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## Executive Summary: Illicit Trafficking of Nuclear and Radioactive Material in Eastern Europe

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## **EXECUTIVE SUMMARY: ILLICIT TRAFFICKING OF NUCLEAR AND RADIOACTIVE MATERIAL IN EASTERN EUROPE**

### **Streszczenie:**

*Handel materiałami jądrowymi i promieniotwórczymi stanowi ogromny problem dla bezpieczeństwa nie tylko Europy, ale i całego świata. W ciągu ostatnich 15 lat ujawniono wiele przypadków nielegalnego handlu uranem, odnotowane zwłaszcza na terenie Europy Wschodniej i Kaukazu. Złożoność problemu i jego wpływu na bezpieczeństwo międzynarodowe powinna skłonić rząd Stanów Zjednoczonych Ameryki Północnej do podjęcia aktywnej współpracy z państwami regionu a także z Unią Europejską w zwalczaniu tego procederu.*

### **Summary:**

*The illicit trafficking of nuclear and radioactive materials is a great threat for the security not only in Europe but around the world. In the past 15 years the international organizations revealed many cases of illegal trade of radioactive uranium, recorded especially in the East Europe and Caucasus region. The complexity of the problem and its impact on the international security should persuade the US government to cooperate actively with the East-European countries as well as with the European Union to decrease the threat.*

### **Słowa kluczowe:**

*prolifracja materiałów radioaktywnych, bezpieczeństwo, Europa Wschodnia, Stany Zjednoczone*

### **Key words:**

*proliferation of the radioactive materials, security, East Europe, United States*

A security threat for the international community is the ongoing illicit trafficking of nuclear and radioactive material in Eastern Europe. Within the last 15 years, five of seven trafficking cases involving highly enriched uranium occurred in the region. There has been previous action that attempted to solve this major concern shortly after the collapse of the Soviet Union. The newly formed states had political crises, fast deteriorating post-Soviet economies, rapid impoverishment and criminalization of the society, and inadequate protec-

tion of nuclear facilities and national borders as factors that contributed to the former Soviet nuclear inventories becoming vulnerable to diversion.

In order to address the ongoing situation, it will require to update the mandate and policies in the U.S. and in the EU over the concerning dilemma. First and foremost, the U.S. and EU will need to extensively collaborate on intelligence with the local authorities to provide information as well as clear guidelines on the implementation process. In the same vain, U.S. and EU can help initiate the development of domestic norms of security culture that will lead to vigilant searches. Secondly, additional effort will need to be made in highly suspected transit countries such as Moldova, especially in Transnistria, and Turkey. This would include improvement on the ability to detect unauthorized possession or shipment of nuclear and radioactive material at the borders. Thirdly, the need to increase basic training for all front line officers at borders and ports on radiation safety, and the use of radiation detecting devices, especially target borders such as the Bulgarian border with Turkey, and Romanian border with Moldova. Lastly, the need for inspections at orphan sites that once hosted as industrial, medical, or research purposes to ensure accountability for radioactive material.

### **Expanding on the Recommended Policies Information Sharing**

To elaborate on the recommended policies, the first source of weakness is the lack of collaborate sharing of intelligence in the region. Both the U.S. and EU have institutions that are responsible for issues concerning nuclear and radioactive material smuggling. All of these institutions are well-developed, well-funded, and have access to gaining intelligence and tools to counter the concerns. In the U.S., institutions include the Department of Energy, Department of State, Department of Defense, U.S. Customs Service, U.S. Coast Guard, and the FBI. These institutions have also been involved in bilateral government assistance programs and among these six federal agencies, U.S. assistance is divided in efforts to combat nuclear smuggling. From the fiscal year 1992 through 2001, the six agencies spent about \$86 million to help about 30 countries, mostly in the former Soviet Union and Central and Eastern Europe to combat nuclear smuggling.<sup>1</sup> During this time period, allocations from the West was substantial because of the recent collapse of the Soviet Union.

