American Council for the UNU
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WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY
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Final Report - Summarizing Environmental Security Monthly Scanning

May 2005––May 2006

The purpose of the monthly scanning reports is to assess worldwide environment-related events in order to identify and analyze issues that might trigger future international environmental regulations and/or modifications to the existing ones with potential implications for the miliraty.

Environmental security continues to move up on national, regional, and international agendas due to increasing scientific evidence of climate change, extreme weather events, the number and intensity of natural disasters, pollution, potentials for pandemics, and nuclear-biological-chemical threats. The *Army Strategy on the Environment* reflects this new direction.

Environmental diplomacy is increasingly being used to support conflict prevention efforts and to build international confidence, while human security is gaining recognition in both military and diplomatic circles. Environmental security is a link between the two.

The Millennium Project defines environmental security as environmental viability for life support, with three sub-elements:

- preventing or repairing military damage to the environment,
- preventing or responding to environmentally caused conflicts, and
- protecting the environment due to its inherent moral value.

This summarizing paper presents the events and emerging environmental security–related issues identified since May 2005, organized around this definition.

Over 250 items have been identified during the past year and about 700 items since August 2002 when tha the Millennium Project has began this monthly scanning. All the items and their sources, organized by the month when they were identidied, are available on the Millennium Project's Web site, www.acunu.org (under "What's New," select "International Environmental Security Issues"). The list is updated monthly.

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All our efforts to promote security, development and human rights, and to pursue sustainable development, will be in vain if environmental degradation and natural resource depletion continue unabated… We need clean water, fertile soils and pure air if we are to build a world of peace, freedom and dignity for all.

Kofi Annan, UN Secretary-General
message to the International Conference on
Environment, Peace and the Dialogue among Civilizations

Executive Summary

It is increasingly passé and unacceptable to think that humanity has to choose between economic growth and environmental protection. Without environmental security, economic growth is not sustainable. Advanced engineering, management concepts, and a better educated market are making it profitable to synergistically further economic growth and a healthy environment.

Calls for improving international environmental governance are increasing. The technological ability to identify environmental threats and crimes is becoming cost-effective through new sensors and communications. The UN Security Council and other international bodies are expected to pay more attention to problems of environmental security. Environmental damages that people and organizations got away with in the past are less like to escape detection and punishment in the future.

General Patterns and Highlights

- The environment and related issues continue to rise on the agenda and in strategic considerations in all institutional categories (government, corporate, NGO, academic, and international organizations). This includes strengthening international environmental governance and addressing institutional structures, interlinkages among treaties, and instruments to improve implementation. At the same time, there are also issues of noncompliance with international treaties, lack of cooperation with international organs, and deadlock in many international treaty–related negotiations as environmental security and multilateral environmental agreements often conflict with national economic or political interests.
- International attention is shifting from designing new MEAs to improving the effectiveness of existing agreements.
- More cooperation is occurring among a variety of institutions for better, more synergistic environmental policy and activities, which expands the scope of environmental considerations among a broader set of actors and the public.
- Costs are falling for nanotech environmental sensors, which can be connected to global information systems via satellite, potentially making environmentally damaging actions known instantaneously and worldwide.
- Increasingly powerful analytic models and tools are being created to compare national environmental status, such as the Environmental Performance Index to measure environmental performance, and to improve policymaking and environment-related decisions.
- More serious incentives are needed to persuade developing countries to adopt environmentally friendly practices, and since richer countries export polluting industries to them, there are economic incentives not to change. However, international pressure to change

seems inevitable, considering the size and scope of countries like India and China. There are also no serious incentives to significantly change richer countries' practices, and the carbon trading system is currently in doubt. The UN Framework Convention on Climate Change's Clean Development Mechanism is a valuable but limited tool for green technology transfer and capacity building in developing countries.

- Stronger international and interinstitutional coalitions and frameworks are needed to counter global environmental crime, such as illegal trade in hazardous wastes, smuggling proscribed hazardous materials, and exploiting and trafficking of protected natural resources, which is estimated to $22–31 billion annually.
- There is a trend toward adopting the precautionary principle versus reactive actions. (Potential health and environmental effects of new technologies and substances are increasingly assessed.)
- The accelerating pace of life sciences discoveries has fundamentally changed the spectrum of threats. In order to prevent misuse of science, it is important to strengthen the scientific expertise of security organizations and to create an independent science-and-technology advisory committee for intelligence agencies, as well as to promote within the international scientific community a common culture of awareness and responsibility.
- New international watchdog bodies have been created and others proposed to assist legal actions against environmental crimes.
- Avian flu is waking up countries to the fact that they are not prepared for pandemics from either natural or terrorist causes. More serious planning is beginning.
- Increasing scientific evidence of accelerating long-term climate change has triggered new regulations to reduce greenhouse gas emissions, better monitoring and models, and strategies to cope with its effects.
- Even with intensified global action, environmental disasters and degradation will continue in many regions of the planet, possibly triggering conflicts.
- The lack of adequate coastal governance might be a potential source of dispute.
- There is no adequate international system or framework to cope with the potential of 50 million environmental refugees by 2010.
- The Millennium Ecosystem Assessment reported that 60% of Earth's vital ecosystems are gone or threatened, which has helped stimulate efforts to stabilize biodiversity.
- ICT and robotics, new detection and cleanup techniques, and more environmentally friendly warfare contribute to reducing military and conflict environmental footprint.
- Complementing or in response to the lack of governmental engagement to address environmental issues adequately, a growing number of industries are making efforts to improve their environmental and social performance, especially related to polluting emissions.
- Militaries are increasingly called upon to assist in environmentally related issues such as natural disasters or conflicts triggered by or affecting the environment, enforcement of multilateral environmental agreements, and reducing their own environmental impacts.

- Europe continues to lead in implementation of environment-related regulations and the design of new ones. It also began a revision of environmental regulations in order to make them easier for implementation and enforcement.

Environmental security analysis has to consider the impacts of new kinds of weapons; asymmetrical conflicts; increasing demands on natural resources; urbanization (which makes more people dependent on vulnerable public utilities); continued advances in environmental law, with escalating environmental litigation; and the globalization that is increasing interdependencies.

Preventing or Repairing Military Damage to the Environment

Environmental degradation and hazardous ordnance leftovers in post-conflict areas threaten the livelihoods and health of current and future generations and may constitute an impediment for lasting peace. There should be a "green chapter" in the Geneva Conventions for safeguarding the rights of the environment. The UN reports that about half of all conflicts over the past 20 years were "re-conflicts"—conflicts that recurred within five years after peace accords. Many had environmental backgrounds.

Some suggest that human security should be the new organizing principle for the UN, since internal conflicts and natural disasters are more likely than national wars. The recent report *Environment and Security—The Role of the United Nations* recommends that "The UN Security Council should take a leadership role by making environmental security a priority and moving environmental issues from the technical to the security domain" and that the UN coordinate international efforts on environmental security in all fields—from trade to water and climate change—and integrate environmental perspective in all its projects.

Many post-conflict health and environmental impact assessments are ongoing, as are liability disputes. The legacy of unexploded ordnance from conflicts around the world and tons of chemical weapons and ordnance abandoned at the end of World War II are still realistic threats to the environment and human health. Protocol V on Explosive Remnants of War, part of the UN Convention on Certain Conventional Weapons (CCW), will enter into force in November 2006, requiring parties to an armed conflict to mark, clear, and destroy all explosive remnants of war in territories under their control, to offer assistance in areas not under their control, and to share information with relevant organizations. New national initiatives increasingly include the military for environmental protection, mitigation (after natural disasters), prevention, and preparedness, as well as assistance in compliance with international agreements. The People's Liberation Army of China now has to submit its construction and training plans, as well as materiel transfer, weapon purchases, repair, and disposal to local authorities for approval regarding environmental impacts. The President also issued new regulations that specify assessment procedures and penalties for infractions.

New technologies are offering improved detection, cleanup, monitoring, and surveillance possibilities. The World Health Organization is developing a global epidemic simulator based on the model of climate monitoring systems that would record the location of disease outbreaks and their trajectory and then allow someone to enter alternative mitigation measures to see the

results. Small robotic helicopters operated by radio control could be used for reconnaissance and surveillance of areas inaccessible to humans. High-sensitivity portable chemical and biological devices offer new detection, monitoring, and cleanup possibilities with high accuracy and rapid response time.

Sensors and techniques based on nanotechnology, bacteria, or genetically modified plants or animals could be used for detection of toxins, cleanup, remediation, and recovery. Similarly, many new technologies are in labs close to the implementation phase for eventual detection and reaction to a pandemic or biological terrorism attack. Incorporating bacteria-killing halamides into fabrics of protective clothing could reduce health risks of personnel working in biologically hazardous environments.

New measures to improve nuclear, biological, and chemical weapons countermeasures include adoption of amendments to the Convention on the Physical Protection of Nuclear Material, the International Convention for the Suppression of Acts of Nuclear Terrorism (which has over 100 signatures and began ratification), the recommendation for a biosecurity watchdog, codes of conduct for scientists, the International Strategy for Chemicals Management adopted in February 2006, and continuous assessment of existing regulations.

Space observations have become a major tool for monitoring environmental change, helping policymaking develop adequate strategies, and assisting in the enforcement of environment-related regulations. The European Space Agency's project CONTRAILS monitors daily contrail and cirrus cloud generation by airplanes over Europe and the North Atlantic for a detailed assessment of their greenhouse impact. Another ESA project, Globwetland, supports the Ramsar Convention on Wetlands. ESA and the EC Joint Research Centre agreement of cooperation enhance the policy support role of the Global Monitoring for Environment and Security system, which aims to provide the public, policymakers, and decisionmakers with essential strategic environmental and civil security information based on operational and integrated space, air, ground, and sea observations.

The IAEA is building a global network for monitoring nuclear facilities by using direct satellite information to enhance the possibility of real-time tracking of sensitive nuclear materials and checking that they are not being diverted for nonpeaceful uses. The Traceable Radiometry Underpinning Terrestrial and Helio Studies (TRUTHS) will improve the monitoring of climate change parameters and help settle international disputes over greenhouse gas emissions and strategies to curb global warming.

Preventing or Responding to Environmentally Caused Conflicts

Water tables are falling on all continents, 40% of humanity depends on watersheds controlled by two or more countries, and the damaged carrying capacity of land may lead the poor to migrate to richer areas—increasing conflict potentials. Even with intensified global action, environmental disasters and degradation will continue in many regions of the planet, and the poor are the most vulnerable.

The UN High Commissioner for Refugees estimates that there are about 25 million internally displaced persons who fled their homes due to environmental circumstances rather than conflict. There is no international organization with an express mandate to protect and help IDPs, thus only about 24% of IDPs got some form of assistance in 2004. Natural disasters have equally devastating effect in industrial countries. Hurricane Katrina produced environmental damage and pollution on an unprecedented scale outside of full-scale war and displaced approximately 1 million people, with many cases still not resolved nine months after Katrina struck.

Possible sea level rises of over 30 centimeters by the middle of this century would drown or make uninhabitable several small Pacific countries. However, it is likely that well before physical inundation from general sea level rise forces residents to flee, they will have to abandon the island owing to unavailability of potable water, as intruding seawater contaminates the fresh water. Funafuti, where this phenomenon occurred in February 2006, might represent a snapshot of the future for all low-lying islands and littoral zones. Many Tuvaluans are already leaving their Pacific island homes and moving their communities to safer ground in New Zealand, thus officially becoming environmental refugees. In late 2005, over 100 villagers of the Pacific island Tegua, in Vanuatu, were relocated to higher ground to be protected from aggressive storms and waves. The move, done under the project Capacity Building for the Development of Adaptation in Pacific Island Countries, might represent the first example of formal mass displacement as a result of climate change.

The United Nations University warns that by 2010 the world might have to cope with as many as 50 million environmental refugees, while the international community is not presently equipped with an adequate international agreements system to deal with the situation. UN Under Secretary-General Hans van Ginkel, Rector of UNU, emphasized the need to prepare now "to define, accept and accommodate this new breed of 'refugee' within international frameworks," while Dr. Bogardi, Director of UNU's Institute for Environment and Human Security in Bonn, cautioned that the term "environmental refugee" might sometimes hide the real cause of displacement, which might be bad policies and practices.

The Third Global Conference on Oceans, Coasts, and Islands, "Moving the Global Oceans Agenda Forward," agreed to accelerate progress for achieving international ocean policy targets, including integrated ocean and coastal management, and participants examined two major emerging ocean policy issues: high seas governance and the effects of climate change on oceans and coastal environments. No international organization is responsible for tracking the progress of programs in integrated coastal and ocean management, and there is no regular collection of information on the social and economic well-being of coastal communities, where half of the world's people live.

Thawing of the Arctic sea ice opens up the Northwest Passage as an international shipping route, triggering international disputes over sovereignty and ecological implications. In addition to a potential sailing route, the opening of the Northwest Passage is an opportunity for access to rich resources, including oil. Recent research suggests that the passage could become ice-free and opened for navigation as soon as 2015. Although scientists, politicians, and environmental activists are increasingly warning about the complexity of the problem, no international regulations are yet in place for this fragile region. While Canada claims sovereignty over the

region, it is at odds with other countries, including Denmark and Russia, which argue that the area is a continuation of their territory.

"Lack of water or its poor quality, last year [2005], caused ten times more deaths than all the wars waged on the planet together," noted Loïc Fauchon, President of the World Water Council. Considering that in a few years more than half of world population will live in urban areas and that the urban populations of Asia, Africa, and Latin America are expected to reach 4 billion within the next three decades, increased efforts are necessary to develop socially and environmentally sustainable cities. In Africa, without immediate implementation of adequate water management systems, by the end of the century a quarter of the continent would suffer of lack of surface water. Presently, it is estimated that out of approximately 800 million Africans, some 300 million lack access to safe drinking water and 313 million do not have access to basic sanitation. In Asia, highland glaciers are shrinking by 7% annually, which means that by 2050 about 64% of China's glaciers would have vanished, raising concerns related to the region's future water supplies, flooding, and drought. Presently about 50% of Asia's mountain region is affected by infrastructure development, which by 2030 could rise to over 70% if current practices continue unrestricted.

The UN has declared 2006 the International Year of Deserts and Desertification to increase efforts to explore ways to cope, counter, or even reverse these phenomena, since "desertification has been seen as a threat to human security." The southern progression of the Sahara increases famine and migration, escalating risk of conflicts across Africa.

The increased number and intensity of natural disasters triggered the building of a global early warning system. The emphasis on actions to prevent and react to natural disasters increased "because their incidence and severity is increasing due to climate change, environmental degradation, inappropriate development patterns and inadequate mitigation and preparedness systems." The International Council for Science launched a new program on Natural and Human-Induced Hazards to reduce their economic and social effects, connecting natural and social sciences to serve policymakers. The 3rd International Early Warning Conference, guided by the motto "From Concept to Action," focused on the implementation of the Hyogo Framework for Action 2005–2015, set short- and long-term early warning projects, and addressed high priority needs, mostly in critical countries and regions. Meanwhile, the World Meteorological Organization is increasing its role in natural disaster mitigation, particularly for helping least developed countries. As part of a global tsunami warning and mitigation system, UNESCO's Intergovernmental Oceanographic Commission launchedplans for a system for the Northeastern Atlantic Ocean, the Mediterranean, and connected seas, aiming to have an initial operational system in place by December 2007. In addition to those in the Pacific and Indian Oceans, planning is under way for one in the Caribbean.

Growing energy demand might become a driving force for some countries to disregard international security issues and accords to the point of jeopardizing international security. For example, there were international concerns expressed about the alleged Chinese offers of arms and other sensitive defense technology in return for oil and gas rights in certain countries.

Protecting the Environment Due to Its Inherent Moral Value

Although there has been great progress in many areas of environmental issues, noncompliance with international treaties and lack of cooperation with international organs, as well as deadlock in many international treaties–related negotiations, continue to be an international concern.

There are more than 500 MEAs, but the implementation and compliance process is seriously impeded by their mostly ad hoc nature and lack of clear international institutional framework. Thus the focus of international negotiations switched from designing new treaties to reinforcing existing ones and strengthening international environmental governance. The High-Level Meeting on Compliance with and Enforcement of MEAs, held in January 2006, explored new legal, structural, and institutional improvements, such as synergies, interlinkages, clustering of MEAs, and instruments to improve implementation. The action plan is expected to be presented to the UNEP Governing Council in 2007. The UNU Inter-Linkages Initiative helps the governments of 14 Asian and Pacific Countries understand and implement multilateral environmental agreements at national and regional levels.

The European Commission has presented a three-year program to modernize EU legislation as part of its commitment to simplify the EU system of rules. The process will start with the environment-related sector, since it is the most heavily regulated one. Europe is also considering transforming some recommendations into directives for enforcing implementation.

New international watchdog bodies have been created and others proposed to assists legal action against environmental crimes. For example, the Compliance Committee for the Kyoto Protocol has begun its operations, the Asian Regional Forum for combating environmental crime was formed, a global advisory group to address bio-threats was proposed, and the EC initiated a series of legal actions against member states for breaching EU environmental law.

Increasingly powerful analytic models and tools are being created to compare national environmental status, such as the Pilot 2006 Environmental Performance Index developed by the Center for Environmental Law & Policy at Yale University and the Center for International Earth Science Information Network at Columbia University in collaboration with the World Economic Forum and the Joint Research Centre of the European Commission.

Some noteworthy MEAs that were recently adopted or strengthened or are in negotiations include:

- International Convention for the Suppression of Acts of Nuclear Terrorism
- Protocol V on Explosive Remnants of War, part of the UN Convention on Certain Conventional Weapons, to enter into force in November 2006
- Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, to be reviewed
- Stockholm Convention, to be updated
- Convention on Biological Diversity and the Cartagena Protocol, to be updated
- post-Kyoto negotiations
- Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal

- Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
- Network of Marine Protection Areas, to be adopted by 2012
- REACH (Registration, Evaluation and Authorization of Chemicals)
- RoHS (EU Restriction of Hazardous Substances) Directive
- EC directive for e-waste management
- mercury and other heavy metals regulations
- legislation to curb harmful ocean sounds, proposed
- New Baltic Sea Action Plan based on ecosystem approach
- EC proposed strategy to curb greenhouse gas emissions from air travel
- EC enforcement of environmental pollution legislation

Electronic waste management is one emerging issue that is not yet addressed sufficiently internationally. A significant percent of the computer equipment sent to developing countries as aid is not usable. An international e-waste recycling system, along with transparent information and monitoring mechanisms to ensure accountability, is needed. Regional initiatives include the EC directive for e-waste management (Waste Electronic and Electrical Equipment), which came into effect in August 2005, and the Environmentally Sound Management of Electronic and Electrical Wastes program of action for the Asia-Pacific.

The number of commercial chemicals is expected to grow 80% over the next 15 years. The International Strategy for Chemicals Management was adopted in February 2006; there are recommendations for a biosecurity watchdog and codes of conduct for scientists. A Strategic Approach for International Chemicals Management was adopted.

China has created standards for nanotech, and the International Organization for Standardization has begun the process to establish international standards in the field of nanotechnologies.

UNESCO has issued a draft declaration that sets universal ethical guidelines for governments to consider ethical and human rights in science and technology policymaking.

In light of the potential revitalization of nuclear energy for meeting growing world energy demand with fewer greenhouse gas emissions, as well as the increase of NBC theft, terrorism, smuggling, and sabotage, countermeasures are needed to strengthen security. (Amendments to the Convention on the Physical Protection of Nuclear Material were adopted in July 2005; the International Convention for the Suppression of Acts of Nuclear Terrorism has over 100 signatures and began ratification.)

The Stockholm Convention on Persistent Organic Pollutants and the Basel Convention on Hazardous Wastes are continuously assessed and adapted, while new more inclusive regulations such as REACH and RoHS are added.

The Convention on Biological Diversity and the Cartagena Protocol were strengthened by new decisions, and new protected ecological sites were suggested both for land and marine environments. Greenpeace is suggesting that 40% of the world's oceans should be declared

natural reserves and protected in the same way as land areas are (according to UN data, at present just 0.6% of the oceans are protected compared with 12% of the world's land).

Some worry that current practices and legal frameworks are not adequate to protect against genetically modified organisms being spread in unwanted places and to other plants. It has been proposed that an investigating independent international commission and an international register for incidents be set up under the Cartagena Protocol on Biosafety. FAO says it is essential that environmental risk assessment studies be conducted, with protocols and methodologies agreed on at national and international levels.

With greenhouse gases on the rise, climate change–related phenomena are expected to continue. Some scientists consider that the global warming threshold might have been crossed. There is growing discussion about post-Kyoto strategies that should be more inclusive and fair. One idea is establishing global per capita carbon emissions targets.

Alliances continue to be created among private companies, government, NGOs, and international organizations to increase national and international ecoefficiency and environmental performance. Examples of these include the Principles for Responsible Investment launched by the UN and backed by the world’s largest investors, representing more than $2 trillion in assets owned; the American States initiatives to fight pollution at the state level; Canadian industrial support for implementing the Kyoto Protocol after the Canadian government’s decision to disregard it; the Asia-Pacific Partnership; and the Urban Environmental Accords, a municipal version of the Kyoto Protocol.

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Russian Green Party Formally Organized
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2.A Preventing or repairing military damage to the environment

ENVIRONMENTAL SECURITY RISES ON THE INTERNATIONAL POLITICAL AGENDA

UN Reforms in Development, Humanitarian Assistance, and Environment to be Proposed by High-Level Panel

The UN Secretary-General has appointed a 15-member international high-level panel to explore how to improve the work and efficiency of the UN system in the areas of development, humanitarian assistance, and environment. The study's outcomes will be used for the comprehensive UN management reform, complementing such other major reform initiatives as the new Peacebuilding Commission and the new Human Rights Council. The study is expected to be completed by the summer and its recommendations formally presented to the UN General Assembly in September 2006, with possible implementation in 2007. [February 2006. Military Implications; Source]

Human Security Proposed as Reorganizing Principle for the UN

The UN was organized 60 years ago around the principle of preventing national wars. Today it should be reorganized around the principle of addressing human security, which would reinvent global governance, proposes former Canadian foreign minister, Lloyd Axworthy. A UN cohesive response system able to rapidly deploy aid when and where necessary is needed now to efficiently respond to current civil conflicts and disasters. [November 2005. Military Implications; Source]

Environment and Security-The Role of the United Nations

Environment and Security-The Role of the United Nations is a comprehensive report summarizing the outcomes of a Roundtable Conference conducted by the UN Foundation and the Woodrow Wilson Center's Environmental Change and Security Project. It assesses security by its links to population, water, resources, and climate change and makes recommendations to the UN for a better integration of environment with security issues. It recommends that "The UN Security Council should take a leadership role by making environmental security a priority and moving environmental issues from the technical to the security domain", and that the UN coordinate international efforts on environmental security in all fields, from trade to water, climate change, and integrated environmental perspective in all its projects. "By protecting the earth, the UN Security Council can help preserve the peace," concludes the report. [See also *New Reports Stress the Link between Environment and Security* in the January 2005 environmental security report.] [September 2005. Military Implications; Source]

Human and Environmental Security - An Agenda for Change

Human and Environmental Security - An Agenda for Change, by Stakeholder Forum for a Sustainable Future, is a "ground-breaking book, authored by prominent international decision-makers, tackles the global human security problem across the range of core issues. The authors identify the causes of insecurity, articulate the linkages between the different elements of human

security, and outline an agenda for engaging stakeholders from across the globe in building the foundations of genuine and lasting human security for all nations and all people." [September 2005. Military Implications; Sources]

International Conference on Environment, Peace and the Dialogue among Civilizations and Cultures

The International Conference on Environment, Peace and the Dialogue among Civilizations and Cultures, held May 9—10 in Tehran, Iran, was organized by UNEP, Iranian Department of Environment, the United Nations University (UNU), and UNESCO. It discussed and reaffirmed the interaction between environment and conflict, environment and human security, and the role of dialogue in reducing international conflict and protecting the environment. Other issues discussed were: the efficiency of the current international regulations relating to environmental protection during armed conflict; the status of environmental treaties after parties go to war; the applicability of international law to non-international armed conflicts; and UNEP's possible role in assessing liability for damages. UNEP representative noted the potential of a future UN Peacebuilding Commission to address these issues. The delegates adopted the Tehran Communiqué that provides nine recommendations and conclusions arising from the Conference: to create a culture of universal peace and solidarity; to deepen and broaden the process of dialogue among civilizations and cultures; UNEP should continue its initiative on environment, peace and dialogue and consider holding annual international meetings; improve understanding and correlation between security and environment; enlarge the dialogue to include all segments of society; the proposed UN Peacebuilding Commission should contribute to the objectives of the Conference; development of fora for preventive dialogue and post-conflict restitution; and cultural, ethical and spiritual values must be fully integrated into strategies of dialogue for peace, security and development. The Communiqué will be formally submitted to the UN Secretary-General as a message to the September UN General Assembly. [May 2005. Military Implications; Sources]

Libya Initiates International Conference on Environmental Security for Seas and Oceans

Building on the "Ocean Security Conference" held in the US Congress in May 1997 and the "Towards Enhancement of Ocean Security in the Third Millennium" conference held in the Swedish Parliament in January 1998, the *International Conference for the Initiative of Environmental Security of Seas and Oceans* was held in Tripoli, Libya, 23-25 July 2005 as the first of three international conferences on the Ocean Security Initiative. It was organized by the Advisory Committee on Protection of Seas and Oceans (ACOPS) under the patronage of the Gadhafi International Foundation for Charities Associations and the Environmental General Authority of Great Jamahiriya. Ocean environment and security experts from 26 countries representing governments, international organizations, NGOs, and the private sector participated. The conference addressed the environmental security issues relating to the seas and oceans from a broad perspective ranging from illegal immigration to transnational organized crime. Participants stressed that international and trans-institutional collective action was required to assure compliance with international terms and standards for improved ocean environmental security. [July 2005. Military Implications; Sources]

First International Research Center for "Creeping" Environmental Issues

The world's first international research center dedicated to 'creeping environmental problems' has been established in the northwestern Chinese city of Lanzhou. These are the slow and cumulative problems, like global warming and desertification. The Center's vice-president, Ye Qian, is from the US National Center for Atmospheric Research. There will be more than 20 scientists from various countries working on the center's projects. [June 2005. Military Implications; Source]

North America's CEC Ministerial Statement

At the 12th Regular Session of the Council of the Commission for Environmental Cooperation (CEC), the environment ministers of Canada, Mexico and the United States adopted the Strategic Plan 2005-2010, which sets the priorities and strategies to achieve the goals. This takes into account the recommendations of the Ten-year Review and Assessment Committee, the Joint Public Advisory Committee (JPAC), and key stakeholders. The priorities for the coming years are: the development of Information for Decision Making (based on high quality environmental information that is integrated and comparable); support for Capacity Building; Trade and Environment issues that help promote environmental protection and improve enforcement of environmental law; and Expand Partnerships for Environmental Stewardship. [See also *Review of NAFTA's Environmental Side Accord* in October 2003 environmental security report.] [June 2005. Military Implications; Source]

ASEAN Seeks East Asia's Cooperation on Environmental Issues

Senior environmental officials from ASEAN countries, Japan, China, and South Korea met in Malaysia's Penang state to discuss ways to improve regional cooperation and responses to ecological/environmental problems, such as the recent forest fires. Details of future cooperation, which are also expected to cover issues such as climate change and safeguarding biological diversity, will be discussed at a meeting to be held next month in Jakarta. [August 2005. Military Implications; Source]

Pacific Islands Forum Summit in October 2005

The Pacific Islands Forum Summit will be held on October 27, in Papua New Guinea. It will be preceded by the Small Island States Summit and the Pacific ACP (African Caribbean Pacific) Leaders Summit, and the Pacific leaders' retreat on October 25-26, and followed by a post-forum dialogue meeting on the 28th and 29th. The Forum's topics will include Pacific regional security, aid, policing, peacekeeping, money laundering, arms trading, HIV-AIDS, resource management of commodities and fish stocks, and regionalized governance. It will be attended by the prime ministers of Australia, New Zealand, Fiji, Samoa, Tonga, Cook Islands, PNG, Tuvalu, Vanuatu, Nauru, French Caledonia, and other islands states, as well as representatives of the EU, the UN, United States of America, China and Japan. Parallel with the official forum will be meetings of NGOs representing stakeholder groups and lobbyists. [See also *Asia and Pacific Countries Adopt Declarations on the Environment* of March 2005 environmental security report] [August 2005. Military Implications; Sources]

CONFLICT AND POST-CONFLICT ENVIRONMENTAL SECURITY ISSUES

Protocol on Explosive Remnants of War Comes into Effect

Protocol V on Explosive Remnants of War, part of the UN Convention on Certain Conventional Weapons (CCW), will enter into force on 12 November 2006. The Protocol stipulates that parties to armed conflicts must mark, clear, and destroy all explosive remnants of war on the territory, including internal waters, under their control; offer assistance in areas not under their control; and share information with organizations involved in clearance activities. It applies to ordnance that existed even prior to the entry into force of this Protocol (Art. 2, Par. 5). [May 2006. Military Implications; Sources]

UN Creates Peacebuilding Commission for Post-Conflict Situations

The UN established a Peacebuilding Commission to prevent countries emerging from conflict from falling back into conflict. The 31-member new Commission will be an intergovernmental advisory organization with membership composed of seven Security Council members (including the five permanent members), seven members of ECOSOC, five top financial contributors to the UN, five top providers of military personnel and civilian police to UN missions, and an additional seven members elected by the General Assembly, with special consideration for States that have experienced post-conflict recovery. The Commission will act by consensus, proposing integrated strategies for improving the UN actions of stabilization and recovery in post-conflict situations. The UN reports that about half of all conflicts over the past 20 years were "re-conflicts" – conflicts that recurred within five years after peace accords. [December 2005. Military Implications; Sources]

New Resolution on Victims' International Human Rights

The latest Session of the UN Human Rights Commission approved the "Basic Principles and Guidelines on the Right to a Remedy and Reparation for Victims of Gross Violations of International Human Rights Law and Serious Violations of International Humanitarian Law." This comprehensive Resolution doesn't introduce new international obligations, but identifies "mechanisms, modalities, procedures and methods for the implementation of existing legal obligations under international human rights law and international humanitarian law" and reinforces the obligation of all States to respect the international legal obligations and adapt their respective national legal systems to the international laws and regulations on human rights. The Resolution will come into effect after adoption by the Economic and Social Council and the General Assembly, which could occur at the next meeting this September. [May 2005. Military Implications; Source]

Sunk Weapons Represent a Growing Health and Environmental Hazard

Tons of chemical weapons and ordnance abandoned at the end of World War II continue to litter the world's oceans, representing serious hazards to the environment and human health. There is no compulsory international legislation requiring full disclosure of dumping sites and long-term monitoring of those areas (the London Convention of 1972 is not retroactive and cannot affect acts that had already been executed). However, one would expect that the countries responsible would have moral obligations and common international customary law should demand action

for cleanup and protection of humans and environment against the imminent hazards that those sites represent. [See also *Chemical Munitions on San José Island, Panama* in August 2004, and *Ocean Dumping of Chemical Weapons a Continuous Threat* in January 2004 environmental security reports.] [November 2005. Military Implications; Sources]

Discussions over World War II Japanese Warfare Program in China not Settled Yet

The chemical weapons left over by the Japanese invading army during World War II are still realistic threats to the Chinese people and environmental security, say Chinese officials urging Japan to take more measures to accelerate the process of destroying them. Chinese Foreign Ministry spokesman Liu Jianchao demands that the Japanese government follow the Convention on the Banning of Chemical Weapons and the memorandum on the destruction of chemical weapons reached between the two governments.

