IAEA Incident and Trafficking Database (ITDB)

2025 Factsheet

The IAEA Incident and Trafficking Database (ITDB) is a component of the IAEA information management systems and supports the implementation of the IAEA Nuclear Security Plan. The ITDB contains authoritative information, voluntarily reported by participating States through their officially nominated Points of Contact (PoC). This information is disseminated through the IAEA to 145 participating States — a number that remained unchanged in 2024 — and eight relevant international organizations.

The information in this factsheet summarizes the details of confirmed incidents, as voluntarily reported by the participating States, and represents a cross-section of the aggregated ITDB data that has been made available for the public domain.

Scope of the ITDB

As originally established, the ITDB recorded incidents of illicit trafficking of nuclear and other radioactive material. Its scope was later expanded to include all incidents in which nuclear and other radioactive material is or was out of regulatory control.

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 voluntarily report incidents involving scams or hoaxes where material is purported to be nuclear or otherwise radioactive.

Communication with participating States is maintained through the network of national PoCs. The ITDB 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 IAEA Secretariat reviews all reported incidents with a view to identify common threats, trends, and patterns; to assist States in determining what actions may need to be taken with respect to particular events or to help formulate policy towards combating illicit trafficking of such materials; and to support the Agency's nuclear security activities.

Confidentiality and security of ITDB information

The ITDB is a resource for information sharing among State authorities and the IAEA. In order to protect the confidentiality of information reported by States, the IAEA upholds strict procedures for handling and dissemination of sensitive ITDB information. Information on reported incidents is only communicated via the PoC network. Access to the complete database is limited to a small number of IAEA staff.

IAEA

ITDB at a glance

The ITDB was established by the IAEA Secretariat and its Member States in 1995 to:

Assist States with the timely exchange of authoritative information on incidents involving illicit trafficking and other related unauthorized activities involving nuclear and other radioactive materials;

Maintain and analyze reported information with a view to identifying common threats, trends, and patterns; to assist States in determining what actions may need to be taken with respect to particular events or to help formulate policy towards combating illicit trafficking of such materials; and support the Agency's nuclear security activities; and

Provide a reliable source of basic information to the media concerning trafficking incidents by providing authoritative information about such events, when appropriate.

ITDB highlights

In 2024, 147 incidents were reported to the ITDB by 32 States, a decrease of 21 incidents from 2023. While the number of incidents reported by participating States to the ITDB in 2024 decreased compared to 2023, the number of overall yearly reports continues to align with the historical averages of annual reporting fluctuations observed since 1993.

The groups of incident types used in ITDB are the following:

- **Group I:** incidents that are, or are likely to be, connected with trafficking or malicious use;
- **Group II:** incidents of undetermined intent; and
- **Group III:** incidents that are not, or are unlikely to be, connected with trafficking or malicious use

As of 31 December 2024, the ITDB contained a total of 4390 confirmed incidents reported by participating States since 1993. Of the 4390 confirmed incidents there are 353 within Group I, 1065 incidents within Group II and 2972 incidents within Group III.

Incidents reported by States to the ITDB Secretariat showed a steady upward trend from 1993 to 2007, with a notable increase in 2006 and 2007. This peak was caused by a change in the reporting practice of one country. After this peak, the trend stabilized and remained at an average of 182 incidents per year for approximately a decade.