However, recently less efforts have been placed in the region. In July 2011, the House of Representatives voted to cut funding for the National Nuclear Security Administration's Second Line of Defense program by more than \$75 million from its fiscal 2012 request. This program is connected through the CSI, Container Security Initiative, which provides funds for radiation-detection

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<sup>1</sup> G. L. Jones, *Nuclear Nonproliferation: U.S. Efforts to Help Other Countries Combat Nuclear Smuggling Need Strengthened Coordination and Planning*: GAO-02-426, GAO Reports 1. Middle Search Plus, 2002.

equipment at border checkpoints, in airports and maritime ports in Russia, as well in Eastern European countries that border Russia. The House also voted to slash \$85 million from the Global Threat Reduction Initiative, which assists allies in mapping, preventing proliferation and controlling exports of their nuclear material.<sup>2</sup>

Although the number of incidents have been decreasing, there should be a reassessment on the concern, especially with the most recent seizure being in 2011 that involved 4.5 kg of HEU in the region. Most of these Western institutions arrive in the region to take action to address the concerns. However, the best alternative to this approach would be to share intelligence with local authorities and develop better implementation programs to help the state authorities to be able to support themselves as well. An exemplary program that was established in Georgia was the Preventing Nuclear Smuggling Program. It is a State Department effort that began in 2007 to help Georgia counter nuclear smuggling by: proving technology to detect material as it comes through an entry point; training local law enforcement in how to use and maintain that equipment; and implementing a forensic training program for the testing and identification of suspect material and preservation of evidence for trial.<sup>3</sup>

## Security Culture

A recent and increasingly important aspect in nuclear security is security culture. The official definition by the IAEA is “security culture: all organizations involved in implementing physical protection should give due priority to the security culture; the assembly of characteristics, attitudes and behavior of individuals, organizations and institutions which serves as a means to support and enhance nuclear security.”<sup>4</sup> It is important to implement a sense of security culture, because it directly affects the effectiveness of the security of the entire nuclear facilities, or security locations such as border accession points. The IAEA stated in their report that “no single government or industry organization or subsection of such an organization can address these elements in isolation. An effective nuclear security is dependent on proper planning, training, awareness, operation and maintenance, as well as on people who plan, operate and maintain nuclear security systems. Ultimately, therefore, the entire nuclear security regime stands or falls because of the people involved and their leaders, and it is the human factor, including management leadership, that must be addressed in any effort to enhance the existing nuclear security culture.”<sup>5</sup> Because of the importance of the human factor, it is important to involve all aspects and

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<sup>2</sup> P. McLeary, *No Loose Nukes*, “Defense Technology International 5”, no. 9, 2011, p. 16.

<sup>3</sup> *Ibidem*.

<sup>4</sup> *Nuclear security culture: implementing guide* – Vienna: International Atomic Energy Agency, 2008, p. 3, [www.pub.iaea.org](http://www.pub.iaea.org).

<sup>5</sup> *Nuclear security culture: implementing guide* – Vienna: International Atomic Energy Agency, 2008, p. 4, [www.pub.iaea.org](http://www.pub.iaea.org).

levels of the government involved for increased efficiency which requires the role of the state, role of organizations, roles of managers in organizations, and attitudes of individuals. A clear example of its importance was in the 1999 incident when the Bulgarian border patrol decided to complete a thorough search simply based on suspicious activity of the suspect passing through.

