

Nuclear Terrorism: Published Literature Since 1992

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Titles of some articles and books on terrorists' potential use of nuclear materials are indeed foreboding:

"When Terrorists Go Nuclear"; "It's the Ultimate Nuclear Nightmare: Terrorist with the Bomb"; *Time Bomb: How Terrorists and the Russian Mafia Threaten the World with a Nuclear Nightmare*; "Arms Experts Fear Nuclear Blackmail"; *Nuclear Terrorism: Rethinking the Unthinkable*; "Nukes on the Loose: The End of the Cold War Has Made Nuclear Terror More Likely"; "When Terrorists Go Nuclear: The Ingredients and Information Have Never Been More Available"; "Be Very Afraid"; and "Smuggling of Nuclear Materials - Deadly Game."

Just how real is the threat and, most important, what can be done to combat or prevent it from occurring? These are vital questions not only for this country but also for the entire world's population. Scholars, scientists, government and military officials all have a pressing need to access and analyze the literature on this topic to produce and refine an effective and coherent security policy. This bibliography serves to fill that need by identifying and assembling in one place citations to the multitude of publications on this topic.¹

Much has been written about this topic in the open-source press.² I used the research sources of a multitude of data bases, CD-ROMs and indexes, including those of the Rand Corporation, UCLA Library, National Defense University Library, Pentagon Library, Georgetown University Library, Combined Arms Research Library at Fort Leavenworth, the Center for Nonproliferation Studies at

the Monterey Institute of International Studies and World Wide Web (WWW) sites.³

A large part of the literature on this topic addresses the security of nuclear weapons in the former Soviet Union (see Section I below). Other articles or books assess the threats posed by individuals, terrorist groups or even nations (see Sections II and III). Section IV compiles citations concerning the security of nuclear power plants. Of utmost importance, if the threat is real or imminent, what preventive or legal measures can world governments take to stave off this possibility or punish those responsible for it? Sections V and VI provide citations to articles addressing these issues. Section VII lists WWW sites dealing with nonproliferation issues and provides myriad links to other sites dealing with this issue. Following all the citations is a synopsis of publications that I believe are of special importance and relevance to Department of Defense and N.A.T.O. officials who are currently or will be working in the future to counter this threat.

Summary of Categories

Under each section, the citations are listed alphabetically by author, or by title if no author is given. Brief synopsis of many articles follow their citations.

I. Nuclear Weapons Security in the Former Soviet Union and Eastern Europe

II. Threat Assessments

III. Threats by Nation States

IV. Security of Nuclear Facilities

V. Countermeasures/Prevention

VI. Legal Aspects of the Problem

VII. World Wide Web Sites

Synopsis of Publications of Special Relevance to Defense Officials

I. Nuclear Weapons Security in the Former Soviet Union and Eastern Europe

Allen, Arthur. "Operation Hades." *New Republic*, 21-28 August 1995, 12-13.

Investigates nuclear smuggling.

Allison, Graham T., et al. *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*. CSIA Studies in International Security, no. 12. Cambridge, MA: M.I.T. Press, 1996. Presents concerns that nuclear material from nuclear-warhead dismantlement in Russia will be released into a nuclear establishment ill-prepared to deal with it and that a resulting nuclear black market might bring about the collapse of the nuclear nonproliferation system based on the Nuclear Nonproliferation Treaty; provides several concrete proposals that Western governments and Russia's MinAtom should accomplish to solve the proliferation problem.

Andreyev, Igor. "CIS Special Services Unite, but Later Than the Criminal World." *Current Digest of the Post-Soviet Press*, 12 April 1995, 21-22. Agreement to cooperate on fighting organized crime, nuclear terrorism and other crimes.

Barry, John. "Future Shock." *Newsweek*, 24 July 1995, 32-5. Weakening of Russia's control over nuclear weapons.

"Basayev's Threat of Nuclear Terrorism Assessed." *Rossiia*, 23-29 August 1995, 1-2, as translated in FBIS-SOV-95-163, 51-52.

Beck, Michael, Gary Bertsch and Igor Khripunov. "The Development of Nonproliferation Export Control in Russia." *World Affairs* (Washington, DC) (Summer 1994), 3-18.

Belyaninov, Kirill. "Nuclear Nonsense, Black-Market Bombs, and Fissile Flim-Flam." *Bulletin of the Atomic Scientists* (March/April 1994), 44-50. Undercover journalists deal with the nuclear black marketeers or "ventilators."

Bolsunovsky, Alexander and Valery Menshchikov. "Security Lacking at Nuclear Weapons Depots." *Moscow News*, 9-15 December 1994, 14. Includes list of nine facilities in dire need of protection and control.

Booth, Ken. "Loose Nukes and the Nuclear Mirror: The Dangers and Opportunities Resulting from the Breakup of the Soviet Union." *Arms Control*, no. 1 (1992), 140-50.

Bukharin, Oleg A. "Meeting the Challenges of Dismantlement." *Transition*, 17 November 1995, 30-33. Describes factors compromising safety during dismantlement.

_____ and William Potter. "Potatoes Were Guarded Better: Stealing Nuclear Fuel from the Storage Building at Sevmorput Was-and May Still be-Easy." *Bulletin of the Atomic Scientists* (May-June 1995), 46-51.

_____. "Nuclear Safeguards and Security in the Former Soviet Union." *Survival* (Winter 1994-95), 53-72.

_____. *The Threat of Nuclear Terrorism and the Physical Security of Nuclear Installations and Materials in the Former Soviet Union*. Monterey, CA: Center for Russian and Eurasian Studies, Monterey Institute of International Studies, 1992. "Chelyabinsk: Special Unit Formed to Fight Nuclear Terrorism." ITAR-TASS, 14 April 1995, as translated in FBIS-SOV-95-073, 33. Unit formed in closed town of Ozyorsk, formerly Chelyabinsk.

Combating Fissile Material Smuggling in the Former Soviet Union. Colorado Springs, CO: US Air Force (USAF) Institute for National Security Studies, June 1995.