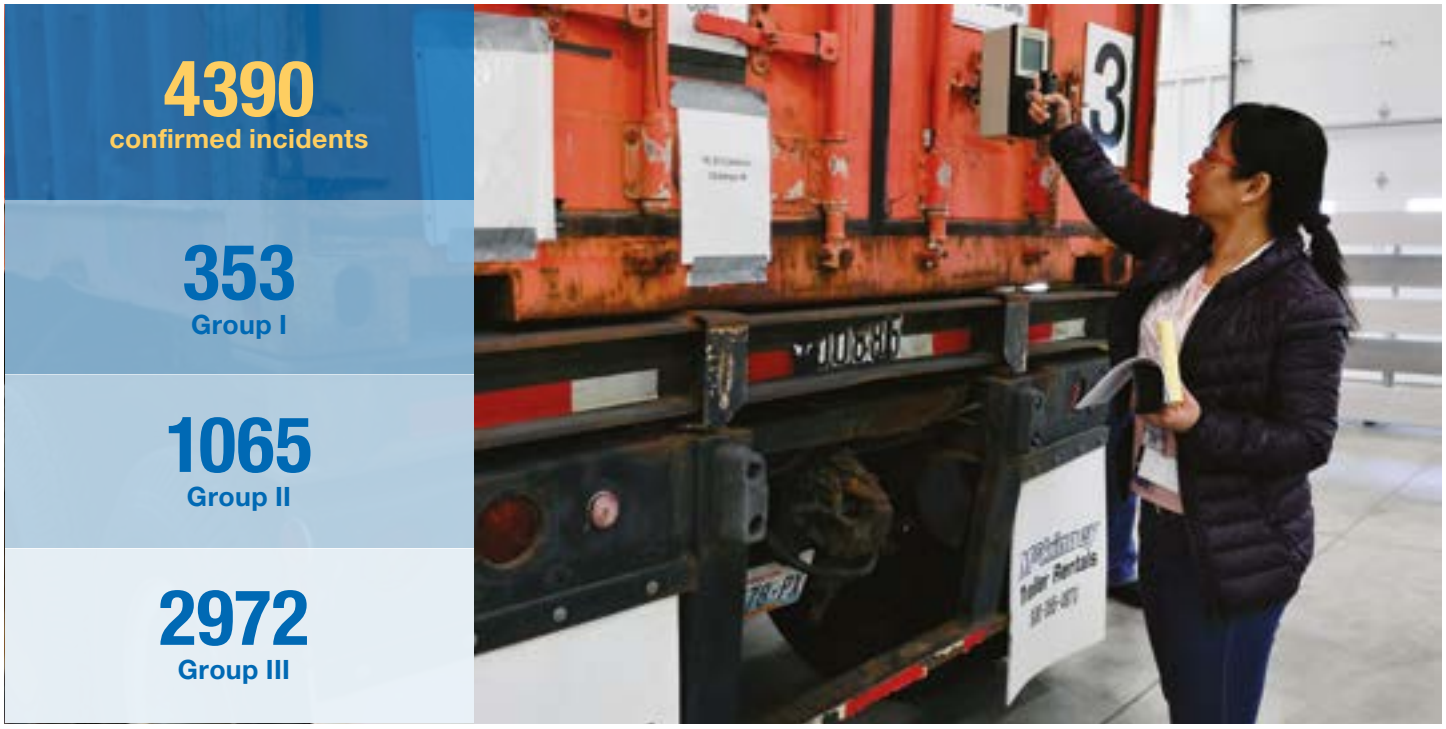


Figure 1. The number of the incidents recorded in ITDB during the period 1993–2024 per incident type group.

A decline in reporting is observed from 2020 to 2021, which is likely a result of the far-reaching impact of the COVID-19 pandemic. In 2024, the number of incidents reported by States continued to follow historical averages of 137 incidents per year, indicating a recovery in the trend from the challenges posed by the pandemic.

An analysis of trends related to the types of materials involved in reported incidents indicates a continuous decline in the reporting of incidents involving nuclear material. Conversely, during the same period, there is a noticeable increase in reporting for incidents involving radioactive materials, and radioactively contaminated and other non-radioactive materials[1].

Overall, about 53% of all thefts reported to the ITDB since 1993 have occurred during the authorized transport of such materials. This figure stands at 65% in the last decade, which highlights the ongoing importance of strengthening transport security measures.

The majority of industrial sources that are reported stolen, lost or otherwise missing are those used for non-destructive testing and for applications in construction and mining. Most such devices use relatively long-lived isotopes, such as caesium-137 and americium-241.

The ITDB categorizes the activity of sealed radioactive sources in accordance with the IAEA Safety Standards[2], which ranks them from Category 1 to Category 5 in terms of their potential to cause harmful health effects[3]. Incidents reported to the ITDB in 2024 include incidents involving sources of Category 5 up to and including Category 2. The information reported underscores the need to provide appropriate security measures for such sources as well as to enhance the regulatory arrangements governing their use, storage, transport and disposal.

Globally, the recovery rate for Category 1–3 radioactive sources[4] is higher, compared to the Categories 4 and 5 radioactive sources[5]. This can be attributed to the concerted effort made by the authorities to recover such sources. However, these dangerous sources comprise only around 12% of the total stolen sources. The majority of incidents relating to Categories 4 and 5 radioactive sources do not have a follow-up report confirming their recovery. Thefts of these sources that are unlikely to be dangerous comprise around 88% of the total.

