of enriched uranium associated with metal scrap received by scrapyards, which continued into 2014. Of concern is the repeated appearance of high enriched uranium in metal recycling streams and outside of regulatory control. In the 1993–2014 period, confirmed incidents included highly enriched uranium (13), plutonium (1), and plutonium neutron sources5 (8).

In recent years, a growing number of incidents involved the detection of manufactured goods contaminated with radioactive material. This indicates a persistent problem for some countries in securing and detecting the unauthorized disposal of radioactive sources. The most common source of such contamination is the material (in most cases, metal) from which the product had been manufactured. This material may have originated from the metal recycling industry and, in the process of being melted down, became contaminated with material from a radioactive source such as cobalt-60. Such contaminated metal, if used to manufacture household goods, could pose a potential health problem to unsuspecting consumers.

**Regional meetings on illicit nuclear trafficking information management and coordination**

Since 2008, participants from 115 States, of which 103 were IAEA Member States, have attended one or more of the 14 regional information meetings that have been conducted by the IAEA across the globe. These meetings are designed, inter alia, to enhance dialogue on the illicit trafficking and related nuclear security issues that most impact the region; help to raise awareness of the ITDB programme; and highlight the support the IAEA can offer to States in improving all elements of nuclear security.

Regional information meetings also contribute to strengthening the national, regional and international capacity to combat illicit trafficking in nuclear and other radioactive material through enhanced sharing, management and coordination of information.

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5 Plutonium smoke detectors were separately reported and totaled 24 in Group 3.
Joining the ITDB

Non-participating States are encouraged to join the ITDB programme. States wishing to join the ITDB programme should contact the IAEA Office of Nuclear Security. States will be asked to nominate a single national Point of Contact who will provide reports on incidents to the ITDB, receive ITDB information and reports produced by the Agency and facilitate responses to the Secretariat’s enquiries on specific incidents. Information on the ITDB, the procedures for reporting incidents and copies of the Incident Notification Form will be provided to the POC.

Membership and Nominations

Membership applications and nominations of Points of Contact should be sent to:

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International Atomic Energy Agency
Wagramerstrasse 5, P.O. Box 100
A-1400, Vienna, AUSTRIA
Tel: +43-1-2600-22299
Fax: +43-1-2600-29299 or -29250
1. Albania  
2. Algeria  
3. Argentina  
4. Armenia  
5. Australia  
6. Austria  
7. Azerbaijan  
8. Bahrain  
9. Bangladesh  
10. Belarus  
11. Belgium  
12. Bolivia  
13. Bosnia and Herzegovina  
14. Botswana  
15. Brazil  
16. Brunei Darussalam  
17. Bulgaria  
18. Burkina Faso  
19. Cameroon  
20. Canada  
21. Central African Republic  
22. Chad  
23. Chile  
24. China  
25. Colombia  
26. Congo, Democratic Republic of the  
27. Costa Rica  
28. Côte d’Ivoire  
29. Croatia  
30. Cuba  
31. Cyprus  
32. Czech Republic  
33. Denmark  
34. Dominican Republic  
35. Ecuador  
36. Estonia  
37. Ethiopia  
38. Finland  
39. France  
40. Georgia  
41. Germany  
42. Ghana  
43. Greece  
44. Haiti  
45. Hungary  
46. Iceland  
47. India  
48. Indonesia  
49. Iran  
50. Iraq  
51. Ireland  
52. Israel  
53. Italy  
54. Jamaica  
55. Japan  
56. Jordan  
57. Kazakhstan  
58. Kenya  
59. Korea, Republic of  
60. Kuwait  
61. Kyrgyzstan  
62. Latvia  
63. Lebanon  
64. Lesotho  
65. Lithuania  
66. Luxembourg  
67. Madagascar  
68. Malawi  
69. Malaysia  
70. Mali  
71. Malta  
72. Mauritania  
73. Mauritius  
74. Mexico  
75. Moldova, Republic of  
76. Mongolia  
77. Montenegro  
78. Morocco  
79. Mozambique  
80. Namibia  
81. Nepal  
82. Netherlands  
83. New Zealand  
84. Niger  
85. Nigeria  
86. Norway  
87. Oman  
88. Pakistan  
89. Panama  
90. Paraguay  
91. Peru  
92. Philippines  
93. Poland  
94. Portugal  
95. Qatar  
96. Romania  
97. Russian Federation  
98. Saudi Arabia  
99. Senegal  
100. Serbia  
101. Sierra Leone  
102. Singapore  
103. Slovakia  
104. Slovenia  
105. South Africa  
106. Spain  
107. Sri Lanka  
108. Sudan  
109. Sweden  
110. Switzerland  
111. Tajikistan  
112. Tanzania  
113. Thailand  
114. The Former Yugoslav Republic of Macedonia  
115. Tunisia  
116. Turkey  
117. Uganda  
118. Ukraine  
119. United Arab Emirates  
120. United Kingdom  
121. USA  
122. Uruguay  
123. Uzbekistan  
124. Venezuela  
125. Vietnam  
126. Yemen  
127. Zambia  
128. Zimbabwe  
129. Cambodia  
130. Guatemala  
131. Honduras  

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