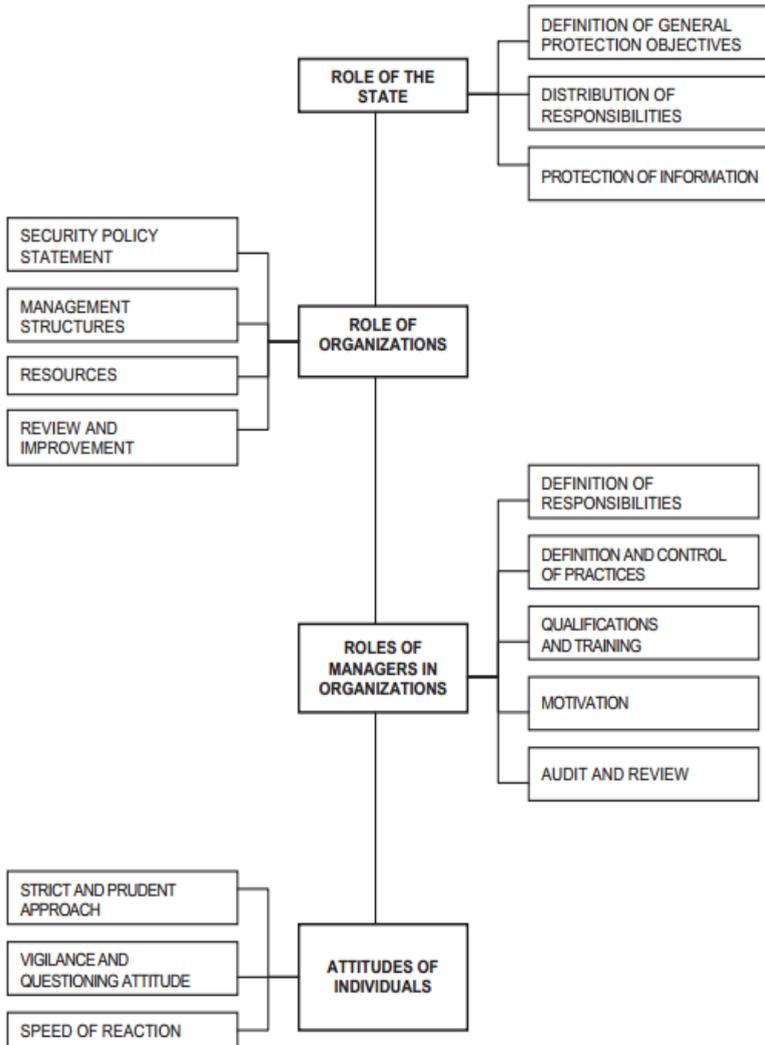


FIG. 1. Universal features of nuclear security culture.

### Suspected Transit Countries

Two increasingly concerning countries that smuggling is most likely to transit through even more recently is Moldova and Turkey. Both states have access points to enter the EU from neighboring countries. Both of the states

have trouble controlling their national borders as well. Although this is unfortunate for security purposes, it helps provide a target point that smugglers will attempt to pass through. In Moldova, the Transnistria enclave is considered a smuggler's den because of the low security in terms of local authorities, state authority, and border control. A similar situation is in Turkey as well. A recent discovery in numbers was revealed once Turkey installed newly radiological equipped checkpoint detectors at the borders with Georgia and Iraq. There was 48 trafficking in the year of 2007, with a vast majority of these cases involving radioactive material in scrap metal. The number of such illegal shipments into Turkey may have comparable in the previous years, but due to the lack of detection equipment at the borders, it had remained undetected.<sup>6</sup> Among the other countries where the rate of detection at national borders over the last years have clearly improved was in Russia, Armenia, Georgia, and Kazakhstan. However, increasing the security equipment in these two suspected transit countries will not be sufficient if not coupled with security culture initiatives as customs as well. The installation of radiation monitoring equipment does not always guarantee an improved detection rate in countries with untrained, unmotivated, and corrupt border control officials.<sup>7</sup>

### **Training on Radiation Safety and Detecting Devices**

It would not be enough to provide the equipment without the training on how to effectively utilize the equipment. In this category, there are several aspects that would need to be addressed such as: strengthen radiation detection capability, including neutron detection, of air cargo and passenger luggage at airports; ensure timely and effective maintenance of stationary radiation detection systems, which has been poor or totally absent in some countries; basic training for all front line officers on radiation safety, use of radiation detecting instruments and trafficking response procedures; enhance training in basic nuclear forensics for front-line officers; conduct train-the-trainers courses in specialized centers to help reach a broader audience within customs agencies; and finally, improve collaboration between border control agencies and supporting nuclear experts.<sup>8</sup>

To address this concern, the EU initiated an EU training center in April 2013. EUSECTRA, European Nuclear Security Training Center, in Karlsruhe,