[1] The ITDB Secretariat also collects data on non-radioactive materials that the perpetrator(s) claim to be radioactive. This type of materials is always associated with scams or fraud. Incidents of this type are consistently categorized in the ITDB as Group I incidents, indicating a confirmed intent for trafficking.

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Categorization of Radioactive Sources, IAEA Safety Standards Series No. RS-G-1.9, IAEA, Vienna (2005).

[3] The exposure of only a few minutes to an unshielded Category 1 source can be fatal. Category 5 sources are the least dangerous; however, such sources could give rise to detrimental health consequences if misused.

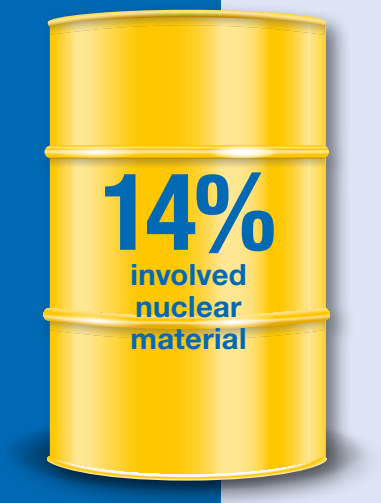
[4] Category 1, 2 and 3 sources are defined in the IAEA Safety Standards referenced in footnote 2 respectively as extremely dangerous to the person, very dangerous to the person and dangerous to the person.

[5] Category 4 and 5 sources are defined in the IAEA Safety Standards referenced in footnote 2 respectively as unlikely to be dangerous to the person and most unlikely to be dangerous to the person. Despite the lower concern from a safety perspective, these sources are still relevant from a security perspective.

Reported incidents 1993–2024

Type of material

- 14% of all incidents involved nuclear material;
- 59% involved other radioactive material;
- Around 27% involved radioactively contaminated and other material.



Trafficking or malicious use intent in reported thefts

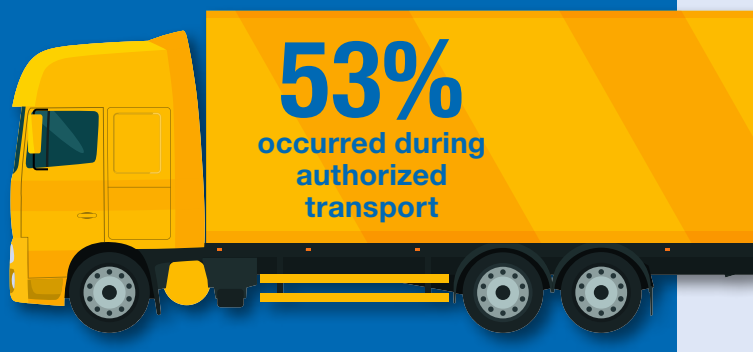
- 4% of the reported thefts have been confirmed to be related to trafficking;
- Around 10% have been confirmed to be not related to trafficking or malicious use;
- The trafficking or malicious use intent of around 86% of thefts remains undetermined.

Thefts/losses/missing

The majority of materials reported to the ITDB as stolen or lost (or otherwise missing under uncertain circumstances), involve radioactive sources that are used in industrial, material analysis 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 scrap metal value.

Transport-related

Overall, about 53% of all thefts reported to the ITDB since 1993 have occurred during the authorized transport of such materials. This figure stands at almost 65% in the last decade, which highlights the ongoing importance of strengthening transport security measures.



Analysis per Group of incident types

Group I: Incidents of trafficking or malicious use, 1993–2024

Incidents in this group are those for which there is sufficient information to determine that the incident is connected with trafficking or malicious use. This group also includes scams and frauds as such acts may indicate the intent to acquire or provide nuclear and/or other radioactive material, in particular, for trafficking or malicious use.

In recent years, incidents related to trafficking or malicious use have been reported at steady levels, although the frequency has remained low. Trafficking-related incidents and attempts constitute almost 86% of the Group I total while scams/frauds and attempts are almost 13% and malicious use and attempts are less than 2%.

In the period between 1993 and 2024, confirmed incidents in this group included high enriched uranium (13), plutonium (3), and plutonium-beryllium neutron sources[6] (5).

By type of material, 47% of Group I incidents involved nuclear material, around 37% involved other radioactive materials and around 16% involved other materials, mostly non-radioactive materials used in scam/frauds.