Combating Fissile Materials Smuggling Workshop #2, 5 December 1995.

Colorado Springs, CO: USAF Institute for National Security Studies, 1995.

Cooperman, A. and K. Belianinov. "Moonlighting by Modem in Russia." *U.S. News & World Report*, 17 April 1995, 45+. Scientists working for countries trying to produce nuclear weapons.

Davydov, Valery. *An Annotated Bibliography of Soviet and CIS Studies on Nuclear Proliferation*. Monterey, CA: Monterey Institute of International Studies, Center for Russian and Eurasian Studies, 1992.

DeWing, Martin J. *The Ukrainian Nuclear Arsenal: Problems of Command, Control, and Maintenance*. Monterey, CA: Program for Nonproliferation Studies, Monterey Institute of International Studies, October 1993.

Edwards, Rob. "Germany Issues Nuclear Smuggling Alert." *New Scientist*, 20 August 1994, 5.

"Estimated Russian (C.I.S.) Stockpile, September 1995." *Bulletin of the Atomic Scientists* (September/October 1995), 62-63+.

"Even the CIA Does Not Know How Much Uranium Do We Have, and Neither Do We." *Russia & CIS Today*, 26 November 1993, 4-5. Estimated by Victor Mikhailov of the Ministry of Atomic Energy to be 1,200 metric tons; originally published in *Novaya gazeta*, 25 November 1993, 1.

Galdi, Theodor. *The Nunn-Lugar Cooperative Threat Reduction Program for Soviet Weapons Dismantlement: Background and Implementation*, CRS Report 93-1057F Washington, DC: Congressional Research Service, 29 December 1993.

"General Discusses Status of Nuclear Arsenal." *Krasnaya zvezda*, 26 November 1993, as translated in FBIS-SOV-93-228. Interview with General Yevgeniy Maslin, chief of the Defense Ministry's 12th Main Directorate.

Gordon, Michael R. and Matthew L. Wald. "Russian Controls on Bomb Material are Leaky." *New York Times*, 18 August 1994, A1.

Gordon, Michael R. "Russian Aide Says Gangsters Try to Steal Nuclear Material." *New York Times*, 26 May 1994, A5. Statement by Mikhail Yegorov of the Organized Crime Control Department of the Ministry of Internal Affairs that organized crime is attempting to infiltrate military facilities.

Hanley, Charles J. "Russian Nuke Security Examined." *Associated Press*, 28 March 1995. Database online. Available from Lexis-Nexis.

Heinemanngruder, A. and M. Petersen. "Nuclear Proliferation from the CIS." *Osteuropa*, no. 5 (1993), 429-40. Text in German.

Heinrich, Andreas and Heiko Pleines. "Russia's 'Nuclear Flea Market' Tempts Smugglers." *Transition*, 17 November 1995, 9-11. Discusses some myths and hazards of transporting and storing of these materials.

Hersh, S.M. "The Wild East." *Atlantic Monthly* (June 1994), 61-63. Describes organized crime and the security of Russia's nuclear arsenal.

Hibbs, Mark. "'Fairy Tales' in Munich." *Bulletin of the Atomic Scientists* (November/December 1995), 5-7. Reviews the facts about the 1994 plutonium smuggling and the trial.

_____. "Attali Bombshell a Real Dud." *Bulletin of the Atomic Scientists* (September/October 1995), 5-6.

_____. "Nuclear Smuggling-Czechs Seize Migrating Uranium." *Bulletin of the Atomic Scientists* (March/April 1995), 13-14.

_____. "Plutonium, Politics, and Panic." *Bulletin of the Atomic Scientists* (November/December 1994), 24-31. Stolen nuclear material discovered in Munich on 10 August 1994.

Hileman, Bette. "Nuclear Theft Poses Growing Security Threat." *Chemical & Engineering News*, 11 September 1995, 24-25. Hearings headed by US Senator Richard Lugar on preventing terrorists' access to nuclear materials in Russia and other former Soviet states.

_____. "Tighter Nuclear Safeguards Needed to Stop Thefts." *Chemical & Engineering News*, 12 September 1994, 17-18. Natural Resources Defense Council experts recommend that International Atomic Energy Agency's threshold amounts be lowered.

_____. "U.S. and Russia Face Urgent Decisions on Weapons Plutonium." *Chemical & Engineering News*, 13 June 1994, 12-25. Possible removal of up to 150 metric tons of plutonium from weapons.

"How to Steal an Atom Bomb." *Economist*, 5 June 1993, 15-16.

Hughes, David. "Uranium Seizures Heighten Terrorism Concerns." *Aviation Week & Space Technology*, 3 April 1995, 63-64. Recent discoveries of smuggled uranium in the Czech Republic, Ukraine and other countries.

_____. "Arms Experts Fear Nuclear Blackmail." *Aviation Week & Space Technology*, 4 January 1993, 61-62. Enriched uranium and plutonium from the dismantling of former Soviet weapons.

Imal, Ryukichi. "Nuclear Weapons in the Former Soviet Union." *Plutonium* no. 3 (1993), 18-32.

Isby, David C. and Thomas H. Johnson. "Post-Soviet Nuclear Forces and the Risk of Accidental or Unauthorized Limited Nuclear Strikes." *Strategic Review* (Fall 1993), 7-21.

"Istochniki yadernoy opasnosti." [Sources of Nuclear Danger] *Segodnya*, 5 January 1994, 6. Includes a map showing risks at various nuclear power plants in Russia.

Ivanov, Igor. "Nuclear Safety and Security in the Modern World. *International Affairs: A Russian Journal of World Politics, Diplomacy and International Relations* 3 (1996), 65-71. The author is the First Deputy Minister of Foreign Affairs of Russia.

Josephson, Paul R. "Russian Scientific Institutions: Internationalization, Democracy and Dispersion." *Minerva* (Spring 1994), 1-24. Possibility of Russian nuclear scientists working for terrorists.