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<sup>6</sup> L. Zaitseva, *Organized Crime, Terrorism and Nuclear Trafficking*, Center for Contemporary Conflict, Aug. 2007, [http://mercury.ethz.ch/serviceengine/Files/ISN/45519/ichaptersection\\_singledocument/e959262e-d730-4927-9cfa-b7b816feac54/en/8\\_zaitsevaAug07.pdf](http://mercury.ethz.ch/serviceengine/Files/ISN/45519/ichaptersection_singledocument/e959262e-d730-4927-9cfa-b7b816feac54/en/8_zaitsevaAug07.pdf).

<sup>7</sup> *Ibidem*.

<sup>8</sup> L. Zaitseva, F. Steinhausler, *Nuclear Trafficking Issues in the Black Sea Region*, EU Non-Proliferation Consortium. EU, Apr. 2014. , <http://www.nonproliferation.eu/documents/nonproliferationpapers/lyudmilazaitsevafriedricsteinhausler53451ed0bbeceb.pdf>.

Germany. The training center will instruct front-line officers, trainers and experts on how to detect and respond to illicit trafficking of nuclear or other radioactive materials. EUSECTRA offers hands-on training using a wide variety of radioactive and nuclear materials and a broad selection of equipment and measurement instruments. Overall, more than 30 measurement and detection tool will be used in training. The center will enhance the former training activities carried out in Ispra.<sup>9</sup> This past year was the pilot of the center and focused sessions for management positioned officers in security. This is can be a great source to address the training concern if more resources will be allocated to the center.

### **Monitoring Orphaned Sites**

Finally, the final step is trying to limit the acceptability to sources from abandoned industrial, medical, and research sites throughout former Soviet Union states. A major concern is the lack of declaring of missing inventory by host countries, in order to estimate the size of the concern. Russia is a major perpetrator in this aspect. The last successful HEU theft declared by Russian officials was reported in 1994, and these thefts has dropped from 29 in 1990 to just four since then. In contrast, DSTO, Database on Nuclear Smuggling, Theft, and Orphan Radiation Sources, recorded a total of 90 nuclear material incidents in Russia between 1992 and 2012, including 15 cases of HEU incidents, 13 cases with low enriched uranium, and 62 cases of radiological material involvement.<sup>10</sup>

Although there is a possibility that some cases go unreported, the probability of theft and trafficking in Russia has decreased. After two decades of security upgrades, material consolidation, HEU down blending, and security culture all have played in a major role in decreasing the source available for illicit trafficking. In addition, the improving economic situation over the past 15 years may also give less of an incentive for nuclear smuggling.<sup>11</sup> In the following two graphs, it illustrates the decreasing trend in Russia for the number of incidents, although, it has the largest number in unauthorized shipment incidents.

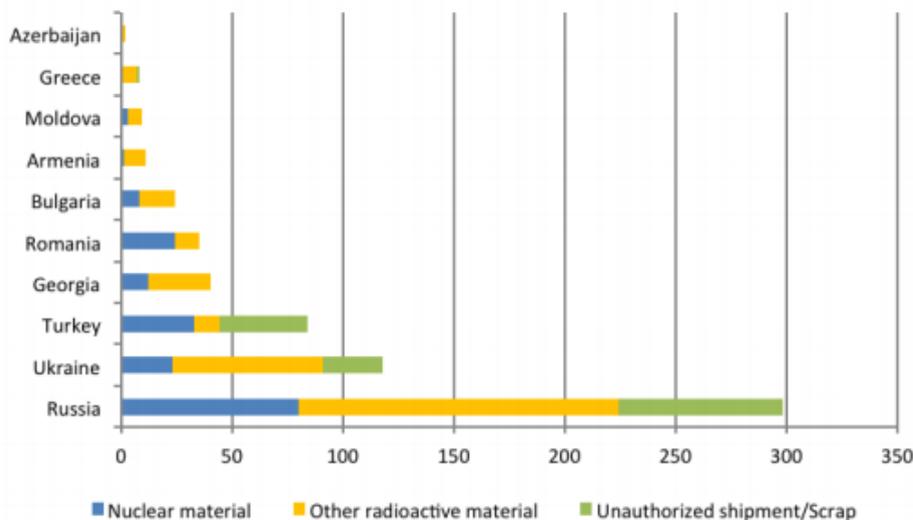
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<sup>9</sup> *New EU Training Centre to Combat Illicit Trafficking of Nuclear and Radioactive Materials*, European Commission. EU, 18 Apr. 2013, [http://europa.eu/rapid/press-release\\_IP-13-338\\_en.htm](http://europa.eu/rapid/press-release_IP-13-338_en.htm).