Regulatory control over use, storage, transport and disposal of radioactive sources is important to ensure their security.

A small number of the above incidents involved seizures of kilogram quantities of potentially weapons-usable nuclear material, but the majority involved gram quantities[7]. In some of these cases, circumstantial information suggested that the seized materials were samples from larger unsecured stockpiles. Some of these incidents involved attempts to sell or traffic these materials across international borders.

Notwithstanding an increase in reported incidents observed in 2023, reported trafficking incidents continued to decline in 2024, maintaining

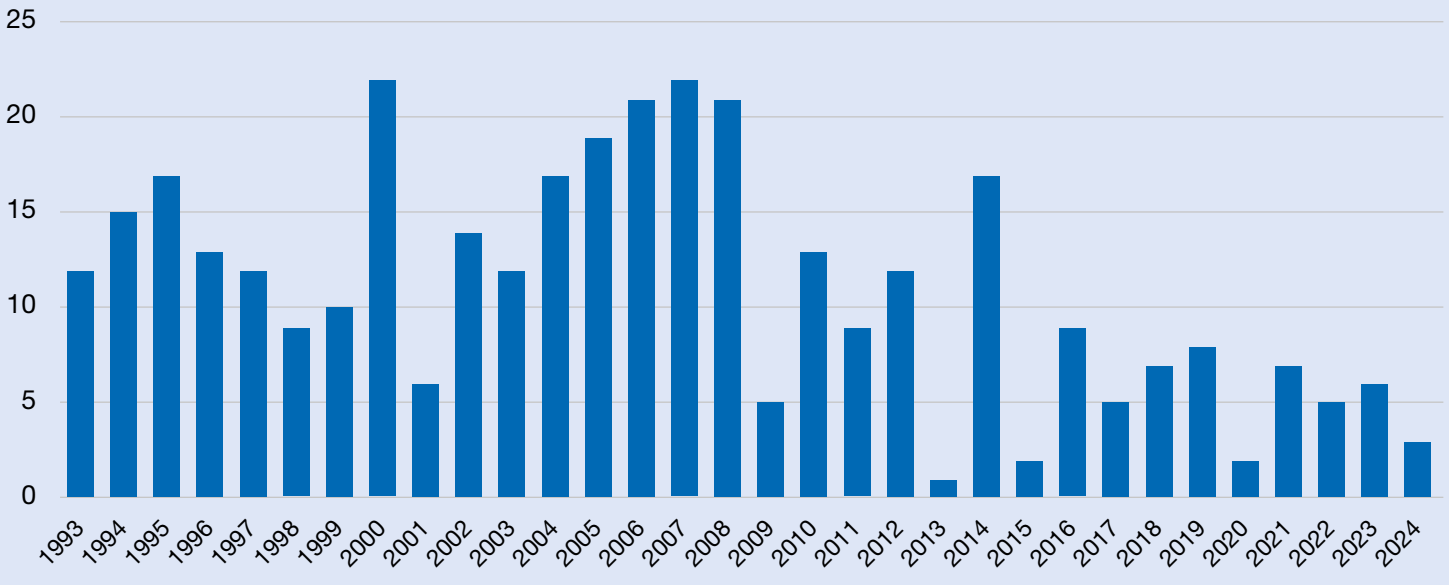


Figure 2. Incidents reported to the ITDB that are confirmed, or likely, to be connected with trafficking or malicious use, 1993–2024.

[6] Incidents involving plutonium-based smoke detectors and other small plutonium sources are counted separately and totaled 13 in Group I. However, one of these 13 incidents comprised one small (calibration) plutonium source together with a plutonium-beryllium neutron source among other sources so this incident is also counted within the 5 incidents that involved plutonium-beryllium neutron sources. Consequently, the incidents involving both plutonium-beryllium neutron sources and small plutonium sources totaled 17 and not 18.

[7] The latest incident that involved kilogram quantities of weapons usable nuclear material occurred in 1994.

consistency with historical trends. In 2024 no scam attempts involving hoax (non-radioactive) material that is purported to be nuclear or other radioactive material were reported. Additionally, the number of incidents involving theft of material from authorized transport or attempts of unauthorized trade remained fairly constant and in line with historical observations.