Kamp, Karl-Heinz. "Die Sicherheit der sowjetischen Atomwaffen." [Security of Soviet Atomic Weapons] *Europa Archiv*, 25 October 1991, 593-600.

Kaufman, Jonathan. "Poland Moves to Stop Nuclear Smuggling." *Boston Globe*, 21 October 1992.

Kaurov, Georgiy. "SShA opasayetsya za nashe yadernoye oruzhiye." [The US is Fearful of Our Nuclear Weapons] *Kontinent*, 10 November 1995, 8. MinAtom official criticizes US concerns over the disposition of Russia's nuclear facilities.

Kirichenko, Elina. "Sistema eksportnogo kontrolya Rossii v tselyakh nerasprostraneniya oruzhiya massovogo unichtozheniya." [Russia's System of Export Control for the Nonproliferation of WMD] *Yadernyy kontrol'* (May 1995), 15-17. Discusses Russia's export controls on nuclear weapons which meet all International Atomic Energy Agency (IAEA) standards.

Kisliak, S. "A New Dimension of Nuclear Security." *International Affairs: A Russian Journal of World Politics, Diplomacy and International Relations* 3 (1996), 119-27. The author is the director of Russia's Department on Safety and Disarmament Issues.

Kukanov, Dmitry and Natalya Timashova. "Will Russia's Nuclear Umbrella Be Left Without Proper Supervision." *Current Digest of the Post-Soviet Press*, 11 October 1995, 23. Presidential order no. 350 concerning inspections of facilities; originally published in *Izvestiia*, 15 September 1995, 1-2.

Kulik, Mikhail. "The Great Uranium Caper." *Moscow News*, 8-14 December 1995, 10. Problem of storing nuclear materials with the Northern Fleet.

"Kurchatov Institute Guards against Nuclear Terrorism." *Moscow 2x2 Television* in Russian, 18 October 1995, as translated in FBIS-SOV-95-202, 38. Concern about the Shamil Basayev terrorist groups.

Kurchatov, Alexander. "Nuclear Arsenals for Terrorists." *Moscow News*, 11-17 September 1996, 4. Raises questions about the nuclear submarine *Komsomolets*, which sank in the Norwegian Sea with 116 kilograms of reactor-grade uranium and over 6 kilograms of plutonium-239 in two nuclear warheads.

Lee, Rensselaer W. III. "Post-Soviet Nuclear Trafficking: Myths, Half-Truths, and the Reality." *Current History* (October 1995), 343-48. A summary of smuggling of nuclear materials since 1991.

"Lithuania Shuts Reactor." *New York Times*, 15 November 1994), A7(N), A12(L).

Lockwood, Dunbar. "U.S., Russia Reach Agreement for Plutonium Site Inspections." *Arms Control Today* (April 1994), 22.

Markushin, Vadim. "Russia and Germany: Together Against Nuclear Terrorism." *Current Digest of the Post-Soviet Press*, 14 September 1994, 6. Originally published in *Krasnaya zvezda*, 24 August 1994, 3.

Masland, Tom, et al. "For Sale." *Newsweek*, 29 August 1994, 30-32. Plutonium from Russia on the European market.

Mikhailov, Victor, et al. "Russia's Ministry of Atomic Energy and Nuclear Weapons Safety." *International Affairs: A Russian Journal of World Politics, Diplomacy and International Relations* 3 (1996), 72-102. The author is the Minister for Nuclear Power of the Russian Federation.

_____. "Establishment of Bilateral System of Response to Nuclear Weapons Crisis Situation." *International Affairs: A Russian Journal of World Politics, Diplomacy and International Relations* 3 (1996), 103-118.

"Minister Mikhaylov on Safeguarding of Nuclear Materials." *Yadernyy kontrol* (February 1995), 9-11, as translated in FBIS-SOV- 95-046-S, 2-5. Interview with Russian Federation minister of Atomic Energy.

Morocco, John D. "U.S. Takes Charge of Uranium Cache." *Aviation Week & Space Technology*, 28 November 1994, 27. Uranium from weapons in Kazakhstan.

"Moscow Summit on Nuclear Security and Safety." *International Affairs: A Russian Journal of World Politics, Diplomacy and International Relations* 3 (1996), 1-64. A summary of the summit held in Moscow, 19-20 April 1996. Contains the following subsections: Russia's Position on Nuclear Issues; Declaration of the Moscow Summit; Program for Combating Nuclear Trafficking; Statement on Nuclear Test Ban Treaty; Statements on Ukraine and Middle East; B. Yeltsin and J. Chirac: Press Conference after the Summit; Russia and the World: Cooperation in the Nuclear Field; The Main Aspects of Nuclear Security; and Nuclear Power Plants in Russia.

Mueller, Harald. "Fissile Material Smuggling: German Politics, Hype and Reality." *Arms Control Today* (December 1994), 7-10. Discusses incidents of smuggled Russian materials.

"MVD General Reports No Theft of Nuclear Weapons Materials." Moscow INTERFAX in English, 10 October 1995, as reported in FBIS-SOV-95-196, 45-46. Interview with General Andrey Terekhov of the Russian Interior Ministry. National Public Radio. "Nuclear Safety and Security in Russia." 4-part series, 16-19 April 1996. May be ordered under transcript #1847, segment #5; transcript #1848, segment #6; transcript #1849, segment #5; transcript #1850, segment 6. Nelan, Bruce W., et al. "Formula for Terror: The Former Soviet Arsenal is Leaking into the West, Igniting Fears of a New Brand of Nuclear Horror." *Time*, 29 August 1994, 46-52.

"Nuclear Facilities' Defenses Prepared for Terrorism." INTERFAX in English, 9 February 1995, as reported in FBIS-SOV-95-028, 12-13. Interview with Georgiy Kaurov, head of the Information Department of the Russian Nuclear Energy Ministry on possible Chechen extremist actions.

"Nuclear Materials Security Said Ineffective." *Rossiya*, 21-27 September 1994, 4, as translated in JPRS-TND-94-019, 304.

