

IAEA INCIDENT AND TRAFFICKING DATABASE (ITDB)

Incidents of nuclear and other radioactive material out of regulatory control

2020 Fact Sheet

The IAEA Incident and Trafficking Database (ITDB) system assists the IAEA's Secretariat, participating States and selected international organizations in improving nuclear security. The ITDB staff maintains a growing collection of authoritative information, reported by participating States, on incidents involving illicit trafficking and other unauthorized activities involving nuclear and other radioactive materials. This information is disseminated through the IAEA to participating States and certain international organizations. Reporting to the ITDB is voluntary. As of 31 December 2019, 139 States were participating in the ITDB programme. Comoros joined the ITDB as a participating State in 2019. The ITDB receives authoritative information on confirmed incidents as reported by States through their officially nominated Points of Contact. This Fact Sheet summarizes the details of these confirmed incidents.

The ITDB is a component of the information management systems that supports the implementation of the IAEA Nuclear Security Plan.

Scope of the ITDB

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

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 Member States, the ITDB upholds strict procedures for handling and dissemination of sensitive 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. The information in this fact sheet represents a cross-section of the aggregated ITDB data that has been made available for the public domain.

New Conceptual Framework

In 2015, the POCs approved a Conceptual Framework and an associated change to the grouping of incidents in the database. Since 2016, the ITDB has been using the following groups of the incidents:

- 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.

Since 2017 all incidents have been grouped in accordance with the new group structure. This means that the graphs and figures presented in this Fact Sheet cannot be directly compared to information reported prior to 2017.

ITDB highlights 1993–2019

In 2019, 189 incidents were reported to the ITDB by 36 States indicating that unauthorized activities and events involving nuclear and other radioactive material, including incidents of trafficking and malicious use, continue to occur.

As of 31 December 2019, the ITDB contained a total of 3686 confirmed incidents reported by participating States since 1993. Of these 3686 confirmed incidents there are 290 incidents that involved a confirmed or likely act of trafficking or malicious use (Group I), 1023 incidents for which there is insufficient information to determine if it is related to trafficking or malicious use (Group II) and 2373 incidents that are not related to trafficking or malicious use (Group III).

Group I: Incidents of trafficking or malicious use, 1993–2019

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.

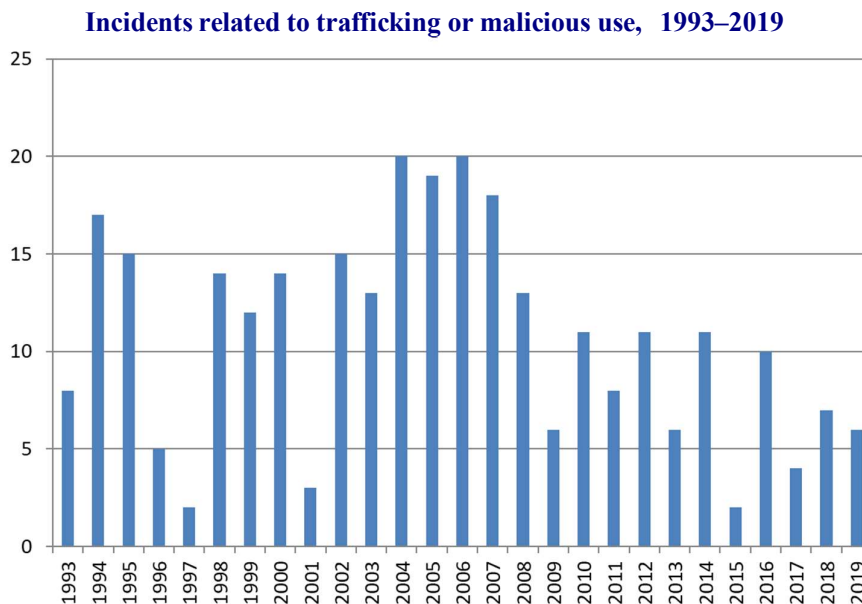


Figure 1 Incidents reported to the ITDB that are confirmed, or likely, to be connected with trafficking or malicious use, 1993–2019.

The number of incidents reported to the ITDB related to trafficking or malicious use has declined slightly over recent years. In the period between 1993 and 2019, confirmed incidents in this group included high enriched uranium (12), plutonium (2), and plutonium beryllium neutron sources¹ (5).

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

¹ Incidents involving plutonium-based smoke detectors are counted separately and totaled 11 in Group I.

indications 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.

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’ 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.

Group II: Incidents of undetermined intent, 1993–2019

Incidents included 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 or during transport. The remaining incidents are unauthorized possessions where there is no information regarding the intent of the individuals involved.

Confirmed incidents where it cannot be determined if they are related to Trafficking or Malicious Use, 1993–2019