Recently, Japan rejected China's demands for apology and compensation for damages caused by the Japanese germ warfare program during World War II. Chinese Foreign Ministry said, "Germ warfare was one of the serious crimes of the Japanese militarist period during World War II… The Japanese government should properly deal with this problem by using an honest attitude, undertaking its full responsibilities and handling conscientiously the reasonable demands of the injured people." The lawsuit has uncovered information about Japan's biological warfare program kept secret by Japan's government and the United States following World War II, says the Associated Press. For instance, the Unit 731 base near the Chinese city of Harbin may be responsible for as many as 250,000 deaths in the 1930s and '40s during the Japanese occupation of China. [See also *China: Japan to Pay $2.7 Million for War Gas Leak* in October 2003 and *Effects of Poison Gas Used in WWII by Japan* in May 2003 environmental scanning reports] [July 2005. Military Implications; Sources]

Gulf Environmental Group Planned

Kuwait hosted a meeting on December 17-18 to establish a regional body to assess environmental damage and coordinate cleanup projects in the Gulf, including in Iraq. The meeting followed previous talks between officials from five countries: Kuwait, Iraq, Iran, Saudi Arabia and Jordan. The chairman of Kuwait's authority for assessing compensation for damages from Iraq's 1990 invasion and occupation has announced that among the goals of the meeting is the establishment of a regional environmental rehabilitation advisory group, its objectives and scope, and to establish a program for regional cooperation. [Note: at the time of this writing, the results of the closed-door, three-day meeting were not yet available.] [December 2005. Military Implications; Sources]

Conclusions on Health and Environmental Impact of 1990-1991 Gulf War

Researchers from the Harvard School of Public Health (HSPH) revealed the findings of Phase I of their study on the implications on the health of Kuwaiti civilians who remained in Kuwait during Iraq's 1990 invasion and occupation. The investigations followed for 14 years the health condition of 5,000 Kuwaitis over the age of 50 to assess likely mortality impacts of exposure to smoke from the oil fires and also reviewed trends in morbidity and mortality data from Kuwait's Ministry of Health. The conclusions show that an average individual risk on the order of 2/10,000 may be attributable to exposure to smoke from the oil fires. Screening assessing risks

connected to other contaminants -- such as volatile organic compounds, polycyclic aromatic hydrocarbons and metals from the oil lakes and marine oil spills; and depleted uranium – also indicated low risks to public health. [See also item *8.2 Study by Sandia on Depleted Uranium* further in this report]

The fifty-sixth session of the Governing Council of the United Nations Compensation Commission (UNCC) concluded the assessment of compensations related to Iraqi 1990 invasion. Some argue that the denial of billions of dollars in compensation to some countries for adverse health and environmental effects of the 1990-1991 Gulf War sets a dangerous precedent to discourage future targeting of natural resources and the environment in future wars. Nevertheless, it is worthwhile to note that the fifth (and last) installment under category "F4"—environmental claims—involved 19 claims filed by six Governments, out of which eight claims filed by four Governments were approved by the Council for compensation, with a total award value of over $252 million. [July 2005. Military Implications; Sources]

Iraqi Chemical Attack Victims Seek Compensation from Supplying Companies

On behalf of the survivors, the Halabja Chemical Victims' Society is seeking compensation from the companies and governments that helped former Iraqi President Saddam Hussein's regime acquire the weapons for the 1988 chemical attack on the Kurdish town of Halabja. Over 5,000 people died in the attack, the survivors continue to have serious health problems, and the environment was never cleaned up. The commercial firms and governments involved in chemical weapons-related trade have never been publicly identified, according to AFP. [See also *War in Iraq triggers UNEP environmental study and plans for post-conflict clean-up* in March 2003, and *UNEP's Post-conflict Environmental Assessment's May One Day Get Extended to On-going Environmental Assessments* in February 2003 environmental security reports.] [May 2006. Military Implications; Source]

Study by Sandia on Depleted Uranium (DU)

Sandia National Laboratories has completed a study assessing health risks associated with accidental exposure to depleted uranium (DU), using as a case study the 1991 Gulf War. The two-year study, *An Analysis of Uranium Dispersal and Health Effects Using a Gulf War Case Study*, used mathematical modeling to estimate eventual health risks both on troops and civilians. The study's findings are consistent with other U.S. studies on the same issue: there are no proofs of serious health risks implied from use of DU in combat. Closer exposure might enhance some risks, but at low level of probability. The report recommends monitoring of those exposed in close proximity or by handling DU, as well as considering conservative guidelines for uranium workers. [See also *Claims of Radioactive Battlefields in Iraq need more scientific ground* in August 2003, *Depleted Uranium Controversy Continues* in July 2003, and *Health Research Updates on Depleted Uranium Inconclusive* in June 2003 environmental security reports.] [July 2005. Military Implications; Sources]

Iraq's Marshes Recovering

Iraq's Mesopotamian marshes, which almost vanished during Saddam Hussein's rule, are rapidly recovering to their former 1970s state, according to the findings of the Iraqi Marshlands Observation System. The system is the latest component of the UNEP marshlands project based

on the use of a variety of environmentally sound technologies and technical training. However, the funding of the project might be in jeopardy for the moment, since Japan has postponed the donors' conference due to the ongoing controversies over Iraq's constitution. The marshes, reputed to be the biblical Garden of Eden, are a major source of fish and freshwater for local people, as well as an important habitat for wildlife. [See also *UN to Help Tackle Iraq Pollution* in September 2004 and *Iraq Marshlands Restorations Could be Dangerous if not Preceded by Cleanup* in October 2003 environmental security reports] [August 2005. Military Implications; Sources]

NATIONAL INITIATIVES AFFECTING MILITARY ACTIVITIES

New Norwegian Emergency Force Set Up

Norway has set up a special emergency force of 1,000 soldiers from the Army prepared to handle national emergency situations mainly related to terrorism, and natural and environmental catastrophes. This is the first time since the Cold War that Norway has established such a unit. [January 2006. Military Implications; Source]

China's President Hu Ordered Environmental Regulations for Military Activities

The People's Liberation Army of China has been directed by President Hu Jintao to submit its construction and training plans, as well as materiel transfer, weapon purchases, repair, and disposal to local authorities for approval regarding environmental impacts. The President also issued new regulations that specify assessment procedures and penalties for infractions. Construction of military bases, ports, logistics centers and exercise fields is to be approved only after the project passes environmental evaluation, including approval by local environment authorities. [April 2006. Military Implications; Source]

Chinese Research Priorities for the Next Fifteen Years

The Chinese Academy of Sciences (CAS) announced its research priority for the next fifteen years. Areas of research are: drug and biofuel development; nanotechnology and new materials; genomics and proteomics; renewable energy and technologies for capturing carbon dioxide emissions; sustainable agriculture; and the next generation of information technology (IT). The academy investment is expected to grow by 70% in the next five years and then by about 12% annually until 2020 making it a major player in the future of science and technology.
Note: East Asian Strategic Review 2006, a recent report by the Japanese National Institute for Defense Studies, warns that increasing Chinese research on the development of technologies for mounting "China's military muscle can be seen as major destabilizing factors in East Asia." [March 2006. Military implications; Sources]

UK Defense Ministry released its first Sustainable Development Report

Ministry of Defense of the UK released its first stand-alone report that aims to provide an overview of the Department's work on Sustainable Development issues. MoD's program for the coming years includes improved data collection systems and the continued integration of sustainable development considerations into procurement. MoD intends to produce an interim

report for 2004/2005 and a full report each financial year thereafter. [August 2005. Military Implications; Source]

Indian Military Upgrades its Counter-WMD Strategies

The Indian Union Home Ministry and the Health Ministry are to prepare "standard operational procedures to deal with terror attacks using biological weapons." Indian military chiefs and senior military scientists held a week-long conference to examine their troops' preparedness in the eventuality of conflicts involving nuclear, biological, or chemical (NBC) weapons. The meeting discussed progress in protective technologies (such as anti-radiation clothing and tanks, and armored carriers resistant to WMD attacks). Last month, an Indian paramilitary unit tasked with protecting key installations announced that it would organize two specially trained anti-WMD battalions by the end of 2006. [April 2006. Military Implications; Sources]

National Interests And Sovereignty Might Be Conflicting With Environmental Security Agenda

Conviction in Transborder Electromagnetic Pollution Case

Cardinal Roberto Tucci, former head of Vatican Radio's management committee, and the Rev. Pasquale Borgomeo, the station's director general, were convicted by a Rome court for polluting the environment with electromagnetic waves from a transmission tower in the Rome suburb of Cesano, damaging the health of those living nearby. Although under the 1929 Treaty between the Holy See and Italy, Vatican is an independent city-state, Italy's Supreme Court ruled that the case could be tried. [May 2005. Military Implications; Source]

Technological Breakthroughs With Environmental Security Implications

Computer Technology And Robotics

Enviromatics could contribute to Environmental Security

MIT introduces and explains the emergence of a new field, enviromatics, born from the convergence of information technology and environmental research. Unlike environmental modeling based on statistical data, enviromatics uses real-time ecosystems-status database, Internet tools, and ubiquitous computers. Improved continuous sensing, simulation, and mapping tools make the predictions more reliable than previously. Instantaneous ecosystem analysis and short-term forecasting of ecosystems' conditions is accessible to anybody interested. Possible applications of the new field range from farmers who could avoid eventual damages to their crops, to protection of endangered species that need special habitat conditions. Enviromatics could impact decisionmaking for improving forecasting implications of different action options, as well as increasing public awareness to foster more environmentally friendly practices. [May 2005. Military Implications; Source]

Computer Simulation Planned to Predict Where Epidemics Will Strike Next

World Health Organization researchers are developing a global epidemic simulator (GES) based on the model of climate monitoring systems. GES would record the location of disease outbreaks and their trajectory and then allow one to enter alternative mitigation measures to see the results. GES would integrate epidemiological and biological models of disease, to model the world's disease status. The system would be connected to major elements of the built environments such as airlines, buildings, etc. to help spot outbreaks and the movements of people. WHO is seeking funding to complete the project. [April 2006. Military Implications; Source]

Small Robotic Helicopters for Reconnaissance

Scientists from the University of South Florida have been surveying hurricane damage with a miniature battery-powered robot helicopter developed by iSENSYS, a spin-off from like90 LLC. This unit can operate by radio control at altitudes up to 300', over a quarter-mile radius. [December 2005. Military Implications; Sources]

Nets of Agents Probe the Environment

An important branch of Enviromatics [See previous item 5.3] is concerned with the acquisition of environmental data. Several current projects (Univ. of Wyoming, Univ. of Pennsylvania, UCLA) are developing variations of advanced data acquisition techniques. These are based on large networks of small intercommunicating devices (agents), incorporating sensors, which can monitor wide areas for environmental data, process it, and transmit results back to a central point. These devices may be stationary—laid out in a grid pattern over the region of concern—or they can be a band of mobile robots swarming over a large area in an internally controlled search for sites and information of interest. Individual units might be specialized; e.g., for radiation, biological weapons, or chemical weapons. The key element here is the combination of individual autonomy, in which each device "runs itself", and intercommunication, which permits low-power wireless transmission of data and plans around the network. In this way the assemblage of units can behave in a seemingly intelligent manner, adjusting its behavior to changing conditions or surroundings. A flight of migratory birds, maintaining its V-shape, is the classic example of this kind of emergent behavior, demonstrating that, in fact, the whole can be greater than the sum of its parts. [See also *On-chip Antenna to Solve Communication Problems among Microscopic Sensors* in May 2004, and *Robot Swarms* in June 2004 environmental security monthly scanning reports.] [May 2005. Military Implications; Source]

Progress on Self-replicating Robots

A team of engineers from Cornell University in Ithaca NY, has created robots that can self-replicate similarly to biological cloning. At this stage, they are just simple sets of 4 modular robot cubes, "molecubes", which are able to assemble copies of themselves, when provided a supply of pre-made cubes. Yet, they represent an important step forward compared to previous self-replicating robots, due to their flexibility, "memory", and three-dimension movement possibility. [May 2005. Military Implications; Source]

New Detection and Cleanup Techniques

High Sensitivity Portable Chemical Detection Device

A research team led by R. Graham Cooks at Purdue University has developed a mass spectrometer for chemical detection and identification that has the twin advantages of high sensitivity (10^{-12} g) and portability/speed (no pre-treatment needed). The equipment uses desorption electrospray ionization (DESI), a technique that separates traces of material from a substrate so that they can be passed into the analytical instrument. The device has analyzed pharmaceuticals at three samples per second. [October 2005. Military Implications; Source]

Piggybacking Environmental Sensors on Communications Gear

Computer science graduate student R.J. Honicky and Prof. Richard Newton of the Univ. of California at Berkeley are working on inexpensive environmental sensors that can be incorporated into communications devices like cell phones, using the power, location (e.g. GPS), and communications facilities already present in those devices. This technique would greatly reduce the space and cost burden of providing environmental data coverage over a wide area. [August 2005. Military Implications; Source]

Very Low Cost Chemical Sensors for Environmental Monitoring

Electrical engineering Prof. Vivek Subramanian at the University of California, Berkeley, has developed a technique for inexpensively producing arrays of chemical sensors, using organic semiconductors and ink-jet printing. Based on organic transistors, the array of sensors mimics the behavior of the human nose, differentiating among toxins in air or water. This approach would cut the cost of such sensors from several hundred dollars per unit to about 30¢. As a result, more nearly ubiquitous toxin monitoring will be possible. [December 2005. Military Implications; Source]

Nano-engineered Powders Tackle Toxic Chemicals

FAST-ACT is a new family of nano-engineered powders that can clean up hazardous substances such as VX nerve gas and sulfuric acid. This toxic-chemical cleaner composed of magnesium, titanium, and oxygen was developed by Kansas State University chemist Kenneth Klabunde and will be produced by NanoScale Materials Inc. [May 2005. Military Implications; Source]

Nanobarcodes for Multiple Pathogen Detection

Scientists in the Department of Biological and Environmental Engineering at Cornell University have developed a rapid, low cost, multiplexed, sensitive and specific molecular detection technique for pathogen DNA that uses fluorescence nanobarcodes to identify the individual potential reactants. A single element in the system comprises a section sensitive to the DNA of a particular target and one containing a bar code identifying it. Multiple elements can be placed on a single test probe. Results can be obtained in 30 minutes. [July 2005. Military Implications; Source]

Bacteria Used to Eliminate Perchlorate from Water

Perchlorate, an ingredient of rocket fuel and fireworks, and known to be dangerous to human health, has become present in drinking water in many parts of the world. Bruce Rittmann of the Center for Environmental Biotechnology at Arizona State University, Tempe, has discovered an efficient way to remove the chemical, by using a system of bacteria that feeds on hydrogen gas and perchlorate to produce water and chloride—a compound commonly found in salts and swimming pools. The advantage of this system over others for the same purpose is that it's very cost-effective and it doesn't appear to generate harmful waste by-products. The bacteria are grown on membranes that are wrapped into spaghetti-like strands that can be filled with hydrogen and bundled into cylinders through which flows the contaminated water. A 1.5-meter-tall system with 7,000 fibers can clean 4-8 liters a minute, says the researcher. The system was already tested on ground water from California's central valley, and in about 2 years its efficiency could be boosted enough to clean the waste water of a small city. [See also *Firm Regulations for Perchlorates are Needed* in October 2004, and *Technology for Perchlorates Cleanup* of August 2004 environmental security reports.] [September 2005. Military Implications; Source]

New Oil Remediation and Recovery Technique

A proprietary oil remediation and recovery application, using patented Self-Assembled Monolayer (SAMs) technology, has been announced by Interface Science Corp. Its treated material, produced using nanoscale techniques, absorbs about 40 times its weight in oil, and has the added advantage of allowing the absorbed oil to be recovered. [September 2005. Military Implications; Source]

New Efficient Energy-free Technique for Oil Removal from Water

The Extended Gravity Oil Water Separation (EGOWS) concept developed by an engineering team from the University of New South Wales is an improvement on the industry-standard American Petroleum Institute (API) gravity separator that has been widely used for the last 60 years. The device is a simple tank-and-siphon system, entirely mechanical, that operates unattended and purifies water to oil content less than 10 ppm, the level often set by environmental regulations. A simple, innovative application of hydraulic principles results in residence times of days instead of minutes, as is common with API designs. Utility seems be limited to sources with episodic discharges, rather than steady flows. [August 2005. Military Implications; Source]

Sunlight-powered System for Cleaning Water and Produce Electricity

Scientists from Aberdeen University of Scotland began a three-year research project for developing a "photoelectrocatalytic" fuel cell that would harness sunlight to break down various organic pollutants in water and produce electricity as a byproduct. [See also *New More Efficient Microbial Fuel Cell Cleans Wastewater and produces Hydrogen* in the April 2005 environmental security report.] [May 2005. Military Implications; Source]

DNA-Wrapped Nanotube Sensors

Trace amounts of harmful contaminants can be found inside the body via single-walled carbon nanotubes wrapped with DNA and placed inside living cells. Ions of atoms such as calcium, mercury and sodium in contact with DNA neutralize its negative charges, changing its shape. This reduces the frequency of the nanotube's fluorescence indicating how many ions have bound to the DNA. "We found that the thermodynamics that drive the switching back and forth between these two forms of DNA structure would modulate the electronic structure and optical emission of the carbon nanotube," said Michael Strano, a professor of chemical and biomolecular engineering at the University of Illinois at Urbana-Champaign. [January 2006. Military Implications; Source]

Sugar-Coated Gold Nanoparticles Detect Toxins

Researchers at the UK's University of East Anglia have developed a new method for detecting toxins based on the use of 16-nm-sized sugar-coated particles of gold. The sugars used are tailored to be sensitive to specific substances; a solution containing the particles will change color in the presence of the target material. The scientists speculate that a portable detector using this scheme could be ready in five years. [April 2006. Military Implications; Source]

Fast Bacteria Detection from Bacteriophage/Quantum Dot Complexes

Scientists from the National Cancer Institute (NCI) and National Institute of Standards and Technology (NIST) have developed a technique for the fast and sensitive identification of bacteria. A selected type of bacteriophage attacks a specific bacterium and produces phage particles that bind to specially treated quantum dots (nanoscale semiconductor particles that give off stronger and more intense signals than conventional fluorescent tags). Fluorescence of the phage-dot complexes can be detected by conventional microscopy or other means. The method can use several different types of complexes simultaneously and can detect and identify up to ten target bacterial cells per milliliter of sample in about an hour. [April 2006. Military Implications; Source]

Anti-anthrax Protein Found

A lysin (specialized enzyme protein) that selectively destroys the anthrax bacterium has been identified by Vincent Fischetti, professor and co-head of the Laboratory of Bacterial Pathogenesis and Immunology at Rockefeller University. The new protein, PlyPH, which is found in a bacteriophage, has the advantage of working over a wide range of pH values and also of killing only anthrax and not any other possibly beneficial organisms. The researchers hope to combine PlyPH with another compound that causes anthrax spores to germinate, and thus become vulnerable to destruction. [April 2006. Military Implications; Sources]

New Microcantilever for Biochemical Detection

Researchers at the Nanomaterials for Cancer Diagnostics and Therapeutics Center for Cancer Nanotechnology Excellence at Northwestern University have developed a new device that generates a direct electrical signal from the bending that occurs when a suspect biological molecule bends a cantilever in binding to an antibody or complementary nucleic acid sequence

attached to it. The cantilever's motion has been detected optically in previous devices, but here the tiny beam forms part of a MOSFET semiconductor, and causes a sharp change in current when displaced. The device can be mass-produced using standard computer chip design and manufacturing techniques, and can detect bending of as little as 5 nm when triggered by DNA or antigens. [March 2006. Military Implications; Source]

Chopped-up DNA Strands Speed Bacterial Identification

A team of researchers at the Brookhaven National Laboratory has developed a new technique for rapid and efficient identification of pathogenic bacteria within an unknown mixture of microbes. An enzyme is added to the mixture that chops up the bacterial DNA into short segments, which can be individually isolated and identified, thus enabling the detection of harmful organisms in the environment. This is much faster than preparing bacterial cultures and avoids the possibility of favoring the detection of certain bacteria over others. [March 2006. Military Implications; Source]:

New Spectroscopy Technique with Superior Results

Scientists at JILA (originally the Joint Institute for Laboratory Astrophysics, but presently having no definition), the institute jointly sponsored by the National Institute of Standards and Technology and the Univ. of Colorado – Boulder, have developed a new technique for spectroscopy as used in the identification of minute quantities of chemicals in gas samples, such as in environmental monitoring stations, or screening for explosives or biochemical weapons. The JILA system uses an ultrafast laser-based "optical frequency comb" as both the infrared source and as a means for precisely measuring the wavelengths produced after interactions. Its sensitivity of one part in 10^8, and an acquisition time of 7 ms for its 100 nm wavelength range indicate its increased capability for use in systems for monitoring the environment. [March 2006. Military Implications; Source]

Laser-tracked Honeybees Detect Landmines

Joseph A. Shaw at Montana State University and colleagues have developed an improved landmine detection system which first trained honeybees to sniff out explosive fumes leaking from buried landmines, and then tracks them with polarized laser scanning beams. The accuracy is better than 97% at a distance of 83 m, and there is no danger of setting off the landmines. [August 2005. Military Implications; Source]

Counter-Pandemic or Bioterrorism Technologies

New On-the-spot Test for Avian Flu and Other Influenza Strains

Scientists at the University of Colorado are perfecting a new “chip” that can test almost instantly for 11 different influenza strains, including avian flu. The test device was already developed and tested for accuracy by the Centers for Disease Control and Prevention and researchers are working now to develop it into a user-friendlier on-the-spot test for influenza. Currently available technologies either take a long time to get a diagnosis of specific influenza strains; or, if giving faster results, do not differentiate among influenza strains. November 2005. Military Implications; Source]

Chinese Find 16 Native Toxin-absorbing Plants

Chinese scientists studied over 5,000 native plant species for their abilities to remove toxins (mainly heavy metals) from the environment. The five-year study identified 16 plants that could safely clean up pollutants such as arsenic or heavy metals, as well as techniques to process the resulting heavy-metal-absorbing plants so that they don't become another pollution problem. The study estimated that using these plants costs less than one-tenth as much as the current chemicals-based cleanup techniques. One of the scientists said that "genes from the species identified could be used to genetically modify other plants" and hence, could enlarge the scope and spectrum of pollution-cleaning plants. [November 2005. Military Implications; Source]

Possible Cure for Bird Flu

A scientist from the Laboratory of New Veterinary Drugs at the Lanzhou Institute of Animal Husbandry and Veterinary Drugs, part of the Chinese Academy of Agricultural Sciences, declares that he has used traditional Chinese medicine to develop a plant extract—hypercine — that can effectively treat poultry infected with the bird flu virus H5N1. The extract proved efficient in all cases tried on poultry and is now in testing on rats for eventual efficacy for humans. [November 2005. Military Implications; Source]

Genetically Engineered Vegetables as Vaccination System to Counter Bioterrorism

At a meeting of the G-7 and WHO to discuss weapons of mass destruction and avian flu threats, Italian researchers launched the idea of a "vegetable-vaccination" by incorporating pathogens' DNA into various vegetables' genetic strings (such as potatoes and carrots), which when eaten would help produce antibodies and boost the body's natural defense system against the pathogens. [November 2005. Military Implications; Source]

Promissing Environmental-friendly Technologies

Sandia researchers develop unique 'surfactant' material

Sandia National Laboratories has developed a new class of surfactants (surface active agents) that are thermally degradable and easily removable in an inexpensive and environmentally friendly manner. These thermally cleavable (easily broken molecules) surfactants could have very large applicability in any field requiring modification of surface properties and where biodegradability is a primary concern. [June 2005. Military Implications; Source]

Sanitizing Fabrics for Environmental Workers

Researchers from Cornell University and the University of California, Davis, have developed a technique for incorporating bacteria-killing halamides into fabrics that can then be used to produce protective clothing for personnel working in biologically hazardous environments, such as where anthrax may be present. They expect testing in 2006 and commercialization in 2008. [March 2006. Military Implications; Source]

New Technique to Convert Liquids to Semi-solids and Back Again
Chemist Takeshi Naota, at Kyoto University in Japan, has developed a technique able to convert fuels, lubricants and paints into gelatinous semi-solids by adding a palladium-based compound and applying ultrasound. The process can be reversed by heat or more ultrasound to produce liquids. [June 2005. Military Implications; Source]

New Antibacterial and Antitoxin Textiles
Researchers from North Carolina State University and textile scientists from Egypt have created a fabric that is up to 90% effective against three commonly occurring microorganisms: *Lactobacillus planterum, E. coli* and *Staphylococcus aureus*. Unlike conventional methods of coating, this plasma-based process eliminates chemical wastes, making it a more environmentally sound investment. The antimicrobial agents are attached to the molecular structure of fibers, creating a permanent bond between the fibers and the agent so that washing and wearing do not reduce the efficacy.

Using nanotechnology, researchers from North Carolina State University and University of Puerto Rico have developed "smart textiles" by attaching nanolayers to natural fibers. These layers can be customized for different chemicals and can block agents such as mustard or nerve gas while keeping the fabric breathable. Nanolayers can be attached to a fiber without undermining its comfort or usability, providing very high levels of protection. [June 2005. Military Implications; Source]

New Environmental-friendly Lighting Based on Gallium Nitride
Prof. Colin Humphreys from Cambridge University, UK, is developing gallium nitride-based light bulbs that could last 100 times longer than light bulbs used today. Scientists agree that using gallium nitride in light-emitting diodes (LEDs) could help cut emissions of carbon dioxide and other greenhouse gases by 15%. While different nitride-based LED applications could soon materialize, it might take 5-10 years to develop the technology to produce gallium nitride LEDs with an acceptably white light for home and office lighting. Since lighting accounts for 20% of electricity use in developed countries and 40% in developing ones, the financial and environmental savings could be considerable. [May 2005. Military Implications; Source]

Sandia Advancing Research on Batteries' Life and Safety
As part of the Department of Energy-funded FreedomCAR program, Sandia National Laboratories' Power Sources Technology Group is researching ways to make lithium-ion batteries work longer and more safely. According to an SNL news release, the research could lead to these batteries being used in new hybrid electric vehicles in the next five to ten years. The work is centered on developing a higher degree of abuse tolerance in the batteries. Another project at Sandia is studying key phenomena that affect the durability and byproduct management of hydrogen-fueled PEM (proton exchange membrane or polymer electrolyte membrane) fuel cells, which are also important candidates as components for advanced vehicles. [See related item *Update on more efficient vehicles: Program of the FreedomCAR and Fuel Partnership* in July 2005 environmental security report.] [January 2006. Military Implications; Sources]

Genetically Engineered Virus May Improve Future Batteries

A genetically engineered virus has been used by scientists at MIT to produce the positive electrode of a lithium-ion battery. The virus proteins contain an amino acid that binds to cobalt ions in a solution, giving the proteins, after some treatment, a coating of cobalt oxide, which has much higher storage capacity than the carbon-based materials now used in lithium-ion batteries. A further improvement was obtained by adding gold as an ingredient, in addition to cobalt. This technique holds a promise for much improved battery manufacturing methods, although much development remains to be done. [April 2006. Military Implications; Source]

Urine-powered Battery

Ki Bang Lee and a team of researchers at Singapore's Institute of Bioengineering and Nanotechnology have developed a very inexpensive and miniaturized power source suitable for biochips used for healthcare testing and disease detection, as in a BW situation. The battery is formed by soaking a credit-card-sized piece of paper in copper chloride, sandwiching it between strips of magnesium and copper, and laminating it between transparent plastic films. When the paper is moistened with a drop of urine, the device generates 1.5 volts of electricity. [August 2005. Military Implications; Source]

New Nanotechnology Batteries with Long Shelf Life

Scientists at Lucent Technologies Bell Labs have developed a new class of batteries, which they call "nanobatteries". They are estimated to have a shelf life of at least 15 years, and are based on a silicon "nanomembrane" whose tiny honeycomb-like grid holds the electrolyte away from the electrodes until power is needed, at which point it becomes liquid-permeable, releasing the electrolyte drops to pass through, activating the cell. [February 2006. Military Implications; Source]

Tiny Batteries Offer Several Promises

mPhase Technologies, in collaboration with Rutgers Univ. and Bell Laboratories, is working on tiny batteries that can hold their charge much longer than today's cells, and could be integrated directly into a circuit board rather than connected by wires. "This is something small, less than postage-stamp size that could be integrated into the same piece of silicon that is housing the electronics," according to Ron Durando, CEO of mPhase. Foresight Institute believes that the work might lead to batteries with a 20-year shelf life. The technology is based on a material called "nanograss", developed at Bell Labs, which permits the control of the interaction of electrolytes within the battery. [September 2005. Military Implications; Source]

New Promises for Flexible Solar Cells

Researchers at Wake Forest University's Center for Nanotechnology and Molecular Materials have developed an organic solar cell technology (cells are as thin as a coat of paint) with almost 6% efficiency in turning sunlight into useful electrical power. The new technology might be available to consumers in about five years. [See related item *Flexible Plastic Solar Cells Converting 30% of Sun's Power into Usable Energy* in January 2005 environmental security report] [November 2005. Military Implications; Source]

Possibilities to Considerably Increase Solar Cells Efficiency

Solar power technology might become more efficient and economic due to a new discovery by Victor Klimov, a physicist at Los Alamos National Laboratory in New Mexico, who has shown that each photon captured by a solar cell reduced to nano-dimensions can be made to generate not one, but two or even more charge carriers. This discovery could change the whole energy debate by giving a considerable boost to solar power research. In all solar cells now in use, each incoming photon contributes a maximum of one energized electron to the electric current it generates. [May 2006. Military Implications; Source]

Inorganic Fullerene-like Materials May Lower Hazards

The Nano-materials Synthesis Group in the Israeli Weizmann Institute has developed a new class of nanomaterials, inorganic fullerene-like substances, based on tungsten disulphide and similar compounds, rather than carbon. These materials, marketed commercially by ApNano, have many of the physical properties of true fullerenes, but are reported to be easier and cheaper to produce, chemically stable and less reactive, and less flammable. They also have been tested and purportedly found to be safe. [February 2006. Military Implications; Sources]

Promising Research for Emission-Free Car that Makes Its Own Fuel

A unique project in the incubator program of the Chief Scientist in Israel called Engineuity has put several technologies together to create a stable metal combustion system that avoids oil and pollution. The technique is based on a metal-steam combustor system that produces a continuous flow of hydrogen using water and common stable metals such as magnesium and aluminum. At high temperature and pressure, the metals combine with the oxygen from water forming an oxide and liberating the hydrogen to be used by the car. The metals can be recovered and recycled. The research leader in an audio recording referenced below claims that adapting conventional cars to run on the Engineuity technology should be easy and the overall running cost would be about the same as today's cars. Pending investments, a prototype car based on the new system could be demonstrated to commercial auto companies in three years. [October 2005. Military Implications; Source]

Infrared Radiation for Deicing Aircrafts Cuts Pollution

A system for cutting pollution by deicing aircraft with infrared radiation rather than chemicals is being further tested at the Oslo airport. This heat-inducing system replaces the present technique of spraying the aircraft with anti-freeze or glycol, which pollutes the environment. The InfraTek Radiant Energy Deicing System is built by the Radiant Energy Corp. of Port Colborne ON, and is already in use at Newark International Airport, and at Rhinelander-Oneida County Airport, Wisconsin, with a hangar under construction at JFK. [November 2005. Military Implications; Source]

Hydrogen Tablets

Scientists at the Technical University of Denmark (DTU) have invented a hydrogen tablet that can efficiently and safely store and transport hydrogen in a solid form. The tablet consists solely of ammonia absorbed efficiently in sea-salt. When hydrogen is needed, ammonia is released through a catalyst that decomposes it back to free hydrogen. The tablet can be simply recharged

just by a “shot” of ammonia. DTU and SeeD Capital Denmark have founded the company Amminex A/S to develop and commercialize the technology. [September 2005. Military Implications; Source]

Hydrogen Farming as a Possible Alternative to Petroleum

If biological and technological obstacles (already identified) can be resolved, then hydrogen farming might become an alternative to petroleum production in 10-20 years, according to Tasios Melis of the University of California, Berkeley. His research is one of several funded by the DOE, aimed at trying to use algae to provide cheap and environmentally friendly hydrogen. It is based on the use of transparent tubes full of water inoculated with the green alga Chlamydomonas reinhardtii, which when put out in the sun naturally produces hydrogen as a by-product of photosynthesis. A system of such tubes with hydrogen collection capacity would form a hydrogen farm. "To displace gasoline use in the US would take hydrogen farms covering about 25,000 square kilometers" (less than a tenth of U.S. soy bean fields), says the researcher. [February 2006. Military Implications; Source]

Biodiesel Increasingly Considered a Viable Alternative to Crude Oil

Growing demand for green fuels brings biodiesel into the spotlight of the global oils industry. It was the focus of the two-day Price Outlook Conference for edible oils, held in Kuala Lumpur, Malaysia, as Southeast Asian countries are looking into increasing their biofuels production. Malaysia and Singapore are the world's leading palm oil producers. Solomon Islands plans to replace its imported fuel with internally produced coconut oil with the help of three Australian companies. Major increased biodiesel demand is expected to stem from the EU policy that, by 2010, 5.7% of its diesel fuel must be biodiesel. [February 2006. Military Implications; Sources]

New Techniques May Help Solve Wind farm/Radar Problem

A previous item in these reports [*Wind Power vs. Air Defense Radar*, March 2004] reported on the problem arising when return signals from wind farm fans interfered with military aircraft control radar systems. Two new developments offer some hope of solutions to this conflict. BAE Systems in the UK has produced a signal-processing algorithm, which uses fuzzy logic to filter out the returns from the rotating blades, leaving only genuine aircraft tracks. The system will be tested this summer and may be ready in a year. Stealth technology for the moving surfaces is also being investigated as a possible way of hiding the blades from the radar beam.
Another approach is being taken by Grimshaw Architects in association with Windpower Ltd, whose Aerogenerator is a Darius-principle wind turbine with a vertical axis that can be operated at ground level (or rather, sea level, since it's planned for off-shore use.). [July 2005. Military Implications; Sources]

New Opportunities for Old Engine Idea

One of the areas currently attracting the attention of the alternative energy sector is the Stirling engine, an alternative to the internal combustion engine, which turns any source of heat into mechanical power, sufficient, for example, to run an electrical generator. The fact that the heat can be created by any external source, from biomass to solar, means that the energy generation can be much more environmentally friendly than other schemes. STM Power, of Ann Arbor MI,

says that its use of the Double Acting Swash Plate Drive External Heat (DA/SH) design avoids the problems that have kept Stirling engines from wide acceptance. [May 2006. Military Implications; Sources]

Space Technology

Space Technology to Help Enforce Environmental Regulations

Space observations have become a major tool for monitoring environmental change, helping policy making, developing adequate strategies, and assisting enforcing environment-related regulations. The European Space Agency (ESA) is participating in the climate change summit in Montreal, to share results from satellite-based forest mapping services developed to support the Kyoto Protocol. Another ESA project, Globwetland, supports the Ramsar Convention on Wetlands by developing a global wetland information service using satellites. ESA's project called CONTRAILS is a satellite-based service to monitor daily contrail and cirrus cloud generation by airplanes over Europe and the North Atlantic for a detailed assessment of the greenhouse impact of aviation-induced contrails. The project results are expected at the beginning of 2006. ESA and the EC Joint Research Centre (JRC) signed an agreement of cooperation for using Earth Observation data in support of the information services of the EU. This will enhance the policy support role of the Global Monitoring for Environment and Security system. [See also Climate Change—Improved Satellite Climate Change Monitoring in June 2005 and other related items on the same issue in previous environmental security reports.] [November 2005. Military Implications; Sources]

Satellite Technology Use for Environmental-related Issues Expands

Following the adoption of the Global Monitoring for Environment and Security (GMES) Declaration by the ESA Ministerial Council, December 5-6 2005, new EU Member States can now be formally involved in the program. The ESA Council also reinforced full support for the GMES Program, which aims to provide the public and policy- and decision-makers essential strategic environmental and civil security information based on operational and integrated space, air, ground, and sea observations. The possible applications would include—but not be limited to—environmental monitoring, risk management and early warning, and climate and weather forecasting. GMES should deliver its first operational Service Elements in 2008. As pointed out at the UN Climate Change Conference in Montreal, satellite technology could also play an increasing role in the efforts for monitoring greenhouse gas emission and developing new mechanisms to combat global warming. [See also Space Technology to Help Enforce Environmental Regulations in November and *Climate Change—Improved Satellite Climate Change Monitoring* in June 2005 and other related items on the same issue in previous environmental security reports.] [December 2006. Military Implications; Sources]

Space Technology for Improving Planetary Knowledge and Security

Over 8000 scientists convened in Vienna, Austria, April 3–7 for the third annual European Geosciences Union (EGU) General Assembly. The discussions through the 400 thematic sessions revealed the importance of space technology in contemporary planetary sciences.