"Nuclear Safeguard System Reliable, Costly." *Krasnaya zvezda*, 17 June 1995, 3, as translated in FBIS-TAC-95-014-L.

"Nuclear Smuggling." *Macleans*, 5 September 1994, 28.

"Odin shag vpered, dva nazad." [One Step Forward, Two Back] *Nezavisimaya gazeta*, 17 October 1995, 6. Report of the Russian Nuclear Radiation and Safety Supervision Committee-Citing reports of 19 radioactive materials incidents at unsecure locations in the first half of 1995.

"Operation Sapphire." *Macleans*, 5 December 1994, 35. Sale of uranium by Kazakhstan to the US to prevent terrorists' access.

Orlov, Vladimir. "No Buyers, but Sellers are Ready." *Moscow News*, 18 August 1995, 4. Officials working to find a solution to the theft problem.

_____. "A Threat of Nuclear Terrorism Exists in Russia." *Current Digest of the Post-Soviet Press*, 19 July 1995, 26-27. Interview with General Yevgeniy Maslin stating that a real threat of nuclear terrorism exists in Russia; originally published in *Moskovskiy novosti*, 25 June-2 July 1995, 14; also published in *Moscow News*, 7 July 1995, 14.

_____. "Black Holes of Red Mercury." *Moscow News*, 13 August 1993, 11.

"O pervoocherednikh merakh po sovershenstvovaniyu sistemy uchota i sokhrannosti yadernikh materialov." [On Immediate Measures to Improve the Inventory and Protection System of Nuclear Materials] *Rossiyskaya gazeta*, 21 September 1994, 4.

Ostanin, Sergey. "General Rules Out Nuclear Terrorism in Russia." ITAR-TASS, 11 January 1996. Database Online; Available from Lexis-Nexis. Senior military

leader sees no chance of this possibility because of strict security measures fully financed by the state.

Parrish, Scott. "Nuclear Arms-A Soviet Legacy." *Transition*, 17 November 1995, 6-8. Problems of avoiding nuclear proliferation and complying with international agreements.

Piest, Jochen and Matthias Schepp. "Stoking up the Nuclear Bazaar." *World Press Review* (November 1994), 10-11. Translation of Stern article on confiscated radioactive material on airplane from Moscow to Munich.

"Poka chto ni odin yadernyy boyepripas v Rossii ne propadal i ne byl pokhishchen." [For Now Not One Nuclear Stockpile in Russia has been Lost or Stolen] *Yadernyy kontrol'* (May 1995), 9-14. Interview with Yevgeniy Maslin, director of the 12th Directorate of the Russian Ministry of Defense; asserts that Russia safely transports nuclear materials and that smuggling is no worse in Russia.

Potter, William. "Before the Deluge? Assessing the Threat of Nuclear Leakage from the Post-Soviet States." *Arms Control Today* (October 1995), 9-16. Leakage is not necessarily inevitable if corrective measures are taken.

_____. *et al. Nuclear Profiles of the Soviet Successor States*. Monterey, CA: Program for Nonproliferation Studies, Monterey Institute of International Studies, May 1993.

_____. "Nuclear Exports from the Former Soviet Union: What's New, What's True." *Arms Control Today* (January/February 1993), 3-10.

"Psst for Plutonium." *Economist*, 30 July 1994, 26. Attempts to keep plutonium away from clandestine bomb makers.

Romanenkova, Veronika. "Russian Ministry Sounds Tough Over Nuclear Threats." ITAR-TASS, 9 February 1995. Database Online; Available from Lexis-Nexis. Response of the Russian Nuclear Energy Ministry to Dudayev's threats that "nuclear terrorism in Russia is possible."

"Rossiyskiye militsionery i atomshchiki oprovergayut mify o `russkoy yadernoy mafii'." [Russian Police and Atomic Scientists Refute the Myths about the

"Russian Nuclear Mafia"] *Segodnya*, 11 October 1995, 6. Report by Andrey Terekhov of the Ministry of Internal Affairs of 52 illegal material dealings in 1993-1994 and 13 in 1995.

"Russian Mafia can Steal Nuclear Materials." *Reuters*, 14 October 1995. Based on reports by "60 Minutes" and US News & World Report that 4 tons of beryllium and 19.8 pounds of cesium were stolen in 1993.

"Russian Security Chief Admits Nuclear Terrorism Danger." The Xinhua News Agency, 27 February 1996. Database Online; Available from Lexis-Nexis. Mikhail Barsukov states it is "quite possible" for terrorists to seize nuclear weapons.

"Russian Weapons Plutonium Storage Termed Unsafe by MINATOM Official." *Nucleonics Week*, 28 April 1994.

"Russia's Strategic Nuclear Forces under Reliable Control." *Military News Bulletin* (July 1994), 3. Article appearing in a monthly publication produced by the Voeninform Agency of the Defense Ministry of the Russian Federation and Russian Information Agency Novosti.

Shapiro, Margaret. "Russia Orders Tightened Security to Protect Nuclear Materials." *Washington Post*, 24 February 1995, A15. Investigations by Interior Minister Viktor Yerin into 30 smuggling cases.

Shenon, Philip. "Bombs for the Making." *New York Times*, 17 March 1996, sec. 4, E2. Account of the General Accounting Office's report of nuclear material security in the former Soviet Union.

_____. "Ex-Soviet A-Bomb Fuel an Easy Target for Terrorists, U.S. Says." *New York Times*, 13 March 1996, A5.

Shoumikhin, Andrei. "The Weapon Stockpiles." *Comparative Strategy* (April/June 1995), 211-17.

Solntsev, Vladimir. "U.S. Aids Russia to Prevent Proliferation of Nuclear Materials." ITAR-TASS, 28 March 1996. Database Online; Available from Lexis-Nexis.

"Some Security Problems with Nuclear Materials in Depots of Northern Fleet." *Yadernyy kontrol'* (February 1995), 12-15, as translated in FBIS-UMA-95-239-S, 24-30.