It should be noted that incidents involving attempts to sell nuclear or other radioactive material are often detected through sting operations. The number of successful transactions is not known and therefore it is difficult to accurately characterize an actual 'illicit nuclear market'. Where information on motives is available, it indicates financial gain to be the principal incentive behind the majority of events. Most trafficking incidents could be characterized as 'amateur' or opportunistic 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 or other criminal activities. Such cases have been relatively rare, and none have occurred for almost a decade.

Group II: Incidents of undetermined intent, 1993–2024

Incidents in this group are those for which there is insufficient information to determine whether the incident is either connected or unconnected with trafficking or malicious use. The majority of incidents in this group involve stolen or missing material. Such occurrences can mark the beginning of an illicit trafficking incident. Thefts and missing material are also indicative of vulnerabilities in security and control systems at the originating facility, temporary storage or during transport.

Transport vulnerabilities stand out as a persistent challenge, with over half of reported thefts occurring during authorized transport.

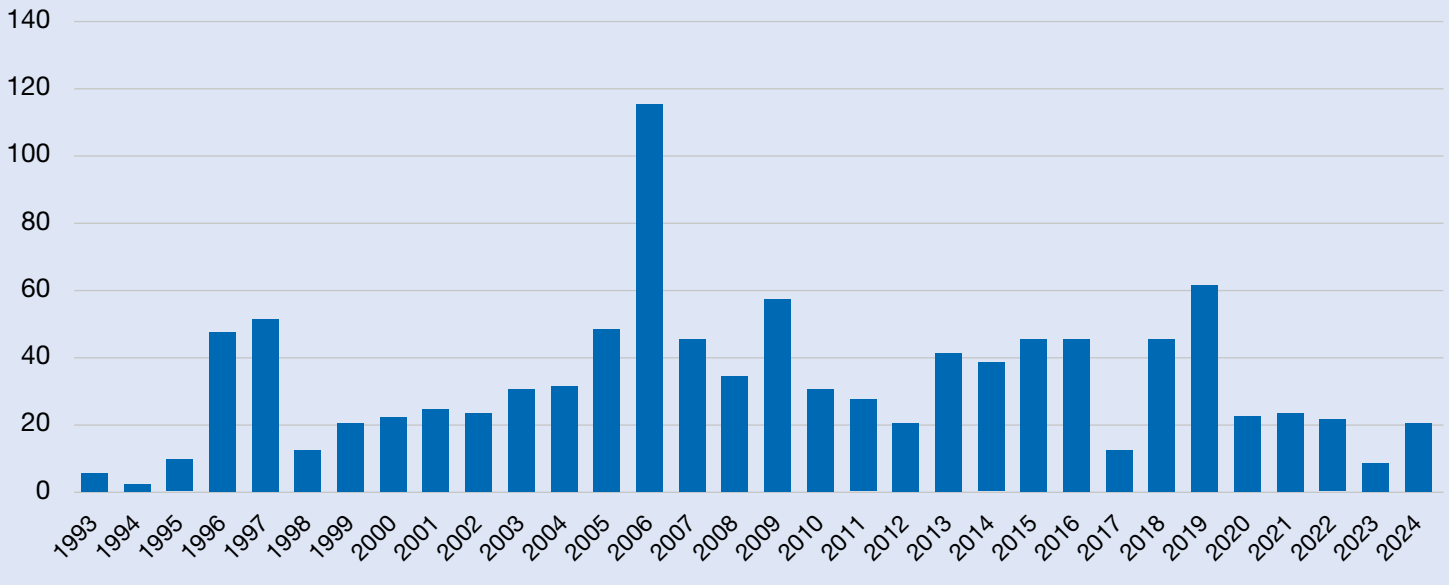


Figure 3. Incidents reported to the ITDB where there is insufficient information to determine that the incident is, or is likely to be, either connected or unconnected with trafficking or malicious use[8], 1993–2024.

[8] It should be noted that the spike of incidents in 2006 is related to a change in reporting practice by one country, rather than any change in the long-term trend of such incidents.

The remaining incidents are unauthorized possessions where there is no information regarding the intent of the individuals involved.

In the period between 1993 and 2024, confirmed incidents in Group II included high enriched uranium (2), and plutonium-beryllium neutron sources (3)[9]. No such materials were reported in 2024. Overall, in the 1993–2024 period the majority of Group II incidents were comprised of radioactive sources (83%). This figure rose to 87% in 2024 and involved one incident containing a Category-3 radioactive source.