Prominent subjects included changes in CO2 levels and their impact on biodiversity; the use of satellite technology in enhancing weather predictions; greater understanding of polar ice loss; deep sea research using marine mammals; the use of solar-powered robots for polar research; and satellite altimetry to predict sea level change and predict its impacts. [See the Appendix for more details on the issues discussed at the EGU General Assembly] Space technology proves to be of great help in monitoring present flooding in Europe and world population mapping, increasing timely and more efficient response. NASA's CloudSat and CALIPSO research satellites launched this month will help scientists refine computer models that forecast the weather and chart global climate change. [See also *Satellite Technology Use for Environmental-related Issues Expands* in December 2005, *Space Technology to Help Enforce Environmental Regulations* in November and *Climate Change--Improved Satellite Climate Change Monitoring* in June 2005 and other related items on the same issue in previous environmental security reports.] [April 2006. Military Implications; Source]

International Atomic Energy Agency (IAEA) Inspectors Use Satellite Feeds to Track Sensitive Nuclear Materials

IAEA is building a global network for monitoring nuclear facilities by using direct satellite information. This will enhance the possibility of real-time tracking of sensitive nuclear materials and checking that they are not being diverted for non-peaceful use. The first field trial connecting a nuclear power plant in Slovakia to IAEA headquarters started in April this year and the results of the feasibility study for a prospective global system are expected by the end of the year. IAEA will be working with the European Space Agency on the system. [July 2005. Military Implication; Source]

Improved Satellite Climate Change Monitoring

The UK's National Physical Laboratory designed the first unmanned probe able to calibrate its instruments in orbit, Traceable Radiometry Underpinning Terrestrial and Helio Studies (TRUTHS). This will reduce the margin of error and be able to supply more accurate satellite data, thus improving climate change parameter monitoring and helping settle international disputes over greenhouse gas emissions and strategies to curb global warming; e.g., carbon trading. [See also *Global Earth Observing System of Systems* (GEOSS) *Gets 10-Year Mandate* in February 2005, and *Improved coordination of global Earth observation* in August 2003 environmental security reports.] [June 2005. Military Implications; Source]

India to Set Up Military Surveillance and Reconnaissance System by 2007

Indian Defence Minister Pranab Mukherjee recently declared that India's satellite-based Military Surveillance and Reconnaissance (SBS) System that was supposed to be operational this year, is now in an advanced stage of development and will begin functioning by 2007. [August 2005. Military Implications; Sources]

2.B Preventing or Responding to Environmentally Caused Conflicts

CONFLICT PREVENTIVE ACTIONS

UNU Calls for International Framework for Environmental Refugees

On UN Day for Disaster Reduction, October 12, the UNU warned that by 2010 the world might have to cope with as many as 50 million environmental refugees, while the international community is not presently equipped with an adequate international agreements system to deal with the situation. UN Under Secretary-General Hans van Ginkel, Rector of UNU, emphasized the need to prepare now "to define, accept and accommodate this new breed of 'refugee' within international frameworks," while Dr. Bogardi, Director of UNU's Institute for Environment and Human Security (UNU-EHS) in Bonn, cautioned that the term 'environmental refugee' might sometimes hide the real cause of displacement, which might be bad policies and practices. [See also related item *Implications of Environmental Migration to National Security* in February 2004 monthly environmental security report.] [October 2005. Military Implications; Sources]

African Security and Environmental Matters Should Be Addressed Together

Scholars agree that Africa's deteriorating environment means that the continent's security and poverty problems cannot be solved without improved environmental management. Ways have to be found to integrate security, poverty, and environmental programs on the continent. Note: The European Union Environmental Diplomacy Network created in 2003 could serve as an example for a similar African Diplomacy Network [See *The European Union Has Created Environmental Diplomacy Network* in June 2003 environmental security report.] [May 2006. Military Implications; Sources]

Environmental Change and Security Program 11th Report

The 11th report of the Woodrow Wilson Center Environmental Change and Security Program discusses the implications and eventual links among environmental problems and population dynamics, and conflict. According to the international panel of experts, stabilizing population growth, and protecting natural resources and the environment should be part of the long-term strategy for resolution and avoiding of conflicts around the world. The report emphasizes that more research is necessary for understanding regional aspects of the links connecting environment, population, and security. [March 2006. Military Implications; Source]

Void in High Seas and Coastal Governance

The Third Global Conference on Oceans, Coasts, and Islands, "Moving the Global Oceans Agenda Forward," organized by the Global Forum on Oceans, Coasts, and Islands, took place at the UNESCO headquarters in Paris, January 24-27. Over 400 participants from 78 countries agreed to accelerate progress for achieving the international ocean policy targets, including integrated ocean and coastal management, and examined two major emerging ocean policy issues: high seas governance and the effects of climate change on oceans and coastal environments. No international organization holds responsibility for tracking the progress of programs in integrated coastal and ocean management, and there is no regular collection of

information on the social and economic well-being of coastal communities, where half of the world's population lives. [February 2006. Military Implications; Sources]

Rising Concerns over Rising Seas

Several recent articles have again raised the threat of rising sea levels that could ultimately cause massive coastal and island destruction. A U.S. analysis of satellite data has indicated that the volume of ice falling into the sea from Greenland's ice cap has doubled over the past ten years, and that the current contribution of Greenland to oceanic level increase is 0.57 mm/year. Australian research has determined that the average level of the oceans has risen 19.5 cm since 1870 and the rate is increasing, with a prediction of a 31 cm rise by 2100. British reports suggest the possibility of a 5-meter increase over the next several centuries, and mention the effect of increased river outflows on ocean levels. [February 2006. Military implications; Sources]

Arctic Northern Passage Opens New International Issues of Regulation

Thawing of the Arctic sea ice opens up the Northern Passage as an international shipping route, triggering international disputes over sovereignty and ecological implications. Although scientists, politicians, and environmental activists are increasingly warning about the complexity of the problem, no international regulations are yet in place for this fragile region. Alex Wolfe, from the University of Alberta and leading researcher on the Arctic, says that besides the sovereignty and ecosystem issues of the opening of the Northern Passage, there are also shipping safety problems that are not yet adequately addressed. As of our information, there are no international shipping standards or regulations in place for ecosystem protection for Northern navigation. Canada claims that the waterway is Canadian territory, while other countries consider it international waters. There is no international treaty dividing the Arctic between the eight countries with claims: Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the U.S. This exposes the northern passages to other possible problems, such as: transportation of illicit materials and illegal immigrants and as a place and route for terrorism, as well as difficulty in solving eventual disputes over tanker accidents, contamination, and overfishing. In March 2006, Canadian military forces will begin Operation Nunalivut ("land that is ours" in Inuktitut, the Inuit language), over the Arctic islands and sea ice of the Northwest Passage. [February 2006. Military Implications; Sources]

Northwest Passage to Become "Canadian Internal Waters"

The Canadian government mounted an expedition to defend the Northwest Passage as Canadian territory. This is the largest Canadian expedition in 60 years in the Arctic, with troops traveling 2800 miles across the region that is changing rapidly as a consequence of climate change. In addition to sailing, the opening of the Northwest Passage is an opportunity for access to rich resources, including oil. Recent research suggests that the passage could become ice-free and open for navigation as soon as 2015. While Canada claims sovereignty over the region, it is at odds with other countries including Denmark and Russia who argue that the area is a continuation of their territory. [See also *Arctic Northern Passage Opens New International Issues of Regulation* in February 2006 environmental security report.] [April 2006. Military Implications; Sources]

World Resources 2005 -- The Wealth of the Poor: Managing Ecosystems to Fight Poverty

This joint report from UNEP, UNDP, the World Bank, and the World Resources Institute suggests an approach to addressing poverty by focusing on environment and local natural resources beyond the conventional aid projects, debt relief, and trade reform. It presents models on how natural resources—soils, forests, water, and fisheries—managed at the local level--could be the most effective means for the world's rural poor people to generate a better life. The report pleads for community stewardship of local resources as a critical element of any poverty-reduction activity. UNEP executive director Klaus Toepfer called the report, "essential reading for any world leader serious about defeating poverty." This is the 11th in a series of biennial reports on global environment and governance. [September 2005. Military Implications; Sources]

State of the World 2006

The Worldwatch annual report, *State of the World 2006*, is a comprehensive overview and analysis of the world situation from the point of view of resources, biodiversity, population, and economic growth, and their impact on the world's ecosystems. This year's report has a special focus on the two fastest growing economies and most populated region: China and India. The report highlights the huge impact that the policies and paths of development of these two countries has on the whole globe from all points of view, even to the point of being a determinant for a better or catastrophic future. [January 2006. Military Implications; Source]

Vital Signs 2005

Worldwatch Institute Vital Signs 2005 report discusses 35 economic, social, and ecological trends that have crucial impacts on the world's future. It raises awareness and a warning signal on the ecological and social costs of today's unsustainable growth and consumption. The report notes that if present tends and patterns continue, environmental refugees could reach 50 million by 2010. [May 2005. Military Implications; Source]

MIGRATION TRIGGERED BY ENVIRONMENTAL CAUSES

Rising Concerns over Rising Seas

The nine tiny atoll islands of Tuvalu, with the highest point merely 4.5 meters above water, are expected to receive their worst high tides ever. In January 2006, Tuvalu had already experienced the highest January tides on record. Australian scientists from the South Pacific Sea Level and Climate Monitoring Project have predicted that as of 17:56 pm February 28th 2006, the country would face the highest tide from the period 1990 to 2016 [at the time of this writing, there was no published information available as to whether this had actually occurred]. Should this prediction become true or not, Tuvalu is definitely facing future widespread flooding affecting the human security of the islands' 11,000 inhabitants. [See also *Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels* in January 2006, *First People Displaced Due to Rising Sea Levels* in December 2005 and other related items in previous environmental scanning reports.] [February 2006. Military implications; Sources]

Future Sea-level Rise will make Freshwater Brackish

The southern Pacific region experienced "king tides" on February 28, 2006, as a result of the 26-year cycle of essentially perfect gravitational alignments of the Sun, Moon and Earth. The island of Funafuti, Tuvalu (max. elevation = 3.7 meters) had tide swells of 3.4 meters above normal in calm weather. While this rise is only minimally attributable to global warming sea-level rise at this stage, it does point to impacts to be expected well before actual inundation of low-lying regions might result from that phenomenon. While only three of the lowest situated homes experienced yard flooding, Dr. Mark Hayes of the University of Queensland observed water bubbling up to emerge on top of the soil. This would have occurred from rapid, significant intrusion of seawater below the lens of brackish and freshwater held in pores and cavities of the island's rocky structure and soil. Such intrusion will have contaminated some of the freshwater upon which residents depend for direct use and for agriculture. In low rainfall regions, such damage will not self-repair quickly. It is likely that well before physical inundation from general sea-level rise forces residents to flee, they will have to abandon the island owing to unavailability of potable water and water for even salt-tolerant crops and trees. Funafuti is one extreme case, but represents a snapshot of the future for all low-lying islands and littoral zones. [See also *Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels* in January 2006, *First People Displaced Due to Rising Sea Levels* in December 2005 and other related items in previous environmental scanning reports.] [March 2006. Military Implications; Sources]

First People Displaced Due to Rising Sea Levels

Over 100 villagers of the Pacific island Tegua, in Vanuatu, were relocated to higher ground to be protected from aggressive storms and waves considered consequence of climate change. The move, done under a project entitled Capacity Building for the Development of Adaptation in Pacific Island Countries, might represent a first example of formal mass-displacement as a result of climate change. {December 2005. Military Implications; Sources]

Rising Sea Level Triggers Rising Refugee Move

Further to the *Rising Concerns over Rising Seas* item of the February 2006 report on the 11,000 inhabitants of Tuvalu facing the threat of the rising ocean level: now, seeing themselves as climate refugees, some Tuvaluans are leaving their Pacific island homes and moving their c

ommunities to safer ground in New Zealand, thus officially becoming environmental refugees. [See also *Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels* in January 2006, *First People Displaced Due to Rising Sea Levels* in December 2005.] [April 2006. Military Implications; Sources]

Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels

Possible rising sea levels of over 30 centimeters by the middle of this century would drown or make uninhabitable several small Pacific countries. Although discussions related to the implications for the region's security have begun, there are no regional and/or international policies and procedures to address displaced populations from small island countries. [January 2006. Military Implications; Source]

FRESHWATER

4th World Water Forum

"Lack of water or its poor quality, last year [2005], caused 10 times more deaths than all the wars waged on the planet together," noted Loïc Fauchon, President of the World Water Council, in addressing the 4th World Water Forum held March 16-22 in Mexico City. About 20,000 participants from 141 countries participated. There were over 200 sessions and 1,600 local actions were presented. The dominating discussions were on: universal access to clean water—without border constraints; recognition of water as a fundamental human right and key to development; access to water-related technologies; and improved water management and capacity building. At the Ministerial Conference concluding the Forum, high-level officials adopted the Ministerial Declaration, calling for intensified national and international action on water and sanitation issues by including water and sanitation as priorities in national processes, and support for integrated water resources management.
Some reports produced in conjunction with the WWF.

The second edition of the World Water Development Report, *Water: A Shared Responsibility*, was launched on World Water Day, which's theme this year was "Water and Culture," stressing the role of local practices for good water management. The comprehensive triennial assessment of freshwater resources addresses the consequences of climate change on water challenges, health and development implications of water scarcity and, emphasizing that water is shared responsibility, the report recommends improved water governance at all levels, including institutional capacity, legal frameworks, and resource distribution.

Other studies launched around the Forum also underline implications of poor fresh water management ranging from access and administration, to pollution and overexploitation. *Challenges to International Waters: Regional Assessments in a Global Perspective*, report by UNEP, addresses mainly water shortages, overfishing, and pollution, and their implications for health, food security, and development, making several recommendations to reverse the damage and declines. It warns that unless improved water management practices, many of the problems are expected to "increase in severity by 2020".

Access to clean water and sanitation might be worsened by high rate of urbanization, mainly in small urban centers, warns *Meeting the development goals in small urban centres?* report by UN-HABITAT. Considering that by 2015, more than half of world population will live in urban areas, and the urban population of Asia, Africa and Latin America is expected to reach 4 billion within the next three decades, increased efforts are necessary to develop socially and environmentally sustainable cities.

Changes in Surface Water Supply Across Africa with Predicted Climate Change, paper by Africa Earth Observatory Network, University of Cape Town, is a detailed assessment of the consequences of climate change on the water situation in Africa. It warns that without immediate implementation of adequate water management systems, by the end of the century a quarter of the continent would suffer of lack of surface water, and the access to clean water will continue to worsen with half of the African population expected to live in urban areas by 2030. Presently, it is estimated that out the approximately 800 million Africans, some 300 million lack access to safe drinking water, and 313 million do not have access to basic sanitation. [March 2006. Military Implication; Sources]

Call for International Intervention to Save the Jordan River

During a session at the Woodrow Wilson Center, mayors and executives of the EcoPeace/Friends of the Earth Middle East asked the international community to increase efforts to save the Jordan River and the ecosystem it supports, including the Dead Sea. They want the governments of Jordan, Israel, Syria and the Palestinian Authority to develop a regional integrated rehabilitation plan. The international community does not understand how serious the issue is becoming, since much of the river flows through a closed military zone. Without intervention, the river's deterioration is expected to increase conflict in the region. Note: The Third International Symposium on Transboundary Waters Management is being held from 30 May–2 June 2006 in Ciudad Real, Spain. [May 2006. Military Implications; Sources]

Future Sea-level Rise will make Freshwater Brackish

The southern Pacific region experienced "king tides" on February 28, 2006, as a result of the 26-year cycle of essentially perfect gravitational alignments of the Sun, Moon and Earth. The island of Funafuti, Tuvalu (max. elevation = 3.7 meters) had tide swells of 3.4 meters above normal in calm weather. While this rise is only minimally attributable to global warming sea-level rise at this stage, it does point to impacts to be expected well before actual inundation of low-lying regions might result from that phenomenon. While only three of the lowest situated homes experienced yard flooding, Dr. Mark Hayes of the University of Queensland observed water bubbling up to emerge on top of the soil. This would have occurred from rapid, significant intrusion of seawater below the lens of brackish and freshwater held in pores and cavities of the island's rocky structure and soil. Such intrusion will have contaminated some of the freshwater upon which residents depend for direct use and for agriculture. In low rainfall regions, such damage will not self-repair quickly. It is likely that well before physical inundation from general sea-level rise forces residents to flee, they will have to abandon the island owing to unavailability of potable water and water for even salt-tolerant crops and trees. Funafuti is one extreme case, but represents a snapshot of the future for all low-lying islands and littoral zones. [See also *Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels* in January 2006, *First People Displaced Due to Rising Sea Levels* in December 2005 and other related items in previous environmental scanning reports.] [March 2006. Military Implications; Sources]

Asia's Water Security in Jeopardy

The Fall of Water report assesses the situation of Asia's mountain areas, including the Himalayas. It warns that rapid increase in infrastructure, overgrazing, and deforestation, are accelerating threats from highland glaciers shrinking, raising concerns related to the region's future water supplies, flooding, and drought. The report notes that presently about 50% of Asia's mountain region is affected by infrastructure development, which by 2030 could rise to over 70% if current practices continue unrestricted. Similarly, highland glaciers are shrinking by 7% annually, which means that by 2050, about 64% of China's glaciers would have vanished. The report argues that unsustainable local development and climate change accelerated by fossil fuel burning are likely to aggravate the problems. It points out that without fast implementation of sound environmental management policies for sustainable development, water security of about half the world's population could be in serious jeopardy. The outcomes are the results of collaborative work of UNEP, IUCN, Chinese Academy of Sciences, International Centre for

Integrated Mountain Development (ICIMOD), and the Netherlands Environmental Assessment Agency. The report was released in preamble to the 2005 World Summit of mid-September. [September 2005. Military Implications; Source]

NATURAL DISASTERS

New Developments for Addressing Natural Disasters

The UN will be organizing the 3rd International Early Warning Conference in Bonn from 27 to 29 March 2006. Guided by the motto 'From Concept to Action,' the conference aims to implement the 'Hyogo Framework for Action 2005-2015,' (adopted at the World Conference on Disaster Reduction in Kobe, Japan, January 2005) and set short- and long-term early warning projects and address high priority needs mostly in critical countries and regions. The conference is expected to be attended by over 600 representatives of governments, parliaments and international organizations, as well as practitioners and members of the scientific community. Meantime, the UN World Meteorological Organization (WMO) decided to increase its role in natural disaster mitigation, particularly for helping the world's least developed countries. The program will be mainly based on better implementation and use of latest the S&T in the domain of weather forecast, climate and water, and cooperation with other international organizations that work in disaster risk and preparedness area. [July 2005. Military Implications; Sources]

Tsunami Warning and Mitigation System in the Indian Ocean

One year after the December 2004 Indian Ocean tsunami, a *Consolidated Report for Countries Affected by the 26 December 2004 Tsunami* was released that addresses capacity building requirements at regional, national, and community levels in 16 countries. It identifies the achievements, gaps, and specific actions still needed and the responsible authorities for those actions for building an effective warning and mitigation system for the Indian Ocean countries. The World Meteorological Organization (WMO) announced that a telecommunications network to provide a tsunami early warning system in the Indian Ocean is on track for completion by the middle of 2006. However, as of December 2005, there is no agreement on the establishment of a single alert center and the countries that have been conferring are going ahead with plans for purely national systems. [See also *Indian Ocean Tsunami Early Warning System to be Operational by the End of 2005* in August 2005, and *Tsunami Triggers an Early Warning System for Indian Ocean and Beyond* in January 2005 environmental security reports.] [December 2005. Military Implications; Sources]

UN Tsunami Early Warning Systems Extended to Mediterranean, Northeast Atlantic

As part of a global tsunami warning and mitigation system, UNESCO's Intergovernmental Oceanographic Commission (IOC) launched the plans for a system for the North-Eastern Atlantic Ocean, Mediterranean and connected seas. At the first meeting of the new system's Intergovernmental Coordination Group, experts from 23 Mediterranean and Northeast Atlantic countries identified the key technical needs for the system and adopted an action plan for 2006-2007 with the aim of having an initial operational system in place by December 2007. Beyond those in the Pacific and Indian Oceans, planning is underway for one in the Caribbean. [See also *Indian Ocean Tsunami Early Warning System to be Operational by the End of 2005* in August

2005, and *Tsunami Triggers an Early Warning System for Indian Ocean and Beyond* in January 2005 environmental security reports.] [November 2005. Military Implications; Sources]

ICSU Launched Global Disaster Research Program

At its 28th General Assembly, the International Council for Science (ICSU) launched a new program on Natural and Human-Induced Hazards to reduce their economic and social effects. The program will connect natural and social sciences to serve policymakers. It would research ways to improve disaster forecasts and human vulnerability, as well as develop the best policies to mitigate and respond to them. [See also *Better Disaster Planning to Avoid Environmental Catastrophes* in September 2004 environmental security report.] [October 2005. Military Implications; Sources]

Better Disaster Planning to Avoid Environmental Catastrophes

Hurricane Katrina along the U.S. Gulf Coast has introduced a new term, "toxic gumbo", into the environmental vocabulary, referring to the liquid/sludge produced when storms cause flood waters to overrun populated areas, especially industrial tracts, picking up from storage facilities a hazardous mix of all sorts of chemicals, both end-products and precursors. As the flood recedes, it may deposit this nasty brew over an entire region, including wetlands, and/or carry it into previously unaffected waters. Katrina produced environmental damage and pollution of this kind on an unprecedented scale outside of full-scale war. President Bush has suggested a greater role for the military in post-national disaster management.

On the other side of the Atlantic, spurred by floods and fires in many places around the continent, the European Commission passed a resolution calling for better disaster planning coordination among its members.

The Asian Conference on Disaster Reduction held in Beijing, aims to assess disaster reduction progress across Asia and build a platform for cooperation on early warning, disaster prevention, reduction, and response in Asia.

UN Secretary-General Kofi Annan, reviewing the statistics of 2004 natural disasters, called for more emphasis on actions to prevent and react to natural disasters, “because their incidence and severity is increasing due to climate change, environmental degradation, inappropriate development patterns and inadequate mitigation and preparedness systems.” [September 2005. Military Implications; Sources]

Arctic Observing Integrated Network

Toward an Integrated Arctic Observing Network, by the Committee on Designing an Arctic Observing Network, National Research Council, discusses the need, scope, and implementation of an international observation system for the Arctic region. The Arctic Observing Network (AON) would coordinate existing national and international efforts for reliable and timely detection of conditions and variations in the Arctic for a better understanding of the arctic system’s functions and changes. The network would serve both scientific and operational needs, also contributing to other programs and research studies that help understand the consequences of arctic changes and thus improve decision-making and timely-action. [March 2006. Military Implications; Sources]

ENERGY SECURITY

World Energy Outlook 2005 -- Middle East and North Africa Insights

The *World Energy Outlook* is accepted as the most comprehensive source of statistics, projections, and analysis in the energy sector. If energy trends follow the business as usual policy, Middle Eastern and North African oil and gas resources seem critical for meeting the world's future energy needs. This year's *World Energy Outlook* focuses on whether the energy production from these key regions will be able to satisfy global demand over the next 25 years. It assesses energy demand and supply trends for the entire regions; analyzes the implications of these trends for global energy markets, international oil and gas prices and energy security; presents a "Deferred Investment Scenario" and its consequences; and reviews the region's power and water desalination sectors. [November 2005. Military Implications; Source]

Energy and Security: Toward a New Foreign Policy Strategy

Although focusing on America's energy dependency on oil, the book assesses the world's prospective on oil and gas, the key and most sensitive energy sources for the near future. A contribution of 36 top foreign policy and energy experts, sometimes with divergent opinion, *Energy and Security: Toward a New Foreign Policy Strategy* suggests new strategies and policy approaches that could mitigate the risks implied by continued dependence on oil. [October 2005. Military Implications; Sources]

Increasing Oil Demand in China and India Raise Security Concerns

The hunger for energy might become a driving force for some countries to disregard international security issues and accords to the point of jeopardizing international security. For example, there were international concerns expressed about the alleged Chinese offers of arms and other sensitive defense technology in return for oil and gas rights in certain countries. "Unprecedented political opposition" probably triggered by strategic concerns in the US Congress forced the withdrawal of China National Offshore Oil Corporation (CNOOC)'s bid for California's Unocal. Similar concerns may affect the rival bids of China and India to buy a Canadian firm with oil fields in Kazakhstan. [August 2005. Military Implications; Source]

China and India Sign Precedent-Setting Energy Agreement

How the world prepares for the advent of "peak oil," will be a major factor in determining the future of war and peace. Will the major consumers and producers plan for the peaceful decline in oil and gas supplies or…? India and China have decided to cooperate and have signed the "Memorandum for Enhancing Cooperation in the Field of Oil and Natural Gas" which outlines comprehensive cooperation concerning hydrocarbons, including trading and joint bidding in third countries; research and development; exploration and production; conservation; and promotion of environment-friendly energy. A joint committee will be established to monitor implementation and facilitate dialogue and information sharing. This new agreement is in addition to the two nations' previous commitments to cooperate for accelerating the development of new energy sources. [January 2006. Military Implications; Sources]

UN Commission on Sustainable Development Fosters Energy Security

The 14th session of the UN Commission on Sustainable Development (CSD) reviewed progress of the efforts on energy for sustainable development, climate change, air pollution/atmosphere, and industrial development. Energy security issues dominated the discussions along with the urgency of achieving Agenda 21, and the cost of inaction, as well as the need for addressing climate change and its consequences, including a long-term, predictable policy framework to move to a low carbon emission society. Meantime, the UN Environment Program (UNEP) report Class of 2006: Industry Report Cards on Environment and Social Responsibility, analyzing progress across some 30 industry sectors since the 2002 World Summit on Sustainable Development, notes that industries are trying to improve environmental and social performance, mainly related to climate change and greenhouse gas emission issues. [May 2006. Military Implications; Sources]

EU Commission Sets Long-term Energy Goals

In April the EU Parliament's Industry Committee approved raising the 2006-2015 energy reduction goal from 10% to 11.5%. This month the EU Executive Commission set an objective of 20% reduction by 2020, saving €60B per year in fuel costs. New EU laws requiring efficient buildings and appliances may achieve half the goal, but additional measures will be needed. A group of legislators went further, calling for a goal of 23% reduction. [See *EU to Set Higher Targets for Cuts in Energy Consumption* in April 2005 environmental security report.] [June 2005. Military Implications; Source]

New European Energy Policy Developments

A European Commission new Green Paper sets the basis for a common energy strategy for the 25-nation European Union, since energy security and the fight against climate change are common challenges and therefore should be addressed by common and coordinated efforts. The paper includes six specific priority areas with over 20 suggestions: establishing an internal EU energy market; solidarity among EU Member States, including setting up a European Energy Supply Observatory and revision of the present supply framework; a sustainable, efficient, and diverse energy mix ("This in turn may eventually lead to objectives being established at Community level regarding the EU's overall energy mix to ensure security of supply, whilst respecting the right of Member States to make their own energy choices" states the EU Press Release); global warming response, including an Action Plan on energy efficiency to be adopted by the Commission later this year; strategic energy technology plan that would assure EU competitiveness for efficient and low-emission technologies; and a common external energy policy to reflect an EU common view in the international arena, including a new Community mechanism to enable rapid and coordinated reactions to emergency external energy supply situations.

In order to reduce dependency on non-European countries' energy sources, European leaders are planning to raise the share of energy generated from renewables from 12% to 15% by 2010 and increasing the proportion of biofuels used in transport from the 5.75% target by 2010 to 8% by 2015. Meanwhile, the EC's "Euro 5" proposal seeks to impose stricter rules on new car emissions, calling for diesel particulates to be cut by 80%, gasoline hydrocarbons by 25%, and, for both gasoline and diesel, NOX cut by 20%. Individual countries advocate even stronger

measures. The new standards, if approved, could enter into force in mid-2008. [March 2006. Military Implications; Sources]

Germany is introducing compulsory quotas of biofuels to be mixed with fossil fuels by refiners effective at the beginning of 2007. Until 2009, German oil refineries will have to blend 2% biofuel content in petrol and 4.4% biodiesel content in conventional diesel. [See also *Biodiesel Increasingly Considered a Viable Alternative to Crude Oil* in February 2006 environmental security report.] [May 2006. Military Implications; Sources]

2.C Protecting the Environment Due to Its Inherent Moral Value

ENVIRONMENTAL SECURITY-RELATED INTERNATIONAL REGULATIONS THAT HAVE BEEN OR ARE CLOSE TO COMING INTO FORCE SINCE JUNE 2005

Nuclear Terrorism Convention Signed by 82 Countries at the UN Summit

The International Convention for the Suppression of Acts of Nuclear Terrorism was signed by 82 countries at the UN Summit, beginning with Russia, the U.S., and France. The Convention, proposed by Russia in 1998, was adopted by the UN General Assembly in April 2005. [See also *UN Convention Against Nuclear Terrorism* in April 2005 environmental security report]

Note: The newly released statistics of the IAEA's Illicit Trafficking Database (ITDB) show a substantial increase in illicit trafficking and unauthorized activities with nuclear and other radioactive materials in 2003-2004. Although the majority of the incidents showed no evidence of criminal activity, the Agency warns of the danger that these materials could be used for malicious purposes, like 'dirty bombs.' [See also *UN Agency to Intensify Tracking of Illicit Nuclear Trafficking* issue in the September 2004 environmental security report.] [September 2005. Military Implications; Sources]

The Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter entered into force on March 24, 2006

The 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) entered into force on March 24, 2006. The Protocol is a comprehensive and restrictive set of regulations regarding dumping of wastes at sea. The new rules prohibit dumping of any materials except for those on an approved list. The 1972 Convention permitted dumping of wastes at sea, except for those materials on a banned list. This is the first international maritime treaty regulating storage of wastes in the seabed, as well as the abandonment or toppling of offshore installations, and it includes the "polluter pays" principle. Although the Protocol's dumping provisions do not cover internal waters, Parties to the Protocol have the option to apply its rules to their internal waters if they wish (Article 7). The Protocol also has linkages with other international environmental agreements that have been developed since 1972; for instance, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The U.S. is a Party to the 1997 London Convention, but is not a Contracting Party to the 1996 Protocol. [March 2006. Military Implications; Source]

The Agreement on International Carriage of Dangerous Goods by Inland Waterways (ADN) Closer to Entry into Force

The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) is two ratifications away for entering into force. The ADN aims to set up high-level safety standards for the entire European Inland Waterways Network by a main legal text and regulations concerning the international carriage of dangerous goods by inland waterways; and effective prevention of pollution resulting from accidents or incidents during the

carriage; while facilitating transport operations and promoting international trade in chemicals. [March 2006. Military Implications; Sources]

Ratification began for the International Convention for the Control and Management of Ships' Ballast Water and Sediments

Australia is the first country to sign the international agreement regulating ships' ballast water, adopted in February 2004 by the UN International Maritime Organization (IMO), and began the ratification procedures. The International Convention for the Control and Management of Ships' Ballast Water and Sediments stipulates a series of measures aiming to prevent potential marine hazards caused by aquatic organisms carried by ships' ballast water. It will come into force 12 months after ratification by 30 countries, representing 35% of world merchant shipping tonnage. [See also *IMO Adopts New Convention on Ships' Ballast Water* in the February 2004 environmental security monthly scanning report.] [June 2005. Military Implications; Sources]

Carpathian Convention Comes Into Force

The Carpathian Convention came into force on January 4, 2006. Although covering just seven European countries (the Czech Republic, Hungary, the Slovak Republic, Ukraine, Poland, Romania, and Serbia and Montenegro, out of which just the first four are States parties), the Convention has considerable global importance, being seen by other regions as an example to follow. There are already requests for UNEP to expand the Convention to adjacent regions, as well as to consider designing similar treaties for other mountain regions of the world. [See also *Fifth Environment for Europe Ministerial Conference* in May 2003, and *Carpathian Mountain office of the United Nations Environment Programme* in July 2004 environmental security reports.] [January 2006. Military Implications; Sources]

REACH (Registration, Evaluation and Authorization of Chemicals)

REACH Approved by European Council

With minor modifications, the EU ministers have approved the proposed Registration, Evaluation and Authorization of Chemicals (REACH) regulation. The Council's position should be formally approved in May 2006, followed by a second reading by the European Parliament, and final decision expected in autumn 2006, for entry into force in spring 2007. Operational requirements of REACH are expected to start to be applied from 2008 onwards. REACH creates a single system for all chemicals (replacing about 40 existing legal acts) and will establish a new European Chemicals Agency headquartered in Helsinki, Finland, to manage the evaluation, authorization, and registration of the substances database. REACH will require manufacturers and importers of chemicals produced or imported in volumes over 1 metric tonne per year to submit a registration dossier to the European chemicals agency with comprehensive information concerning the safe use of those substances. Failure to register will prohibit manufacture or import to the EU. [See also *REACH Draft Voted by the European Parliament* and other related items listed in November 2005 environmental security report.] [December 2005. Military Implications; Sources]

REACH Draft Voted by the European Parliament

The draft REACH (Registration, Evaluation and Authorization of Chemicals) regulation passed the European Parliament on November 17th. Since just fewer than 300 out of more than 1,000

proposed amendments survived, the result pleased neither industrialists, nor environmentalists and the lobbying continues intensely on what might be one of the EU's most important pieces of legislation so far. As it stands now, the priority for screening potentially hazardous substances would be set by volume rather than by risk measures—as was the original plan. The British EU presidency is pushing to pass the regulation by the end of the year. However, that depends on the vote of the EU Council of Ministers due to meet on December 19th. If the Parliament's amendments are not accepted, than the bill might be sent back for a second reading and the debate would go on. [See also *The REACH Debate Continues* and other related listed items in October 2005 environmental security report.] [November 2005. Military Implications; Sources]

The REACH Debate Continues

The full assembly vote on REACH (Registration, Evaluation and Authorisation of Chemicals), a regulation designed to reduce the impacts of hazardous chemicals on public health and the environment, is scheduled for November. However, the debate continues among different European parliamentary committees, industry lobbying groups, and environmental groups. The environment committee, which has the lead role in shepherding REACH, supported changes that would ease requirements for companies that deal with listed hazardous substances in volumes of 1-10 tonnes annually; but, would keep the registration rules for those handling over 10 tonnes annually, while another parliamentary committee recommended just requiring companies to replace hazardous substances with safe ones when substitutes are available. The European Eco-Forum pleads for strengthening REACH and extending it to the rest of the pan-European region, a suggestion that they want to include on the agenda of the Belgrade 2007 "Environment For Europe" Conference. [See also REACH Closer to Finale in August 2005, The REACH Program Closer to Entry Into Force in March 2005, Leading Cancer Specialists call for REACH Strengthening in May 2004, and EU Chemical Policy Reforms in January 2004 environmental security reports.] [October 2005. Military Implications; Sources]

REACH Closer to Finale

The drafting of the Registration, Evaluation and Authorization of Chemicals (REACH) legislation is in its final phases as it moves through committees in the European Parliament. The vote on it is scheduled for November. REACH provides a legal framework for controlling hazardous chemicals, requiring manufacturers and importers to register the physical, chemical and toxicological properties of substances with a central EU database, provide lifecycle safety and environmental risks information, and eventually get a special authorization for those of high concern. Britain, which holds the EU's rotating presidency, hopes that agreement on the program will be reached by the end of the year. [See also *The REACH Program Closer to Entry Into Force* in March 2005, *Leading Cancer Specialists call for REACH Strengthening* in May 2004, and *EU Chemical Policy Reforms* in January 2004 environmental security reports.] [August 2005. Military Implications; Source]

RoHS (EU Restriction of Hazardous Substances) Directive

RoHS Closer to Deadline (July 1)

Under the Restriction of the use of certain Hazardous Substances (RoHS) directive, beginning July 1, the European Union will bar the import of electronic components that include lead, mercury, cadmium and several other substances. [See *Recycling Regulations in the EU* in August 2005 and *Two E-waste laws entered into force in the EU* in February 2003 environmental security reports.] [May 2006. Military Implications; Source]

Denmark to Sue EU Over Annulling Flame Retardant Ban

The Danish government announced its intent to sue the European Commission over annulling the ban on deca-BDE, a brominated flame-retardant, since it might cause birth defects and cancer. Brominated flame-retardants are a group of chemicals used in electronic devices. The deca-BDE was to be banned starting on July 1, 2006, under the EU Restriction of Hazardous Substances (RoHS) directive, which will regulate the use in new products of certain hazardous substances—lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ethers (PBDE). However, in October 2005, the European Commission decided to exempt decaBDE from the RoHS Directive. [See also *Recycling Regulations in the EU* in August 2005 and *Two E-waste laws entered into force in the European Union (EU)* in February 2003 environmental security reports.] [January 2006. Military Implications; Sources]

E-waste Management Directive Came into Effect on August 13, 2005

The EC directive for e-waste management, Waste Electronic and Electrical Equipment (WEEE), has come into effect, requiring that all 25 EU member states comply with the electrical and electronic appliances disposal framework in order to minimize the impacts of this kind of waste on the environment. Among other stipulations, the directive requires that all such devices manufactured in the EU bear a label requiring mandatory recycling. The related directive on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment was also updated, setting maximum concentration values for some substances that were previously supposed to be completely banned in manufacture after July 1, 2006: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). [See also *Two E-waste laws entered into force in the European Union* of February 2003, and *E-waste Directives to be Enforced in the UK* of July 2005 environmental security reports.] [August 2005. Military Implications; Sources]

Gothenburg Air Pollution Protocol Entered into Force on May 17, 2005

The Protocol to Abate Acidification, Eutrophication and Ground-level Ozone entered into force on 17 May 2005. The Protocol was originally adopted on 30 November 1999 in Gothenburg (Sweden) and signed by 31 countries. It is the eighth to take effect under the Convention on Long-range Transboundary Air Pollution of the United Nations Economic Commission for Europe (UNECE). The Protocol sets targets for emission cuts for sulphur dioxide, nitrogen oxides, volatile organic compounds (VOCs), and ammonia, and sets limit values for specific emission sources (e.g. combustion plants, electricity production, dry cleaning, cars and lorries) and requires best available techniques to be used to keep emissions down. [See also *The Gothenburg Protocol on Air Pollution to Enter into Force on May 17* of March 2005, and *Changes to the Convention on Long-range Transboundary Air Pollution* of December 2004 environmental security scanning reports.] [May 2005. Military Implications; Source]

EU Imposes New Battery Restrictions

The European Union has imposed new requirements on the manufacture and disposal of batteries. Limits are placed on the amount of mercury and cadmium portable batteries may

contain (Certain classes, such as those for emergency systems and handheld tools, are excepted.) The new law also prescribes minimum used battery collection rates of 25% of annual sales by 2012 and 45% by 2016. [See also *Two E-waste laws entered into force in the European Union (EU)* in February 2003, *EU to Ban the use of Cadmium in Batteries* in December 2004, and *WEEE comes into effect* in August 2005 environmental security reports.] [May 2006. Military Implications; Source]

PROPOSED TREATIES AND/OR CHANGES TO EXISTING ONES

Biological Diversity

Convention on Biological Diversity and the Cartagena Protocol

The third Meeting of the Parties to the Cartagena Protocol on Biosafety (COP/MOP-3) was held from 13-17 March 2006, in Curitiba, Brazil, preceding the eighth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP-8) held 20–31 March. COP/MOP-3 adopted 18 decisions ranging from requirements for handling, transport, packaging and identification of living modified organisms (LMOs) to capacity building and funding. The most important achievement was the adoption of the documentation requirements for LMO shipments for food, feed and processing (LMO-FFPs).