Smith, R. Jeffrey. "U.S. Takes Nuclear Fuel; Officials Feared Terrorism in Kazakhstan." *Washington Post*, 23 November 1994, A1.

Sutyagin, Igor. "Security of Russian ICBM Launch Sites." *Jane's Intelligence Review* (August 1994), 356-57.

"Terrorist Threat to Nuclear Plants Denied." *Komsomol'skaya pravda*, 22 February 1995, 2, as translated in FBIS-SOV-95-039, 20-21. Interview with Georgiy Chirov, chief of "Rosenergoatom" Department for Physical Protection of Nuclear Power Stations, on Chechen threats.

Thompson, M. "Sapphire's Hot Glow." *Time*, 5 December 1994, 38-39. Report on smuggling from Kazakhstan.

Turbiville, Graham H. Jr. *Weapons Proliferation and Organized Crime: The Russian Military and Security Force Dimension*. INSS Occasional Paper 10. Colorado Springs, CO: USAF Institute for National Security Studies, USAF Academy, June 1996. Concludes that Russian military and security forces are the principal source of arms available to organized crime groups, participants in regional conflict and corrupt state officials engaged in the black, gray and legal arms markets.

"Ukrainian Regulations on Nuclear Safety." *Pravyla Fizychnoho zakhystu yadernoho materialu ta yadernykh ustanovok*, 12 July 1994, as translated in JPRS-TND-94-007-L, 35-40.

Umbach, Frank. "Control and Security of Nuclear Weapons in the Former Soviet Union." *Aussenpolitik: German Foreign Affairs Review* (Winter 1992), 363+.

"U.S. and Russia May Share Intelligence Services." *New York Times*, 19 October 1992, A4(N), A6(L). Discussions that United States and Russia may pool intelligence information to fight nuclear proliferation, terrorism and drug smuggling.

US Congress. Office of Technology Assessment. *Proliferation and the Former Soviet Union*. Washington, DC: U.S. Government Printing Office (GPO), September 1994.

US Congress. Senate. Committee on Foreign Relations. Subcommittee on European Affairs. *Loose Nukes, Nuclear Smuggling and the Fissile Material Problem in Russia and the CIS*. Washington, DC, GPO, 1995. Superintendent of Documents catalog no. Y4.F 76/2:S HRG.104-253.

"'Vympel' Force to Combat 'Nuclear Terrorism'." INTERFAX, 19 April 1994, as translated in FBIS-SOV-94-076. Commander of Russian Interior Troops, General Anatoliy Kulikov, reorganizes special *Vympel'* force.

Walker, William. "International Responses to the Threat of Nuclear Smuggling from Russia." *Medicine, Conflict and Survival* 12 (1996), 53-57. Discusses efforts by the Russian, US, British and other governments to control this problem.

Weglarczyk, Bartosz. "Atomic Smuggling, Cont'd." *World Press Review* (January 1996), 28-29. Presents the views of Sergei Novikov, a Russian nuclear-security official, and other issues concerning weapons security in Russia.

Whitney, Craig R. "Germans Suspect Russian Military in Plutonium Sale." *New York Times*, 16 August 1994, A1.

"Yadernaya mafiya v Rossii: Pravda i mify." [Nuclear Mafia in Russia: Truth and Myths] *Vek*, 22-28 September 1995, 4-9. Gennadiy Yevstafev, director of the SVR, states that there is no evidence that Russian nuclear scientists are working in countries such as Libya and Iran.

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II. Threat Assessments

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Attali, Jacques. *Economie de l'apocalypse: Traffic et proliferation nucleaires* [Economy of the Apocalypse: Nuclear Trafficking and Proliferation] Paris: Fayard, 1995.

Badolato, Edward V. and Dale Andrade. "Red Mercury: Hoax or the Ultimate Terrorist Weapon?" *Counterterrorism and Security* (Spring 1996), 18-20.

Barnaby, Frank. "Nuclear Accidents Waiting to Happen." *World Today* (April 1996), 93-95. Discusses safety of reactors, illicit trade of materials and safe management of plutonium and uranium.

_____. "Red Mercury: Is There a Pure-fusion Bomb for Sale?" *International Defense Review* (June 1994), 79-81.

_____. "Nuclear Terrorism." *Safe Energy* (June-July 1993), 10-12.

_____. "Nuclear Threats." *Medicine and War* (April/June 1992), 74-86.

_____. *The Role and Control of Weapons in the 1990s*. London; New York: Routledge, 1992. Discusses proliferation in the Third World, nuclear terrorism and environmental damage.

Beckman, John. "The Clock is Still Ticking; Unstable Regions, Terrorists Push the World a Little Closer to the Nuclear Brink." *Los Angeles Times*, 29 February 1996, B2.

Begley, Sharon, Daniel Pedersen, et al. "Chain Reaction: It's the Ultimate Nuclear Nightmare: Terrorists with the Bomb. Could They Make One?" *Newsweek*, 12 July 1993, 50-51.

"Blackmail Threat from 'Nuclear Terrorists' Viewed." *Neue Kronen-Zeitung*, 13 September 1994, 10-11, as translated in JPRS-TND-94-019, 35.

Bluth, Christopher. "Nuclear Proliferation 2: Assessing the Risks." *World Today* (August-September 1993), 146-47.

"BND: Arab Terrorists Buying Nuclear Material." *Bild*, 24 April 1995, as translated in FBIS-WEU-95-078, 13-14.

Boyar, Robert E. "Senator Lugar Warns about U-235 Bombs." *Insight on the News*, 25 March 1996, 27.

Brooks, Linton. "New Nuclear Threat." *U.S. Naval Institute Proceedings* (May 1994), 52-55.

Cameron, Gavin. "Nuclear Terrorism: A Real Threat?" *Jane's Intelligence Review* (September 1996), 422-26.

Cetron, M.J. and O. Davies. "The Future Face of Terrorism." *Futurist* no. 6 (1994), 10-15.