Group III: Incidents not connected with trafficking or malicious use, 1993–2024

Incidents in this group are those for which there is sufficient information to determine that the incident is not connected with trafficking or malicious use. These incidents 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, including radioactively contaminated material.

The majority of incidents in Group III fall into one of three categories: unauthorized disposal (e.g. radioactive sources domestically entering the scrap metal or waste recycling industries); unauthorized shipment (e.g. orphan sources or 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 indicates deficiencies in the systems to control, secure and properly dispose of radioactive material. The increase in reporting of these incidents between 2003 and 2005 coincides with the deployment of an increased number of radiation portal monitoring systems at national borders and scrap metal facilities.

The number of Group III incidents reported over the last decade has averaged at around 135 incidents per year.

In the 1993–2024 period, more than half (53%) of incidents involved radioactive sources while only around 10% of all incidents in this group involved nuclear material. Incidents involving high enriched uranium (20), plutonium (3), and plutonium-beryllium neutron sources (10) were reported[10]. These included a number of reports of scrap metal shipments contaminated with high enriched uranium received by scrapyards, the most recent of which occurred in 2014. Radioactively contaminated and other materials, such as manufactured goods and parts, metal scrap and naturally occurring radioactive materials (NORM), constitute the remaining incidents (37%).

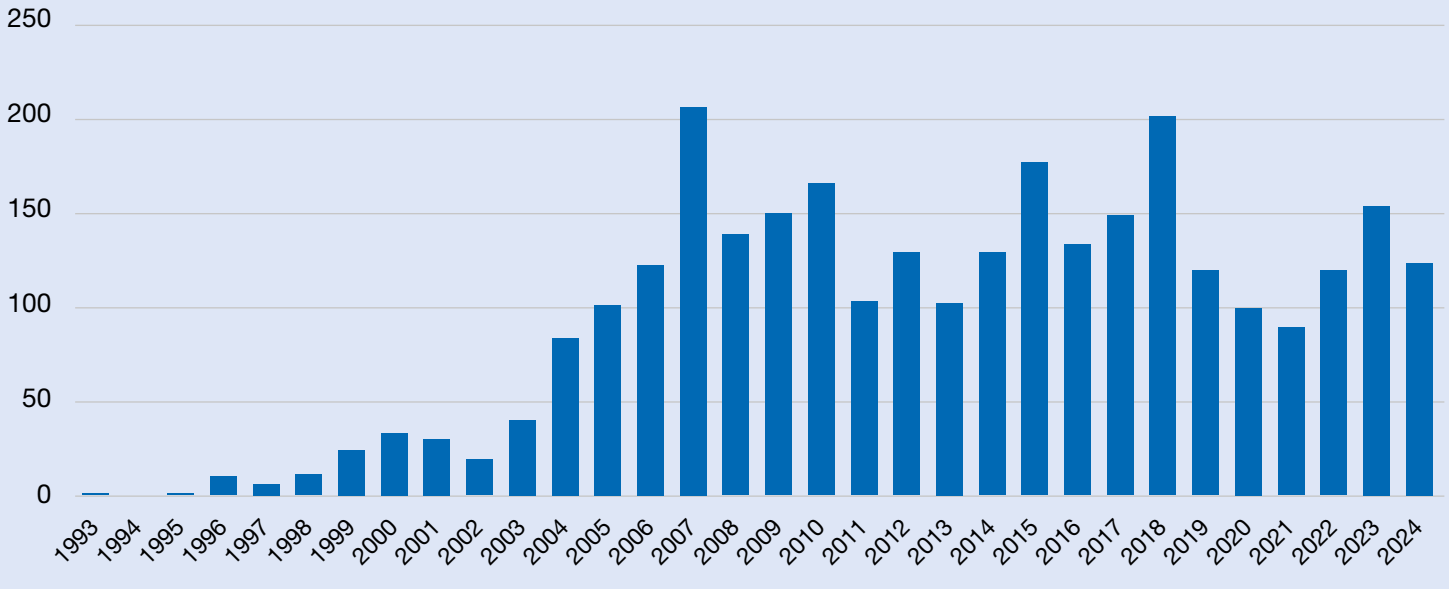


Figure 4. Incidents where there is sufficient information to determine that the incident is not, or is unlikely to be, connected, with trafficking or malicious use, 1993–2024.