The Conference of the Parties to the Convention on Biological Diversity (CBD COP-8) focused on concrete actions and policies to achieve the 2010 biodiversity target. *Global Biodiversity Outlook 2,* by the secretariat of the UN CBD, released at the opening of the Conference, reveals that human activity might be the cause of the worst extinction since the dinosaurs' era. Some notable outcomes of the CBD COP-8 include:

- call to use zoning schemes, special management areas, and policies to preserve endangered species
- designation of several new protected areas
- rejection of lifting the moratorium on terminator seeds
- set of measures and objectives for the protection and sustainable use of the vulnerable biodiversity of islands, and another on arid lands
- new initiatives to raise awareness globally on the consequences of the biodiversity loss
- an alliance among the world's top research centers and agencies specializing in biodiversity to cooperate with the UN CBD to reduce the rate of loss of biodiversity by 2010
- Conservation of Biodiversity Rich Sacred Natural Sites initiative
- a 2010 Biodiversity Forum with preparations to begin this year

The ninth Conference of Parties will be held in 2008, in Germany. The Convention on Biological Diversity has 188 Parties (168 Signatures), and the Cartagena Protocol on Biosafety has 132 Parties (103 Signatures). The United States is not Party to any of them. [March 2006. Military Implications; Sources]

Cartagena Protocol on Biosafety—Second Working Group on Liability and Redress

The second meeting of the international working group on liability and redress in the context of the Cartagena Protocol on Biosafety, held February 20–24, 2006 in Montreal, Canada, discussed the issues of damage caused by trans-boundary movements of living modified organisms and further considered options available for liability and redress. Specific talks focused on options for elements of rules and procedures as referred to in Article 27 - Liability and Redress. The discussions included definition of damage, effectiveness criteria, functional scope, clear rules on burden of proof and standing, and rules and procedure on compensation beyond national jurisdiction. Although no agreement was reached on any of the substantive issues, the final report acknowledges progress in mapping out the issues and in articulating their underlying legal rationales. There are presently 132 Parties to the Cartagena Protocol on Biosafety; the U.S. is neither Party, nor signatory. [See also *The First Meeting of the Conference of the Parties to the Cartagena Protocol on Biosafety (COP MOP 1)* in February 2004 environmental security report] [February 2006. Military Implications; Sources]

Nuclear Safety

Nuclear Theft, Smuggling, and Sabotage Countermeasures

The recent conference on strengthening nuclear security held in Vienna, Austria, 4–8 July, 2005 adopted Amendments to the Convention on the Physical Protection of Nuclear Material (CPPNM). The original CPPNM applied only to nuclear material in international transport. The amendments substantially strengthen the Convention by providing an expanded system for preventing, combating and punishing nuclear material theft, smuggling and sabotage. The amendments also request expanded cooperation among States regarding rapid measures to locate and recover stolen or smuggled nuclear material, to mitigate any radiological consequences of sabotage, and to prevent and combat relevant offences. The new rules will come into effect once they have been ratified by two-thirds of the 112 States Parties of the Convention. This is expected to take several years. [July 2005. Military Implications; Source]

Review Conference of the Non-Proliferation Treaty

In spite of all the current discussions on different forms of nuclear threats, the Review Conference of the Nuclear Non-Proliferation Treaty (NPT) ended its month-long meeting without adopting any significant decisions to improve the NPT and its mechanisms. The three working committees were organized on the main topics of the Treaty: disarmament, verification of safeguards on national nuclear programs, and the peaceful use of atomic energy. No consensus was achieved on any of them and the final document has no “recommendations” section. Yet, many delegates attested their nations’ continuous commitment to push for nuclear disarmament, entry into force of the Comprehensive Nuclear Test Ban Treaty, and other measures to promote nuclear safety. Ambassador Sérgio de Queiroz Duarte (Brazil), President of the Conference, acknowledged, however, that the ways in which the issues have been discussed, the interest of the delegations, the documents presented, and the debates were an important step forward and a great opportunity for the delegations to put forth their nations’ views on how to improve the system of the Treaty. Canadian Ambassador Paul Meyer suggested that annual conferences be held to accelerate progress of the negotiations. Among the positive outcomes of the Conference

is the agreement on "indicators of noncompliance" and possible consequences for withdrawal from the treaty.
Meantime, addressing the "Mayors for Peace" conference, UN Secretary-General Kofi Annan called on the world's mayors to revitalize their view for a global ban on nuclear weapons by 2020 and advance the organization's Programme to Promote Solidarity of Cities toward the Total Abolition of Nuclear Weapons. [May 2005; Military Implications; Sources]

Post-Kyoto Protocol Suggestions

Post-Kyoto Agenda Agreed

Delegates to the UN conference on climate change agreed on a long-term agenda of discussions for the post-Kyoto Protocol period, aiming to build consensus on how to address greenhouse gas emissions reduction, and climate change. "There is strong consensus about the urgency of the problem; that there really needs to be action taken and that the international community needs to work together to address the problem," said Richard Kinley, acting head of the Climate Change Secretariat. The "Dialogue on long-term cooperative action" is open to all 189 parties to the UN Framework Convention on Climate Change, the Kyoto Protocol's parent treaty. It was agreed that negotiations should be based on the latest scientific data and reduction policies be focused on technology development and research. Developing countries and Europe called for much more significant reduction targets for industrialized countries than those stipulated by the Kyoto Protocol (the EU had suggested 15–30%, compared to the average 5% called for by the Kyoto Protocol.) The meeting was held in Bonn, Germany, May 15-16. The next round of negotiation will take place in Nairobi, Kenya, in November. Meantime, the UN Climate Change Secretariat said that there had been an exponential rise in investment in emission reductions through the Kyoto Protocol, referring to the carbon market growth and the clean development mechanism (CDM) that now has more than 176 registered projects and approximately another 600 in the evaluation process. [May 2006 Military Implications; Sources]

Second European Climate Change Program and post-Kyoto Negotiations

On Monday, 24 October, Environment Commissioner Stavros Dimas launched the second European Climate Change Program (ECCP II) at a stakeholder conference in Brussels. ECCP II will focus on strategies and technologies that would allow the EU to reduce its greenhouse gas emissions (including carbon capture and storage) and to adapt to the effects of climate change. Commissioner Dimas outlined the Commission's views on the further development of EU climate change policy including after 2012 and called on all states to adhere to the eventual post-Kyoto measures. He underlined EU commitment to initiate a process that will lead to international negotiations on a global climate change regime. Global negotiations for post-2012 strategies will take place at the UN Climate Change Conference (COP 11 and COP/MOP 1) to be held on November 28-December 9, 2005 in Montreal. [See also *UN Meeting Fails to Agree on Post-Kyoto Strategy* in May 2005 and other previous environmental security reports.] [October 2005. Military Implications; Sources]

G8 Environmental Results Are Limited to Post-2012 Concerns

Although the Gleneagles meeting of the G8 industrialized nations did not generate measurable targets and timetables for tackling greenhouse gas emissions, the heads of government of the world's eight wealthiest nations agreed that "climate change is happening now, that human activity is contributing to it, and that it could affect every part of the globe." They also set the stage for dialogues for post-Kyoto regulations that would include the US and other high-emitting countries such as China and India. The dialogues are planned to start with a meeting in London in November to be organized by the British government. [July 2005. Military Implications; Sources]

Marine Environment

Network of Marine Protection Areas to be Adopted by 2012

The establishment of a network of marine parks to protect the world's oceans from growing pollution and marine environment devastation was proposed at the First International Marine Protected Areas Congress held in Geelong, Australia 23-28 October 2005, In the Conference opening speech, Achim Steiner, director-general of the World Conservation Union (IUCN) emphasized that although there is rising concern and scientific evidence about marine environmental degradation, less than one percent of it is under protection today. He suggested establishing a system of Marine Protected Areas (MPAs) as decided at the 2002 World Summit on Sustainable Development. The MPAs would be designed by 2008 through collaboration of all concerned parties—international organizations, sovereign states, fishery organizations, and conservationists, for adoption by world governments by 2012. [See also *Marine Protection Issues* in the March 2005 environmental security scanning report.] [October 2005. Military Implications; Sources]

New Baltic Sea Action Plan Based on Ecosystem Approach

The kick-off Stakeholder Conference of the Helsinki Commission approved the first steps in drafting the Baltic Sea Action Plan (BSAP) to protect and restore the Baltic Sea marine environment. The Plan includes intergovernmental cooperation among the countries bordering the sea—Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. The BSAP will be part of the new EU Marine Strategy for a healthy marine environment. “The BSAP will apply the ecosystem-based approach to management of the Baltic Sea. In setting a definition of ‘good ecological status’ for the Baltic Sea, as well as specific environmental targets and necessary measures, the BSAP will be instrumental to the successful implementation of the [EU Marine] Strategy in the region,” said Peter Gammeltoft, Head of the Water and Marine Unit in the Directorate General for Environment at the European Commission. The Plan is expected to be adopted in late 2007. [March 2006. Military Implications; Sources]

Coalition Urges UN to Consider Legislation to Curb Harmful Ocean Sounds

The Ocean Noise Coalition urges the international community to pass regulations to curb harmful sound waves used by the oil and gas industry, and navies to detect submarines. Marine

scientists state that there is increased evidence that these sounds are harmful to whales, dolphins and other marine life. The Coalition aimed to convince delegates from 148 nations to take action on the issue during their forthcoming consultations on oceans and marine law. [See also *Scientific Models Could Help Navy Avoid Whales During Sonar Tests* in February 2005, *European Parliament Resolution to Protect Whales From Sonar* in October 2004, and *Research Confirms Military and Industry Sonar Harms Whales* of July 2004 environmental security reports.] [June 2005. Military Implications; Source]

UNU Report Urges the Need For a New Treaty on Deep-Sea Research

A new international treaty is needed to regulate the search for new products from species in deep international waters, the Institute for Advanced Studies of the United Nations University warns in a report. Compounds found in marine organisms can be used in medicines, and commercial exploration lured by potential profits threatens unique deep-sea ecosystem. The report urges the need for a new treaty to regulate exploitation so that benefits from the research are shared fairly and helps humanity as a whole. [See also *Could large-scale ocean zoning prevent conflicts?* of March 2005 environmental security monthly report.] [June 2005. Military Implication; Sources]

Toxic Substances

Over 4,000 Chemicals in Use in Canada to be Assessed for Safety

A comprehensive review of chemicals in use in Canada has determined that about 4,000 of 23,000 reviewed should have additional safety assessments as to their potentials for persistence in the environment, ability to bio-accumulate, direct health threats to humans or wildlife, and whether their extensive use poses a health or environmental threat. The list will be released September 14, 2006 by Environment Canada and Health Canada. They escaped previous detailed scrutiny because they were developed before modern pollution laws existed. Once the testing is complete, Canada will be ahead of Europe and the US in chemical safety assessments. [May 2006. Military Implications; Source]

Mercury Instruments May Be Banned in EU

The European Commission has proposed a ban on the use of mercury in new fever and room thermometers, barometers and blood pressure gauges because of the serious risk the heavy metal poses to human health. The proposition will go for further debate to the European Parliament and European Ministers. Specialized applications, in particular medical measuring devices, where adequate substitutes may not be available, would not be subject to the restriction. [See also *Recycling Regulations in the EU* in August 2005, *EU Sets 2011 Deadline to Ban Mercury Exports* in June 2005, and *Governments Call for Global Assessment and Control of Mercury Pollution* in February 2005 environmental security reports.] [February 2006. Military Implications; Sources]

EU Sets 2011 Deadline to Ban Mercury Exports

EU Environment ministers decided to ban mercury exports by 2011. Europe is the world largest mercury exporter, supplying about one-third of global demand. It also proposed the phase-out of

mercury in some products such as thermometers, and improved global efforts on mercury waste management. [See also *Governments Call for Global Assessment and Control of Mercury Pollution* in February 2005 environmental security report.] [June 2005. Military Implications; Source]

EU Committee Proposes Banning Fluorinated Gases

The European Parliament has voted to ban the use of fluorinated gases (F-gases) in certain products, including shoes, and car air conditioning systems. This is a much watered-down regulation compared to previous plans. The committee proposes to regulate the F-gases on an environmental basis and not on an internal market basis, which avoids countries having to adopt environmental standards higher than those of the EU's, thereby making themselves subject to trade sanctions. [See also *EU Environment Ministers Propose post-Kyoto Protocol Climate Policies* in October 2004 and *Europe to Reduce Fluorinated Gas Emission* in March 2004 environmental security reports.] [October 2005. Military Implications; Sources]

Stockholm Convention on POPs

Stockholm Convention to be Updated

The first meeting of the Persistent Organic Pollutants Review Committee (POPRC), held in Geneva on 7-11 November 2005, determined that all five chemicals proposed for inclusion in the Convention (pentabromodiphenyl ether, chlordecone, hexabromobiphenyl, lindane, and PFOS) fulfilled the screening criteria as stipulated in Annex D of the Convention and also adopted a draft outline of the risk profile for the new POP candidates. The first meeting of the Expert Group on Best Available Techniques and Best Environmental Practices to comply with the Stockholm Convention will be held in Geneva, Switzerland, 28 November–2 December 2005. [See also *Sweden Calls for World Ban on PFOS Chemical* in June 2005, *New Chemicals Proposed to be Added to Stockholm Convention on POPs* in May 2005, and *Stockholm Convention on Persistent Organic Pollutants (POPs) First Meeting of the Conference of the Parties* in the April 2005 environmental security scanning reports.]

This month India has ratified the Stockholm Convention, considerably increasing environmental protection in that economically fast-growing Asian country. [November 2005. Military Implications; Sources]

New Chemicals Proposed to be Added to Stockholm Convention on POPs

The Punta del Este meeting of the parties to the Stockholm Convention on Persistent Organic Pollutants (POPs) established a POPs Review Committee that will be responsible for evaluating additional chemicals that can be added to the current list of 12. Four candidate chemicals were given to the Committee, whose first meeting will be held in Geneva later this year, with its recommendations forwarded to future annual meetings of the Conference of the Parties to the Convention. The four candidates for phaseout are: the flame retardant pentabromodiphenyl; the hexachlorocyclohexanes, including the pesticide lindane; the pesticide chlordecone; and the flame retardant hexabromobiphenyl. [See also *Stockholm Convention on Persistent Organic Pollutants (POPs) First Meeting of the Conference of the Parties* in the April 2005, and

Stockholm Convention on POPs Came Into Force this Month in the May 2004 environmental security scanning reports.] [May 2005. Military Implications; Sources]

Sweden Calls for World Ban on PFOS Chemical

Sweden proposes a global ban on perfluorooctane sulfonate (PFOS), a chemical used by a number of industries including semiconductor makers, and which might be harmful to human and animal health. Sweden would propose the ban under the Stockholm Convention. Sweden hopes that if the approval of the regulation takes a long time, the scientific evidence will convince countries to take independent advance actions to phase out PFOS. [See also *Stockholm Convention on Persistent Organic Pollutants (POPs) First Meeting of the Conference of the Parties* in the April 2005, and *8.2 New Chemicals Proposed to be Added to Stockholm Convention on POPs* in May 2005 environmental security scanning reports.] [June 2005. Military Implications; Source]

Waste Management

Basel Convention on Hazardous Wastes to be Made More Effective

The Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal might be strengthened by new proposals prepared for the biannual ministerial conference to be held in late 2006. Issues on the Open Ended Working Group's agenda include used mobile phones, obsolete ships dismantling, furthering the ratification and implementation of the Protocol on Liability and Compensation, mobilizing funds and empowering the Convention's Regional Centers, and drafting technical guidelines for promoting the environmentally sound management of various kinds of hazardous wastes. [See also *Basel Convention on the Transboundary Movements of Hazardous Wastes* of October 2004 and previous environmental security scanning reports on the Basel Convention.] [July 2005. Military Implications; Sources]

Global Environmentally Sound E-waste Disposal System is Needed

Environmentally Sound Management (ESM) of Electronic and Electrical Wastes (e-waste) is a new program of action for the Asia-Pacific region aiming to achieve environmentally sound disposal of e-waste and to stop illegal trafficking of hazardous e-materials. The program is supported by UNEP Basel Convention Regional Centres in China, Indonesia, and the South Pacific (SPREP-Samoa) and focuses on capacity building at regional and national levels for best implementation of the Convention, assessment of the current situation and design of best strategies to cope with e-waste in the conditions of the region's rapid development. At the program's launch festivity, the need for developing an international e-waste recycling systems along with transparent information and monitoring mechanisms to ensure accountability was highlighted.

A new study, *The Digital Dump: Exporting Reuse and Abuse to Africa*, by the Basel Action Network, based in Seattle, reports that most of the computer equipment sent from the United States to developing countries as "aid" are not usable, creating environmental problems in already challenged places. Local sources say that the port of Lagos, Nigeria, receives 400,000 used computers a month, 75% of which are junk that must be disposed of, raising environmental issues. [See related items *Two E-waste laws entered into force in the European Union* of

February 2003, and *E-waste Management Directive Came into Effect on August 13, 2005* of August 2005 environmental security reports.] [November 2005. Military Implications; Sources]

EU New Strategy on Waste Recycling

The European Commission proposed a new strategy on the prevention and recycling of waste, part of the seven thematic strategies considered under the EU's Sixth Environmental Action Programme (6EAP). The new strategy includes consolidating and updating existing legislation (including the 1975 Waste Framework Directive) and minimizing waste by using it as a resource. It will set recycling standards and will include an obligation for all 25 member states to develop national waste prevention programs. The new regulations and a first set of standards for waste recycling are expected to enter into force in 2008. National governments will then have three years to finalize their own waste action programs. [See also *New EU Environmental Strategies* in the September 2005, and *Recycling Regulations in the EU* in August 2005 environmental security reports.] [December 2005. Military Implications; Sources]

Higher Targets for Packaging Recycling and Recovery

The EU updated and strengthened its 1994 Directive for packaging waste, setting higher recycling and recovery targets to further reduce the negative environmental impacts created by the landfilling and incineration of packaging waste and by the production of virgin materials. This type of waste includes packaging made from paper, glass, metals, plastics and wood. [August 2005. Military Implications; Sources]

Air Pollution and Greenhouse Gases

EU Thematic Strategy on Air Pollution for the CAFE Programme

Under the EU's Sixth Environmental Action Programme (6EAP), as part of the Clean Air for Europe (CAFE) strategy, the European Commission proposed the Thematic Strategy on Air Pollution. The Strategy, which aims to improve human and ecosystem health, covers most major air pollutants, with accent on airborne particulates known as PM2.5 and ground-level ozone pollution, and sets a cap on concentrations in the most polluted areas. It aims by 2020 to cut the annual number of premature deaths from air pollution-related diseases by almost 40% from the 2000 level. The strategy also proposes changes to the current regulation system by merging existing legal instruments into a single Ambient Air Quality Directive (that would cut by 50% the existing legal texts) and improving reporting requirements. The proposed legislation still has to be approved by member states and the European Parliament. The other six Thematic Strategies that the Commission will present over the next few months cover Soil protection; Sustainable use of pesticides; Protect and conserve the marine environment; Waste prevention and recycling; Sustainable use of natural resources; and Urban environment. [See also *The European Union Environmental Initiatives* in January 2005 environmental security report] [September 2005. Military Implications; Sources]

EC Proposed Strategy to Curb Greenhouse Gas Emissions from Air Travel

Considering the rapid increase of air travel and consequently its increased share in the overall EU greenhouse gas emissions undermining progress achieved through emission cuts in other areas of the economy, the EC proposed a strategy to tackle aviation emissions. It suggests bringing aircraft operators into the EU's Greenhouse Gas Emissions Trading Scheme (ETS), as an incentive for airlines to minimize their emissions. The new regulation would apply to all flights departing from the EU, whether to another EU destination or not and all carriers (EU or non-EU) would be treated equally. [September 2005. Military Implications; Sources]

Forests

Sixth UN Forum on Forests Agrees to Multi-Year Work Plan

The two-week UN Forum on Forests held in New York, February 13–24, assessed the issues of management, conservation, and sustainable development of all forests worldwide. The focus was on re-assessing the International Agreements on Forests (IAF), and the establishment of an international legally binding instrument (LBI), promoted by members such as Canada and China; however, countries like Brazil emphasized voluntary measures. The accord on the LBI will be concluded and adopted next year, at the Seventh UN Forum on Forests. Agreement was reached on a multi-year program of work, including more substantial progress on reporting. Most speakers highlighted that besides the forests' ecological role, their management has important security implications, since the livelihood of millions of people depends on forests. [February 2006. Military Implications; Sources]

Call for Legally Binding Agreement for Forests' Conservation

UN Forum on Forests 5th Session, held 16–27 May 2005, reviewed the effectiveness of the International Arrangement on Forests and determined that better international regulations, management mechanisms, and long-term political commitments are needed to improve forest conservation. Several officials called for a legally binding instrument and quantifiable targets eventually linked to the Millennium Development Goals. [These goals will be reviewed for possible modification at the UN General Assembly meeting in September 2005.] The delegates failed to reach agreement on future international arrangements and improving international regulations on forests. The next UNFF is planned for February 13, 2006.
During the Forum, the World Wildlife Federation and the World Bank renewed their World Bank/WWF Alliance for Forest Conservation and Sustainable Use and announced their new forest protection goal to cut global deforestation 10% by 2010. [May 2005. Military Implications; Sources]

Meeting of the Parties (MOP-2) to the Aarhus Convention

The second meeting of the Parties to the Aarhus Convention—UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters—took place in Almaty, Kazakhstan, on 25-27 May 2005. It reviewed progress so far and improvement of its mechanism to increase performance of the Convention's implementation in all regions. It assessed the application of principle 10 [access to environmental information at all

levels] of the Rio Declaration at both global and regional levels. Agreement was reached on an amendment to the Convention for extending the role of the public in decisions involving genetically modified organisms (GMOs). The declaration adopted by the Ministerial segment of the meeting was not yet available at the time of this writing. [See also related items *Aarhus Clearing House Launched* in September 2004, *Full Application of the Aarhus Convention* in November 2003, *The Aarhus Convention and GMOs* in October 2003 environmental security scanning reports.] [May 2005. Military Implications; Source]

New "European Citizens' Initiative" Could Affect Environmental Politics

A coalition has formed to establish the "European Citizens' Initiative" as a tool of direct democracy to bypass the need for EU parliamentarians to introduce legislation. If the ECI becomes law, then any EU citizen(s) that secures one million signatures supporting a proposed law would have it autocratically introduced for a vote in the EU. The campaign also plans to get at least one million signatures within 18 months to prove viability of the concept. Since the ECI would enable European citizens to directly influence the political agenda of the EU, and there are many grass roots environmental organizations, then it is reasonable to expect an increase in environmental politics if the ECI becomes law. [May 2006. Military Implications; Sources]

IMPROVED COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

Improving Effectiveness of Multilateral Environmental Agreements

The High-Level Meeting on Compliance with and Enforcement of Multilateral Environmental Agreements (MEAs), organized by UNEP, took place in Colombo, Sri Lanka, 21-22 January. The meeting reviewed and assessed the problems impeding the full implementation of MEAs and the best procedures to help governments comply with their obligations under the various international treaties for protecting the global environment. In addition to looking into the technical aspects of compliance, the meeting also explored new legal, structural, and institutional improvements, such as synergies, inter-linkages, and clustering of MEAs. The draft Chair's Summary identifies 23 challenges grouped in 3 categories (institutional structures; interlinkages; and instruments to improve implementation) that need further consideration, capacity building, and resources. The Summary will serve UNEP in developing an action plan to improve MEAs' compliance and enforcement. The plan is expected to be presented to the UNEP Governing Council in 2007.

Note: The UNU Inter-Linkages Initiative helps the governments of 14 Asian and Pacific Countries understand and implement multilateral environmental agreements at national and regional levels http://www.unu.edu/inter-linkages [See *Developing countries' compliance with environmental regulations is expected to improve via new modes of international assistance* in January 2003 environmental security report] [January 2006. Military Implications; Sources]

Reforming International Environmental Governance: From Institutional Limits to Innovative Reforms

Reforming International Environmental Governance: From Institutional Limits to Innovative Reforms by the UNU addresses the international institutional framework that would best serve global environmental governance. The ad hoc nature of the current over 500 international agreements and institutions dealing with environmental issues around the world complicates the implementation and compliance process of environmental regulations. The contributors suggest institutional reform of the current international environmental governance system and evaluate three potential models: enforcement, centralization, and cooperation through increased coordination and collaboration. They examine the possibilities of improving international environmental governance by strengthening UNEP and clustering the existent international regulations; a potential World Environment Organization; and the prospect of a World Environment Court; as well as UN reforms. [May 2005. Military Implications; Source]

Environmental Performance Index to Help Improve Policymaking

The Pilot 2006 Environmental Performance Index measures countries' performance relative to environmental targets, and aims to provide an analytical and empirical tool for improving policy choices. The Index is composed of 16 indicators from six policy categories: environmental health; air quality; water resources; biodiversity and habitat; productive natural resources; and sustainable energy. The indicators included in the index are: child mortality, indoor air pollution, drinking water, adequate sanitation, urban particulates, regional ozone, nitrogen loading, water consumption, wilderness protection, ecoregion protection, timber harvest rate, agricultural subsidies, overfishing, energy efficiency, renewable energy, and CO_2 per unit of GDP. Based on the Index, the five top ranked countries are: New Zealand, Sweden, Finland, Czech Republic, and the UK. The U.S. is ranked 28th. However, the report also shows the ranking based on the components of the Index, thus providing countries useful information to review their policies and improve environmental decisionmaking. The Pilot 2006 Environmental Performance Index was developed by the Center for Environmental Law & Policy at Yale University and the Center for International Earth Science Information Network (CIESIN) at Columbia University in collaboration with the World Economic Forum and the Joint Research Centre of the European Commission and was formally released at the annual meeting of the World Economic Forum, in Davos, on January 26, 2006. [January 2006. Military Implications; Source]

EC Legislation Reform First Targets Environment-related Rules

The European Commission has presented a three-year program to modernize EU legislation as part of its commitment to simplify the EU system of rules. About 250 basic pieces of legislation and 1,250 related legal acts would be updated by repeal, codification, or recasting. The main aims of the legislative reform are to: a) simplify the understanding and implementation of rules; b) transform directives into regulations for prompt and general application by all Member States; and c) improve enforcement. The program will be regularly updated. The process will start with the environment-related sector, since it's the most heavily regulated. The other sectors, as well as the administrative aspect, will follow shortly. The simplification process can be completed only if the European Parliament and Member States support it. [October 2005. Military Implications; Source]

European Commission Enforces Environmental Pollution Legislation

The Court of Justice of the European Communities ruled that the European Commission (EC) would have the right to require Member States to impose criminal penalties on environmental polluters "in order to ensure that the rules which it [the EC] lays down on environmental protection are fully effective." Although EU countries will still be the ones to prosecute, the Commission could extend its powers by recommending the level of punishment. This ruling is consistent with the Community's environmental strategy underlined by the obligation of having environmental protection requirements "integrated into the definition and implementation of the Community's policies and activities."
Note: The EC began improving its whole system of regulations, by three main actions: withdrawal or modification of pending proposals; simplification of existing EU-law; and better quality of new Commission proposals. [September 2005. Military Implications; Sources]

EU Starts Legal Action Against Member States on Breaches of Environmental Law

The European Commission is enhancing its environmental law enforcement by initiating a series of legal actions against Member States for breaching EU environmental law. The Commission has decided to pursue legal action against Italy in eleven cases, including non-compliance with the EU directive on Environmental Impact Assessment (EIA), and ten cases for lack of cooperation with the Commission (Article 10 of the Treaty) on issues involving nature protection (a military base enlargement on La Maddalena island); several cases on waste management aspects; water resources; and genetically modified organisms (GMO). Along with Italy, Spain and Greece were also sent final warnings for non-compliance with the EU Water Framework Directive. [October 2005. Military Implications; Sources]

Preparatory Process Started for the EfE 6th Ministerial Conference

The 6th Ministerial Conference "Environment For Europe" (EfE) will take place at Belgrade in October 2007. The international preparatory process started officially with the 1st session of the Working Group of Senior Officials (WGSO) held in Geneva, 12-13 October 2005. The United Nations Economic Commission for Europe (UNECE) Committee on Environmental Policy (CEP) proposed reviewing issues such as sustainable development, energy, EU enlargement, coordination and implementation of UNECE Conventions, and closer links to other international processes (environment and health, in particular). The European ECO-Forum (a pan-European coalition of more than 200 environmental citizens' organizations) suggested an "action-oriented" review of implementation of several strategies and protocols (including the Protocol on Strategic Environmental Assessment, and the Protocol on Pollutant Release and Transfer Registers). The next meeting of the WGSO will be in June 2006. October 2005. Military Implications; Sources]

Asian Regional Forum on Combating Environmental Crime Formed

The "Asian Regional Forum" will be established to share information and expertise in policy, law, training, investigation and prosecution related to environmental crimes in Asia. The Forum is the result of a meeting in Bangkok on 25 August 2005 of the Regional Intelligence Liaison Office for Asia and the Pacific (RILO A/P), the regional office of INTERPOL, the World Conservation Union, TRAFFIC (the wildlife trade monitoring network), the World Customs Organization, the UK-based Environmental Investigation Agency (EIA) and Thailand's Office of

the National Implementation for Chemical Weapons Convention. The regionalization of the Green Customs Initiative was also discussed to share information and training materials for customs officials to combat illegal trade in commodities of environmental concern. It is estimated that environmental damage caused by illegal trade in hazardous wastes, smuggling proscribed hazardous materials, and exploiting and trafficking of protected natural resources worldwide is US$22-31 billion annually. The Forum will be facilitated by the United Nations Environmental Program's Regional Office for Asia and the Pacific. [September 2005. Military Implications; Source]

Indonesia Joins the Partnership to Improve Environmental Governance

Indonesia became the seventh national government and the first in Asia to join the International Partnership for Principle 10 (PP10) of Rio Declaration on Environment and Development that advocated citizen participation in environmental matters. In joining the PP10, the Indonesian government commits to implementing a series of activities designed to increase access rights in the country, including: increasing public involvement in the Environmental Impact Assessment (EIA) process, responding to public grievances in environmental cases, and publishing more environmental information on the Internet, as well as issuing environmental regulation booklets. [See also *Meeting of the Parties (MOP-2) to the Aarhus Convention* in May 2005, and other related items in previous environmental security scanning reports.] [May 2006. Military Implication; Sources]

Biological Weapons Convention

PrepCom to Set Agenda for the BWC Review Conference

The Preparatory Committee for the Sixth Review Conference of the Biological Weapons Convention met in Geneva to prepare the agenda along with organizational and financial matters for the Review Conference to be held in November 2006. The Review Conference will examine the operations of the Convention since its review in 2002. It will also discuss new technological developments, and further actions necessary to strengthen the BWC (formally called the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction). Masood Khan, Pakistan's ambassador to the UN and expected president of the review conference, chaired the meeting. [See also *Recommendation for a Biosecurity Watchdog* in February 2006 and *Time to Strengthen the 1972 Biological Weapons Convention* in December 2004 environmental security reports.] [April 2006. Military Implications; Sources]

Recommendation for a Biosecurity Watchdog

Globalization, Biosecurity, and the Future of the Life Sciences, a report by the U.S. National Research Council and Institute of Medicine of the National Academies assesses the evolution of science and technology capabilities over the next 5-10 years with implications for next-generation bio-threats. Acknowledging that the accelerating pace of life sciences discoveries worldwide has fundamentally changed the spectrum of threats, it looks into next-generation bio-weapons and recommends ways to prevent misuse of science, including strengthening the scientific expertise of security organizations, and the creation of an independent science-and-technology advisory committee for intelligence agencies, as well as the promotion within the

international scientific community of a common culture of awareness and responsibility to prevent misuse of science. In that context, one of the co-authors of the report, Canadian Peter A. Singer, suggests the creation of a global advisory group that would act as a watchdog to prevent science being misused to produce biological weapons. He advocates that Canada should advance the idea of such a network at the upcoming G8 Meeting to be held this summer in Russia and which would have infectious disease as one of its three priorities.
Note: the preliminary negotiations for setting up a verification body to strengthen the Biological Weapons Convention, failed. The talks took place this month in Tokyo in preparation for the next review conference to be held in November, in Geneva. [See also *Codes of Conduct for Scientists to Strengthen the Biological Weapons Convention* in December 2005, and *Time to Strengthen the 1972 Biological Weapons Convention* in December 2004 environmental security reports.] [February 2006. Military Implications; Sources]

Codes of Conduct for Scientists to Strengthen the Biological Weapons Convention

States Parties to the Biological Weapons Convention met this month in Geneva to conclude a three-year process designed to enhance the implementation of the Convention by adopting a set of principles to guide the development of codes of conduct concerning sensitive biological research. In view of present and future threats posed by biological and toxin weapons, States Parties agreed on a range of different approaches for addressing the codes of conduct function of national specifics and using existing mechanisms and frameworks whenever possible without impeding scientific discovery, or placing unnecessary constraints on research or peaceful international cooperation. Also, it was agreed that the codes and their underlying principles should be widely known and understood, and developed in cooperation with those concerned. States Parties to the BWC will meet again in Geneva, April 26–28 2006 for the Preparatory Committee and then November 20–December 8, 2006 for the Review Conference. [See also *Time to Strengthen the 1972 Biological Weapons Convention* in December 2004 environmental security report.] [December 2005. Military Implications; Source]

Chemical Weapons Convention

Five Countries Organize CWC National Authorities

The Organization for the Prohibition of Chemical Weapons (OPCW) announced that five member states (Haiti, Niue, Suriname, Tanzania, and Yemen) have established national authorities to assure proper implementation and compliance with the Chemical Weapons Convention (CWC). Additionally, these national authorities have the role of liaison with the organization and other states parties. [May 2006. Military Implications; Source]

Software *Toolkit* for Control of Hazardous Chemicals

The Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous and Other Wastes developed a software "toolkit" that would greatly help assessing and managing the hazardous chemicals called polychlorinated biphenyls (PCBs). The PCB Inventory and Management Decision Supportive Tool (DST) will help collect and organize PCB data, and support planning for PCB disposal and transboundary movement. In addition to falling under the scope of the Basel Convention, PCBs are to be phased out of use by 2025 under the Stockholm Convention on Persistent Organic Pollutants. [May 2005. Military Implications;

Source]

Climate Change

Compliance Body Set Up for Kyoto Protocol

The Compliance Committee for the Kyoto Protocol "designed to ensure the environmental integrity of the agreement and to contribute to the credibility of the carbon market created by the Protocol" has begun its operations, announced the UN Framework Convention on Climate Change. The 20-member Committee has two branches: the Enforcement Branch of the Committee that deals with non-compliance consequences for Parties that do not meet their commitments under the Protocol, and the Facilitative Branch of the Committee, that would provide advice and assistance to countries having difficulties meeting their commitments. The Committee deals with individual cases as they come up, and reports annually to the meeting of the Parties to the Protocol.

A European study, *An economic assessment of the Kyoto Protocol application*, states that the United States' stand on the Kyoto Protocol influences the economic consequences of the Protocol implementation more than any other factor or region. The analysis considered four main factors: the participation of the United States—the major emissions-producing country; and the role of Russia—the potential major emission credit seller; the Marrakech Accords' CO_2 sinks; and the trading mechanisms and related trade restrictions defined by the Protocol; and boycott movements. The report aims to help assess the most cost-effective options to reduce greenhouse gases emissions globally. [See also *Montreal Conference on Climate Change Reached New Agreements* in December 2005, *UN Meeting Fails to Agree on Post-Kyoto Strategy* in May 2005 and other previous environmental security reports.] [March 2006. Military Implications; Sources]

Montreal Conference on Climate Change Reached New Agreements

Thirty decisions were reached during the first Meeting of the Parties to the Kyoto Protocol (COP/MOP 1) that was held November 29 to December 9, 2005 in conjunction with the eleventh Conference of the Parties to the UN Framework Convention on Climate Change (COP 11), which reached 14 decisions. This package of decisions was named the "Montreal Action Plan" by Stéphane Dion, President of COP 11 and COP/MOP 1. The Plan is a "clear roadmap" for international cooperation to reduce greenhouse gas emissions and to develop approaches to cope with consequences of climate changes. It also has established a forum to find innovative solutions. The complete listing of these decisions is available at Decisions adopted by COP11 and COP/MOP1. Some highlights include:

- The Marrakesh Accords were accepted at COP/MOP 1 as a "clear rulebook" of the Kyoto Protocol that sets the framework for the Protocol's implementation and enforcement, including a system for an effective global carbon market. A complex compliance regime was accepted and members of the compliance committee were elected to strengthen Kyoto's Parties' accountability in meeting their emission reductions targets. A review for improving the Kyoto Protocol will be formally launched at next year's UNFCCC meeting.
- There are two mechanisms for developed countries to earn greenhouse gas emission credits: 1) The Clean Development Mechanism gives developed countries emission

credits for investing in sustainable development projects in developing countries. (Developed nations have pledged over $13 million for this mechanism to be expanded in 2006-07.); and 2) The Joint Implementation mechanism gives developed countries emission credits for investments in low greenhouse gas emissions projects in other developed countries (in particular in transition economies).

- Negotiations for new emissions reduction targets for developed countries in the post-Kyoto period (2013-2017) were approved to begin May 2006. This is to ensure that negotiations are concluded in time to avoid any gap between the first phase and the second phase beginning in 2013.
- A Five Year Plan of Action on Adaptation addresses concrete steps to identify climate change impacts and measures to adapt to it —mainly for developing countries. A one-year process to define how the Adaptation Fund will be managed and operated was approved.
- COP requested the Global Environmental Facility to consider adding carbon capture and storage technologies to those areas receiving financial support. International cooperation in developing, adopting, and transferring green technologies was a theme heard throughout the meetings.
- Agreement was achieved to launch a dialogue and series of workshops in 2006 on strategic approaches for long-term global cooperative action to address climate change that might result in a more inclusive UN climate pact (including the U.S. and China). The U.S. agreed to join talks in the future, as long as mandatory emissions targets were not on the agenda.