Cheek, Gary H. *Coping with Mass Destruction: United States Power Projection in the Nuclear and Chemical Third World*. Fort Leavenworth, KS: Army Command and General Staff College, School of Advanced Military Studies, 1993. Weapons of mass destruction proliferation may cause grave consequences for power projection forces in the future.

Cohen, Sam. "The Coming Neutron Bomb Threat." *Wall Street Journal*, 15 May 1996, A14. Possible use of nuclear fusion byproduct by terrorists.

Crowell, Todd. "Nukes on the Loose: The End of the Cold War Has Made Nuclear Terror More Likely." *Asiaweek*, 6 October 1995, 50-56. Cover story; contains the following subsections: "Diversions: Examples of Nuclear Smuggling; Ground Zero: What If a Terrorist Bombed Hong Kong?; Danger: Five Spots in Asia to Worry about; Testing: Why Nations Feel They Must Explode Their Bombs."

De Santis, Hugh and Marvin Ott. "Rating Clinton Policy on Nuclear Terrorism; Administration Long on Talk, Short on Real Effort to Halt Nukes." *Christian Science Monitor*, 14 December 1993, 22.

"Die neuen Risiken." [The New Risks] *Internationale Politik* (February 1995), 3-46. Seven articles discussing organized crime, narco- and nuclear terrorism and arms smuggling.

Eberle, J. "Nuclear Proliferation 1: The Politics of Fear." *World Today* nos. 8-9 (1993), 144-46.

Edwards, Rob. "Cherry Red and Very Dangerous." *New Scientist*, 29 April 1995, 4-5. Discusses the dangers of "red mercury," a powerful chemical explosive.

Evancoe, Paul R. "Germinating Technology Feeds A-weapon Scenario: Illegal Acquisition of Enriched Uranium, Plutonium Becomes the Source of Deep International Concern." *National Defense* (October 1994), 18-19.

Falk, Bernhard. "Nuklearkriminalität in Deutschland." [Nuclear Criminality in Germany] *Journal Kriminalistik* (May 1995), 323-29. Describes changes in Germany's internal security because of nuclear material diversion.

Fialka, John J. "Nuclear Terrorism Threat is Growing, Senate Panel is Told." *Wall Street Journal*, 14 March 1996, A8. Testimony of Sarah A. Mullen before the Permanent Investigations Subcommittee.

"FIS' Yevstafyev on World Proliferation." *Yadernyy kontrol'* (January 1995), 12-15, as translated in JPRS-TAC-95-002, 99-104. Interview with the head of the Directorate for Arms Control and the Proliferation of Weapons of Mass Destruction at the Foreign Intelligence Service of Russia.

Fischer, David. "Plutonium Smuggling: Assessing the Risk." *Army Quarterly and Defence Journal* (January 1995), 92-97.

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Scheinman, Lawrence. "Nuclear Safeguards and Non-Proliferation in a Changing World Order." *Security Dialogue* no. 4 (1992), 37-50.

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Smith, R. Jeffrey. "Specialists Urge Better U.S. Efforts to Safeguard Ex-Soviet Nuclear Material." *Washington Post*, 14 March 1996, A13. General Accounting Office's report on the security of facilities.

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Waller, Douglas. "Nuclear Ninjas: A New Kind of SWAT Team Hunts Atomic Terrorists." *Time*, 8 January 1996, 38-41. Description of the Department of Energy's Nuclear Emergency Search Team.

Wolf, Franklin R. *Of Carrots and Sticks or Air Power as a Nonproliferation Tool*. Maxwell AFB, AL: Air University, July 1994. Proposes institutionalizing force options into nonproliferation enforcement, ideally as part of Chapter 7 enforcement actions under the authority of the UN Security Council.

VI. Legal Aspects of the Problem

Beres, Louis Rene. "On International Law and Nuclear Terrorism." *Georgia Journal of International and Comparative Law* (Spring 1994), 1-36.

_____. "The United States and Nuclear Terrorism in a Changing World: A Jurisprudential View." *Dickinson Journal of International Law* (Fall 1994), 327-66.

Boyle, Francis A. "Citizen Initiatives Under International Law: The Criminality of Nuclear Weapons." *Scandinavian Journal of Development Alternatives* (June 1989), 37-43.

Capezzuto, Louis J. "Preemptive Strikes Against Nuclear Terrorists and Their Sponsors: A Reasonable Solution." *New York Law School Journal of International and Comparative Law* nos. 2-3 (1993), 375-99. See Synopsis of Publications of Special Relevance to Defense Officials.

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"First Committee: Post-Cold-War Nuclear Security Issues Debated in Disarmament Forum." UN Chronicle (March 1995), 76-77. Discusses the opinion of the International Court of Justice on the threat or use of nuclear weapons.

International Congress of Jewish Lawyers and Jurists. *The Calamira Trial: Protekistan v. Calamira; A Public Trial on Legal Problems Concerning the Sale of Nuclear Weapons*. Jerusalem: International Association of Jewish Lawyers and Jurists, 1992.

Mullins, Wayman C. "An Overview and Analysis of Nuclear, Biological, and Chemical Terrorism: The Weapons, Strategies and Solutions to a Growing Problem." *American Journal of Criminal Justice* no. 2 (1992), 95-119.

Reye, Susan. "Nuclear Law in Central and Eastern Europe." *NEA Newsletter* (March 1993), 36-9.

Treiger, A. "Plugging the Russian Brain Drain: Criminalizing Nuclear-Expertise Proliferation." *Georgia Law Journal* (November 1993), 237-67.

United Nations. International Law Committee. *Yearbook of the International Law Commission, 1991: v. 1, Summary Records of the Meetings of the Forty-Third Session, 29 April-19 July 1991*. 1993. Contains sections on legalities on nuclear weapons and other weapons and liabilities for damage.

Weisbecker, Jane C. "Protecting Nuclear Materials in the Terrorist Age: The International Challenge." *Brooklyn Journal of International Law* no. 2 (1986), 305-338.

Williamson, R.L. "Law and the H-Bomb: Strengthening the Nonproliferation Regime to Impede Advanced Proliferation." *Cornell International Law Journal* (Winter 1995), 71-167.