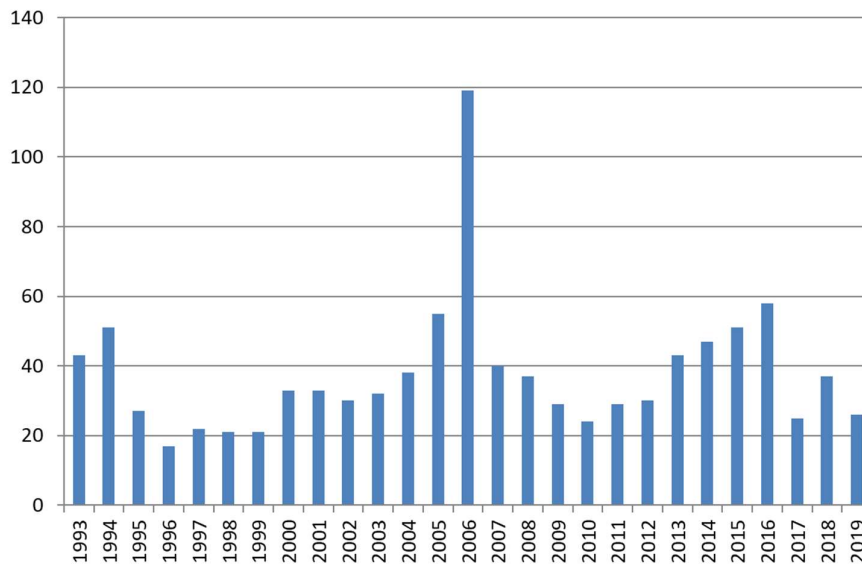


Figure 2. Incidents reported to the ITDB where there is insufficient information to determine that the incident is, or is likely to be, either connected or unconnected with trafficking or malicious use², 1993–2019.

In the period between 1993 and 2019, confirmed incidents in this group included high enriched uranium (3), plutonium (1) and plutonium neutron sources (4)³.

The majority of thefts and losses reported to the ITDB involve radioactive sources that are used in industrial or medical applications. Devices containing radioactive sources can be attractive to a

² 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.

³ Incidents involving plutonium-based smoke detectors and other small plutonium sources are counted separately and totaled 13 in Group II.

potential thief as they may be perceived to have a high resale or scrap metal value.

The majority of industrial sources that are reported stolen or 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 iridium-192, caesium-137 and americium-241. The ITDB categorizes the activity of sealed radioactive sources in accordance with the IAEA Safety Standards⁴, which ranks them from Category 1 to Category 5 in terms of their potential to cause harmful health effects. 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 consequences if misused. Those incidents reported to the ITDB in 2019 include incidents involving sources up to Category 2. The information reported underscores the need to improve security measures for such sources as well as to enhance the regulatory arrangements governing their use, storage, transport and disposal.

The recovery rate for Category 1-3 radioactive sources is high and can be attributed 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.

Group III: Incidents not connected with trafficking or malicious use, 1993–2019

Incidents included 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.

Incidents involving other unauthorized activities and events, Group III, 1993–2019

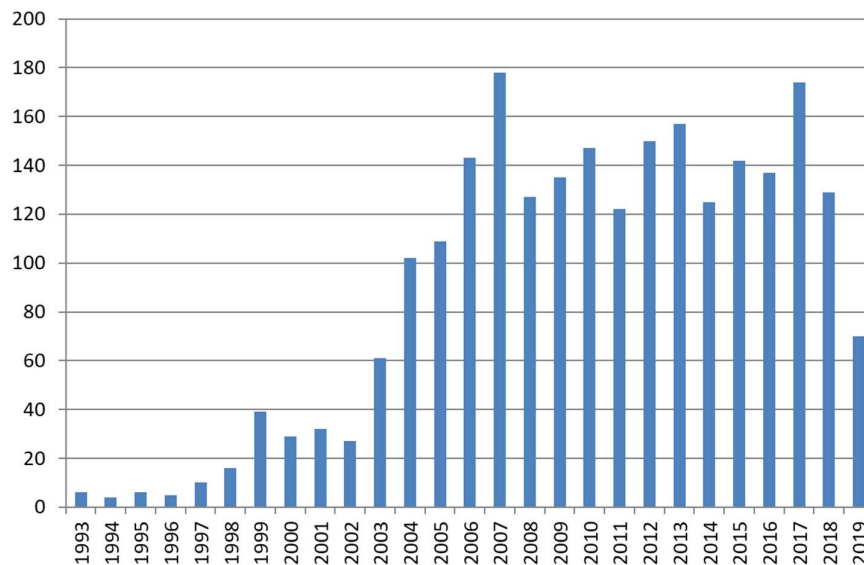


Figure 3. Incidents where there is sufficient information to determine that the incident is not, or is unlikely to be, connected, with Trafficking or Malicious Use., 1993–2019.

The majority of incidents in Group III 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 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

⁴ Categorization of Radioactive Sources, IAEA Safety Standards Series No. RS-G-1.9

of an increased number of radiation portal monitoring systems at national borders and scrap metal facilities. Over the last ten years, the number of reported incidents of this kind has stabilized to between 120 and 160 incidents per year⁵.

Of concern is the repeated appearance of high enriched uranium in metal recycling streams and outside of regulatory control. Since 2009, the ITDB has received reports of scrap metal shipments contaminated with enriched uranium received by scrapyards, the most recent of which occurred in 2014. In the 1993–2019 period, incidents involving high enriched uranium (20), plutonium (2), and plutonium neutron sources (8) were reported⁶.

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 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.

Regional meetings on illicit nuclear trafficking information management and coordination

In 2019, 63 participants from 45 States attended one or more of the three international and regional meetings about the ITDB that were conducted by the IAEA. These meetings are designed to enhance dialogue on the illicit trafficking and related nuclear security issues that impact a region most; 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.

Joining the ITDB

Non-participating States are encouraged to join the ITDB programme. States wishing to join the ITDB programme should contact the IAEA Division of Nuclear Security. States will be asked to nominate a 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 applications and nominations
of Points of Contact should be sent to:**

Mr. Raja Abdul Aziz RAJA ADNAN
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

⁵ Due to the delay between an incident occurring and being reported, as incidents can take some time to be fully investigated, the number of incidents for 2018 and 2019 are expected to rise in line with previous years.

⁶ Incidents involving plutonium-based smoke detectors and other low activity plutonium sources are counted separately and totaled 44 in Group 3.

Annex: States Participating in the ITDB as of 31 December 2019

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