Approximately 2,800 government officials and 5,800 representatives of UN organizations, intergovernmental organizations and non-governmental organizations attended this comprehensive overview of the world's state in addressing climate change, witnessed by 817 accredited members of the media. More than 120 ministers and other high-level government officials delivered statements, along with senior representatives of intergovernmental and non-governmental organizations, UN bodies and specialized agencies, and other relevant groups. The reports of 140 NGO "side" sessions can be found at http://www.iisd.ca/climate/cop11/enbots/. [December 2005. Military Implications; Sources]

UN Meeting Fails to Agree on Post-Kyoto Strategy

The UN meeting in Bonn trying to extend the spectrum of the Kyoto Protocol after 2012 failed to agree on an international post–Kyoto framework mainly because of EU-US disagreements and major emerging economies that are reluctant to curb their surging greenhouse gas emissions. This two-day seminar attended by delegates from 190 nations, was the first formal UN climate meeting since the Kyoto Protocol entered into force. The next negotiations will be at a meeting of environment ministers in Montreal, Canada, in December. [See also items *Ambitious Post-Kyoto EU Emissions Goals* in March 2005 and *Kyoto Protocol Came into Force on February 16, 2005* in February 2005 environmental security reports.]
A recent World Bank study shows that trade in carbon dioxide permits surged this year since the Kyoto Protocol came into force and as the EU launched its "cap and trade" scheme. [May 2005. Military Implications; Sources]

EU Not On Track Meeting Kyoto Requirements

A new study by the UK Institute for Public Policy Research warns that Britain and Sweden are the only countries in Europe that seem to be on target to cut greenhouse gas emissions under the Kyoto Protocol. Of the 15 European countries that ratified the Protocol, 10 would miss their targets unless they take urgent action, while France, Greece, and Germany could fulfill their obligations only if planned polices were successfully implemented. [December 2005. Military Implications; Source]

Possible Tougher European Carbon Limits

Due to a huge decrease of CO2 emissions prices after several countries lowered demand for carbon credits thus weakening the incentive to clean up, it is likely that the EU will introduce toughen pollution targets. Polls indicate that 75% of Britons would favor a new law forcing successive governments to commit to reducing CO2 emissions by 3% each year, as a contribution to tackle climate change. [May 2006. Military Implications; Source]

Meeting of Asia-Pacific Partnership on Clean Development and Climate

The Asia-Pacific Partnership on Clean Development and Climate, comprising Australia, U.S, Japan, India, South Korea, and China, a group accounting for about 50% of global greenhouse gas emissions, held its meeting on January 11-12 in Sydney. The Partnership is intended to be consistent with the countries' commitment under the UN Framework Convention on Climate Change and "complement, but not replace, the Kyoto Protocol." The six nations did not set any binding targets or regulations to cut greenhouse gases, but adopted a Charter that outlines the purposes, organization, functions, funding, and terms of the Partnership. The meeting also prepared the Partnership Work Plan that sets the framework of the partnership, based on collaboration among private, research and government organizations to accelerate the development and implementation of advanced clean and efficient technologies that would increase energy security and reduce greenhouse gases without hindering economic development. The eight public-private sector Task Forces established would be covering "(1) cleaner fossil energy; (2) renewable energy and distributed generation; (3) power generation and transmission; (4) steel; (5) aluminum; (6) cement; (7) coal mining; and (8) buildings and appliances." The task forces will submit plans by mid-2006. It was also proposed to establish an Asia-Pacific Energy Technology Co-operation Centre, for the "development and implementation of an energy audit program and its follow-up projects." [January 2006. Military Implications; Sources]

U.S., Australia, and Asia-Pacific Countries Coalition for Clean Development

The Asia-Pacific Partnership on Clean Development and Climate founded by the U.S., Australia, China, India, Japan, and the Republic of Korea, aims to address energy security, air pollution, and climate change issues based on cooperation in the development, implementation, and exchange of new, clean technologies. The joint Vision Statement was issued at the Association of Southeast Asian Nations' annual ministerial meetings in Vientiane, Laos. The six countries combined represent more than half of the world's economy, population, and energy use, and are responsible for half of the world's greenhouse gas emissions. This initiative is "a complement, not an alternative," to the 1992 United Nations Framework Convention on Climate Change and

the 1997 Kyoto Protocol, said U.S. Deputy Secretary of State Robert Zoellick. [July 2005. Military Implications; Sources]

World's Mayors Sign Municipal Version of the Kyoto Protocol

Mayors from 70 of the world's largest cities signed the Urban Environmental Accords aiming to tackle global warming by implementing ecologically sustainable policies. The agreement specifies 21 actions that mayors should implement to improve their cities' environment, covering the domains of energy; waste; urban design; urban nature; transportation; environmental health; and water. It is expected that at least three actions will be implemented each year until World Environment Day 2012. The "Green Cities" event occurred in San Francisco, June 1-5, 2005. [June 2005. Military Implications; Source]

Marine Environment

Stronger Guidelines for UN Fish Stocks Agreement

Delegates attending a preparatory meeting for the review of the UN Agreement for Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, agreed on guidelines to strengthen the treaty in order to better manage the world's fish stocks. The guidelines will serve to: evaluate the adequacy and implementation status of the Agreement, assess what new political commitments are needed, establish new regional management organizations, and strengthen international cooperation. The "Fish Agreement" entered into force in December 2001; the review conference will be held in New York, May 22–26, 2006. [March 2006. Military Implications; Sources]

Marine Biodiversity Protection Regulations Need Improvement

Greenpeace and 17 countries have asked Japan to "cease all its lethal scientific research on whales," that seems to violate international regulations for whales' protection. Japan's scientific research on whales caused the death of a significant number of protected species. In the first weeks of January, Greenpeace and Japanese whaling fleets have twice come into collision. Greenpeace and the Sea Shepherd Conservation Society are trying to raise international awareness to increase pressure upon Japan to stop its whaling operations. Although the Sea Shepherd Conservation Society, which was pursuing Japanese whaling operators, has said that Japan's whaling operations have been in violation of many international laws, no reprimands have been issued. It takes 75% of the International Whaling Commission's 66 members to support and make substantive changes to the International Convention for the Regulation of Whaling.

A similar case was brought forward to the UN Law of the Sea Tribunal in the case of Chile v. European Commission on the conservation of swordfish. Both parties submitted the case to the Tribunal at the international level for clarification of several aspects pertaining to marine biodiversity protection. The Tribunal extended the deadline on the proceedings until January 1, 2008. [January 2006. Military Implications; Sources]

Europe to Harmonize Marine Pollution Legislation

Regulations on marine pollution from ships will be harmonized for all 25 EU member states. The new Directive, considers pollution discharging from ships in coastal waters or the high seas a crime, whether by intention or by negligence. The European Council of Ministers was expected to adopt legislation this month that defines both marine pollution crimes and harmonizes the level of penalties. However, these were not yet adopted at the time of this writing. Penalties for these crimes will be much higher than current fines. Enforcement will be through countries' collaboration in identifying pollution cases and synergies among enforcement authorities, including national coast guards and criminal justice organizations. [July 2005. Military Implications; Source]

Nuclear Safety

Increasing Nuclear Safety and Security

The first International Conference on Effective Nuclear Regulatory Systems was held in Moscow, 27 February–3 March 2006. The 216 participants from 57 countries and seven international organizations discussed the full range of issues of nuclear security and safety in light of the potential revitalization of nuclear energy for meeting world energy requirements without greenhouse gas production. Triennial forums will review progress in creating effective nuclear regulatory systems and deepening international collaboration.

On March 23, Slovakia became the first country to ratify the International Convention for the Suppression of Acts of Nuclear Terrorism; to date, 100 States have signed it. [See also *Nuclear Terrorism Convention Signed by 82 Countries at the UN Summit* in the September 2005, and *UN Agency to Intensify Tracking of Illicit Nuclear Trafficking* in the September 2004 environmental security reports.] [March 2006. Military Implications; Sources]

Russia Accepts London Convention on Dumping of Radioactive Wastes

The Russian Federation announced its acceptance of the regulations that ban dumping radioactive wastes in seawater, as stipulated under Resolution LC.51(16) to the London Convention. Adopted in 1993, Resolution LC.51(16) to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, "London Convention", prohibits all forms of radioactive wastes dumping into seas (including incineration at sea of industrial wastes). The resolution is now in force for all 81 Parties to the London Convention. [June 2005. Military Implications; Source]

Ozone Protection

Seventh Conference Of The Parties To The Vienna Convention For The Protection Of The Ozone Layer and Seventeenth Meeting Of The Parties To The Montreal Protocol On Substances That Deplete The Ozone Layer

The 7th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the 17th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (COP-7/MOP-17) took place in Dakar, Senegal, from 12-16 December 2005. Over 400 representatives from governments, UN agencies, intergovernmental and NGOs,

academia, industry, and the agricultural sector participated. More than 50 decisions were adopted on a wide range of issues concerning phaseout of ozone-depleting substances, budgets, target years, and reducing illegal trafficking in CFCs (chlorofluorocarbons) and other substances. Under the Protocol, developing countries have until 2010 to phase out CFCs and halons, and until 2015 to phase out methyl bromide. (The CFC phaseout year for developed countries was 1996.) Even if all targets of the Montreal Protocol are achieved, the ozone layer will not fully recover until 2065, according to research presented at the conference. This is 15 years later than initially estimated. A new report "Safeguarding the Ozone Layer and the Global Climate System" of the Protocol's Technology and Economics Assessment Panel and the Intergovernmental Panel on Climate Change demonstrated the interlinkages between ozone and global warming. Parties also agreed to defer until 2006 consideration of a U.S. proposal on multi-year exemptions for methyl bromide, and a European Community (EC) proposal for an amendment to the Protocol that would include an expedited procedure for adding new chemicals. The Eighteenth Meeting of The Parties To The Montreal Protocol: MOP-18 is scheduled to take place in late 2006. [See also *First Extraordinary Meeting of the Parties to the Montreal Protocol Gives One Year Extension to Ban on Methyl Bromide to 11 Developed Countries* in March 2004 environmental security report.] [December 2005. Military Implications; Sources]

REACH (Registration, Evaluation and Authorization of Chemicals)

New UK Chemical Data Base for Regulatory Compliance

The UK's Chemical Industries Association has set up the ReachReady organization and database at www.reachready.co.uk to aid organizations in complying with the EU's REACH (Registration, Evaluation and Authorization of Chemicals) regulations. [See also *Integration of Chemical Regulations (REACH) Approved by European Council* in December 2005, *The REACH Program Closer to Entry Into Force* in March 2005, and other related items in previous environmental security reports.] [April 2006. Military Implications; Source]

Stockholm Convention on POPs

Stockholm Convention Meeting to Look at Concrete Actions and Policies

The Second Meeting of the Conference of the Parties to the Stockholm Convention (COP 2) on Persistent Organic Pollutants (POPs) will be held in Geneva, May 1–5. Representatives of Parties to the Convention will review progress and discuss specific activities, policies, and investments at the national and community levels that would help POPs reduction. The conference agenda includes: strengthening of a global monitoring network to track the levels of POPs in the environment; technical assistance; non-compliance; liability; and the redress of issues. Presently there are 12 POPs covered by the Convention and more chemicals are under technical review and expected to be added to the list in coming years. [See also *Stockholm Convention Updates* in November 2005 and other previous environmental security scanning reports.] Note: we will report on the COP-2 outcomes in the May environmental security scanning report. [April 2006. Military Implications; Source]

National Initiatives for Implementing the Stockholm Convention

At the second meeting of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants (POPs) (COP-2), governments focused on concrete measures to be taken at the national level for implementing the Convention and eliminating 12 extremely hazardous chemicals. Parties have to submit their National Implementation Plan (NIP) that establishes particular priorities and detailed action plans within two years of joining the Convention and then report on progress every two years. Several countries have already submitted their NIP. The Stockholm Convention targets 12 hazardous POPs; it entered into force on May 2004. [See also *Stockholm Convention Updates* in November 2005 and other related items in previous environmental security scanning reports.] [May 2006. Military Implications; Sources]

Waste Management

Taiwan Cracking Down on Environmental Violators

The prevalence of illegal toxic waste dumping has led Taiwan's Environmental Protection Agency to recruit a group of 70 volunteers to patrol industrial areas and report violations of the country's strict waste disposal and recycling rules. The effort is supported by emerging environmental activism among the populace at large. [August 2005. Military Implications; Source]

E-waste Directives to be Enforced in the UK

The two EU directives on E-waste will be enforced by UK legislation. The Waste Electrical and Electronic Equipment (WEEE) Directive is expected to be enforced by UK law on August 13, 2005. The WEEE Directive of the EC sets a recycling framework for electrical and electronic equipment in order to minimize the impacts of this kind of waste on the environment. The related directive on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment bans the use in manufacture after July 1, 2006 of certain hazardous substances (lead, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenylethers (PDBEs)). The two directives on E-waste are already in force at EU level and were supposed to be added to EU Members legal system with rules for monitoring compliance by August 2004. [See *Two E-waste laws entered into force in the European Union (EU)* in February 2003 environmental security report.] [July 2005. Military Implications; Sources]

INTERNATIONAL STANDARDS

ISO to Establish Standardization in the Field of Nanotechnologies

The International Organization for Standardization established in June 2005 the Technical Committee for Nanotechnologies (ISO/TC 229) with Chair and Secretariat in the UK. The scope of ISO/TC 229 is to produce standards for "classification, terminology and nomenclature, basic metrology, characterization, including calibration and certification, risk and environmental issues." The first meeting of the new Committee will be held on 9-11 November 2005 in

London, organized by the British Standards Institution (BSI). [October 2005. Military Implications; Sources]

International S&T Information System Proposed

To help resolve the conflict between protecting intellectual property rights and maximizing social benefits from public investments in research around the world, the International Council for Science's (ICSU's) Committee on Data for Science and Technology (CODATA) has proposed the Global Information Commons for Science Initiative. This initiative was launched at the World Summit on the Information Society held this month in Tunis, Tunisia, after being formulated at ICSU's annual meeting held in October, in Suzhou, China. The international S&T information system would help develop and implement "new policy guidelines and legal structures that will promote collaboration in a variety of research domains... [and could produce] a productive balance between private research and development, and publicly funded open science," says Paul David, an economist at Stanford University. [November 2005. Military Implications; Sources]

UNESCO Draft Declaration on Bioethics and Human Rights

UNESCO has issued a draft declaration that sets universal ethical guidelines for governments to consider ethical and human rights in science and technology (S&T) policymaking. It covers aspects of human rights, biodiversity, rights of indigenous people, and respect for traditional local resources and knowledge systems. The declaration suggests setting up ethics committees at different levels to assess scientific developments and encourage transparency and public participation in bioethics issues discussions. The draft declaration will be submitted for approval by all 192 UNESCO member states in October. [July 2005. Military Implications; Sources]

ANSI to Carry Out Survey on Needs for Nanotech Standards

The American National Standards Institute (ANSI) has announced the initiation of a survey developed by the U.S. Technical Advisory Group to ISO Technical Committee 229—Nanotechnologies. According to the ANSI announcement, "Input from the survey will help to shape the U.S. position on international standardization activities in nanotechnology. The survey asks U.S. industry stakeholders to identify market needs and areas of standardization that they believe will lead to the commercialization of nanotechnology applications. The ISO effort currently focuses on three main areas: terminology and nomenclature; metrology and instrumentation …; and science-based health, safety and environmental practices." [See also *ISO to Establish Standardization in the Field of Nanotechnologies* in the October 2005 environmental security report.] [April 2006. Military Implications; Sources]

SAFETY ISSUES

Environmental Testing

Assessment of Toxicity Testing for Environmental Agents

In view of new directives and initiatives for toxicity testing in the U.S. and Europe, and the new testing technologies and methods that are emerging, EPA called for a comprehensive review of the present testing methods and strategies and recommendations for improvement. To that effect, the National Research Council (NRC) designated a Committee on Toxicity Testing and Assessment of Environmental Agents to conduct an independent two-part study. The focus is human toxicology and not ecologic effects of environmental agents. The first part of the study, *Toxicity Testing for Assessment of Environmental Agents: Interim Report* is a comprehensive analysis of the current approaches to toxicity testing and data needs to meet regulations. The committee agrees that new strategies and protocols are needed to improve the efficiency of toxicity screening and address some of the data gaps identified. The second part, expected to be completed by fall 2006, focuses on developing long-range vision and strategy to advance the practices of toxicity testing and human health risk assessment of environmental contaminants. [April 2006. Military Implications; Source]

Chemical and Biological safety issues

New International Strategy for Chemicals Management and 9th Special Session of the UNEP Governing Council

The International Conference on Chemicals Management (ICCM) focused on safe handling of chemicals in order to minimize adverse effects on human health and the environment by improving the production, trade, transportation, and storage of chemicals worldwide. The large number of chemicals already on the market, and the expected 80% growth over the next 15 years, has made it impractical to deal with separate regulations for individual compounds or groups of chemicals. As a result, the Conference adopted the Strategic Approach for International Chemicals Management (SAICM), a voluntary and comprehensive framework of measures pertaining to risk assessment, labeling, and stockpiling of chemicals, as well as handling of obsolete products. It also covers capacity building and staff training—primarily in the developing countries—in chemicals safety issues such as spills and accidents. UNEP will house the SAICM secretariat. The conference was held in Dubai, United Arab Emirates, from 4-6 February 2006, prior to the 9th Special Session of the UNEP Governing Council and Global Ministerial Environment Forum, which formally approved the SAICM.

The 9th Special Session of the Governing Council and Global Ministerial Environment Forum discussed strengthening international environmental governance, including transforming UNEP into a United Nations Environment Organization (UNEO) and the proposal to introduce universal membership of the Governing Council. No agreement was reached, but negotiations are expected at the next meeting. Other issues included environmental aspects of energy, tourism, and chemicals; assessment, monitoring and early warning; and revitalization of the Environmental Management Group. [February 2006. Military Implications; Sources]

Micro-reactors Challenge Chemical Weapons Convention Effectiveness

A paper by Tuan Nguyen of the Lawrence Livermore National Laboratory calls attention to the erosion in effectiveness of the Chemical Weapons Convention caused by the advent of micro-reactors in the chemical industry. These devices, with sizes from a credit card to a notebook, replace large batch reaction vessels and make it much more difficult to monitor and verify compliance with the Chemical Weapons Convention. Hydrogen cyanide, phosgene, and methyl isocyanate have already been produced using this system, according to Nguyen. He also points out that chemical weapon precursors could be synthesized rather than purchased, making it more difficult to track down and discover the preparation of chemical weapons. [August 2005. Military Implications; Source]

New Web Site on Biomonitoring Technology

The Environmental Health Research Foundation (EHRF) launched a new web site that is providing comprehensive information on Biomonitoring," the scientific technique for assessing human exposure to natural and synthetic chemicals http://www.biomonitoringinfo.org. [Note: the website is just now being populated.] [May 2005. Military Implications; Source]

Soviet-Era Anti-plague Institutes Still Pose Environmental Threat

The United States has an extensive program aimed at minimizing the possible transfer and misuse of Soviet WMD R&D. One area that has fallen through the proverbial crack, however, is the collection of more than 80 anti-plague institutes, which were not a formal part of the Russian biowarfare program and therefore are not covered by the DOD Threat Reduction effort. These establishments, located in all parts of the FSU, still work with extremely hazardous pathogens under totally inadequate physical and biological security. This incredibly dangerous situation is described in a draft report from a major investigation by scholars from the Center for Nonproliferation Studies at the Monterey Institute of International Studies. [August 2005. Military Implications; Source]

Russia to Destroy All Chemical Weapons Arsenal by 2012

The Russian government approved a plan to destroy its chemical weapons arsenal by 2012, reported Agence France-Presse in Moscow. Under the proposal, 20% of Russia's 40,000 ton chemical weapons stockpile would be destroyed by 2007, 45% by 2009, and all of it by 2012, meeting its commitment under the Chemical Weapons Convention. "Even though it has the biggest chemical weapons stockpile in the world, Russia has also come up with the safest technologies for disarmament," said Viktor Khristenko, Russia's Industry and Energy Minister. Out of the $6 billion program, foreign countries are expected to cover $385 million. Final approval by the Russian government of the chemical weapons disarmament plan is expected before August 15. [July 2005. Military Implications; Source]

EU and Japan Respond to Risks from Low Dose Chemicals

A series of articles by Peter Waldman in the Wall Street Journal have brought to attention new scientific studies which have indicated that exposure to extremely low levels of certain industrial chemicals, even a few parts per trillion, can have harmful biological effects. Many of these results are controversial, and disputed by manufacturers and users. Compounds include

bisphenol A, phthalates, and perchlorates. The EU and Japan are taking measures to impose stricter controls or outright prohibitions on such materials, and are conducting further investigations. [August 2005. Military Implications; Sources]

Bioterrorism and Epidemics Threats

World Health Assembly adopts new International Health Regulations

The new International Health Regulations adopted by the World Health Organization's annual assembly on May 23, 2005, will increase security against global epidemics of deadly diseases by improving national and international capacity for preventing and responding to disease outbreaks. The new regulations include comprehensive assessment, reporting, and response standards mandatory for each country and to be implemented within a specific timeframe; operational mechanisms; increased collaboration between countries' health offices and with the WHO; and a better coordinated international reporting and response system. The regulations stipulate the increased roles of countries and WHO in identifying, preventing, and responding to public health emergencies of international concern. WHO should be quickly informed of any outbreak of four diseases—SARS, bird flu, smallpox and polio—as well as any outbreaks of "potential international public health concern" from known or unknown causes or sources. The new regulations will formally come into force two years after approved by the Assembly. [See also *UN Report Recommends New Powers to Combat Bioterrorism and Epidemics* in the February 2005 environmental security scanning report.] [May 2005. Military Implications; Sources]

Avian Influenza

Worries over Avian Influenza Pandemic Increase

Lee Jong-wook, the head of the World Health Organization, has predicted that the avian flu virus will mutate so as to make the disease transmissible from human to human, and says that the world has no time to waste to stop it becoming a pandemic. "The pandemic is likely to be like the seasonal influenza, which is much more infectious than the SARS virus," said Dr Hitoshi Oshitani, who ran the battle against SARS and now leads the fight against avian flu in Asia. The United States is working to rally states behind a new U.S. plan to fight the disease, and Canada will host a major international conference in October to discuss how ready the world is to combat a likely pandemic. Concerns are increasing even more as strains of the virus in Asia seem to be becoming resistant to amantadine, a widely used drug for human cases, possibly because farmers are giving it as a preventative to poultry. It has also been shown that strains less dangerous than H5N1 can be transmitted from birds to people. An important achievement is that scientists in Singapore have developed a test kit that can detect the gene specific to the H5N1 strain (so both in animals and humans) within four hours, compared to the several days that it takes with present lab tests. This might help a lot in controlling the spread of the virus. [See also *Avian Influenza New Developments* in April 2005 environmental security report.] [September 2005. Military Implications; Sources]

Bird Flu Spreads Increasing Threats of a Human Pandemic

Bird flu is spreading around the world with new cases confirmed in Europe and—as feared—in Africa, where poverty and disease, and humans' intimate proximity to poultry increases the potential of a human pandemic. Scientists argue that since a global flu pandemic cannot be avoided solely by containing an outbreak at its source, plans should focus on how to limit the chance of pandemic-forming viruses emerging in the first place. There are also debates that migrating wild birds might not be the only cause of the worldwide spread. Dr. David Nabarro, the UN System Coordinator for Avian and Human Influenza, sketched a framework of a global four-prong approach to control the spread of the deadly avian influenza virus, highlighting the different roles of governments, civil society, the private sector, and the media. [See also *Bird Flu Updates* in November 2005 and other previous environmental security reports on this issue.] [February 2006. Military Implications; Sources]

Avian Flu Updates

Comprehensive roundups of the latest news on the spread of the bird flu virus and the threat to human health map the cases by countries, and identify actions to counter its spread and effects. Noteworthy actions are the UN Food and Agriculture Organization effort in assembling a 'task force' of health and veterinary specialists to help Indonesia face bird flu; efforts to find/test a vaccine that might be efficient both for birds and humans; the pledge of health ministers from 30 countries to coordinate efforts to fight an eventual influenza pandemic; and some countries (as the UK) commitment to have vaccine for every person in the country. [See also *Worries over Avian Influenza Pandemic Increase* in September, and *Avian Influenza New Developments* in April 2005 environmental security reports.] [October 2005. Military Implications; Sources]

Although much is going on worldwide on this issue, the following are some noteworthy activities and updates on avian flu: The Convention on Migratory Species (CMS) and UNEP are developing a bird flu early warning system based on mapping the different migratory birds' itineraries and timing. This would alert countries and communities and would provide advice on potential hot spot areas, increasing the possibility of preparedness and strategy development.

The number of H5N1 human infections is rising in Asia, and the disease seems to be spreading in animals in Asia. It has also been identified in parts of Europe and North America. World health officials from more than 100 nations met November 7-9 at WHO headquarters in Geneva, to design a concrete global action plan to counter the threat of a possible avian influenza pandemic among humans. The plan outlines a six-point global action plan for countering any eventual pandemic: improved control at source; rapid detection and response; rapid containment; building and strengthening national pandemic preparedness and response plans; integrated cross-sector country plans for coordinated technical and financial support; and factual and transparent communication.

Strategies for combating the avian flu were also on the agenda of the G-7 and WHO meeting on global health risks and threats of WMD, held in Rome.

The seven member countries of the South Asian Association for Regional Cooperation agreed to create two regional centers to detect and respond to natural disasters and emerging health threats such as bird flu. A regional center for disaster preparation, emergency relief, and rehabilitation

will be set up in India and the disease surveillance center will be in Bangladesh. Member countries will also develop a regional strategy for facing infectious diseases.
While these meetings and strategies are focusing mainly on human health, veterinarian and environmental scientists, emphasizing the interconnectedness between the nature of animal and human health, are advocating that maintaining healthy ecosystems is the best and most important strategy of defense against pathogens. [See also *Avian Flu Update* in October 2005 and other related items on the same issue in previous environmental security reports.] [November 2006. Military Implications; Sources]

Two Viral Diseases Lie in Wait

A new genus, Henipavirus, has been created for the Hendra and Nipah viruses, causes of serious disease outbreaks in humans and livestock in Australia, Malaysia, Singapore and Bangladesh. Like avian flu, so far these diseases have not shown human-to-human transmission (the primary vector is the fruit bat; an immediate one is swine), and they do not appear to be as contagious in animal-human contacts, but the human death rate was 40% in a Nipah epidemic in Malaysia. [December 2005. Military Implications; Sources]

African Countries are Vulnerable to Bioterrorism

African science policy should give higher importance to the threat posed by biological weapons, according to an international meeting of representatives from the fields of science, law, and security, held in Kampala, Uganda, this month. Africa is vulnerable to bioterrorism; it lacks the institutions, technology, and expertise to protect its citizens from biological terrorism. Science and technology policy of African countries should simultaneously enhance biological research for eradicating diseases and assure strict security measures to prevent access to material eventually usable in bioterrorism. Because there is little scientific awareness in both the political leadership and cultures of African countries, it will be necessary to improve public understanding of science. The meeting was organized by the Kampala-based International Law Institute (ILI) and the US-based International Consortium for Law and Strategic Security (ICLSS). [October 2005. Military Implications; Source]

Nuclear Safety

IAEA Annual Report for 2004

The annual report of the UN atomic watchdog calls for global cooperation on all nuclear issues––from countering the threat of nuclear and radiological terrorism to preventing nuclear weapons proliferation, and meeting a growing energy demand. The report is a comprehensive overview of the Agency's work in 2004 in its three main domains: technology, safety and verification, also presenting prospects for future developments. It highlights that although attention to security of nuclear and other radioactive material and associated technologies increased significantly in recent years, international cooperation is essential to strengthen all countries' preparedness to respond properly to the threat of nuclear and radiological terrorism and to build regional and global networks for combating transnational threats. The report notes that out of the over 650 confirmed incidents of trafficking in nuclear or other radioactive material recorded since 1993,

the highest number of incidents—121 (of which 11 involved nuclear material) were in 2004. The report will be presented at the IAEA General Conference to be held in Vienna beginning 26 September. Other IAEA reports and documents prepared for the Conference will be made available as they are published. [July 2005. Military Implications; Sources]

Nanotechnology

Industry/Environmentalist Cooperative Effort on Nanotechnology Risks

DuPont and Environmental Defense recently agreed to collaborate on a framework for the responsible development, production, use and disposal of nanomaterials. According to a statement, its intent is "to define a systematic and disciplined process that can be used to identify, manage and reduce potential health, safety and environmental risks of nano-scale materials across all lifecycle stages. This framework will then be pilot-tested on specific nano-scale materials or applications of commercial interest to DuPont". [October 2005. Military Implications; Sources]

Low Environmental Risk from Nanomaterial Manufacturing

A new study from Rice University compares the environmental and health risks associated with the production of five nanomaterials—single-walled carbon nanotubes, buckyballs, zinc selenide quantum dots, alumoxane nanoparticles and titanium dioxide nanoparticles—with the risks of making six everyday products—silicon wafers, wine, high-density plastic, lead-acid car batteries, refined petroleum and aspirin. Using end-to-end analysis of the manufacturing processes, the research team concluded that they present environmental risks no greater than do the technologies in such industries as oil refining, or wine or aspirin production. It should be noted that this work dealt only with possible hazards in manufacturing nanomaterials, not in utilizing them in products. The study is planned for publication in the 15 November issue of *Environmental Science and Technology*. [October 2005. Military Implications; Sources]

Nanomaterials in Drinking Water May be Hazardous

Preliminary results from research at Arizona State University indicate that the presence of certain nanomaterials in drinking water may be hazardous to intestinal cells. A layer of colon cells was broken down when exposed to a simulated intestinal fluid containing titanium dioxide particles. Further, the experiment showed that such a breakdown would allow the particles to pass into other parts of the body. The next phase of the effort will examine the potential adverse effects of the nanomaterials inside cell tissue. [October 2005. Military Implications; Sources]

Roadmap for Characterizing Nanomaterial Health Effects

Principles for characterizing the potential human health effects from exposure to nanomaterials: elements of a screening strategy, a report sponsored by the EPA, details the various ways in which nanoparticles can be characterized (shape, size, electrical properties, etc.) and the kinds of tests that can be carried out to determine their effects, in different contact modes, on anatomical and physiological elements in the body. [October 2005. Military Implications; Sources]

Nanotechnology—Health Implications of Quantum Dots

Quantum dots (QD) are nanoparticles that consist of a metalloid core and a shell that surrounds the core and makes the particle biologically active. They form an important class of elements in nanotech-based applications, particularly biological ones, but raise the same environmental safety questions as other nanomaterials. A recent toxicological review of QD at Duke Univ. indicated that:

- "QD toxicity depends on multiple factors including their physico-chemical properties (e.g. size, charge, concentration, outer coating bioactivity, and stability) and environmental conditions.
- "Human exposure to QD may result from environmental, workplace and therapeutic exposure. There may be a risk of bioaccumulation of these materials within organs and tissues (e.g. in lungs) with still unexplored or under-explored health risks."
- QDs may enter the environment in wastes from any (QD) activity, their persistence may be long, and the exposure risk varies with the host material - water, air, or various soil types.
- The principal concern with QD relates to the possible effects from toxic metals (e.g. Cd, Se) in the metalloid core, in particular as determined by the physical, chemical, and physiological properties of the core/coating complex. Some in vitro studies suggest that prolonged exposure may be toxic to cells.

[See also *Nanotechnology* in January 2006 and previous environmental security reports.] [February 2006. Military Implication; Source]

Nanotechnology: Environmental Implications and Solutions

According to a review in US National Institute of Health's (NIH) Environmental Health Perspectives, this new book "gives an excellent summary of traditional environmental pollution issues", but "may disappoint those who expect dramatic revelations about nanoparticles as pollutants". One chapter gives a good summary of the production and applications of nanomaterials, but in general the work is wanting in nano-specific information, except, to some extent, in the section on air pollution (albeit with several errors). [July 2005. Military Implications; Sources]

UK Launches $8.5M Nanotech Risk Research

As a follow-up to the 2004 study into the risks and benefits of nanotechnology, the UK government's Department for the Environment, Food and Rural Affairs has announced an $8.5 million research plan to identify long-term environmental and health risks from the technology. The new program should lead to a framework for containing any "unacceptable risks" associated with nanotechnology. The study had three foci, to: 1) understand the physical and chemical properties of nanoparticles; 2) determine the avenues of exposure to them; and 3) assess their possible human health impacts. The report describing the effort identifies 19 research objectives and describes ways in which they could be funded. [See also *Progress on Establishing Frameworks for Responsible Nanotechnologies* in October 2005, *Nanotechnology Assessment Reports* in March 2005, and *New UK Study on Future Impacts of Nanotechnology* in August 2004 environmental security reports.] [December 2005. Military Implications; Sources]

New Database of Nanotechnology Risk Studies

The Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars in Washington has just established an on-line database intended to provide information on nanotech risk projects worldwide. Although it currently contains U.S government-sponsored research, it is planned to be international and comprehensive. [December 2005. Military Implications; Sources]

EPA Nanotechnology White Paper

The U.S. Environmental Protection Agency released a draft paper that identifies gaps and research needed for better understanding the environmental and health implications of nanotechnology and for designing appropriate regulatory safeguards. After presenting the current state of nanotech, the paper suggests recommendations on next steps for addressing science policy issues and research needs and even indicates that the complexities of nanotechnology are too much for a single government agency to handle. [December 2005. Military Implications; Sources]

German NanoCare Project to Evaluate Nanoparticles

This month marks the beginning of the NanoCare project under the auspices of the German Ministry of Education and Research. This project brings together thirteen companies, universities and research institutes, and focuses on "the properties of nanoparticles to ensure that they pose no risk to humans and the environment when used in chemical materials." It will operate for three years and has €7.6 million in funding from government and industry. [March 2006. Military Implications; Sources]

Nanotech Consumer Products Data Base

The Emerging Nanotechnologies Project of the Woodrow Wilson International Center for Scholars has launched the first publicly accessible on-line 'Nanotechnology Consumer Products Inventory.' The database lists over 200 nanotech-related consumer products by name, manufacturer, country of origin, and category, and includes a product photograph, description, and Web link. The database is available at http://www.nanotechproject.org/index.php?id=44 and is still being expanded. [March 2006. Military Implications; Source]

New Patent Office Nanotech Index Should Speed Research

The U.S. Patent and Trademark Office is about to unveil its new expanded classification schedule for its cross-reference art collection (XRAC) of Nanotechnology, Class 977, material. This schedule will have 263 new subclasses (or categories) in which nanotech-related items can be filed and organized, compared to only one massive subclass at present. [January 2006. Military Implications; Source]

Nanotech Health, Safety, and Environment Working Group Set Up by ISO/ANSI

A result of the inaugural meeting of the International Organization for Standardization (ISO) Technical Committee 229, Nanotechnologies, held in London, November 9-11, 2005, was the establishment of a working group on health, safety and the environment, to be convened by the

United States within the American National Standards Institute (ANSI) framework. The group will work on standards for environmental issues involving nanomaterials. [See also *ISO to Establish Standardization in the Field of Nanotechnologies* in the October 2005 environmental security report.] [November 2005. Military Implications; Source]

NIOSH to Form Field Research Team for Assessing Nanotechnology Processes Safety

The National Institute for Occupational Safety and Health (NIOSH) will form an interdisciplinary Field Research Team for assessing occupational health and safety practices related to nanotechnology operations. The interdisciplinary team will include researchers representing areas such as industrial hygiene, engineering, occupational medicine, and risk assessment, who will serve in limited-time assignments in the field, in those locations where nanomaterials are developed or utilized. The information and insight provided by the team will periodically update NIOSH's "Approaches to Safe Nanotechnology" on-line guidance document www.cdc.gov/niosh/topics/nanotech/nano_exchange.html. [January 2006. Military Implications; Source]

Managing the Effects of Nanotechnology

Managing the Effects of Nanotechnology by J. Clarence (Terry) Davies, is a comprehensive overview of the existing legal framework that would apply to nanotechnology, and outlines aspects that should be covered by new regulations. The author notes the need for a "right regulatory framework for nanotechnology--framework that encourages initiative and innovation, while also protecting the public and the environment." [January 2006. Military Implications; Source]

Lux Report Addressing Nanotech Health, Environmental, and Safety Risks

Nanotechnology's environmental, health, and safety (EHS) risks can be addressed responsibly today, states a new Lux Research report, *A Prudent Approach to Nanotech Environmental, Health, and Safety Risks*. Explaining different types of risks associated with nanotechnology, Lux estimates that of $8 trillion projected manufacturing output using some nanotechnology through 2014, 25% is exposed to real risk at manufacturing (which should be easiest to mitigate), 7% is exposed to real risk at use, 14% is exposed to risk at end-of-life, while 40% is exposed to perceptual risk. The report states that risks can be effectively addressed today by using well-established risk management techniques, and it also suggests that specific actions from corporations, start-ups, investors, and governments are needed to address nanotech EHS risks. It comments that U.S. government funding for nanotech EHS risk assessment should be increased from the present earmarked 3.7% of the $1.05 billion U.S. National Nanotechnology Initiative budget for 2006. [See also item *9.4 Nanotechnology: Environmental Implications and Solutions* in May 2005 environmental security monthly report.]
Note: on June 29, 2005 Lux Research released *Nanotechnology: Where Does the U.S. Stand?* "assessing how U.S. research and business activities in nanotech measure up to those of international competitors." (Report available only to Lux Research clients) [June 2005. Military Implications; Source]

European Nanotechnology Action Plan

The European Commission has announced its Action Plan to improve European competitiveness in nanotechnology. The plan outlines European-wide and national measures to strengthen nanotechnology research and implementation in a safe and responsible way. The measures in the action plan include: boosting funding—including research to assess possible impact on human health and the environment; respect of ethical principles and citizens' concerns and expectations; building risk assessment into the research and developing guidelines for such risk assessment (including reassessment of existing EU legislation); full access of the public to research; strengthening international dialogue on common issues; and improved infrastructure. The plan also calls for a legislative review, which may lead to future treaty provisions. [June 2005. Military Implications; Sources]

Buckyballs Might Affect the Environment

Scientists have found that buckyballs (the C60 hollow molecule nanospheres), envisioned for use in a wide variety of applications, are soluble in water, and influence the functioning of bacteria. So far, research shows that the particles at a concentration of 0.5 parts per million inhibited bacterial growth and respiration. Several features influence their behavior, including water's Ph. Thus, buckyballs are not biologically inert. This reveals that more research is necessary to understand buckyballs' behaviors and influences on the environment, and to guide the development of any eventual regulations concerning nanotechnology applications. [May 2005. Military Implications; Sources]

Buckyballs Could Damage DNA

Using computer simulations, researchers at Oak Ridge National Laboratory in Tennessee, and Vanderbilt University found that buckyballs bind strongly to DNA, distorting the strands, which could interfere with the DNA's function, disrupting replication and repair and increasing mutation rates. However, the researchers admit that only actual experiments could determine buckyballs' impact on DNA in the real world. [December 2005. Military Implications; Sources]

Buckyballs no Risk to DNA

Reacting to last month's remarks on possible dangers that "buckyballs" could present to human DNA, Dr. Hicham Fenniri, senior researcher at the National Institute for Nanotechnology in Edmonton, Canada, comments that there are no such risks. He explains that since buckyballs are not soluble in water, it would be difficult for them to reach the DNA to damage it. [See also *Buckyballs Could Damage DNA* in December 2005 environmental security report.] [January 2006. Military Implications; Source]

Grant for Review of Best Practices in Nanotech Safety

Researchers at the University of California, Santa Barbara received a grant from the International Council on Nanotechnology (ICON), a multi-sectoral consortium, to conduct a "Review of Best Practices for Nanotechnology Safety", to be completed by the end of 2006. The first phase will involve a comprehensive review of all existing "best practice" development efforts. The second will conduct interviews of a broad range of companies internationally to determine current practices, having as a goal, "to identify critical needs for the standardization and implementation

of safe practices in the nanotechnology industry in different parts of the globe." A project official, Barbara Herr Harthorn, commented, "The ICON-funded study will provide essential data on current nanotech industry standards and practices for enhancing the environmental and health safety of nanomaterials. By providing comparative data on companies in the US, Europe and Asia, it will help shed light on new safety models as they are being implemented and also help identify where they are most needed. This work will provide important baseline data for … research … UCSB is planning on risk and society issues." [March 2006. Military Implications; Source]

OECD Workshop on the Safety of Manufactured Nanomaterials

The Organization for Economic Co-operation and Development (OECD) released a report on its Workshop on the Safety of Manufactured Nanomaterials. The workshop was held to identify the human health and environmental safety issues related to manufactured nanomaterials, as well as to identify opportunities for other forms of cooperative activities in the area of nanomaterials. The workshop dealt with current information on the field, and also recommended the establishment of an OECD Working Group to advise on planning for future safety-related work, and the implementation of a collaborative program with the OECD Business and Industry Advisory Committee (BIAC) to create a public database on the health and environmental effects of nanomaterials. [May 2006. Military Implications; Sources]

New Essays in Nanotech Journal

The Center for Responsible Nanotechnology published eleven new essays about molecular manufacturing in the journal Nanotechnology Perceptions, including, "Considering Military and Ethical Implications of Nanofactory-level Nanotechnology", by Brian Wang. This is a relatively new journal, now producing its 2006 four-issue Volume 2. [May 2006. Military Implications; Sources]

Nanotechnologies for Wearable and Non-Wearable Textiles

This comprehensive report includes in depth profiles of R&D centers and technologies under commercialization or in research related to wearable and non-wearable textiles using nanotechnology. It covers textiles based on nanofibres, nanotubes, nanocapsules, and nanoparticles with new functional properties, such as soil repellence, UV protection, anti bacterialism, abrasion resistance, and healing textiles. [May 2006. Military Implications; Sources]

Nanotechnologies for Anti-Bacterial and Self-Cleaning Coatings

Anti-bacterial and self-cleaning protective coatings have many applications and therefore represent an area of strong interest for industry. This report covers: prevention of biofilm formation in medical devices; anti-microbial surfaces for food and drink applications; anti-microbial encapsulation; photocatalytic coatings for anti-soiling and anti-bacterial; self-cleaning coatings for tiles, glass and steel; and hydrophilic and super hydrophobic coatings. [May 2006. Military Implications; Sources]

Upcoming Conferences on Nanotechnology Safety

A conference on "Nanoparticles for European Industry – Manufacture, Scale-Up, Stabilization, Characterization and Toxicology'" will be held 2-3 May 2006, at the Olympia Conference Centre, London. The meeting, sponsored by the Institute of Nanotechnology and the European Nanotechnology Trade Alliance, will present the latest views on issues of critical importance to industry, including innovations in manufacturing techniques, and scale-up and stabilization of nanoparticles. The conference will include sessions on toxicology and characterization, plus presentations on current approaches to regulation.