VII. World Wide Web Sites

Two of the most useful and informative sites are described below and contain a multitude of links to other related sites.

1) Center for Nonproliferation Studies (CNS) at the Monterey Institute of International Studies <http://cns.miis.edu>.

The Center "was created at the Monterey Institute of International Studies (MIIS) by Dr. William C. Potter to confront the serious threat of international proliferation of nuclear, missile, biological, chemical and advanced conventional weapons. The CNS provides research tools, analysis, training and education on nonproliferation issues to scholars and policy makers from around the world. Since its inception in 1989, the CNS has grown into the leading US center for training and research specifically on nonproliferation issues."

This site contains a list of CNS projects, publications (full-text) and access by subscription only to numerous databases maintained by CNS. The feature "CNS User's Guide to Nonproliferation Research on the Internet" is an extensive guide to related sites. This site's "Top Ten Sites for Nonproliferation Research" is especially useful for analysts researching this topic for the first time.

2) Nuclear Control Institute <http://www.nci.org/nci/index.htm>.

The Nuclear Control Institute "is an independent research and advocacy center specializing in problems of nuclear proliferation." It is a nonpartisan and nonprofit organization monitoring nuclear activities worldwide and pursuing "strategies to halt the spread and reverse the growth of nuclear arms." In particular, it focuses on the "urgency of eliminating A-bomb materials-plutonium and highly enriched uranium-from civilian nuclear power and research programs."

This institute has an especially useful area titled "Special Section Nuclear Terrorism Threat: How to Prevent It," which contains the following subsections: "Could Terrorists Build an A-Bomb with Stolen Materials?"; "Are Nuclear Reactors Vulnerable to Truck Bombs?"; "Are International Safeguards Effective in Plutonium Plants?"; "Is There a Nuclear Black Market?"; and "Valuable Links."

Synopsis of Publications of Special Relevance to Defense Officials

This section highlights previously cited publications that I deem especially important and relevant to defense officials. Detailed abstracts follow each of the citations.

Three studies produced by the Center for Counterproliferation Research of the National Defense University are especially useful in assessing the impact on the

three branches of the US Armed Forces in dealing with weapons of mass destruction:

The Impact of Nuclear, Biological, and Chemical Proliferation on Naval Operations and Capabilities. Washington, DC: Center for Counterproliferation Research, National Defense University, February 1996.

The stated objectives of the workshop proceedings are "to heighten the awareness within key sectors of the Navy-Marine Corps team of the rising impact on naval operations and naval capabilities of the global proliferation of nuclear, biological and chemical weapons and associated technologies. The workshops emphasize the practical, operational issues associated with battle group and expeditionary naval operations mounted within a joint operational context in collaboration with allies and local, friendly military forces." Highlights of some ideas produced by the workshop include the following:

- The nuclear, biological and chemical threat faced by the fleet is serious and growing. The biological and chemical warfare threats are especially acute.
- Fleet nuclear, biological and chemical readiness has been substantially eroded.
- On balance, naval forces bring significant strengths to operations in a nuclear, biological and chemical environment.

A key near-term requirement is the development of an interactive gaming method to enable operational commanders, planners and key policy officials to improve their understanding of operational tactics in an nuclear, biological and chemical environment.

The Impact of the Proliferation of Nuclear, Biological, and Chemical Weapons on the United States Air Force. Washington, DC: Center for Counterproliferation Research, National Defense University and HQ USAF National Security Negotiations Division, February 1996.

This report discusses initiatives aimed at coping with an adversary's possession and potential use of nuclear, biological and chemical and missiles, to include improved passive and active defenses, accelerated development of counterforce and command, control, computers and intelligence capabilities. Workshop

participants concluded that a number of closely related conceptual, doctrinal, organizational, training, equipment, intelligence, operational and planning issues dealing with this threat have not been addressed satisfactorily. A sampling of these issues includes the following:

- Effective theater air and missile defenses are crucial to protecting air bases from nuclear, biological and chemical attack and ensuring sustained air operations.
- Overseas air bases do not have the resources or people to support identification, location and early warning of biological or chemical warfare attacks.
- Insufficient individual protective equipment is available for sustained operations and there is need for a collective protection capability.
- Air Force intelligence collection requirements and efforts need to place greater emphasis on adversary nuclear, biological and chemical capabilities, operational concepts and employment doctrines.

Part II of the report contains a description of the war game, and part III provides an extensive list of participants' recommendations.

The Impact of the Proliferation of Nuclear, Biological, and Chemical (NBC) Weapons on United States Army. Washington, DC: Center for Counterproliferation Research, National Defense University, August 1995.

The four-part workshop focuses on the challenges presented to US Army units in combat and noncombat operations by the proliferation of nuclear, biological and chemical weapons and missiles. Its principal objectives are "to enhance the understanding of the participants on emerging proliferation threats and problems, to assess the Army's posture in addressing these challenges and to assist workshop participants in developing potential responses and undertaking future developments."

Workshop 1, Establishing the Baseline. Examines current intelligence estimates of the proliferation threat worldwide, US government policies, joint military approaches and initiatives, ongoing research and an overview of the Army's

applicable doctrine, concepts and programs. This part of the workshop produced six key observations.

Workshop 2, Research and Development. Focuses on proliferation-relevant Army programs; progress in developing both active and passive defense capabilities; a counterproliferation planning and analysis tool; and the emerging results of the Joint Staff's Counterproliferation Missions and Functions Review. This workshop contains seven key observations.

Workshop 3, Unit Operations. Focuses on the impact of nuclear, biological and chemical proliferation on the operations of combat units at corps and division levels. It discusses the US Army Chemical School; dismounted Battle Space Battle Lab; Army Chief of Staff guidance; studies of operations in nuclear, biological and chemical environments; and doctrine, training, leader development, and requirements for organizations, materiel and individual soldier capabilities.

Workshop 4, Shaping the Future. Focuses on policy and strategy for the future; concepts and doctrine for the future, and requirements for the future.