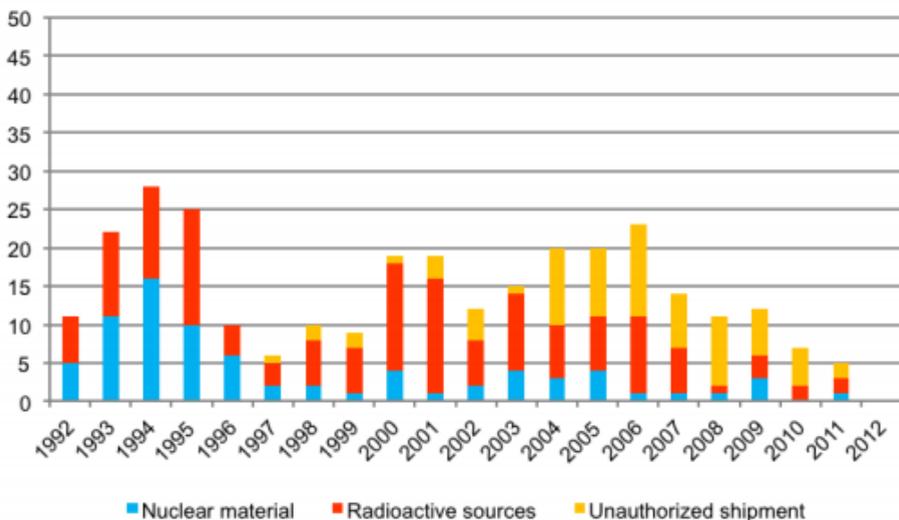
<sup>10</sup> L. Zaitseva, F. Steinhausler, *Nuclear Trafficking...*

<sup>11</sup> *Ibidem*.

Trafficking and unauthorized shipment incidents in the Black Sea region countries as recorded in the Database on Nuclear Smuggling, Theft, and Orphan Radiation Sources (DSTO), 1991-2012 (Albania and Serbia have not been included due to the lack of data on incidents.)



Incidents involving nuclear and other radioactive material recorded in Russia as recorded in the Database on Nuclear Smuggling, Theft, and Orphan Radiation Sources (DSTO), 1992-2012



## **Cases: Observing the Five Incidents Involving HEU**

Five of the seven most recent HEU incidents took place in the Black Sea region, all of them smuggling and sale attempts. The sixth case, which occurred in France, the investigation identifies links to the previous seizure in Bulgaria and criminal connections to Moldova and Romania, via which the HEU sample was transported to Paris. The reasoning behind selecting these five cases is that if it is possible to obtain highly enriched uranium, it is just as likely, if not more probable, to obtain other dangerous radiological sources as well, which has been increasing in the past decade.

### **1999: Bulgarian-Romanian Border**

In May 1999 in the city Rousse, Bulgaria, custom officers stopped a Turkish citizen travelling from Turkey. Rousse is a city that serves as Bulgaria's principal river port and is a transportation hub for road and rail traffic. The material was hidden in a shielded, lead container inside the trunk of the car. It held 10 grams of highly enriched uranium of 75% grade. A Bulgarian customs agent became suspicious of the individual, noticing that he was behaving quite nervously when answering questions. Just as extra security measure, the agent asked the driver to pull aside for a short inspection. The search led to find the driver's papers, which revealed a document describing uranium. When the driver attempted to bribe the customs officer, his car was thoroughly inspected and the officer eventually discovered the container.<sup>12</sup> It was handed over to Bulgarian scientists that verified it was highly enriched grade uranium and estimated that the source of the material came from the Mayak Production Association in Russia. The complex produces special isotopes used for civilian uses such as industrial, agricultural, and medical purposes and also reprocesses naval and civil nuclear power reactor fuel for plutonium and uranium recovery. The driver had initially attempted to sell the material in Turkey and then travelled through Bulgaria to attempt to find a buyer in Romania. This case in particular reinforces the need to have security culture instilled in local authority to take initiative to commit to searches when there is suspicious behavior.