The International Symposium on Nanotechnology in Environmental Protection and Pollution will be held in Hong Kong, China 18-21 June 2006. One of the three sections of the Symposium is directed toward Nanotechnology Toxicity and Environmental Pollution, including Environmental Cleanup, Filters and Membranes, Nanoelectromechanical Systems (NEMS) and Advanced Devices for Environmental Monitoring, Environmental Impact and Assessment, Nanotechnology Defense, Responsible Commercialization, and Nanotechnology Industry Standards. [March 2006. Military Implications; Sources]

Nanotechnology's Bottom-up Approach Gets a Boost

Foresight Nanotech Institute and Battelle Memorial Institute will lead a broadly based project to create a nanotechnology roadmap to help investment become more strategic and help set goals. The roadmap will focus on a bottom-up approach to nanotechnology based on productive nanosystems, using molecular machines to make larger products, scaling up to desktop manufacturing systems. The current approach mostly focuses on the reverse: large machines making smaller things like nanotubes, and other arrangements of molecules and atoms. The roadmap will describe a step-by-step development process starting with today's laboratory capabilities and providing useful products at every stage. Creating a roadmap that includes a broader range of approaches to nanotechnology will make cost, benefits, and time-to-impact judgments more clear for all. Such a roadmap may also assist future developers of international agreements on nanotechnology standards and trade. [June 2005. Military Implications; Source]

Nanotechnology Protest

A group of environmental protesters disrobed in front of a high-end Madison Avenue clothing store in New York City to bring media attention against nanotech clothing that has stain-resistant nanotechnology-treated fabrics. This may be an early incident in a new anti-nanotech campaign that could grow into a major movement condemning uses of these new techniques. The situation is exacerbated by the very real lack of comprehensive scientific research on nanotechnology risks, and certainly by lack of public awareness of what is known about the hazards. [June 2005. Military Implications; Source]

Potential Health Threats Of Some New Technologies

Publication of Data Dangerous to the Environment

A recent article by futurist and inventor Ray Kurzweil reminds us of the question of how to weigh the need for free interchange of the results of scientific research against the possibility that

those results would offer a recipe for an environment-destroying terrorist attack. The particular example cited was the publication in the GenBank database of the full genome of the 1918 influenza virus. This information could theoretically lead to the reconstruction of the virus, and its possible release in weaponized form. The threat to the environment from this kind of information dissemination has received relatively little attention so far outside of the nuclear field, but is certain to become a major topic for international discussions. [See also *Control of Pathogenic Chimeras and GMOs under Study* in January 2004, *Bioweapons Are Already Possible to Make, Says New CIA Report* and *New Lethal Viruses Developed* in November 2003 environmental security reports]. [October 2005. Military Implications; Source]

Underwater Sounds from Human Sources Endangering Marine Life

A new report by the Natural Resources Defense Council (NRDC), *Sounding the Depths II: The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life*, is a comprehensive overview of the scientific record on the impact of man-made underwater noise on marine life. It shows that increasing human marine activity—industrial, commercial, and military—became life threatening to whales, dolphins, fish, and other marine species. The report reviews worldwide incidents of mass whale strandings related to military activities, and the oil and gas industry; maps the "hotspots" affected by different human activities; presents the latest scientific findings on noise and whale strandings; and suggests several measures for reducing the impacts of human-made ocean noise. The recommendations include geographic and seasonal restrictions on intense noise from military sonar and seismic air guns; better monitoring and marine life research; stronger international regulations and enforcement concerning marine life protection; and technological improvements to reduce sonic damage.

Another report, produced by the Convention on Migratory Species and UNEP's Regional Seas Programme, estimates that noise pollution linked with underwater sonar and military maneuvers is putting at risk over 4% of marine species. [See also *Coalition Urges UN to Consider Legislation to Curb Harmful Ocean Sounds* in June 2005, *Scientific Models Could Help Navy Avoid Whales During Sonar Tests* in February 2005, *European Parliament Resolution to Protect Whales From Sonar* in October 2004, and *Research Confirms Military and Industry Sonar Harms Whales* of July 2004 environmental security reports.] [November 2005. Military Implications; Sources]

Study Says Mobile Phones Raise Tumor Risk

A study by the Swedish National Institute for Working Life has indicated that the use of mobile phones over a long period of time can raise the risk of brain tumors. The criterion for heavy use was 2000 hours or more, equivalent to ten years use at an hour a day. The work involved 2200 cancer patients and an equal number of controls. According to a Reuters dispatch, one of the scientists said that the results pointed to a 2.5× higher risk of a malignant tumor on the side of the head the phone is used. These results are at odds with earlier Dutch and British research, which found no such correlation. [See also *Cell Phones Damage Rat Brains* in February 2004 environmental security report.] [April 2006. Military Implications; Sources]

Phthalates May Trigger Lupus

A new study at Indiana State University provides some evidence, in a mouse model, that phthalates may trigger lupus. In the study, only a certain strain of mice developed fatal cases of lupus after injection with a phthalate compound; much work remains to be done to clarify the possible connection. [December 2005. Military Implications; Source]

Toxicogenomic Technologies and Risk Assessment of Environmental Carcinogens: A Workshop Summary

This report is a summary of the workshop organized by the National Research Council's Committee on How Toxicogenomics Could Inform Critical Issues in Carcinogenic Risk Assessment of Environmental Chemicals. Scientists, policymakers, and advisors participated in the workshop. They assessed how toxicogenomics could address critical knowledge gaps in risk assessments, including how toxicogenomic data could be applied to improve risk assessments, particularly cancer risk from environmental exposure to chemicals. After an overview of the types of data gaps that make regulatory risk assessment difficult, the workshop analyzed the types of toxicogenomics and their role in carcinogen risk assessment, and discussed the types of research that could move the field forward. [October 2005. Military Implications; Source]

GM Food Protein Revealed to Cause Allergic Lung Damage in Mice

A study in Australia has revealed that subtle structural changes may occur when genetic modification is used to transfer a protein from one species to another. An anti-pest pea protein, coded for by a gene introduced from a bean, caused unexpected immune effects in mice. It turns out that when the transferred gene is expressed in the new organism, slight modifications may occur in the resultant protein, which is then different enough to trigger an immune response. Mice who ate the pea seed and then were exposed to the new protein developed skin reactions and mild lung tissue damage not seen on exposure to the original bean form of the chemical. [See also *GMOs Controversy Continues* in July 2005 and other related items on the same issue in previous environmental security reports.] [November 2005. Military Implications; Source]

POLLUTION ISSUES

Safe Toxin Levels Unknown

A recent paper in the journal *Public Library of Science - Medicine* reported that a review of the epidemiological data shows that there is no clearly safe level of exposure to four of the most common environmental toxins - lead, radon, tobacco smoke and such byproducts of drinking-water disinfection as the trihalomethanes. The general practice has been "to assume that there is no safe level of exposure to carcinogens and use linear dose-response models to estimate human health risks at low exposure levels … [but] that a threshold, or 'safe', exposure level exists for noncarcinogens." If further work confirms the conclusion of this study that the non-carcinogen part of that assumption is incorrect, there may be substantial changes in the international regulatory approach to environmental pollutants. [See also *EU and Japan Respond to Risks from Low Dose Chemicals* in the August 2005 environmental security report] [January 2006. Military Implications; Sources]

Drug Metabolites Identified in Wastewater—Removal Possible

University of Buffalo researchers announced (Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy in Orlando, FL, March 16, 2006) that metabolites of two antibiotics and a medical imaging agent have been found in wastewater treatment plants. "Current wastewater treatment processes are optimized to reduce nitrates and phosphates and dissolved organic carbon, the major pollutants of concern in domestic wastes," said Diana Aga, UB's research leader, "However, treatment facilities don't monitor or measure organic microcontaminants like residues of pharmaceuticals and active ingredients of personal care products." The team described methods for identification and treatment of these pollutants. Such antibiotics and their metabolites can increase drug resistance among disease organisms and synthetic hormones can act as endocrine disruptors. Italian researchers also found high concentrations of pharmaceuticals in aquatic environments at levels close to those that may induce adverse ecotoxicological effects. [March 2006. Military Implications; Sources]

Dechlorane Plus® Detected in Atmosphere

An atmospheric monitoring network in the U.S. Great Lakes region has detected the presence of Dechlorane Plus, an organochlorine flame retardant, the limited preliminary data for which indicates that it is persistent, bioaccumulative, and potentially toxic. This is the first report of the presence in the environment of this widely used chemical. Major uses of Dechlorane Plus are in electrical wires and cables and in computer connectors. Some of its properties may be similar to those of the polybrominated diphenyl ether (PBDE) compounds already banned in Europe and in some parts of the U.S. [January 2006. Military Implications; Source]

Repeated Spills in China Threaten Human Health and the Environment

After last November's catastrophic slick of several toxic chemicals into the Songhua River following an explosion at a petrochemical plant in China's northern Jilin Province, several new major toxic spills have threatened the environment and health of millions of Chinese in other parts of the country. One spill of diesel oil into the Yellow River forced the shutdown of 63 pumping stations cutting off the water supply to six million inhabitants of the Shangdong capital city of Jinan. A cadmium spill in southern China's Guangdong province cut tap water supply to tens of thousands of people for more than a week in December, and another cadmium spill that occurred recently in Hunan was neutralized faster with less implication for the population. A field mission report by UNEP following the Songhua River spill makes several recommendations to the Chinese authorities for overcoming and coping with such incidents, including considering the implementation of a program such as UNEP's Awareness and Preparedness for Emergencies at Local Level (APELL). The report also highlights that the environmental and health implications of the spill can't be completely assessed yet. [January 2006. Military Implications; Sources]

North American Report on Children's Health and Environment Indicators

Children's Health and the Environment in North America is the first ever report analyzing the link between children's health and environmental quality. The report considers 13 indicators under three thematic areas: asthma and respiratory disease; effects of exposure to lead and other toxic substances; and waterborne diseases, finding that only one of the indicators, addressing

asthma, was fully reported by all three countries, Canada, Mexico and the U.S. Highlighting that children are at higher risk by exposure to environmental pollution than are adults, the report recommends better data collection and reporting, for improving public policy in this area. The report is the result of a joint effort of The Commission for Environmental Cooperation, the International Joint Commission, the Pan American Health Organization, the World Health Organization (WHO), and the governments of Canada, Mexico and the United States. [January 2006. Military Implications; Source]

Plastic Bags Taxed and/or Banned

Several jurisdictions, including Ireland, Taiwan, Bangladesh, and some Indian states are banning or taxing the use of plastic bags because of their potential as litter, their role in clogging flood control channels, and their threat to wildlife. Maharashtra blames them for floods that killed more than a thousand people. [September 2005. Military Implications; Source]

CLIMATE CHANGE

Joint Science Academies' Statement on Climate Change

The heads of eleven national academies of sciences (all G8 countries plus Brazil, China, and India) issued a joint statement: "Climate change is real". Documented with scientific and statistical data, the statement makes clear that global warming is occurring and all nations should engage in sustained long-term actions to reduce greenhouse gas emissions, and prepare for the inevitable consequences of climate change. Since the most affected would be those in developing nations, poverty and migration are likely to increase. Although global collaboration will be necessary, the statement also calls on G8 nations to show leadership in addressing climate change and assisting developing nations to meet the challenges of adaptation and mitigation. [See also *8.4 Climate Change Updates* in April 2005 and other previous environmental security monthly reports.] [June 2005. Military Implications; Source]

Research Documents Continued Global Warming Effects

At the European Geosciences Union meeting in Vienna, several scientists revealed recent research and data on greenhouse gas emissions; global warming and its consequences; glaciers' unprecedented melting rates; and the increasing acidity of oceans and its consequences on marine life. There was consensus that human activity is an important driver and that swift action to change current trends and practices should be mandatory. [April 2006. Military Implications; Sources]

Global Warming Threshold Might Have Been Crossed

In the preamble to his upcoming book, 'The Revenge of Gaia', James Lovelock, who formulated the Gaia theory— a planetary system which keeps the Earth fit for life—made the astonishing statement that climate change has reached the point of no return due to humans' abuse of the environment. He argues that before the end of the century the devastating effects will be considerable, as the result of an uncontrollably accelerated process of warming mainly caused by

huge emissions of greenhouse gases such as CO_2. He suggests that governments' efforts — mainly in Europe—should concentrate more on preparedness to cope with consequences of climate change than countering it. The temperature might rise 8^oC in the temperate regions and 5° in the tropics. Although some consider Lovelock's assumptions controversial, there is consensus that the situation is critical and more intense actions are needed to curb global warming. Scientists studying the Arctic are also noting that the polar region is close to or on the edge of the "no return" point. They warn about the effects that the thaw will have all over the world, not just in the north: accelerating global warming, possibly even changing the Earth's weather systems, including significantly changing Europe's climate. [January 2006. Military Implications; Sources]

Global Warming Could be the Cause of Significant Disasters

Several research papers published recently link the increasing numbers and intensity of powerful storms to increasing ocean temperatures, suggesting that global warming is the main cause. Most climate models indicate that the effects of climate change will be felt more intensely farther from the equator. ESA's CryoSat measurements of sea ice are expected to confirm or refute this theory and also help with better weather forecasting.

Dr. Nathan P. Gillett argues in an article published in *Nature* that the impact of global warming on European weather patterns has been underestimated. The Northern Hemisphere Circulation study compares the results of nine state-of-the-art climate models with real situation of Northern Hemisphere air pressure changes at sea level over the past 50 years. It concludes that the simulations underestimate the sea-level air pressure circulation trends, which questions their accuracy in showing changes of weather patterns or predicting regional climate changes.

A report by population health experts from Australia and New Zealand warns that even with action to reduce global warming, thousands of Australians are likely to die by the end of the century because of heat waves caused by human-induced climate change. It is estimated that by 2100 the annual average temperatures could increase by 1 to 6°C over most of Australia, with significantly larger changes in some regions. The report, *Climate change health impacts in Australia*, also addresses the danger of spread of dengue-carrying mosquitoes, as well as possible large-scale poverty and migration in the Asia-Pacific region, mainly in the Small Island States that are particularly susceptible to climate change.

Shishmaref, a whole community of 600 residents of NW Alaska, needs to be permanently relocated on the mainland to be protected from storm systems that are certain to arrive, as a consequence of global warming. Other communities from farther north might follow. [September 2005. Military Implications; Sources]

Two recent research projects concluded that if the amount of CO_2 in the atmosphere were to double, global average temperature could rise by between 1.5°C and 4.5°C, which is more than previous studies have estimated. The two scientific teams, from Berkeley, U.S., and Europe respectively, used different methodologies and data from different historical periods. The consistency of the results indicates validity. The Australian Greenhouse Office endorses the results.

Scientists from the Chinese Academy of Sciences have announced that the glaciers of the Tibetan plateau might be reduced by 50% every decade, with devastating environmental

consequences, such as drying out many of the world's greatest rivers, increasing droughts and sandstorms over the rest of the country as the ice-capped “roof of the world” would turn into desert.

Glaciers in East Africa (including Kilimanjaro [in Tanzania] and Mount Kenya), and Equatorial icecaps in the Ruwenzori Mountains are also shrinking, researchers warning that they might disappear within the next 20 years, with catastrophic impact on water resources in Africa.

According to current predictions, Africa will be the most affected by climate change. In sub-Saharan Africa, in addition to increasing poverty, global warming could increase the spread of disease and kill an estimated 185 million people by the end of the century, reveals *The climate of poverty: facts fears and hope*, a report by Christian Aid. [May 2006. Military Implications; Sources]

New Computer Climate Models Reveal Threatening Conditions

New computer climate models reveal Earth’s limits of CO_2 intake. The computer climate models developed by scientists from Berkeley Atmospheric Sciences Center, Woods Hole Oceanographic Institution, and the National Center for Atmospheric Research (NCAR) in Boulder, Colorado indicate that CO_2 absorption by land and oceans can not keep up with the current trends of increasing fossil fuel emissions, accelerating climate warming after the critical point is reached. The process is increased by drought and other phenomena already present. The paper explaining the findings, *Evolution of carbon sinks in a changing climate* was published in the Proceedings of the National Academy of Sciences (PNAS) of August 9, 2005.

Another computer model, also developed by scientists at the National Center for Atmospheric Research, simulates Earth's climate at the time of the greatest mass extinction in history, at the end of the Permian Era. It reveals that an abrupt and dramatic rise in atmospheric levels of CO_2 triggered the extinction of an estimated 90-95% of all marine species, and about 70% of all terrestrial species. "The results demonstrate how rapidly rising temperatures in the atmosphere can affect ocean circulation, cutting off oxygen to lower depths and extinguishing most life," says NCAR scientist and lead author, Jeffrey Kiehl. [August 2005. Military Implications; Sources]

New observations and climate model data confirm recent warming of tropical atmosphere

Results of state-of-the-art climate models by Lawrence Livermore National Laboratory are consistent with new observational estimates of temperature data obtained from satellites and weather balloons, providing compelling evidence that the tropical troposphere is warming since 1979. Human activity is considered as one important cause of the warming. [See also *New Developments on Climate Change* of January 2005 environmental security report.] [August 2005. Military Implications; Sources]

Earth is Absorbing an Excess of Solar Energy

A recent paper in Science by NASA scientists reports that Earth is absorbing much more heat than it is losing, a result that adds weight to the pessimistic forecasts on global warming. Their prediction shows a global rise of 1° F. this century even if greenhouse gases remained at their present level. Some of their new data comes from the Argo ocean sensing project and, combined

with readings from other sources, indicates that the planet's surface has a solar energy imbalance of +0.85 watts/square meter. [May 2005; Military Implications; Sources]

Reversal of Global Dimming

Researchers found that the amount of sunlight reaching the Earth's surface is increasing, and has been for at least the past ten years, reversing a dimming trend that extended over several prior decades. The reasons for these fluctuations are obscure, but it is likely that this brightening, and consequent increased warming, is at least partly due to a decrease in the emission into the atmosphere of particulates and other sunlight-shielding pollutants from industrial operations. If this trend persists, or even stabilizes, it raises doubts as to whether the current forecasts of global warming are pessimistic enough. [May 2005. Military Implications; Sources]

Melting of Permanent Frozen Areas Accelerates

Siberia's melting accelerates global warming. Scientists recently discovered that in the last three or four years the entire western Siberian sub-Arctic region has begun melting, transforming the world's largest frozen peat bog into a watery landscape of lakes. This could cause the release into the atmosphere of huge quantities of methane, 20 times as potent a greenhouse gas as carbon dioxide. Consequently, Siberia's melting, considered to be partially caused by global warming, becomes in its turn an accelerating factor of it. This finding follows a similar phenomenon of major expansion of lakes in Alaska's northern extreme, bordering the Arctic Ocean.

The *Arctic Ocean* could be seasonally ice-free within 100 years, concludes a new report by U.S. and Canadian scientists. Climate warming is causing thawing of Arctic glaciers and ice sheets, driving the Arctic system into an ice-free state for the first time in more than one million years. The researchers could find no natural processes that might slow or reverse the accelerating melting process. Indigenous people and animals of Alaska, Canada, Russia, Siberia, Scandinavia and Greenland, are already feeling the warming, but the consequences will be felt worldwide, mostly by the millions of people of coastal areas. The melting is an accelerating process. [See also *Climate Change Updates; Antarctic glaciers shrinking accelerating*, in April 2005 environmental security report] [August 2005. Military Implications; Sources]

Greenland Conference on Global Warming

Environmental ministers and other officials from 23 countries around the world and the EU met on the edge of a retreating glacier (110 Km in 45 years) in Greenland and agreed that nations must take action against global warming. The proceedings of the conference were not made public and although the group didn't make specific action recommendations, there was consensus that discussions need to be urgently replaced by action. [August 2005. Military Implications; Sources]

Polar Ice Melting Faster than Forecasted

Several studies have recently revealed that ice at both poles is melting faster than previously forecast. Using satellite technology, scientists found that sea levels rise by 0.4 millimeters a year, due to water pouring into the seas, mainly caused by the bulk loss of ice sheets. Although there is evidence that while the West Antarctic is thinning the East of the continent is thickening, and

similarly, Greenland's interior is becoming heavier due to more snowfall, while the edges are thinning, the overall melting is more. A model developed by the National Center for Atmospheric Research (NCAR), also reveals that ice sheets and glaciers in the Arctic and Antarctic have been melting steadily. The model is based on observations of the Last Interglaciation period when shifts in Earth's orbit caused the Arctic to warm by 3-5 ºC and the sea level to rise by some 5 meters. The scientists note that half of the sea level rise predicted in 2001 by the Intergovernmental Panel on Climate Change (IPCC) to occur this century has already taken place in the past decade. They warn that passing the 560 ppm CO_2 concentration threshold in the atmosphere (now it's about 380ppm) might trigger unpredictable changes with catastrophic consequences, and are calling for increased efforts to curb greenhouse gases emission and tackle global warming. [March 2006. Military Implications; Sources]

Increased Concerns over Rising Sea Level as Effect of Glaciers' Breakup and Melting

Recent studies show that breakup and melting of glaciers is happening faster than expected, increasing concerns over rising sea levels and threatening low-lying regions of the world. Sunlight previously reflected by ice will not be absorbed, hence furthering the warming effect. A new report by researchers from five U.S. and European institutes and universities analyzes the possible impacts of the rapid dynamic of glacial change in Greenland and Antarctica, warning that this could significantly speed up the melting of major ice sheets, worsening the present projections for the sea level's rise. Recent models by the Max Planck Institute for Meteorology in Hamburg show that the average global temperature could rise by as much as 4.1° Celsius by the end of the century, melting sea-ice in the Arctic and raising world sea levels by 30 centimeters (12 inches). During the conference of Antarctic climate experts held by the Royal Society in London, Dr. Tony Payne Monday, professor of glaciology at the University of Bristol and co-director of the UK's Centre for Polar Observation and Modelling, warned that West Antarctica ice melting "would lead to a sea level rise of five or six meters (16 to 19 feet) around the world, or sufficient to cause effects such as the inundation of much of the state of Florida." Such research will influence the Fourth Assessment Report from the Intergovernmental Panel on Climate Change, which is due to be published in 2007. [See also *Melting of Permanent Frozen Areas Accelerates* under *Climate Change Issue* in the August 2005 environmental security report.] [October 2005. Military Implications; Sources]

Greenhouse Gases at Rise, Show Several Recent Reports

Greenhouse-gas concentrations reached new highs in 2004, reveals the first annual Greenhouse Gas Bulletin published by WMO. Globally, average concentrations of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) in the Earth's atmosphere exceed those of pre-industrial times by 35%, 155%, and 18% respectively, reaching their highest-ever recorded levels. The WMO prepared the Greenhouse Gas Bulletin in cooperation with the World Data Centre for Greenhouse Gases (that archives observations from some 44 WMO Members), and with assistance of the U.S. National Oceanic and Atmospheric Administration's Earth System Research Laboratory. The bulletin with 2005 data is expected in November 2006. NOAA reports that in 2005, the CO_2 average atmospheric concentration reached 381 ppm, an increase of 2.6 ppm since 2004 (although compared to WMO data, the difference would be 3.9 ppm), noting that half a century ago, the annual increase was less than 1 ppm. [March 2006. Military Implications; Sources]

The Annual Greenhouse Gas Index (AGGI) compiled by the National Oceanic and Atmospheric Administration (NOAA) is 1.215 for 2005 (vs. 1.00 at the 1990 benchmark), reflecting a continuous rise in the accumulation of greenhouse gases as well as a positive change in the amount of radiative forcing. The AGGI increase is mostly due to considerable growth of carbon dioxide (CO_2) and rise of nitrous oxide (N_2O), while methane (CH_4) seems to level off, and the two chlorofluorocarbons (CFCs) are decreasing. During 2005, global CO_2 increased from an average of 376.8 parts per million (ppm) to 378.9 ppm; the pre-industrial CO_2 level was approximately 278 ppm. The AGGI will be included in the World Meteorological Organization's annual Greenhouse Gas Bulletin to be published in November.

International pressure and more serious incentives to persuade developing countries to adopt environmentally friendly practices seem inevitable, considering the size and scope of countries like India and China. According to the *Little Green Data Book 2006*, annual publication of the World Bank, although the worldwide average CO_2 emissions increase was 15% in the period 1992-2002, in developing countries it was much higher, with China and India showing the highest increase, with 33% and 57%, respectively, in the interval. With their sustained economic growths, unless drastic measures are taken, this trend will probably continue. [May 2006. Military Implications; Sources]

Melting Permafrost Releases Methane Twenty Times More Dangerous for Global Warming than CO_2

Permafrost covers much of Russia, Canada, and Alaska. As it melts, trapped methane gas is released, which is twenty times more effective in creating the greenhouse effect than is CO_2. Scientists disagree about how much permafrost will be melted over what period of time; however, the phenomenon has not been properly factored into global warming forecasts. With less snow and ice, solar radiation that used to be reflected off the earth is now absorbed, which furthers the warming impact. New climate simulations using the National Center for Atmospheric Research (NCAR) Community Climate System Model (CCSM) show that global warming may thaw over half of Northern Hemisphere's permafrost by 2050 and as much as 90% by 2100. This would alter ecosystems across the northern latitudes and might increase runoff to the Arctic Ocean and release vast amounts of carbon as well as methane into the atmosphere in greater volume than now released by fossil fuel usage. Canadian Arctic sea-ice cover has been reduced by about 24% in extent and about up to 50% in thickness since 1978, remarks Louis Fortier, chief scientist aboard the Canadian icebreaker CCGS Amundsen and director of several Arctic research programs. Even more alarming, he notes, since 2004 there are indications that the melting has begun to accelerate, with 2005 an all-time record minimum for sea ice cover. In discussing opening of the Northwest Passage for commercial navigation, besides the ecological implications, he warns about risks linked to pollution, as well as major problems of sovereignty and security for Canada. [December 2005. Military Implications; Sources]

Fluctuations of Glaciers VIII 1995–2000 Report

The latest report by the World Glacier Monitoring Service, *Fluctuations of Glaciers (FoG) VIII*, examining glaciers' situation over the period 1995–2000, warns of a possible complete deglaciation due to the greenhouse effect in the next few decades. This would be a phenomenon "without precedent in the history of the Earth" notes the report. The conclusion is based on the direct proportionality observed between the losses of average annual ice thickness and

accelerated global warming over the last two decades of the 20th century. The FoGs are published each five years since 1959, offering a comprehensive analysis and standardized information on changes in glaciers' conditions. [August 2005. Military Implications; Sources]

The Year 2005 Hits the Record Books for Climate Extremes

Data from climatologists around the world show that 2005 is the record year on many counts: warmest year on record; worst Atlantic hurricane season for intensity, number, and consequences; hottest Caribbean waters ever; worst drought; and least perennial Arctic sea ice cover. The global mean surface temperature in 2005 is currently estimated to be +0.48 degrees Celsius above the 1961-1990 annual average of 14 degrees C, according to World Meteorological Organization (WMO) records. [December 2005. Military Implications; Sources]

Climate Change Impact on Human Health

Climate Change Futures: Health, Ecological and Economic Dimensions (CCF), a three-year study by the Climate Change Futures Project at Harvard Medical School's Centre for Health and the Global Environment, is a comprehensive analysis of trends and implications of global warming in several areas: economy (financial, and impact on developing nations), environment (including exacerbating freaky weather); health (spreading and intensifying diseases); and two potential scenarios to outline possible impacts of climate change. The novelty of this study is the analysis of the direct impact of climate change on human health in addition to environmental and economic impacts that are the focus of most other studies. The report concludes that global warming threatens humans and ecosystems alike, particularly if the frequency of extreme weather events increases. It also offers some recommendations of policies and measures for reducing greenhouse gas emissions, and improving the strategies of adaptation and mitigation of climate change effects. [November 2005. Military Implications; Source]

G20 climate summit advocates "clean technologies" Rather than targets to tackle climate change

Energy and environment ministers attending the G20 climate summit in London advocated more implementation of "clean technologies" than use of targets to tackle climate change. The 'G20' represents the nations that emit the most greenhouse gases. Global warming induced by human activities appears also to be responsible for rising global ocean levels twice as fast today as they did 150 years ago, according to a Rutgers (the State University of New Jersey) study. The ocean has been rising almost two millimeters per year in the last 200 years compared to a steady one millimeter annually for the previous 5,000 years. See also further in this report item *6.2 Climate Change Futures: Health, Ecological and Economic Dimensions*, a comprehensive report on the implications of climate change.