Beres, Louis Rene. "Preventing Nuclear Terrorism against the United States: 10 Vital Questions." *Special Warfare* (August 1996), 22-29. Few publications have appeared for policy makers who must create a strategy for dealing with nuclear terrorism. To achieve a fuller understanding of the risk calculations that terrorist organizations make and the factors most likely to affect those calculations, the author postulates 10 questions to ask, such as, "Are the risk calculations made by terrorist groups affected by their particular relations with host states?" and "Would the implementation of effective measures to counter nuclear terrorism require special patterns of international cooperation, and how might such patterns be created?". Also discussed is the role of special operations forces in coordinated preemption operations in this country and abroad.

Capezzuto, Louis J. "Preemptive Strikes against Nuclear Terrorists and Their Sponsors: A Reasonable Solution." *New York Law School Journal of International and*

Comparative Law nos. 2-3 (1993), 375-99. Discusses a doctrine of anticipatory self-defense against terrorist states.

Cottrell, Scott. "Identifying the Separate Governmental Agency Roles and Tasks in Countering the Proliferation of Weapons of Mass Destruction Among Nonstate Actors (Terrorists) During Each Phase of the Counterproliferation Process."

MMAS thesis, US Army Command and General Staff College, Fort Leavenworth, Kansas, 1997. This thesis by Major Cottrell, United States Marine Corps, identifies the threat posed by nonstate actors/terrorists wielding weapons of mass destruction and defines the roles of the separate governmental agencies during each phase of the counterproliferation process. It also makes judgments as to whether current interagency relationships are adequate to counter this threat. [Available on DTIC Summer 1997].

Krause, Joachim. "Proliferation Risks and Their Strategic Relevance: What Role for NATO?" *Survival* (Summer 1995), 135-148. The article discusses NATO's June 1994 publication *Policy Framework on Proliferation of Weapons of Mass Destruction* which placed concern about proliferation of these weapons high on its agenda (see *NATO Review*, June 1994). NATO's publication assessed two categories of risk-weapons of mass destruction threats to Western armed forces operating in out-of-area missions and direct attacks against Western Europe by rogue nations. The author calls for reviewing other threats not envisioned in this document, which in turn will lead to adjustments in nuclear, biological and chemical defense, force structures and doctrines. His additional threats to consider include shifts in regional power balances, danger of accidents, erosion of international norms and systems of order, regional instabilities fueled by proliferation, and others.

Ruehle, Michael. "NATO and the Coming Proliferation Threat." *Comparative Strategy* (July-September 1994), 313-20. The author, a senior planning officer in the Political Affairs Division of NATO, discusses those areas where a NATO role could be developed in the longer term to prevent and counter proliferation. He suggests various levels of a NATO contribution to what he calls an "assertive nonproliferation policy." At the basic level preventive diplomacy using military

means would be used to defuse proliferation incentives at the core. Another level of an assertive nonproliferation policy would entail enforcing international sanctions against proliferators. The third level would involve offensive military action against the weapons or production facilities of the proliferating state, as in the Gulf War, in pursuing a state's weapons of mass destruction program during the initial phases of a war. A fourth level is ballistic missile defense which is being carried out in several ways.

US Congress. Senate. Committee on Governmental Affairs. Permanent Subcommittee on Investigations. *Global Proliferation of Weapons of Mass Destruction: Illicit Trafficking of Nuclear Materials: Hearings before the Permanent Subcommittee on Investigations of the Committee on Governmental Affairs*. 104th Cong., 2d sess., 13, 20, 22 and 27 March 1996. These hearings, conducted by Senators Roth and Nunn, include testimonies by John Deutch of the CIA and Ambassador Rolf Ekeus of the UN Special Commission. The addendum to the hearings includes very informative documents by numerous specialists in the field. Among others they include:

"The Threat of Nuclear Diversion: The Intelligence Community Response."

"Chronology of Nuclear Smuggling Incidents."

"Nuclear Nonproliferation: U.S. Efforts to Help Newly Independent States Improve Their Nuclear Material Controls."

"The Nuclear Black Market."

"Scientists, Engineers and Proliferation of Weapons Technology."

"Weapons, Proliferation and Organized Crime: Russian Military Dimensions."

"Reducing the Threat of Nuclear, Biological and Chemical Proliferation and Terrorism."

The hearing of 27 March concentrates on responses to domestic terrorism and includes presentations by the Federal Emergency Management Agency (FEMA), FBI, NEST, Department of Defense and other agencies.

If tomorrow morning the world awakens to the realization of the specter of nuclear, biological or chemical terrorism, will US and international planning be

adequate and coordinated enough to respond? With so many agencies and nations involved in countering this threat, will each entity know its precise role and be able to act on it in a moment's notice in a coordinated and efficient manner? More important, are all agencies involved doing enough collectively now to prevent this threat from ever being realized? Reading, evaluating and acting on problem areas and solutions set forth in the publications listed above will help formulate the most effective strategies to counter this worldwide threat.

1. This project was completed under the auspices of a grant from the Institute for National Security Studies, US Air Force Academy, Colorado Springs, Colorado.

2. For citations to literature on this topic published before 1992, see Timothy L. Sanz, "Nuclear Terrorism: Selected Research Materials," *Low Intensity Conflict & Law Enforcement* (Winter 1992), 337-45; or the US Army Foreign Military Studies World Wide Web site at <http://leav-www.army.mil/fmso/geo/pubs/nucter.htm>.

Citations found in this research from 1992 to today can be accessed at <http://leav-www.army.mil/fmso/geo/pubs/mrnucter.htm>.

3. I would like to thank the following individuals for helping to identify very pertinent sources of information: Chrisopher Fitz and the Center for Nonproliferation Studies at the Monterey Institute of International Studies; James L. Ford, senior visiting fellow at the Center for Counterproliferation Research of the National Defense University; and John Sopko, deputy chief counsel to Senator Sam Nunn on the Congressional Permanent Subcommittee on Investigations.

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