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Brisk worldwide trade in raw materials for an atomic bomb

► Attempts to smuggle radioactive material through Finland

By Petteri Tuohinen

 [Link to a larger image](#)

The threat of a nuclear strike carried out by a terrorist organisation sounds rather remote, and ultimately it is. Although the situation on the surface looks calm enough, governments and the International Atomic Energy Agency (IAEA) are nevertheless actively battling against nuclear terrorism.

The member-states of the IAEA (which Finland joined in 1958) have in recent years reported hundreds of cases of illegal trafficking in nuclear materials. To take one example, last November Turkish police arrested two men in Istanbul who were in possession of 1.16 kilos of enriched uranium and tried to sell it - at a knock-down price - to undercover agents. The enriched uranium, believed to have come from one of the former Soviet republics, could have been used to make a nuclear device.

According to the IAEA, since 1993 the Agency has had reports of 376 cases in which people have attempted to buy and sell radioactive sources or nuclear material. Of these, "only" 18 actually involved quantities of enriched uranium or plutonium suitable for making weapons.

One of the largest seizures took place in Russia in 1998. Russian Federal Security Service officers intercepted around 18 kilos of weapons-grade highly enriched uranium from an "insider" criminal gang in the Urals, near the nuclear weapons plant at Chelyabinsk.

The IAEA warns that this quantity alone would be close enough to fashion a single nuclear weapon. The authorities point out, however, that the usual quantities that are confiscated are very much less significant.

For all that, the truth must be faced that the IAEA statistics are based only on reported cases, which implies that the amount of radioactive material on the illegal market is a great deal larger. We know from experience that police and customs drug hauls do not provide an accurate picture of the extent of the traffic in narcotics. They are merely the tip of the iceberg.

Finland, too, has had experience of radioactive goods being smuggled across the eastern border. In the 1990s, the customs picked up each year 20-30 passengers who were trying to bring radioactive materials into the country illegally. In 2000, there were "only a handful" of such cases.

According to the Finnish authorities, there has only been one documented case of someone trying to smuggle weapons-grade material into this country. At the beginning of the 1990s, frontier guards picked up a smuggler who was attempting to get californium through Finland and onto to some third party countries. Californium, a radioactive rare earth metal produced in very small quantities and used in nuclear reactors as a neutron source, could in principle be used as a triggering device for a nuclear weapon.

The use of Finland as a transit route for shifting nuclear material from the East is not a particularly profitable or sensible exercise, since radioactive materials are monitored automatically at the borders. If the monitoring devices issue an alert of the presence of radioactive material, the frontier is closed immediately.

An extensive terrorist operation such as the al-Qaeda network would have three alternative routes to

get a nuclear device: building it, stealing it, or buying it.

Building an atomic bomb would be an extraordinarily difficult exercise. In the first place it would require getting hold of plutonium or highly-enriched weapons-grade uranium-235. In order to put together a "crude" nuclear device, you would require around 8 kilos of plutonium, or alternatively 25 kilos of U-235. The high-tech nuclear nations, meanwhile, are capable of building much smaller weapons.

Just to provide a comparison, **Saddam Hussein** spent around USD 10 billion on Iraq's nuclear programme in the decade leading up to the Gulf War. The project employed around 10,000 people and still only managed to generate 1.5 kilos of uranium.

The IAEA states that uranium that contains the fissionable isotope U-235 in a concentration of no more than 20 percent (the threshold figure for "highly enriched") could feasibly be used in a weapon, even though the nuclear powers enrich their weapons-grade uranium way up to 90% and more.

It has to be said that enriching uranium is not something that can be done under garage or garden shed conditions, but the material must be bought already highly enriched.

A terrorist with a yen for making a nuclear statement

would also have to hire a weapons expert to build a bomb. There are fears that some weapons experts from the former Soviet Union may have "defected" to the payrolls of so-called rogue nations to develop nuclear arms programmes.

In order to stem this dangerous brain-drain, the ISTC or International Science and Technology Center was set up in Moscow in 1992. The Center is funded jointly by the United States, the EU, Japan and Russia, and is charged with providing weapons scientists from Commonwealth of Independent States (CIS) countries with opportunities to redirect their talents towards peaceful research.