> Note: The Eleventh Conference of the Parties (COP 11) to the UN Framework Convention on Climate Change and the first Meeting of the Parties (MOP 1) to the Kyoto Protocol, is currently going on, from 28 November to 9 December 2005 in Montreal, Canada. About 10,000 delegates from 189 nations are participating. The December environmental security report will report on the outcomes. [November 2005. Military Implications; Sources]

Nordic Countries Suggest Actions to Cope with Global Warming

Conservation of Nordic Nature in a Changing Climate is a report commissioned by the Nordic Council of Ministers to analyze global warming causes and to address strategies concerning the Nordic Countries' abilities to cope with climate change effects. Experts from environmental research institutes in the five-country region affirm that climate changes are mainly caused by humans and urge the region's governments to take joint action against global warming as well as to design strategies to deal with more extreme weather patterns. The report identifies some concrete strategies and tools for adaptation to climate change effects—such as management and administration aspects, including some regarding "natures' goods and services." [October 2005. Military Implications; Source]

UK Calls for Worldwide Action for Addressing Global Warming

The British government is intensifying its call for immediate worldwide consensus and action for addressing global warming, which would include the economically booming China and India, even if it would take decades to see the results. The government's chief scientist, Sir David King, warned that, even by the most optimistic forecasts, carbon dioxide levels are set to double those of the pre-industrial era, leading to a three-degree centigrade rise in temperature, jeopardizing eco-systems, raising sea levels and flooding coastal areas, and causing the hunger of 400 million people. The Blair government claims that Britain will exceed the Kyoto Protocol target of 12.5% emissions reductions by 2012, but not its own goal of 20% reduction by 2010, in spite of the plans for stricter emission regulations introduced last month. [April 2006. Military Implications; Sources]

East Asia and Climate Change

The spotlight of the latest *East Asia Update* report by the World Bank, "Climate Change and East Asia—Challenges and Opportunities" warns that climate change is likely to significantly affect economies in the Asia-Pacific region, threatening the coastal area and jeopardizing the region's economic growth. Rising sea levels, more intense storms and greater extremes of droughts and floods will threaten the livelihoods of millions of poor and cause mass migration. Another report, *State of the Environment in Asia and the Pacific 2005* by the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), is assessing the implications of the region's rapid economic growth, revealing that present patterns are unsustainable and urges adoption of "green" policies and standards. Along the same lines, experts and policy-makers attending the "Asia-Pacific Dialogue on Innovative Options for Non-Annex I Countries Participation for Climate Change Action" held in Bangkok, discussed strategies for the regions' developing countries to reduce greenhouse gas emissions in the framework of the Clean Development Mechanism (CDM). The meeting was co-organized by the Institute for Global Environmental Strategies (IGES) and UNESCAP. Little progress has been made, because many developing countries are worried that binding targets to reduce greenhouse gas emissions would jeopardize their economic growth. [April 2006. Military Implications; Sources]

OTHER BIODIVERSITY PROTECTION MEASURES

International Year of Deserts and Desertification—2006

The UN has declared 2006 the International Year of Deserts and Desertification to help raise global public awareness of the threat that advancing deserts and desertification represent to humanity, and consequently to increase efforts to explore ways to cope, counter, or even reverse these phenomena. "…desertification has been seen as a threat to human security," notes UN Convention to Combat Desertification Executive Secretary, Hama Arba Diallo. The southern progression of the Sahara increases famine and migration, escalating conflicts across Africa. December 2006 is the 10th anniversary of the UN Convention to Combat Desertification with 191 states parties. [January 2006. Military Implications; Sources]

New Protected Ecological Sites

Seven New Sites Added to World Heritage List

The UN World Heritage Committee included 7 more natural sites on UNESCO's World Heritage List, expanded 2, and removed 3. The 7 new sites inscribed are: South Africa – Vredefort Dome; Egypt - Wadi Al-Hitan Whale Valley; Japan – Shiretoko; Norway – West Norwegian Fjords Geirangerfjord and Nærøyfjord; Mexico - Islands and Protected Areas of the Gulf of California dolphins; Thailand - Dong Phayayen - Khao Yai Forest Complex; Panama - Coiba National Park and its Special Zone of Marine Protection. The two extensions are: India – Valley of Flowers National Park; and UK—St Kilda. The sites removed from the List of World Heritage in Danger List are: Sangay National Park in Ecuador, Timbuktu in Mali, and Butrint in Albania. Altogether, UNESCO World Heritage List numbers 160 natural sites and 24 mixed sites —both natural and cultural. [July 2005. Military Implications; Sources]

UN Ecological Reserves Network Adds 22 New Sites

The World Network of Biosphere Reserves, under the Man and the Biosphere (MAB) Programme of UNESCO, added 23 ecosystems to its list, for a total of 482 sites in 102 countries. At these reserves, communities promote sustainable development while also conserving biodiversity. The community members also contribute to governance, management, research, education, training and monitoring at the sites.
[See also *Nine New Hotspots Added to World's Protected Areas* in February 2005, *Intensified Efforts Needed to Save Biodiversity* in January 2005, and related items on UNESCO World Heritage Sites in November and June 2004, and October 2003 environmental security monthly reports.] [July 2005. Military Implications; Sources]

Biodiversity Synthesis Report (Millennium Ecosystem Assessment 2)

The second Millennium Ecosystem Assessment report, Biodiversity and Human Well–being: A Synthesis Report for the Convention on Biological Diversity (CBD) was released on May 22 to mark the International Day of Biodiversity. [See the March 2005 ES Report, Item 8.7, for the first in this series of seven similar Millennium Assessment papers] In response to requests for information received through the CBD, the report synthesizes and integrates findings related to biological diversity from the four MA Working Groups: Conditions and Trends, Scenarios, Responses and Sub-global Assessments. The key findings of the report are: in the last 50 years,

human actions have changed the diversity of life on the planet more than at any other time in human history; biodiversity is the foundation for human well-being; human activities are leading to the loss of the variety of life; in the past, actions and programs that promoted conservation and the sustainable use of biological diversity limited biodiversity loss; the size of the task ahead of us is so great that the 2010 biodiversity target will only realistically be achieved in certain areas and regions if we engage in substantial efforts. [May 2005. Military Implications; Sources]

Desertification Synthesis (Millennium Ecosystem Assessment 3)

The *Desertification Synthesis* report was launched on June 17, to mark World Day to Combat Desertification. It represents a synthesis and integration of the findings of the assessment of ecosystem change—mainly desertification—due to human activity, as well as the consequences of these changes on future human wellbeing. It provides scientific evidence for sustainable living policies. "Growing desertification worldwide threatens to swell by millions the number of poor forced to seek new homes and livelihoods," according to the report. The *Desertification Synthesis* is part of a series of six MA synthesis reports. [See also items *9.1 Biodiversity Synthesis Report (Millennium Ecosystem Assessment 2)* of May and *8.7 Human Footprint on Earth Ecosystem at Critical Stage and Millennium Ecosystem Assessment Synthesis Report* of March 2005 environmental security monthly reports.] [June2005. Military Implications; Source]

Ecosystems & Human Well-being: Wetlands & Water Synthesis (Millennium Ecosystem Assessment 5)

Ecosystems & Human Well-being: Wetlands & Water Synthesis, the fifth synthesis report by the Millennium Ecosystem Assessment (MEA), was launched at the opening ceremony of COP9 of the Ramsar Convention on Wetlands. The report assesses the current situation of wetlands in view of strengthening the link between scientific knowledge and decision-making for the conservation and wise use of wetlands, and setting future agendas for Ramsar. The report found that the degradation and loss of wetlands, as well as the status of both freshwater and coastal wetland species is deteriorating faster than those of other ecosystems. [December 2006. Military Implications; Sources]

Ecosystems and Human Well-being: Health Synthesis (Millennium Ecosystem Assessment 6)

Ecosystems and Human Well-being: Health Synthesis, a report by WHO, is the sixth (last) in the series of the Millennium Ecosystem Assessment reports. Examining the complex interdependence between the ecosystems and human health, the report assesses the current state of affaires, as well as the critical factors that might trigger future changes in ecosystems and the possible health implications. Pointing out the benefits reached over the past 50 years in adapting the natural ecosystems to benefit the human condition, the report notes that not all regions and groups of people have benefited equally from this process. Continued ecosystem degradation, with already serious consequences to human health, could grow worse over the next 50 years. Regions facing the greatest risks include sub-Saharan Africa, Central Asia, parts of Latin America, and certain areas in South and Southeast Asia, points out the report. [See also *Millennium Ecosystem Assessment Synthesis Report* in March 2005, *Biodiversity Synthesis Report* (MA report 2) in May, *Desertification Synthesis* (MA report 3) in June, and *Environmental concerns increase opportunities and challenges for business* (MA report 4) in July environmental security monthly reports.]

Note: The *Millennium Ecosystem Assessment* (MEA) won the 2005 Zayed International Prize for the Environment, awarded for 'scientific and or technological achievement in environment'. [December 2006. Military Implications; Sources]

European environment - State and outlooks 2005

The *European environment - State and outlooks 2005* report by the European Environment Agency (EEA) analyzes the European ecological footprint. Revealing that it takes 2.1 times the biological capacity of Europe to support Europe, the authors emphasize that Europe should reassess its consuming patterns and consider new policies that would take into account the disproportionate impact European present behavior has on the rest of the world's environment. With rich graphs and data, the report shows a comprehensive regional analysis as well as detailed analysis by country and sectors over time. For example, while in 1961, Europeans represented over 12% of global population with a demand on global ecological capacity of less than 10%, by 2002, Europe's population represented only 7% of the world total but its demand on global ecological capacity increased to nearly 20%. The report outlines some economic, technological, and policy strategies for addressing Europeans' ecological footprints without jeopardizing their quality of life. More detailed sub-reports on specific sectors and policies are to come next year. [December 2006. Military Implications; Source]

One Planet Many People–Atlas of our Changing Environment

UNEP launched the *One Planet Many People* Atlas to mark World Environment Day 2005. Using satellite images that compare and contrast images of critical parts of the planet from a few decades ago with contemporary ones, the Atlas shows grave damaging environmental changes, addressing a variety of key environmental issues such as urbanization, deforestation, and melting glaciers. [June 2005. Military Implications; Source]

Europe 2005: The Ecological Footprint

Europe 2005: The Ecological Footprint is a report launched at the European Parliament, by WWF and Global Footprint Network, analyzing the impact of Europe's lifestyle on the ecosystem. It reveals that Europe's ecological footprint is 2.2 times larger than its own biological capacity. With just 7% of world population, Europe consumes 17% of the world resources supply—a figure that has risen nearly 70% since 1961. The report shows that innovation and addressing ecological deficits are fundamental to maintaining Europe's competitiveness and wellbeing. Europe 2005: The Ecological Footprint is based on Global Footprint Network's National Footprint Accounts and analysis (specifically France, Germany, Greece, Poland, and the UK), as well as a comparison of the footprints of 25 European nations. [See also items *9.1 Biodiversity Synthesis Report (Millennium Ecosystem Assessment 2)* of May and *8.7 Human Footprint on Earth Ecosystem at Critical Stage and Millennium Ecosystem Assessment Synthesis Report* of March 2005 environmental security monthly reports.] [June 2005. Military Implications; Sources]

Mediterranean Threatened by Development Pressures, Says *Blue Plan Report*

A Sustainable Future for the Mediterranean: the Blue Plan's Environment & Development Outlook, a report by the UNEP's Mediterranean Action Plan, states that if current trends continue, the region's ecosystem will be severely jeopardized by 2025. The report suggests an alternative based on the principles of sustainable development that could boost the quality of life over the coming decades while protecting the environment. The report was commissioned by the 21 nations bordering the Mediterranean Sea and is the result of the cooperation of 300 experts. [April 2006. Military Implications; Source]

Greenpeace Calls for Oceans Natural Reserves

A new report by Greenpeace, *Roadmap to Recovery: A global network of marine reserves*, is a comprehensive assessment of the present status of the high seas and threats to them, suggesting that 40% of the world's oceans should be declared natural reserves and protected in the same way as land areas are (according to UN data, at present just 0.6% of the oceans are protected compared with 12% of the world's land). The report outlines a global marine reserve network for the high seas, documenting why it is needed, investigating candidate sites for protection, and indicating some principles of marine reserve networking, as well as suggesting implementation strategies. [March 2006. Military Implications; Sources]

Tougher Systems to Control GMO Suggested

GM Contamination Report 2005, by GeneWatch UK and Greenpeace International, warns that current practices and legal frameworks are not adequate to protect against GMO spread in unwanted places and to other plants. Reviewing cases of contamination and negative side effects of genetically modified organisms, the report reveals that over the past decade, GM crops have been planted illegally, or have pollinated non-GM food in 39 countries, which is nearly double the number of countries that introduced GM crops since 1996, when they were first commercialized. The report calls for an independent international commission to be set up to investigate, and for an international register of such incidents to be set up under the Cartagena Protocol on Biosafety. [March 2006. Military Implications; Sources]

The Debate over Genetically Modified Organisms (GMOs) Continues

The EU is still divided over GMO bans. At the recent European Environment Council meeting, five European countries, Austria, France, Germany, Greece, and Luxembourg got majority support for rejecting the European Commission's proposal to lift the bans on transgenic varieties of maize and oilseed rape, under the justification that they present risks to human health and the environment. Meanwhile, Italy requested that the European Food Safety Authority (EFSA) conduct its own independent scientific research to assess possible health risks associated with GMO rather than rely on data provided by the biotech industry. [See also *EU Commission Seeks to Increase Biotech Food Safety* in January 2004 and *The EU Ended its Ban on Genetically Modified Foods* in May 2004 environmental security reports.]

Japan, after finding a U.S. corn cargo infected with the unapproved Bt-10 biotech corn variety, decided to test every U.S. cargo entering the country. In China, genetically modified rice illegal cultivation and commercialization is spreading, increasing concerns that the non-approved variety could enter markets overseas. [June 2005. Military Implications; Source]

A preliminary ruling by the World Trade Organization established that the EU regulatory framework of GMOs is in non-concordance with its obligations under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). The EU defends its legislation as being consistent with the internationally recommended approach and the requirements of the Cartagena Protocol on Biosafety. Several environmental groups consider the WTO ruling conflicting with the democratic principle of peoples' right to know and decide, and, along with the EU, argue that the WTO is not the appropriate forum for this kind of decision.

Meantime, the biotechnology industry is pushing to abolish the Genetic Use Restriction Technologies (GURTs) (de facto moratorium on sterile seed technologies) at the next high-level meeting of the Convention on Biological Diversity (CBD) to be held in Curitiba, Brazil, March 20-31, 2006. Over 300 organizations worldwide campaign for a global ban on Terminator technology, asserting that sterile seeds threaten biodiversity and food sovereignty, and undermine the livelihood of the 1.4 billion people who depend on farm-saved seed.

A new report by experts of the European Commission's Joint Research Centre (JRC), *New case studies on the coexistence of GM and non-GM crops in European agriculture*, concludes that the unintended occurrence of GMO content threshold of 0.5% in harvested crops is safe for coexistence farming of crops like maize, cotton, and sugar beet before the grain has to be labeled as biotech. This is still under the EU's 0.9% threshold for food and animal feed. Reducing the threshold under 0.5% would require extra farming measures like arranging seed plots as a function of dominant wind patterns, notes the report. [See also *GMOs Controversy Continues* in July 2005 and other related items on the same issue in previous environmental security reports.] [February 2006. Military Implications; Sources]

FAO calls for an international framework for GM trees

Genetic modification activities in forestry are taking place in some 35 countries and a commercial phase has already started without full scrutiny of potential benefits and risks. FAO says it is essential that environmental risk assessment studies be conducted with protocols and methodologies agreed upon at national and international levels. [July 2005. Military Implication; Sources]

GM Crops Created Superweed

Scientists from the Centre for Ecology & Hydrology in the UK argue that there is a potential that modified genes from GM crops could transfer into local wild plants, creating herbicide-resistant "superweeds." The findings of their four-year study were recently made public. The phenomenon was observed in a trial where cross-fertilization between GM oilseed rape, brassica, and a distantly related plant, charlock, created a new form of charlock that didn't react to lethal herbicide. The same was demonstrated in the lab for other weeds that became herbicide resistant. Although they consider that the potential of such cross-fertilization in the field is likely to be very low, they add that "this unusual occurrence merits further study in order to adequately assess any potential risk of gene transfer." [See also *The Controversies over GMO Bans Continue* in June 2005 and other previous environmental security reports.] [July 2005. Military Implication; Sources]

Europe to Redouble Efforts to Stabilize Biodiversity by 2010

At the fourth Intergovernmental "Biodiversity in Europe" Conference, held February 22–24 at Lake Plitvice National Park, Croatia, officials from 40 European governments and 32 environmental organizations agreed to redouble their efforts to achieve the goal of halting Europe's biological diversity decline by 2010. Climate change, human activities, and low political priority of biodiversity were noted as the main factors that should be addressed to curb present trends. The benefits of the development of the Pan European Ecological Network and the initiatives of several banks to establish European biodiversity investment funds were stressed. The conclusions of the Conference will be advanced at next month's meeting of the Convention on Biological Diversity. [February 2006. Military Implications; Source]

WHO Project to Minimize Risks of Radon

The World Health Organization (WHO) is launching the International Radon Project to help countries reduce the health risks associated with radon gas. Radon, a radioactive gas emanating from soil, is estimated to be the cause of 6–15% of lung cancer cases. The first phase of the project is designed to run for three years, 2005–07. It will assess risk levels, and exposure measurements and guidelines. It will also increase public and political awareness about the consequences of exposure to radon. It will also identify and promote effective strategies and policies useful to countries for mitigating health impacts of radon. Radon is present worldwide, in air and water, but its concentration is highly dependent on the content of uranium in soil. [June 2005. Military Implications; Sources]

NEW ORGANIZATIONS WITH MANDATES WITH EVENTUAL ES IMPLICATIONS

UN to Enhance Eco-Development Procedures

UNESCO and Italy began the procedure for establishing the Institute on a Partnership for Environmental Development (IPED) to provide capacity building to help expedite economic development while protecting the environment in developing countries. It will operate mostly by helping to set environmental targets for the UN's priority development projects, and providing necessary knowledge and training to developing countries on how to effectively integrate environmental dimensions into economic development. IPED will be located in Trieste, Italy. *A legal framework for the integration of environmental, social and governance issues into institutional investment*, a report just released by UNEP, addresses the issue of eventual "legal obligation" of institutional investors to consider environmental, social, and governance issues when choosing how to invest their resources. [See also *Efforts for Increasing Corporate Eco-responsibility* in July 2004 environmental security report.] [October 2005. Military Implications; Sources]

NEW INITIATIVES AIMING TO INCREASE ECO-EFFICIENCY

UN Launched the Principles for Responsible Investment

The Principles for Responsible Investment, launched by the UN and backed by many of the world's largest investors from 16 countries representing more than $2 trillion in assets owned, is an effort to include the environmental and social dimensions in global financial markets. Developed by the UNEP Finance Initiative and the UN Global Compact, the six overarching Principles, which are voluntary, are backed by a set of 35 possible actions that institutional investors can take to integrate environmental, social and corporate governance (ESG) considerations into their investment activities. [May 2006. Military Implications; Source]

New American Association for the Advancement of Science (AAAS) Global Website on Sustainability

AAAS has announced the opening of its new website "Forum: Science and Innovation for Sustainable Development" (< http://sustainabilityscience.org >). This new service builds on a site previously operated by Harvard University, but is greatly expanded from being primarily a repository of scholarly works. It will now serve that library function and also add discussion forums, commentary, and international event listings. It is formatted to ensure that limited bandwidth users can have access. Institutions from across the spectrum of society are acceptable as members, in order to ensure that the range of scientific and related societal issues aired will be as complete as possible. The intent is to provide a growing, interdisciplinary forum that will be flexible and long-lived to meet many needs. Currently, the Forum has 300 members in 41 nations. [May 2006. Military Implications; Source]

Environmental concerns increase opportunities and challenges for business (Millennium Ecosystem Assessment report 4)

Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry, the fourth Millennium Ecosystem Assessment (MA) report, synthesizes and integrates findings related to the interdependence between ecosystems and the private sector. "The Millennium Assessment is a user's guide to the planet for long-term thinkers… an invaluable resource for business leaders who think long term and seek to understand the threats and opportunities that will shape the economies of the future." said Jane Lubchenco, co-chair of the Synthesis Team. [See also items *9.1 Biodiversity Synthesis Report (Millennium Ecosystem Assessment 2)* of May, *8.7 Human Footprint on Earth Ecosystem at Critical Stage and Millennium Ecosystem Assessment Synthesis Report* of March 2005, and *9.3 Desertification Synthesis* of June 2005 environmental security monthly reports.] [July 2005. Military Implications; Sources]

UN Envisaging a Treaty for Multinational Corporations

The UN began a feasibility study and eventual steps for the implementation of an international treaty regulating multinational corporations' activities. One of those closely involved in the process is Harvard professor John Gerard Ruggie, appointed by Secretary-General Kofi Annan as his special representative on the issue of human rights and transnational corporations. The special representative position was created for identification and clarification of "standards of corporate responsibility and accountability for transnational corporations and other business

enterprises with regard to human rights." STRATFOR (Strategic Forecasting, Inc.) comments that the “appointment is important because it will galvanize a global social movement, which will in turn accelerate the changing systems of public policy development.” It might take five years until a draft treaty will be drawn. [August 2005. Military Implications; Source]

Climate Change Dialogue Initiative Launched

Government officials and business leaders of G8 and five major developing countries (India, China, Brazil, Mexico, and South Africa) launched the Climate Change Dialogue initiative to campaign for more aggressive action to tackle climate change. Part of the new group are also institutions such as the World Bank, International Energy Agency, and oil giant BP. The group hopes to attain some concrete policy proposals for the G8 summit in Japan in 2008. [February 2006. Military Implications; Source]

Second Australia-New Zealand Climate Change and Business Conference

“Climate change responses are going to be delivered by business, responding to Government policy-setting,” said Gary Taylor, Environmental Defence Society chairman at the second Climate Change and Business Conference held in Adelaide, February 20–21. Over 300 delegates representing business, environmental, and governmental organizations, discussed how individual businesses could help in coping with climate change and greenhouse gas emission issues. Many suggested that Australia would continue to get hotter while New Zealand would continue to get wetter. The problem posed for Australia would be lower crop outputs and higher pest problems, with consequent food security implications. [February 2006. Military Implications; Sources]

Two Global Alliances for “Greener” Buildings Around the World

The UN Environment Programme (UNEP) and major companies worldwide in the construction industry launched the Sustainable Building and Construction Initiative (SBCI), whose purpose is to promote environment-friendly practices throughout the industry. According to Monique Barbut, director of UNEP’s Division of Technology, Industry and Economics (DTIE), which hosts the SBCI secretariat, the project's objectives include the worldwide adoption of sustainable building and construction practices that can help deal with problems like climate change, waste disposal, and depletion of natural resources; the development of pilot projects that embody its recommendations; and the inclusion of sustainability considerations in legislation and building standards. Another alliance initiated by the World Business Council for Sustainable Development (WBCSD) of such companies as United Technology and Lafarge Group is promoting construction standards that would make new buildings energy self-sufficient (no dependency on external power grids) and carbon-neutral. Their initial focus is on new buildings in China, India, Brazil, the United States and the EU. [Military Implications; Sources]

UNEP and 150 Labor Unions Agree on Environmental Objectives

The Trade Unions’ Assembly on Labour and the Environment, a joint meeting of UNEP and representatives from over 150 trade unions, set forth "a wide ranging strategy to mainstream environment and sustainable development within the trade unions movement", embodied in the "Workers’ Initiative for a Lasting Legacy". The unions agreed to support the UN Millennium Development Goals, the Johannesburg Plan of Implementation, action on climate change, and

promotion of sustainable production and consumption patterns. According to the UNEP announcement, "Other areas include working for the ratification and implementation of key treaties that promote important social, economic and environmental objectives alongside monitoring of governments so that their purchasing, regulation and land-use policies meet sound social and environmental targets." [January 2006. Military Implications. Sources]

Prospects for Hydrogen and Fuel Cells

Prospects for Hydrogen and Fuel Cells, a study by the IEA, assesses the present state of affairs in research and potentials of hydrogen and fuel cells, and investigates several aspects related to future energy markets, innovative technologies and policies needed to promote the use of hydrogen as an energy carrier and fuel cells as motive devices in transportation and energy distribution systems for the next half century. Additionally to the analysis, it also provides four scenarios for a hydrogen and fuel cells transition, along with governance and decision-making suggestions for addressing the world's energy problems. [December 2005. Military Implications; Source]

The Future of Technology Assessment

The Future of Technology Assessment is a collection of three essays published by The Foresight and Governance Project of the Woodrow Wilson International Center for Scholars. It explores the issue of science and technology assessment and related policymaking from multiple perspectives and with a look towards a future that will be fundamentally influenced by the way science and technology will evolve and be addressed. It highlights the importance of making a clear distinction between handling basic and applied science. The first essay, *Back to the Future: Revisiting OTA Ten Years Later*, by Michael Rodemeyer, reviews technology assessment issues in the U.S. after the dissolution of the Office of Technology Assessment (OTA), pointing out that the rate of change and globalization make policy- and decision-making difficult to assess and to react to all possible implications of new technologies. Concluding that there is no institutional arrangement for technology analysis, the author contemplates the eventual necessity of an internal or external technology assessment capability. The second essay, *This Won't Hurt a Bit: Assessing and Governing Rapidly Advancing Technologies in a Democracy* by Daniel Sarewitz, analyzes the transition from conventional to real time technology assessment in the condition of democracy, of complex social settings, when S&T should reflect and serve the system of values of the whole community. The third essay, *Paddling Upstream: New Currents in European Technology Assessment*, by James Wilsdon, analyzes the science-society relationship, outlining the need and process of public participation in decision-making concerning science. [December 2005. Military Implications; Source]

UK Analysis of Current Green Energy Options

The *Which Energy?* report by the Institute of Science in Society is an assessment of many energy options regarding accelerating global warming and depleting fossil fuels. Bringing together the science, ethics, economics, safety, and politics of available energy options, the report puts forward recommendations for cleaner energy policies and actions, including ruling out nonrenewable sources and techniques that are not environmentally friendly and/or safe for society (e.g. nuclear), and advocating energy self-sufficiency as the best guarantee for energy

security. Although this report does not include such high tech items as genetically engineered photosynthesis to produce hydrogen or orbital solar power satellites for base load electricity, it is nevertheless a very good review of current alternative "green" energy solutions. [April 2006. Military Implications; Source]

Renewables 2005: Global Status Report

Renewables 2005: Global Status Report published by Worldwatch Institute, is a comprehensive overview of today's global renewable energy status and provides trends and estimations, as well as a look at emerging renewable energy technologies and policies. According to the report, government support for renewable energy is growing rapidly, with at least 48 countries (including 14 developing ones) already having some type of renewable energy promotion policy. [November 2005. Military Implications; Source]

Target 2020: Policies and measures to reduce greenhouse gas emissions in the EU

Target 2020, a new report by the Wuppertal Institute in Germany, outlines concrete steps that would allow the EU to cut its greenhouse gas emissions to a third of their 1990 level, by 2020. The recommendations include adoption of comprehensive climate policy strategies at regional and national levels, consisting of mandatory regulations promoting energy efficiency and renewables. To illustrate the analysis, the report compares two scenarios over the period 1990–2020: The "Business-as-usual" scenario—to be avoided, and the recommended "The Policies and Measures (Target 2020)" scenario, which implies high energy-efficiency strategies and policies. [November 2005. Military Implications; Source]

New REN21 Report Links Renewable Energy to Climate Change Solutions

Changing Climates, the Role of Renewable Energy in a Carbon-Constrained World, a new report by Renewable Energy Policy Network for the 21st Century (REN21), was launched during the 9th Special Session of UNEP's Governing Council/Global Ministerial Environment Forum [see Item 2 above]. Noting "emerging consensus" in both the scientific and political communities that renewable energy is a major player in meeting the growing global energy demand and the increasingly serious environmental and economic threats of climate change, the report highlights the need for more aggressive strategies and specific economic and policy tools adapted to local circumstances. Also, remarks the report, with the current development of the global market for renewable energy, "it is not necessary to wait for strengthened global agreements before taking action at the national level." [February 2006. Military Implications; Source]

Chinese Popular and Government Support for Environmental Concerns

Environmental awareness and anger seem to be increasing among the Chinese people, and even certain segments of the government are taking up environmental causes. Pocha (Dec 2005) writes, "A growing section of the Chinese leadership, led by Deputy Environment Minister Pan Yue, has been vocal in calling for China to make its economic policies more environmentally sensitive… Earlier this year, China's State Environmental Protection Administration took the unprecedented step of suspending work on 30 projects, worth more than $10 billion collectively, after they failed to meet environmental standards." There are now more than 2,000 grass-roots environmental NGOs in the country, many of which are now learning how to organize and

empower themselves. Although the government is still focusing on high economic growth with little regard to environmental impacts, there are signs that this situation is changing. China recently announced that it would begin monitoring energy efficiency and encouraging cleaner energy production and use as its national income surges. Its National Bureau of Statistics is compiling an index to show each region's energy consumption per unit of GDP for publication every six months. [December 2005. Military Implications; Source]

Russian Green Party Formally Organized

The Green Russia party (now its official name) has now been formally organized with Alexei Yablokov as its chairman and Alexander Nikitin, the former naval officer, and nuclear safety activist, as one of its principal figures. The party's major present goal is to achieve the 50,000 member level necessary for participation in elections. [See also *Russia's Green Movement Plans to Become a Political Party* of October, 2004 environmental security monthly report] [June 2005. Military Implications; Sources]

New Israeli Venture Capital Fund for "Clean Tech" Enterprises

Israeli entrepreneurs and venture capitalists are fueling a burgeoning new crop of "clean technology" enterprises devoted to cleaning up the environment. A "cleantech" venture capital (VC) fund is being formed by the Millennium VC firm. Water management is a central element of many of these efforts. The fund's manager says that, "In five years it [Israel] will be the only country to use all of its wastewater, mainly for agriculture." [June 2005. Military Implications; Source]

3. Military Implications and Sources

A Preventing or repairing military damage to the environment

ENVIRONMENTAL SECURITY RISES ON THE INTERNATIONAL POLITICAL AGENDA

UN Reforms in Development, Humanitarian Assistance, and Environment to be Proposed by High-Level Panel

Military Implications
Via appropriate diplomatic channels, military personnel should both offer advice on roles for the military in environmental security efforts and keep abreast of the panel's deliberations that affect military operations.
Source:
Secretary-General Announces Formation of New High-Level Panel on UN System-Wide Coherence in Areas of Development, Humanitarian Assistance, Environment
http://www.unis.unvienna.org/unis/pressrels/2006/sgsm10349.html

Reforming International Environmental Governance: From Institutional Limits to Innovative Reforms

Military Implications:
Relevant military personnel should study the report to evaluate current institutional arrangements and weaknesses and to be prepared for potential institutional and legislative reforms. The report would be a key reference for formulating the military's contributions to policy debates for improving the current international environmental governance system.
Source:
Reforming International Environmental Governance: From Institutional Limits to Innovative Reforms. Edited by W. Bradnee Chambers and Jessica F. Green. UN University, May 2005
http://www.unu.edu/unupress/2005/reforming-ieg.html

Human Security Proposed as Reorganizing Principle for the UN

Military Implications:
There may be an emerging consensus that human security could be the next organizing principle for international relations. Whether or not Lloyd Axworthy will promote the idea in the UN General Assembly, the idea of re-organizing the UN on human security issues could well be inevitable. The military should create alternative scenarios for such potential UN restructuring and study how it might contribute to and be affected by each scenario.
Source:
Former foreign minister wants to "re-wire" UN
By Fabian Schweyher, The Budapest Times, November 21, 2005
http://www.budapesttimes.hu/index.php?art=1286 (article available for a limited time on the website)

Environment and Security-The Role of the United Nations

Military Implications:

The report's focus on recommendations to the UN can help one understand the respective environmental security roles for national militaries vs. UN forces. Although environmental issues were not high on the 2005 UN Summit agenda, it is likely that recommendations such as the ones made by this report will find their ways into the UN restructuring process. Relevant military personnel should study the report to appreciate the extent of the international community's insights on links between environment and security.

Source:

Environment and Security—The Role of the United Nations

http://www.wilsoncenter.org/news/docs/ACF64A.pdf

Human and Environmental Security - An Agenda for Change

Military Implications:

Relevant military personnel might find the report useful for new insights on human security issues and an assessment of the present and future status of security threats, mainly related to the environment.

Sources:

Press release, Network 2015 email list

Human and Environmental Security - An Agenda for Change

Available through: http://www.stakeholderforum.org/StakeholderForumbooks3.pdf

International Conference on Environment, Peace and the Dialogue among Civilizations and Cultures

Military Implications:

Those military personnel studying environment-and-conflict relationships should review the sources below, not only for any new insights, but also to find potential areas to a) help implementation of and compliance with existing laws; b) cooperate in drafting new convention(s) on war and environmental issues; and c) encourage dialogue on security and environmental issues between relevant segments of society.

Sources:

International Conference on Environment, Peace, and the Dialogue among Civilizations and Cultures, 9-10 May 2005, Tehran, Iran

http://www.iisd.ca/sd/sdter/

Dialogue Among Civilizations Bulletin

http://www.iisd.ca/sd/sdter/ymbvol108num1e.html

Libya Initiates International Conference on Environmental Security for Seas and Oceans

Military Implications:

Relevant military personnel should review outcomes of the July 2005 conference to determine whether new, relevant issues or opportunities were created. Military-to-military cooperation with Libya should be considered, given Libya's new international posture. Relevant military personnel should study the Tripoli Declaration on Ocean Security and contact the US Assistant

Secretary of State for Oceans and International Environmental and Scientific Affairs and the US Congressional delegation led by Congressman Curt Weldon to explore the range of possibilities for cooperation.
Sources:
Tripoli Declaration on Ocean Security (non-negotiated statement)
http://www.acops.org/Tripoli%20Declaration%20240705%20final%20final.doc
Opening of the First International Conference for the Initiative of Environmental Security of Seas and Oceans
http://en.ljbc.net/online/news_details.php?id=987

First International Research Center for "Creeping" Environmental Issues

Military Implications
The military should consider establishing liaison with this institution, and follow its work. It affords an excellent opportunity to maintain contact with research and researchers on global long-range environmental issues.
Source:
Chinese centre to study 'creeping' environment issues
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2128&language=1

North America's CEC Ministerial Statement

Military Implications:
Relevant military personnel should review the CEC Strategic Plan 2005-2010 for impacts on their programs, procedures, and potentials for cooperation in view of the Army's Strategy for the Environment and the CEC's Partnerships for Environmental Stewardship strategies.
Source:
CEC Ministerial Statement
http://www.cec.org/news/details/index.cfm?varlan=english&ID=2675

ASEAN Seeks East Asia's Cooperation on Environmental Issues

Military Implications:
Since one of the outcomes of the meeting was a determination to share experience with environmental problems and look at the use of technology to treat them, US military environmental security personnel should contact each of the parties (the 10 ASEAN countries, and the three East Asian states) and offer to share knowledge and experience in the role of military institutions in environmental security, within the framework of this regional collaboration. This action could open possibilities for useful military-to-military cooperation.
Source:
SE Asia Seeks Cooperation with China, Japan, South Korea on Environmental Protection
Associated Press, August 19, 2005
http://www.enn.com/today.html?id=8560

Forest fires for commercial land clearing should stop

http://www.fao.org/newsroom/en/news/2005/107399/index.html

Smoky Haze Chokes Southeast Asia
http://www.ens-newswire.com/ens/aug2005/2005-08-16-06.asp

Pacific Islands Forum Summit in October

Military Implications:
The Pacific Islands Forum is the association of the 16 independent island states of the Pacific, one of whose four areas of concern is sustainable development and environmental security. Its objective is "to enhance the economic and social well-being of the people of the South Pacific". Its Pacific Plan lays out how the region can improve cooperation in the four areas. In view of the large number of environmental aspects of military operations in the Pacific theater, PACOM should arrange to have observer representation at the Summit, in order to provide input to the discussions and learn of future environmental security plans.
Sources:
NZ Election Postpones Pacific Forum Until October
http://www.scoop.co.nz/stories/HL0506/S00411.htm

Pacific Islands Forum: www.forumsec.org.fj

CONFLICT AND POST-CONFLICT ENVIRONMENTAL SECURITY ISSUES

Protocol on Explosive Remnants of War Comes into Effect

Military Implications:
Although not Party to the Protocol, the US might consider collaborating with States Party to facilitate their compliance. Also, since each Party is required to ensure that “its armed forces and relevant agencies or departments issue appropriate instructions and operating procedures and that its personnel receive training consistent with the relevant provisions of this Protocol” (Art 11, Par. 1), the military should consider taking appropriate preparative actions in the eventuality of future accession to the Protocol.
Sources:
Treaty on explosive remnants of war to enter into force
http://www.icrc.org/Web/eng/siteeng0.nsf/html/treaty-weapons-news-160506!OpenDocument
Protocol on Explosive Remnants of War (Protocol V to the 1980 Convention)
http://www.icrc.org/ihl.nsf/FULL/610?OpenDocument

UN Creates Peacebuilding Commission for Post-Conflict Situations

Military Implications:
Environmental issues can be both a contributing cause and consequence of conflicts. Military personnel involved in environmental matters should liaise with those involved with the new Peacebuilding Commission to help add the environmental dimension to any conflict avoidance and/or country reconstruction plan.
Sources:

UN establishes new body to prevent countries from sliding back into war
http://www.un.org/apps/news/story.asp?NewsID=16990&Cr=reform
Secretary-General's remarks on the General Assembly endorsement of the Peacebuilding Commission— New York, 20 December 2005
http://www.un.org/apps/sg/sgstats.asp?nid=1846
The Peacebuilding Commission—Draft resolution submitted by the President of the General Assembly. A/60/L.40, 14 December 2005
http://www.un.org/News/Press/docs/2005/gaab3717.doc.htm

New Resolution on Victims' International Human Rights

Military Implications:
Although there is no specific language on the environment, several international laws recognize the status of victims as a result of harm to the environment. The Resolution would fully apply to those victims, too. The military should review the new Principles and Guidelines to ensure that its actions are consistent with evolving international human rights law and international humanitarian law.
Source:
Basic principles and guidelines on the right to a remedy and reparation for victims of gross violations of international human rights law and serious violations of international humanitarian law. Human Rights Resolution 2005/35
http://ap.ohchr.org/documents/E/CHR/resolutions/E-CN_4-RES-2005-35.doc

Sunk Weapons Represent a Growing Health and Environmental Hazard

Military Implications:
It is likely that increasing worldwide public environmental concern and activism may lead to new proposals for cleanup and/or monitoring measures. The military should cooperate with the international community in assessing the danger that the dumpsites pose today; and, since the risks increase over time, it should monitor the known chemical dumpsites and identify those that are yet unknown in order to disseminate warnings and organize safeguarding or cleanup actions.
Sources:
Decades of Dumping Chemical Arms Leave A Risky Legacy
Special Report, Part 1: The Deadliness Below
http://www.dailypress.com/news/dp-02761sy0oct30,0,2199000.story
U.S. not legally bound to reveal dump sites
Contributed by: arch_Stanton, Infoshop News, October 31 2005
http://www.infoshop.org/inews/article.php?story=20051031111213143 (article stored for a limited time on the website)

Discussions over World War II Japanese Warfare Program in China not Settled Yet

Military Implications:
[Same as in previous reports on similar issues] This is one more event that builds the case for an agreement for universal and ethical treatment of health damages induced by the use of chemical, biological or radiological weapons. The military should consider collaboration with diplomatic

personnel on drafting provisions in anticipation of such an agreement, and continue developing antidotes for such weapons.
Sources:
China urges Japan to accelerate process of destroying abandoned chemical weapons (Xinhua)
http://english.people.com.cn/200506/28/eng20050628_192893.html

China Wants Japan to Respond to Germ Warfare Victims
http://www.nti.org/d_newswire/issues/2005_7_20.html#A28FCD5A

Gulf Environmental Group Planned

Military Implications
Military personnel with environmental rehabilitation experience and responsibilities (in addition to those who might already be involved in the establishment of this advisory group) should be notified of this development so they can offer their experience.
Sources:
Kuwait to host talks on clean-up
http://www.tradearabia.com/tanews/newsdetails_snENV_article97493.html

Kuwait to host talks on Gulf environment clean-up
Reuters, 06 Dec 2005
http://www.alertnet.org/thenews/newsdesk/L0660604.htm