### **2003: Sadakhlo, Georgia**

In June 2003, at the border between Georgia and Armenia, Georgian border officials arrested a man possessing 170 grams of HEU at 89% grade. The Armenian smuggler, Garik Dadayan, had been travelling from Russia to Armenia through Georgia and was arrested at the Sadakhlo checkpoint. He had crossed the Russian-Georgian border a day earlier without any problems. The driver of the car hired by Dadayan later testified to providing regular shuttle services

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<sup>12</sup> G. L. Jones, *Nuclear Nonproliferation...*

between Vladikavkaz, Russia, Tbilisi, Georgia, and Yerevan, Armenia using his personal car. At the checkpoint, the car triggered a radiation detector alarm. The border guards asked each passenger to take their belongings to go through an individual radiation screening. Once Dadayan stepped out of the car, he attempted to drop a plastic bag and leave it behind. Fortunately, a border guard noticed it and asked him to pick it up. The bag triggered an alarm and when the bag was opened, the guards found a small tin container for loose tea. The box had three vials inside with black powder. One of the border guards tried to lick the powder and then spat it out after he realized it was not a drug. Dadayan claimed to try to sell the HEU to a Turkish middleman named Teimur Sadik, who was to sell it to another individual in the Middle East.<sup>13</sup> This incident highlights a couple of major concerns. The first is the need to have training in radiation safety and devices. The border guard placed himself in a dangerous situation if he had consumed a higher amount in quantity of the HEU, it would have serious repercussions. Secondly, the detection devices were essential tools to the apprehension of the smuggler. Lastly, the details of the incident were not reported to the IAEA in a timely manner. The IAEA was informed months later in October about the incident and did not receive details such as the substance until 2005. This provides an example for the need of information sharing.

### **2006: Tbilisi, Georgia**

In February 2006 in the capital of Georgia, Oleg Khintsagov, a Russian citizen in Vladikavkaz, was apprehended in Tbilisi along with three Georgian accomplices as the result of a sting operation carried out by the Georgian police unit. A Turkish speaking Georgian undercover agent, reportedly representing himself as a member of a “respectable Muslim organization” made contact with Khintsagov, who claimed he had 2 to 3 kg of HEU and requested \$100 million for the material. The meeting point was made to be in Tbilisi. Khintsagov used the same crossing used by the smuggler in 2003. Fortunately for Khintsagov’s cousin had worked at that border crossing until 2004 and was able to aid him in crossing the border using his contacts at customs. Khintsagov had arrived with 80 grams to the meeting point. At his initial testimony, Khintsagov reportedly claimed to have acquired the material in Novosibirsk and claimed to have 2 to 3 kg, but investigations did not make it clear if this claim was true.<sup>14</sup> Lastly, Russian analysis indicated that the HEU seized in 2006 was significantly different from the 2003 material, both in terms of its composition and processing date. The analysis established that the material was also as 89% enrichment grade power of HEU (U<sub>3</sub>O<sub>8</sub>). However, the analysts were not able to establish the exact origin of the material. In this incident, it demonstrates the importance of

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<sup>13</sup> *International Conference on Illicit Nuclear Trafficking: Collective Experience and the Way Forward (2007)*, p. 410, [www.pub.iaea.org](http://www.pub.iaea.org).

<sup>14</sup> *Ibidem*, p. 413.

local authority awareness. It exemplifies the need for local authority training and involvement. It also reveals the possibility of corruption of local customs officials as well. This could be mitigated by the need of security culture to be instilled in the mindset of officers.