It is now more than half a century since the first atomic bomb was built and detonated. The basic design principles for constructing an atomic bomb are available to practically anyone who wishes to try, and lack of scientific know-how is not seen as a significant threshold for the task.

In addition to numerous Internet sites, there are books on the subject in the public domain, such as **Robert Serber's** *Los Alamos Primer: First Lectures on How to Build an Atomic Bomb*.

In the 1960s, an experiment was carried out in the United States. In a government project, three physics students with the ink barely dry on their graduation diplomas were given the task of building an atomic bomb based solely on information available in the public domain. Three man-years of research later, they had a viable design. And that was in the 1960s...

All the same, for terrorists it would be more practical to buy or steal a weapon than to manufacture one. A few years ago the then Russian President **Boris Yeltsin's** national security adviser Gen. **Alexander Lebed** reported that dozens of "suitcase-sized" nuclear devices had gone missing in Russia. Lebed said that the 1-kiloton devices were around 60 cm x 40cm x 20 cm in size, and weighed around 30-45 kilos each.

Later Lebed retracted his remarks about the missing suitcase-nukes. The then Russian Prime Minister **Viktor Chernomyrdin** called his allegations "absolute stupidity".

There is no categorical evidence either way on the question of whether Russia has or does not have such suitcase-bombs (the name is probably misleading in any case; a US Department of Defense spokesperson has commented that such tactical munitions are not flat and would require two people to carry them), and hence the

idea of their having fallen into the hands of terrorist cells is pure conjecture.

Some intelligence sources have stated that **Osama bin Laden** has been trying to get his hands on nuclear weapons since the early 1990s.

There are claims, for instance, that bin Laden would have paid Chechen elements USD 30 million in cash and consignments of opium worth around USD 70 million in order to secure 20 suitcase-bombs.

Osama bin Laden is known to have links with Chechen rebels, whose war against the Russians he helped to finance.

In principle, the idea of such bombs is not pure science fiction, as the smallest nuclear warheads built have been only around 30 centimetres long.

Then again, even if a terrorist grouping were to have a suitcase-sized bomb or two, the usability of these devices is somewhat uncertain, as nuclear weapons require an upgrade or “refurbishment” every five to ten years. If these devices were built during the Soviet era, then their condition would have had to be inspected on at least two occasions by now.

Besides attempts to buy nuclear weapons, from time to time news stories have surfaced of attempted thefts. In one case, in October last year, the man in charge of Russia’s military nuclear security Gen. **Igor Volynkin** reported that twice during that year terrorists had been caught spying on a Russian nuclear storage site, presumably with a view to liberating some of its contents.

Tero Varjoranta, who heads up the Nuclear Waste and Materials Regulation Unit of STUK, Finland's Radiation and Nuclear Safety Authority, believes that Russia has begun to pay extra careful attention to the security around its nuclear weapons depots ever since the country’s conventional armed forces have been run down and strategic and tactical nuclear forces have been given a more important role.

“There has to be a further commitment to get this under control. It’s a kind of new nuclear arms race, getting to the weapons-grade material and making it safe before the terrorists can get hold of it”, says Varjoranta.

In spite of the relative improbability of a bin Laden atomic weapon, the IAEA is concerned about the possibility of a nuclear strike from such a direction.

“There are good reasons to be concerned”, said **Charles B. Curtis**, President of the Nuclear Threat Initiative, as he summed up an IAEA Special Session on Combating Nuclear Terrorism held last November. He argued that with the attacks of September 11th and the dangers posed by biological agents “thresholds have been crossed, and we can now imagine our worst scenarios.”

The NTI is a privately-funded charitable organisation set up in January 2001 with a mission to reduce the risk of use and spread of nuclear, biological and chemical weapons.

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Links:

- ▶ [NTI - Nuclear Threat Initiative](#)
- ▶ [A number of assorted nuclear weapons links on a Catholic resource site](#)
- ▶ [ISTC – The International Science and Technology Center](#)
- ▶ [IAEA - International Atomic Energy Agency](#)
- ▶ [Bin Laden is looking for a nuclear weapon. How close has he come? *The Guardian*, 7.11.2001](#)
- ▶ [Bellona - Non-Proliferation and Russian nuclear weapons](#)

PETTERI TUOHINEN / Helsingin Sanomat
petteri.tuohinen@sanoma.fi

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