[9] Incidents involving plutonium-based smoke detectors and other small plutonium sources are counted separately and totaled 13 in Group II.

[10] Incidents involving plutonium-based smoke detectors and other low activity plutonium sources are counted separately and totaled 52 in Group III.

The national Points of Contact have an important role in reporting incidents to the ITDB.

While the number of incidents in which material was detected in metal recycling chains has decreased in the period 2023–2024, the number of detections of manufactured goods contaminated with radioactive material has continued to increase over the same period. 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 feed material (in most cases, metal) from which the product had been manufactured. Much feed material is often obtained from the metal recycling industry and, in the process of being melted down, can become contaminated with material from an undetected radioactive source such as cobalt-60. The resulting contaminated metal, if used to manufacture household goods, could pose a potential health problem to unsuspecting consumers.

Joining the ITDB

Non-participating States are encouraged to join the ITDB. States wishing to join the ITDB need to contact the IAEA Division of Nuclear Security. States will be asked to nominate a national PoC who will provide reports on incidents to the ITDB, receive ITDB information and reports produced by the IAEA and facilitate responses to the IAEA 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 applications and nominations of PoC should be sent to:

Ms. Elena Buglova
Director, Division of Nuclear Security
International Atomic Energy Agency
Vienna International Centre
P.O. Box 100
A-1400, Vienna, Austria
Tel: +43-1-2600-22299

Annex: States participating in the ITDB as of 31 December 2024

1. Albania
2. Algeria
3. Antigua & Barbuda
4. Argentina
5. Armenia
6. Australia
7. Austria
8. Azerbaijan
9. Bahrain
10. Bangladesh
11. Belarus
12. Belgium
13. Benin
14. Bolivia, Plurinational State of
15. Bosnia and Herzegovina
16. Botswana
17. Brazil
18. Brunei Darussalam
19. Bulgaria
20. Burkina Faso
21. Cambodia
22. Cameroon
23. Canada
24. Central African Republic
25. Chad
26. Chile
27. China
28. Colombia
29. Comoros
30. Congo
31. Costa Rica
32. Côte d'Ivoire
33. Croatia
34. Cuba
35. Cyprus
36. Czech Republic
37. Democratic Republic of the Congo
38. Denmark
39. Dominican Republic
40. Ecuador
41. El Salvador
42. Estonia
43. Eswatini
44. Ethiopia
45. Finland
46. France
47. Gabon
48. Georgia
49. Germany
50. Ghana
51. Greece
52. Guatemala
53. Haiti
54. Honduras
55. Hungary
56. Iceland
57. India
58. Indonesia
59. Iran, Islamic Republic of
60. Iraq
61. Ireland
62. Israel
63. Italy
64. Jamaica
65. Japan
66. Jordan
67. Kazakhstan
68. Kenya
69. Korea, Republic of
70. Kuwait
71. Kyrgyzstan
72. Latvia
73. Lebanon
74. Lesotho
75. Libya
76. Liechtenstein
77. Lithuania
78. Luxembourg
79. Madagascar
80. Malawi
81. Malaysia
82. Mali
83. Malta
84. Mauritania
85. Mauritius
86. Mexico
87. Mongolia
88. Montenegro
89. Morocco
90. Mozambique
91. Myanmar
92. Namibia
93. Nepal
94. Netherlands, Kingdom of
95. New Zealand
96. Niger
97. Nigeria
98. North Macedonia
99. Norway
100. Oman
101. Pakistan
102. Panama
103. Papua New Guinea
104. Paraguay
105. Peru
106. Philippines
107. Poland
108. Portugal
109. Qatar
110. Republic of Moldova
111. Romania
112. Russian Federation
113. Rwanda
114. Saudi Arabia
115. Senegal
116. Serbia
117. Sierra Leone
118. Singapore
119. Slovakia
120. Slovenia
121. Somalia
122. South Africa
123. Spain
124. Sri Lanka
125. Sudan
126. Sweden
127. Switzerland
128. Tajikistan
129. Thailand
130. Togo
131. Tunisia
132. Türkiye
133. Uganda
134. Ukraine
135. United Arab Emirates
136. United Kingdom
137. United Republic of Tanzania
138. United States of America
139. Uruguay
140. Uzbekistan
141. Venezuela, Bolivarian Republic of
142. Viet Nam
143. Yemen
144. Zambia
145. Zimbabwe

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