### **2010: Tbilisi, Georgia**

A similar operation to the 2006 incident led to the arrest of the smugglers. A sting operation by the Georgian Security Services sent an undercover agent posing as a “radical Islamist” from Turkey. Two Armenian citizens, Sumbat Tonoyan and Hrant Ohanyan, a former business and physicist, had arranged to meet their buyer in a hotel in Tbilisi. The Armenians had smuggled 18 grams of HEU, also at 89% enrichment grade, but had previously informed the undercover agent that their supplier in Armenia had much more available. The pair was able to smuggle it into Georgia by train in a cigarette box lined with lead to deflect the radiation sensors at the border. Once the smugglers were apprehended, the men reportedly told investigators that their supplier contact was Garik Dadayan, the smuggler in the 2003 case. Dadayan had been released from jail in Armenia because of his bad health and former veteran status. The Georgian authorities had informed the Armenian authorities, who then arrested Dadayan and charged him with supplying the material.<sup>15</sup> This incident also replicated the need for local authority involvement and information sharing. In addition, there is a concern to enforce stricter punishment that could also de-incentivize attempts to smuggle.

### **2011: Chisinau, Moldova**

In June 2011 in the capital of Moldova, there was six people arrested by the Moldovan police for attempting to sell 4.4 kg of HEU. It appeared to be the third in a series of connected cases. According to Moldovan officials, the material had been smuggled from Russia through the Transnistria, or Trans-Dniester, enclave in Moldova. Two of the suspects, one of them a Russian citizen, were from the region and the other four were Moldovan nationals. The Moldovan investigators stated that the suspects had created a stable criminal group that specialized in acquisition, possession, transportation, and sale of uranium. The investigation had also revealed that the group had sought contacts in North Africa in order to sell the material and was planning to send it to Turkey from the Ukrainian port of Ilyichovsk, which would go to the Georgian port of Poti and then to Turkey. It was after this incident, officials in Moldova acknowledged that “their territory is being used by non-state actors as a trafficking corridor for

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<sup>15</sup> *Georgian President Saakashvili Announces Arrest of HEU Traffickers*, “NTI: Nuclear Threat Initiative” 14.04.2010, <http://www.nti.org/analysis/articles/georgian-president-arrest-heu-traffickers/>.

nuclear material.”<sup>16</sup> From this incident, it revealed the porous security in Moldova. There had been four smuggling attempts with various radioactive material from Moldova which were intercepted at the country’s borders by Ukrainian border guards and one by Romanian border guards. The problems associated with the uncontrolled territory of Transnistria makes combating nuclear trafficking even more challenging from the country.<sup>17</sup> This reveals the need for prioritizing the foreign assistance from the U.S. and EU to be allocated in Moldova. The situation highlighted the vulnerability of the country being a source and transit spot for non-state actor illicit trafficking activity. Interesting, Turkey sees itself as a purely transit country that is used by nuclear smugglers due to geographical location and the volume of commercial activities between neighboring countries.<sup>18</sup>

### Conclusions for Future Concerns

As a word of conclusion, it is important to note the need to update the policies and actions taken in the Eastern European region to combat the illicit trafficking. As noted before, to combat the situation in the region, it will require international help from Western Europe, EU and the U.S. to collaborate for an effective method of solving the current situation. The key policies changes that the community needs to address is collaboration on intelligence amongst countries in the region, increasing security culture in the local authorities in the region, prioritizing security concerns in transit countries such as Moldova and Turkey, increasing cooperating training in safety and detection devices, and lastly, accountability for abandoned sites. The major concern for the international community should be illustrated by these five recent trafficking incidents that involved HEU. If smugglers were able to obtain a considerably hard source, it should be as alarming that the possibility of gaining access to radioactive sources is more probable. Lastly, most of the investigations revealed that the smugglers were aiming to find non-state actors to purchase the sources, and just as alarming, the undercover agents were portraying ‘radical Islamist’ as buyers. The future of the situation in the region will only be able to be mitigated with the help of the international community.

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