

## ANNUAL TREND IN LOST AND STOLEN SOURCE EVENTS EXCEEDING THE THRESHOLD QUANTITIES FOR RADIOACTIVE SOURCES OF CONCERN

An analysis of lost and stolen radioactive sources of concern data from the U.S. Nuclear Regulatory Commission's (NRC's) Nuclear Material Events Database (NMED) for calendar years 1994 - 2005 was performed. Table 1 describes the number of lost and stolen events involving material exceeding the threshold quantities for radioactive sources of concern. The threshold quantities are those for Category 2 sources from the International Atomic Energy Agency's (IAEA's) "Code of Conduct on the Safety and Security of Radioactive Sources" (2004).

Table 1 - Number of Lost and Stolen Source Events Involving Material Exceeding the Threshold Quantities for Radioactive Sources of Concern from Calendar Years 1994 - 2005<sup>(1)</sup>

Radionuclide <sup>(2)</sup>	Threshold, TBq (Ci)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Am-241	0.6 (20)												
Cf-252	0.2 (5)												
Cm-244	0.5 (10)												
Co-60	0.3 (8)			2(0) <sup>(3)</sup>									
Cs-137	1 (30)			1(0)									
Ir-192	0.8 (20)	5(3)	4(1)	8(3)	4(0)	7(1)	5(1)	2(0)	7(1)	4(0)	7(1)	3(0)	2(1) <sup>(4)</sup>
Pu-238	0.6 (20)												
Pu-239	0.6 (20)												
Sr-90/ Y-90	10 (300)												
Total Sources		5	4	11	4	7	5	2	7	4	7	3	2
Total Sources Not Recovered		3	1	3	0	1	1	0	1	0	1	0	1

Note 1: For isotopes in use in the U.S.

Note 2: Am-241 - americium-241; Cf-252 - californium-252; Cm-244 - curium-244; Co-60 - cobalt-60; Cs-137 - cesium-137; Ir-192 - iridium-192; Pu-238 - plutonium-238; Pu-239 - plutonium-239; Sr-90/Y-90 - strontium-90/yttrium-90

Note 3: Total number of events, followed in parentheses ( ) by number of events where at least one source was not recovered

Note 4: One event involved the loss of a radiography source in about 27 meters (90 feet) of water in the Gulf of Mexico, as it was being transferred from an offshore platform to a transport boat. This event does not meet the criteria of Goal 2: Security-Performance Measure #1, based on a determination, by NRC's Office of Nuclear Security and Incident Response (NSIR), that the risk-significance of this source is low, based on the location (i.e., water depth) of the source.

Analysis of the data shows that in 80 percent of the events involving lost and stolen radioactive sources, the radioactive sources of concern were recovered. Seventy percent of these events

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were caused by losses of radioactive sources and 30 percent caused by theft. This represents no significant change to the averages from the period from calendar years 1994 - 2004. The data analysis does not reveal a discernable trend in the number of lost and stolen events for radioactive material exceeding the threshold quantities.

For the 12 sources not recovered, after decay correction, the total activity remaining is less than 3 Ci (Category 3). All ten of the unrecovered sources lost or stolen prior to CY 2003 have now decayed below exempt quantity levels (10 microcuries). The one source stolen in CY 2003 has decayed to a Category 5 source. The source lost in CY 2005 has decayed to a Category 3 source, and will be a Category 4 source by the end of April 2006. The source will be a Category 5 source by August 2006. The current risk posed by the source is limited.