Conclusions on Health and Environmental Impact of 1990-1991 Gulf War

Military Implications:
The Iraqi example is a basis and sets a precedent for compensation for the environmental and public health consequences of conflict between nations. As controversy over the compensations continues, pressure could mount for new international regulations that would create a clear framework for assessment, consequences, and compensations/liabilities for the responsible countries.
Sources:
Public health impact of 1990 Iraq invasion of Kuwait
http://www.medicalnewstoday.com/medicalnews.php?newsid=26891
A summary of the report and list of contributing scientists is available at:
http://www.hsph.harvard.edu/press/releases/kuwait/kuwait.doc
UN Denial of Billions in Gulf War Health Compensation Denounced
http://www.ens-newswire.com/ens/jul2005/2005-07-25-01.asp
Governing Council Of United Nations Compensation Commission Has Concluded Its Fifty-Sixth Session
http://www2.unog.ch/uncc/pressrel/pr_56c.pdf

Iraqi Chemical Attack Victims Seek Compensation from Supplying Companies

Military Implications:

Although there is no international legislation addressing liability and redress issues related to human health and environmental damage in intra-state post-conflict situations, one would expect that all countries and companies responsible would have moral obligations, and common international customary law should demand action for cleanup and protection of humans and environment against the imminent hazards that this kind of attack represent. Since incidents such as Halabja are not isolated and access to information is increasing, it is likely that, under civil society pressure, adequate international regulations will be adopted.
Source:
Halabja wants Saddam's chemical suppliers to pay
http://www.kurdmedia.com/articles.asp?id=12383

Study by Sandia on Depleted Uranium (DU)

Military Implications:
This study, along with the others on the same line could be considered for updating the AEPI report on DU, one of the most widely cited US military sources on DU.
Sources:
An Analysis of Uranium. Dispersal and Health Effects. Using a Gulf War Case Study
By Albert C. Marshall, Sandia National Laboratories
http://www.sandia.gov/news-center/news-releases/2005/all/snl-dusand.pdf
Sandia completes depleted uranium study—Press Release
http://www.sandia.gov/news-center/news-releases/2005/all/depleted-uranium.html

Iraq's Marshes Recovering

Military Implications:
[Same as in September 2004 report] Although troop limitations preclude direct involvement in the environmental clean-up process, the coalition military forces could provide security to civilian scientists to ensure that research and cleaning efforts are systematic and successful. Some military and their related civilian environmental personnel could eventually be asked to contribute expertise.
Sources:
UNEP Press Release. Iraqi Marshlands: On the road to recovery
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=449&ArticleID=4902&l=en
Japan scrubs Iraq marshland donor conference amid constitution negotiations
http://www.signonsandiego.com/news/world/20050825-0205-iraq-marshlanddonors.html

NATIONAL INITIATIVES AFFECTING MILITARY ACTIVITIES

New Norwegian Emergency Force Set Up

Military Implications:
If not already in planning or implementation, military personnel with environmental catastrophe missions and experience should consider cooperation with the Norwegian special force.
Source:

New Norwegian emergency force set up
http://norwaypost.imaker.no/cgi-bin/norwaypost/imaker?id=21411

China's President Hu Ordered Environmental Regulations for Military Activities

Military Implications:
Military liaisons in China and personnel with experience in the environmental impact of military activities should confer to identify opportunities for sharing and learning best practices for lowering military impact on the environment.
Source:
China moves to curb military pollution
http://news3.xinhuanet.com/english/2006-03/18/content_4314926.htm (Article stored for a limited time)

Chinese Research Priorities for the Next Fifteen Years

Military implications:
Considering that China is emerging as an important player in new technologies, the international community should keep track of their R&D status for potential environmental and health implications as well to seek synergies among other national research programs to improve environmental security.
Sources:
Chinese Academy of Sciences gets first constitution
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2735&language=1
CAS publishes its blueprint for development
http://english.cas.cn/eng2003/news/detailnewsb.asp?InfoNo=25962
East Asian Strategic Review 2006 Executive Summary
http://www.nids.go.jp/english/dissemination/east-asian/pdf/east-asian_e2006s.pdf

UK Defense Ministry released its first Sustainable Development Report

Military Implications:
Relevant military personnel should study the report for possible insights to improve US environmental strategy. Section 7.1: Sustainable Development and Environmental Management in Defense and 7.2: Environmental Protection in Defense could be of particular importance.
Source:
Ministry of Defense Sustainable Development Report October 2003 – October 2004
http://www.mod.uk/linked_files/dsc/env/mod_sd_report_03_04.pdf

Indian Military Upgrades its Counter-WMD Strategies

Military Implications:
The military should explore the possibility of evaluating India's counter-WMD procedures to see if more environmentally friendly options are available.
Sources:

Indian military ready to fight all out nuclear, chemical and biological warfare
http://www.indiadaily.com/editorial/8048.asp

Indian military kicks off nuclear warfare conference
http://news.yahoo.com/s/afp/20060417/wl_sthasia_afp/indiamilitarynuclear_060417114817

Plan to deal with germ warfare by terrorists
http://www.newindpress.com/NewsItems.asp?ID=IEH20060427131917&Page=H&Title=Top+Stories&Topic=0

NATIONAL INTERESTS AND SOVEREIGNTY MIGHT BE CONFLICTING WITH ENVIRONMENTAL SECURITY AGENDA

Conviction in Transborder Electromagnetic Pollution Case

Military Implications:
This is an interesting legal precedent that might impact any radio transmission that might be considered harmful, including military, disregarding sovereignty. Military legal experts should follow this case for its precedent setting potential beyond Italian borders, given a long history of US and European plaintiffs claiming brain tumors and leukemia from radio frequency and transmission line emissions.
Source:
Cardinal Convicted in Environmental Case
By Frances D'emilio, May 9, 2005 6:01 PM
http://www.guardian.co.uk/worldlatest/story/0,1280,-4993374,00.html

TECHNOLOGICAL BREAKTHROUGHS WITH ENVIRONMENTAL SECURITY IMPLICATIONS

Computer Technology And Robotics

Enviromatics could contribute to Environmental Security

Military Implications:
With the rising role of the military in environmental protection and conflict prevention due to environmental degradation and calamities, the military should conduct a feasibility study of implementing enviromatics in regions where critical environmental conditions might cause, for example, famine triggering conflict and/or mass-migration. Collaborating with international and local agricultural and environmental organizations, the military could contribute to timely implementation of enviromatics and building of early-warning systems.
Source:
Enviromatics. Computer forecasts enhance farm production and species diversity
http://www.technologyreview.com/articles/05/05/issue/feature_emerging.asp?p=8

Computer Simulation Planned to Predict Where Epidemics Will Strike Next

Military Implications:
Such a simulator showing outbreaks and how they might spread around the world would be a great help in the struggle to contain pandemics. The military should consider options for

collaboration with the WHO team. Perhaps, the technique could be adapted to management of diseases of plant and animal natural resources on military installations.
Source:
Simulator could predict where epidemics will strike next
From issue 2545 of New Scientist magazine, 30 March 2006, page 27
http://www.newscientisttech.com/article/mg19025456.000.html

Small Robotic Helicopters for Reconnaissance

Military Implications:
Equipped with sensitive environmental sensors, these miniature robot helicopters might be considered for military use such as battlefield surveillance and environmental scanning.
Sources:
USF mini-helicopters go "Back to Katrina"
http://usfnews.usf.edu/page.cfm?link=article&aid=1111

Robotics Researchers Return to Examine Katrina Devastation With Small Unmanned Helicopters
http://www.nsf.gov/news/news_summ.jsp?cntn_id=105603

Isensys website http://www.isensys.com

Nets of Agents Probe the Environment

Military Implications
[Same as for previous Robot Swarms issues] Possible military uses of robot swarms are numerous. Human safety and health can be preserved by using robotics for hazardous missions such as site characterization, decontamination, and explosive ordnance disposal; or—as in this case—for data collection in austere environments. Environmental damage can be minimized by using robots for quick remediation actions, for environmental monitoring, and for mapping of sensitive terrain. With continuing improvements in human health protection requirements, both domestically and overseas, the use of robots in hazardous environments is a logical application of the technology. In addition, because the programming of robots can be easily limited and verified, environmental treaty monitoring that is stymied by distrust of human monitors may actually be improved by allowing the use of robots in nations that fear corollary human espionage.
Source:
Couple Receive Grant to Develop Robots
http://www.forbes.com/business/healthcare/feeds/ap/2005/05/16/ap2032031.html

Progress on Self-replicating Robots

Military Implications:
Besides the practical applications of having “everlasting soldiers” with numbers adaptable to demand and able to act in austere conditions (either for combat or after-combat cleanup), there are moral and legal implications of self-replicating robots. Although there is no international law yet that would bind robots’ self-replication, it is likely that as these technologies get closer to

implementation, regulations will be needed. The military should look into all the ethical aspects of eventual use of such technologies and be active in designing international regulations for their use. Also, as for anything that could become a weapon against human interests, self-replicating robots should be designed with fail-safe human-controlled on-off switches.
Source:
Stuff of sci-fi nightmares? An army of robots that reproduce
By Steve Connor, Science Editor, 12 May 2005
http://news.independent.co.uk/world/science_technology/story.jsp?story=637672 (by subscription only)
Robotics: Self-reproducing machines
Nature 435, 163-164 (12 May 2005) Brief Communication
http://www.nature.com/nature/journal/v435/n7039/abs/435163a.html (by subscription only)
Robots master reproduction
Andreas von Bubnoff
http://www.nature.com/news/2005/050509/full/050509-6.html

New Detection and Cleanup Techniques

High Sensitivity Portable Chemical Detection Device

Military Implications:
If the military has not already explored the applications of this technology for biological and chemical weapons detection and post-conflict environments, relevant personnel should do so.
Source:
Fast, accurate detection of explosives on airport luggage possible
http://news.uns.purdue.edu/UNS/html4ever/2005/050930.Cooks.explosives.html

Piggybacking Environmental Sensors on Communications Gear

Military Implications:
The use of environmental sensors in communication devices could considerably enhance environmental monitoring for improved environmental security and law enforcement, as well as operational environment monitoring. Military applications could range from easier integration of environmental data (e.g. the presence of CBW) into the structure of network-centric warfare, to enhanced environmental monitoring during and after conflict (no need for separate environmental-sensing units, as the sensors could be part of regular communications devices.)
Source:
Saving the World with Cell Phones
By Rachel Metz, Wired.com, August 11, 2005
http://www.wired.com/news/wireless/0,1382,68485,00.html

Very Low Cost Chemical Sensors for Environmental Monitoring

Electrical engineering Prof. Vivek Subramanian at the University of California, Berkeley, has
Military Implications

If not already in process, relevant military personnel should consider this technology (or its variations) for use in environmental toxicity monitoring, post conflict cleanup operations, and for treaty monitoring applications.
Source:
Cheap Chemical Sensors. Electronic "noses" made from printed electronics could detect toxic chemicals inexpensively
By Kevin Bullis, MIT Technology Review, December 1, 2005
http://technologyreview.com/NanoTech-Devices/wtr_15947,303,p1.html

Nano-engineered Powders Tackle Toxic Chemicals

Military Implications:
Although FAST-ACT is already in testing by the DOD, other relevant military personnel should receive a heads-ups about its potential, and if proven efficient, for planning international distribution and training requirements.
Source:
Nano-engineered Powders Tackle Toxic Chemicals
http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=104102

Nanobarcodes for Multiple Pathogen Detection

Military Implications
This technique, along with others presented in previous environmental security reports, might be considered for fast pathogens detection systems useful to the military from identification of eventual biological warfare to post-conflict surveying and cleanup. Also, systems based on such techniques could be valuable for surveillance and enforcement of eventual biological treaty violations.
Source
Multiplexed detection of pathogen DNA with DNA-based fluorescence nanobarcodes
Yougen Li, Yen Thi Hong Cu & Dan Luo. Department of Biological and Environmental Engineering, Cornell University, Ithaca, New York 14853-5701, USA
http://www.nature.com/nbt/journal/v23/n7/abs/nbt1106.html

Bacteria Used to Eliminate Perchlorate from Water

Military Implications:
[Same as for previous items on the same issue] Contamination with various types of perchlorates is one of the important issues of concern in many areas of the world. The new technology can be used for cleanup of the old contaminated areas and can be prepared in advance for rapid cleanup in case of eventual anticipated, unavoidable contamination.
Source:
Spaghetti filters cleanse water supplies. Chemists package bacteria to eliminate perchlorate.
By Andreas von Bubnoff. news@nature.com, 1 September 2005
http://www.nature.com/news/2005/050829/full/050829-16.html (by subscription only; see alternative at: http://www.bioedonline.org/news/news.cfm?art=1994)

New Oil Remediation and Recovery Technique

Military Implications:
Relevant military personnel should follow the development of this new technology, and consider its eventual use in cleanup of both non-conflict and battlefield oil pollution.
Source:
Nanotechnology for Recovery and Reuse of Spilled Oil
http://www.physorg.com/news6358.html

New Efficient Energy-free Technique for Oil Removal from Water

Military Implications:
The military should investigate the use of this system (being promoted by New South Innovations, the commercial arm of the University) in situations where episodic oil discharges can contaminate water sources.
Source:
New approach to oil-water separation
http://www.engineeringtalk.com/news/uns/uns100.html

Sunlight-powered System for Cleaning Water and Produce Electricity

Military Implications:
[Same as for the April item] The Army should encourage feasibility studies for practical usage and scalability for implementation of these ecologically friendly technologies due to their potential for aiding improved mobility and energy efficiency.
Source:
Harnessing the power of the sun to clean water
Frank Urquhart, The Scotsman: http://business.scotsman.com/index.cfm?id=457072005

DNA-Wrapped Nanotube Sensors

Military Implications:
This process should be added to others being studied by the military for use in early warning of biological attacks. Its safe use in humans and other animals should also be assessed.
Source:
Optical Detection of DNA Conformational Polymorphism on Single-Walled Carbon Nanotubes
http://www.sciencemag.org/cgi/content/abstract/311/5760/508

Sugar-Coated Gold Nanoparticles Detect Toxins

Military Implications
Such a portable device might prove to be efficient for environmental surveillance and toxins detection. The military should consider following the development of the technique for eventual tailoring for specific uses.
Source:
Gold nanoparticles to trap toxins
http://news.bbc.co.uk/2/hi/technology/4872188.stm

Fast Bacteria Detection from Bacteriophage/Quantum Dot Complexes

Military Implications

The military should consider following this research and investigating its applicability to systems for detecting eventual traces of environmental contaminants and biological weapons.

Source:

Quantum Dot Method Rapidly Identifies Bacteria
http://www.physorg.com/news62951476.html

Anti-anthrax Protein Found

Military Implications:

This discovery could be developed for environmental cleanup systems after a biological attack. The military should follow and encourage its evolution for speedy applicability.

Sources:

Newly Discovered Protein Kills Anthrax Bacteria
http://www.emaxhealth.com/39/5607.html

Protein Found That Explodes Anthrax Bacteria on Contact
http://www.ens-newswire.com/ens/apr2006/2006-04-21-03.asp

New Microcantilever for Biochemical Detection

Military Implications:

This application might be useful for future environment surveillance systems in conflict situations due to its biochemical high sensitivity and connectability to multiplexed and remotely addressable, networked systems. The military should follow this development for its possible future field applications.

Source:

Transistor-Cantilever Combo Detects Biomolecules with High Sensitivity
http://nano.cancer.gov/news_center/nanotech_news_2006-02-27b.asp

Chopped-up DNA Strands Speed Bacterial Identification

Military Implications:

The military should follow the course of this research and investigate its application in new field-oriented environmental data acquisition systems.

Source:

New Technique Rapidly Detects Harmful Bacteria
http://www.nationalacademies.org/headlines/20060313.html

New Spectroscopy Technique with Superior Results

Military Implications:

The military should follow the further development of this technique, which promises even higher sensitivity, and should investigate it for field environmental surveillance applications.

Source:

New JILA Technique Using Infrared Laser Light to Identify Trace Levels of Different Molecules
http://www.azonano.com/news.asp?newsID=1999

New On-the-spot Test for Avian Flu and Other Influenza Strains

Military Implications:

This new technology has tremendous applications in case of a pandemic or biological attack and has the potential to provide better global influenza surveillance by easy and fast identification of strains. Also, as strains tend to mutate, this technology could help faster identification of any changes. If not already being done, relevant military personnel should consider cooperation with the researchers to speed up the implementability of this new technology.

Source:

New "chip" could provide quick bird flu test
http://go.reuters.com/newsArticle.jhtml?type=technologyNews&storyID=10190863&src=rss/technologyNews (article available for a limited time on the website)

Chinese Find 16 Native Toxin-absorbing Plants

Military Implications:

Along with other similar plant-based cleanup techniques, the plants identified and eventually adapted by the Chinese should be considered—in the regions where applicable—as cost-effective and eventually cleaner soil pollutant removal techniques.

Source:

China's five-year hunt for toxin-absorbing plants ends
http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierReadItem&type=1&itemid=2485&language=1&dossier=11&CFID=5187246&CFTOKEN=73c840a863493c12-427E991D-B0D0-F03F-734651F39BDA904D

Possible Cure for Bird Flu

Military Implications

If not already done, the military should soon evaluate the efficacy claims for hypercine in treating H5N1 and/or determine the impacts the Chinese research has for carrying out mass treatments.

Source:

Plant extract 'protects chickens from bird flu'
http://www.scidev.net/content/news/eng/plant-extract-protects-chickens-from-bird-flu.cfm

Genetically Engineered Vegetables as Vaccination System to Counter Bioterrorism

Military Implications:

US-Italian cooperation to combat infectious disease began in April 2003. If not already included in these activities, relevant military personnel should consider full collaboration on this novel counter to bioterrorism.

Source:

G-7 and WHO Meet to Discuss WMD, Avian Flu Threats
http://www.nti.org/d_newswire/issues/2005_11_18.html#D55B4003

Laser-tracked Honeybees Detect Landmines

Military Implications:
The military should evaluate this technique for a variety of minefields cleanup situations.
Source:
Lasers, landmines and honeybees
Ed Gerstner, Nature Physics On-line, 4 Aug 2005
http://www.nature.com/nphys/journal/vaop/nprelaunch/full/nphys103.html

Promissing Environmental-friendly Technologies

Sandia researchers develop unique 'surfactant' material

Military Implications:
This new class of materials might be an environmentally friendly, biodegradable alternative for military equipment and cleaning agents to reduce the military footprint on the environment.
Source:
Sandia researchers develop unique 'surfactant' material
http://www.sandia.gov/news-center/news-releases/2005/all/cleavable-surfactant.html

Sanitizing Fabrics for Environmental Workers

Military Implications:
The military should continue to follow this development and, as appropriate, plan for the use of these materials in operational situations.
Source:
New Nano-Fabrics to Safeguard Agricultural, Medical, and Military Workers
http://www.nanotechbuzz.com/50226711/new_nanofabrics_to_safeguard_agricultural_medical_and_military_workers.php

New Technique to Convert Liquids to Semi-solids and Back Again

Military Implications
This research is still at an early stage, but, if generally applicable, may reduce environmental impacts through safer handling of toxic chemicals – solids are much more tractable in that regard than liquids. The military should closely follow this line of development, and encourage investigation of its use with substances of military interest.
Source
Blast of sound turns liquid to jelly
NewScientist.com news service, Celeste Biever, 25 June 2005
http://www.newscientist.com/article.ns?id=mg18625055.800

New Antibacterial and Antitoxin Textiles

Military Implication
These new textiles could considerably increase protection against biological and chemical agents. Since the protection is permanent and the technologies are more environmentally friendly

and lighter weight than conventional alternatives, appropriate military personnel should evaluate the potential applications. Likewise, these materials might offer significant soldier health protection benefits in unhygienic environments.
Sources:
Scientists to Develop Textiles with Permanent Antibacterial Properties
http://www.physorg.com/news4631.html

Nanotech Researchers Develop High-Tech 'Smart Textile'
http://www.physorg.com/news4246.html

New Environmental-friendly Lighting Based on Gallium Nitride

Military Implications:
The army should investigate the effectiveness of any new energy-efficient systems, and if proven beneficial, speed up their production and introduction into general use, as part of the Army's energy-saving strategy.
Source:
UK Scientist's Bright Idea to Fight Global Warming
PlanetArk, Story by Patricia Reaney, 2/5/2005
http://www.planetark.com/dailynewsstory.cfm/newsid/30647/story.htm

Sandia Advancing Research on Batteries' Life and Safety

Military Implications:
The military should follow these researches and, considering their importance in the effort to reduce emissions, try to find ways to help accelerate their development and implementation with due regard for health and environmental safety considerations.
Sources:
Sandia researchers seek ways to make lithium-ion batteries work longer, safer
http://www.sandia.gov/news-center/news-releases/2006/all/battery2.html
Sandia researchers collaborate to understand phenomena controlling PEM fuel cell performance, durability
http://www.sandia.gov/news-center/news-releases/2006/all/fuelcell.html

Genetically Engineered Virus May Improve Future Batteries

Military Implications
The military should keep in touch with this research in order to be ready to apply it to smaller and cheaper power sources for field environmental monitoring devices.
Source:
Virus-Assembled Batteries
http://www.technologyreview.com/BizTech/wtr_16673,296,p1.html

Urine-powered Battery

Military Implications:

Considering its advantages in size, weight, and convenience, the military should follow this development as it becomes suitable for commercialization, and consider applying it to environmental and health-sensing devices designed for individual use.
Source:
Scientists develop pee-powered battery
By Bjorn Carey, LiveScience, Aug. 16, 2005
http://msnbc.msn.com/id/8973626/

New Promises for Flexible Solar Cells

Military Implications:
[Same as previous on similar issues] Military applications of such a new technology are diverse, ranging from a 'portable recharger' to devices that 'see' in the dark, to new renewable energy sources. The military should contact the research team and/or follow the developments of this discovery for eventual adaptation and introduction of it in the design of new equipment.
Source:
Nanotechnology Center Makes Flexible Solar Cell Breakthrough
http://www.ecnasiamag.com/article.asp?id=5462

Possibilities to Considerably Increase Solar Cells Efficiency

Military Implications:
The military should follow the DOE research for more energy-efficient and environmentally friendly systems.
Source:
Solar power - seriously souped up
http://www.newscientist.com/article/mg19025531.600;jsessionid=LDLFFIFHFLJB (by subscription only)

New Nanotechnology Batteries with Long Shelf Life

Military Implications:
The military should investigate the use of these devices as power sources for pre-positioned environmental surveillance systems that need to be activated on demand. Safety, health and environmental characteristics will need to be explored and compared with current and other developing technologies.
Source:
Long Life Battery
http://www.sciencentral.com/articles/view.php3?article_id=218392734

Tiny Batteries Offer Several Promises

Military Implications:
The military should monitor the development of this technology and evaluate potential applications from the proposed autonomous networked nanosurveyors for post-conflict cleanup to miniaturized environmental sensing devices. Final disposal will need to be addressed, though, since this is a general nano-technology issue that is still in question.
Source:

Putting power into battery research
http://smalltimes.com/document_display.cfm?document_id=9942

Promising Research for Emission-Free Car that Makes Its Own Fuel

Military Implications:
This seems to be another system (along with others recently presented) that might be solving the obstacles still associated with the manufacturing, transporting, and storing of hydrogen to be used in cars. The military should consider following and encouraging the development of such technologies for advancing the introduction of emission-free cars and reduction of oil dependency. However, this technology does not address the ultimate source of energy needed to produce the reduced metals or to reprocess the oxides.
Source:
The Car That Makes Its Own Fuel
http://www.isracast.com/tech_news/231005_tech.htm

Infrared Radiation for Deicing Aircrafts Cuts Pollution

Military Implications.
If not already aware of this new technology, relevant military aviation personnel should investigate the use of this technique.
Source:
Pollution-Cutting Infrared System for De-Icing Aircraft Tested at Oslo Airport
http://www.enn.com/today.html?id=9124

Hydrogen Tablets

Military Implications:
The military should consider the new technology to further the completion of environmentally friendly vehicles, assuming that the hydrogen is generated via an environmentally friendly energy processes.
Source:
University of Denmark Scientists Develop Hydrogen Tablet
http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,6487,00.html

Inorganic Fullerene-like Materials May Lower Hazards

Military Implications:
The military might consider monitoring the development of these materials and their possible use in some applications as a more environmentally friendly substitute for conventional fullerenes.
Sources:
Nano-Armor: Protecting The Soldiers Of Tomorrow
http://www.isracast.com/tech_news/091205_tech.htm

Nano this, Nano that, what the...
http://www.physorg.com/news10452.html

Hydrogen Farming as a Possible Alternative to Petroleum

Military Implications:

Since hydrogen could replace oil as an energy medium for transportation, its safe, economical, and local production should be considered a national security priority. In cooperation with DOE, the military should verify the feasibility of this approach to hydrogen production. Energy companies may be skeptical about investing in this approach to hydrogen farming due to the sophisticated genetic manipulation needed to make it a commercial success, hence the need for government leadership.

Source:

Growing hydrogen for the cars of tomorrow
By Peter Aldhous, *New Scientist*, 25 February 2006
http://www.newscientist.com/channel/mech-tech/mg18925401.600;jsessionid=IAACLHIKFBBN
(by subscription only)

Biodiesel Increasingly Considered a Viable Alternative to Crude Oil

Military Implications:

Developments of this scale in the energy industry may affect some states' foreign policies and reliance on oil, foster sustainable economic development of some developing countries, and change some geopolitical interest points, thus directly affecting the military role in protecting energy interests.

Sources:

Rapeseed and palm oil in biofuel race. *The National* Papua New Guinea
http://www.thenational.com.pg/022706/column6.htm
Traders upbeat on palm oil's performance. *Business Time*, Malaysia
http://www.btimes.com.my/Current_News/BT/Saturday/Nation/BT553096.txt/Article/
Govt Pushes for Biodiesel
http://www.solomonstarnews.com/drupal-4.4.1/?q=node/view/6966 (website might work randomly)
Coconut Oil as a Biofuel
http://www.solomonstarnews.com/drupal-4.4.1/?q=node/view/7019 (website might work randomly)

New Techniques May Help Solve Wind farm/Radar Problem (update)

Military Implications

Relevant military personnel should stay in touch with these developments, and monitor their geographic areas of responsibility for wind energy plans, so that they can adapt military radar algorithms and to serve as information sources and mediating elements when environment-friendly energy projects and military requirements may conflict.

Sources:

BAE Uses Fuzzy Logic to Make Wind Farms Vanish
http://www.enn.com/biz.html?id=757

A turn for the better. Wind turbines are ugly and no one wants to live near one. Right? Wrong.
By Steve Rose, Guardian, Monday July 18, 2005

http://www.guardian.co.uk/print/0,3858,5241315-103605,00.html

New Opportunities for Old Engine Idea

Military Implications:
If not already explored, the military should investigate this development for its possible application to reducing the environmental footprint of military facilities and also allowing those facilities to be independent of possibly unreliable local power grids.
Sources:
5 A Sterling Solution
http://www.msnbc.msn.com/id/10020271/site/newsweek/page/5/
Manufacturer's site: www.stmpower.com

Space Technology

Space Technology to Help Enforce Environmental Regulations

Military Implications:
[Similar to previous on related issues] By improving climate change monitoring, the new satellite capabilities and projects could also increase GEOSS's (Global Earth Observing System of Systems) potential to help enforce international treaties worldwide, calling for more attention to compliance with the international legal requirements. These improvements could also enhance international assessments of human conflict environmental impacts.
Sources:
ESA participating in UN's Montreal summit working for a better atmosphere
http://www.esa.int/esaEO/SEML8FULWFE_environment_0.html
Satellites support Kyoto Protocol through forest mapping service
http://www.esa.int/esaEO/SEMV5V638FE_environment_0.html
Space service for wetlands protection on show at Ramsar COP
http://www.esa.int/esaEO/SEMNUTJBWFE_environment_0.html
Implementing European Space Policy: Key ESA/EC agreement on Earth Observation data signed today
http://www.esa.int/esaEO/SEMOGW538FE_index_0.html
Earth from Space: Contrails over the United States
http://www.esa.int/esaEO/SEM8GGULWFE_index_0.html

Satellite Technology Use for Environmental-related Issues Expands

Military Implications:
Developing an integrated environmental monitoring capability to provide informed data to the public, and policy- and decision-makers, would considerably improve the assessment of potential environmental impacts of different actions, enforce international treaties worldwide, and could help mitigate environmental and social consequences induced by conflict or natural disasters. The military should consider full cooperation in all the phases—from development to implementation and use of such a space-based observation system.
Sources:

Integration Of New EU Member Countries Into GMES Programme Commences
http://www.spacedaily.com/news/disaster-management-05zzzzzm.html
Providing GMES services at the ends of the Earth – interview with Dr Charles Randell
http://www.esa.int/esaCP/SEMGHVVLWFE_index_0.html
ESA Council meeting at ministerial level
http://www.esa.int/esaCP/SEMTNPULWFE_index_0.html
Montreal outcomes: forest focus could enhance role of space in combating climate change
http://www.esa.int/esaEO/SEMZC68A9HE_environment_0.html

Space Technology for Improving Planetary Knowledge and Security

Military Implications:
[Same as previous on similar issues] Developing an integrating environmental monitoring capability to provide informed data to the public, and policy- and decision-makers, would considerably improve the assessment of potential environmental impacts of different actions, facilitate enforcement of international treaties worldwide, and could help mitigate environmental and social consequences induced by conflict or natural disasters. The military should consider full cooperation in all the phases—from development to implementation and use of space-based observation systems.
Sources:
European Geosciences Union—Media
http://www.egu-media.net/content/category/3/39/49/
Geoinformation from space sharpens population density maps
http://www.esa.int/esaEO/SEMZWFOFGLE_economy_0.html
Massive German floods monitored from space
http://www.esa.int/esaEO/SEMRPVNFGLE_environment_0.html
NASA launches climate satellites
http://today.reuters.com/news/articlenews.aspx?type=topNews&storyid=2006-04-28T110208Z_01_B193600_RTRUKOC_0_US-SPACE-SATELLITES.xml

International Atomic Energy Agency (IAEA) Inspectors Use Satellite Feeds to Track Sensitive Nuclear Materials

Military Implication
Military liaisons with IAEA should seek and offer military expertise where possible to help this global monitoring system enforce uniform global safety standards at nuclear facilities and nuclear material handling sites. [See *Safeguarding radioactive materials is inadequate* in May 2003 environmental security monthly report.]
Source:
IAEA Inspectors Use Satellite Feeds To Track Sensitive Nuclear Materials
http://www.iaea.org/NewsCenter/News/2005/satellitefeeds.html

Improved Satellite Climate Change Monitoring

Military Implications:
In addition to improved climate change monitoring, the new satellite capability could also increase GEOSS potential to help enforcement of international treaties worldwide, calling for

more attention to compliance with the international legal requirements. These improvements could also enhance international assessments of human conflict environmental impacts.
Source:
New probe may silence climate skeptics
NewScientist.com news service, Duncan Graham-Rowe, 01 June 2005
http://www.newscientist.com/article.ns?id=mg18625023.600

India to Set Up Military Surveillance and Reconnaissance System by 2007

Military Implications:
Although the satellite-based surveillance system is originally dedicated exclusively to military-related matters, India might consider extending its use to environment-related issues. Relevant military personnel and satellite specialists might consider eventually assisting India with extending the use of the system to cover a larger range of applications.
Sources:
India installs Satellite surveillance system
http://news.indiainfo.com/2005/08/04/0408satellite-surveillance.html

India To Set Up Military SBS System By 2007
http://www.spacewar.com/news/india-05zq.html

Technologies that Could Trigger New Forms of Arms Race

B. Preventing or Responding to Environmentally Caused Conflicts

CONFLICT PREVENTIVE ACTIONS

UNU Calls for International Framework for Environmental Refugees

Military Implications
In view of the forecast that environmental disasters and degradation will continue in many regions of the planet, it is likely that the international community will revise its toolbox of conventions to address environmental refugees accordingly. It is important that the military community participates in the design of an eventual international framework concerning this group of people; continuously reviews the possible causes of refugee flows; and cooperates with civilian agencies in preparing contingency plans for those circumstances when their assistance is needed.
Sources:
As Ranks of "Environmental Refugees" Swell Worldwide, Calls Grow for Better Definition, Recognition, Support (UNU Press release)
http://www.unu.edu/hq/rector_office/press2005/mre29-05.doc
U.N. University takes on environmental challenges
By HANS VAN GINKEL. Special to The Japan Timeshttp://www.japantimes.co.jp/cgi-bin/getarticle.pl5?eo20051019a1.htm

50m environmental refugees by end of decade, UN warns
David Adam, environment correspondent. The Guardian, October 12, 2005
http://www.guardian.co.uk/naturaldisasters/story/0,7369,1589899,00.html

African Security and Environmental Matters Should Be Addressed Together

Military Implication:
Those responsible for military-to-military activities in Africa should explore ways to integrate their activities with poverty and environmental programs. This is another opportunity to show how international military cooperation could prevent or reduce conflict exacerbated by environmental deterioration.
Sources:
Report of the AU Ministerial Conference on Disaster Risk Reduction
http://www.africa-union.org/root/au/Conferences/Past/2006/May/infrastructure/22-May/EX.CL.%20228%20(VIII)%20-%20Disaster%20Risk%20Reduction.1.doc
11th Regular Session of the African Ministerial Conference on the Environment in Brazzaville, Congo on 24 May 2006
http://www.africa-union.org/root/au/Conferences/Past/2006/May/infrastructure/22-May/welcome-en.htm
Conflict and Cooperation in Eastern Africa: Making the Case for Environmental Pathways to Peacebuilding (VIDEO)
http://wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=181986
Cattle Disease, Ethnic Tension Strain Uganda Border Region
http://www.ens-newswire.com/ens/may2006/2006-05-11-03.asp
Their animals are dead. These people are next
http://observer.guardian.co.uk/world/story/0,,1784611,00.html

Environmental Change and Security Program 11th Report

Military Implications:
Along with other similar reports, this edition of the Environmental Change and Security Program report is a source for those who need a better understanding of the complex interdependence among environment, population dynamics, and conflict, and its different regional aspects.
Source:
Environmental Change and Security Program Report
http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.publications&group_id=173708

Void in High Seas and Coastal Governance

Military Implications:
It is reasonable to assume that an international body will be established to coordinate the collection and assessment of data on oceans, coasts, and islands, as well as monitoring policy and regulations implementation and compliance. Military logistics and information resources could be helpful to any such future international body. The conference called for a broad coalition to further the ocean, coastal and small island agenda. After reviewing the papers and agreements

available from the website below, the military might seek liaison with the sponsoring organizations to participate in future policy discussions and keep abreast of potential military implications of proposed regulations.
Sources:
Third Global Conference on Oceans, Coasts, and Islands Moving the Global Oceans Agenda Forward
http://www.globaloceans.org/paris3/

UNESCO conference eyes planet's threatened oceans and coastal communities
http://www.un.org/apps/news/story.asp?NewsID=17341&Cr=ocean&Cr1=coast

3rd Global Conference on Oceans, Coasts and Islands Bulletin
http://www.iisd.ca/ymb/globaloceans3/ymbvol68num3e.html

Rising Concerns over Rising Seas

Military implications:
[Similar to previous on the same issue] The prospect of rising sea levels, changes in sea salinity, and floods, with consequently expected large-scale relocation of individuals, is likely to trigger new international environmental security policies and cooperation to avoid potentially large scale disasters and conflicts.
Sources:
Studies back fears sea levels are rising rapidly
http://www.theaustralian.news.com.au/common/story_page/0,5744,18002634%5E30417,00.html

Greenland's less-icy mountains. *The Economist* print edition, Feb 16th 2006
http://www.economist.com/displaystory.cfm?story_id=5518916 (by subscription only)

Scientists Warn of Melting Ice in Arctic. *Anchorage*, Alaska, Feb. 7, 2006
http://www.cbsnews.com/stories/2006/02/07/ap/tech/mainD8FK1HMO0.shtml

Full to bursting. *The Economist* print edition, Feb 16th 2006
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=5518909&subjectid=348924 (by subscription only)

'Extreme high tides expected to hit Tuvalu'. *Solomon Star*, Monday 13th February 2006 (no online link)

Arctic Northern Passage Opens New International Issues of Regulation

Military Implications:
It is likely that discussions for clear international regulations concerning Northern Passage navigation will increase rapidly and more military action will be called for to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in the other countries and international organizations in developing adequate national and international regulations and enforcement procedures regarding the Arctic Northern Passage navigation, as well as planning to defend U.S. interests against intrusion in this "new frontier" by other nations.
Sources:
As the Arctic ice retreats, the old Great Game begins to boil over. Ben Macintyre, Norway
http://www.timesonline.co.uk/article/0,,13509-2034643,00.html

Forces plan Arctic 'land is ours' mission. *National Post* (Canada), 02.09.06
http://www.canada.com/nationalpost/news/story.html?id=d75acb3e-7643-4f47-8a62-d21c9e001002&p=1

The Need to Defend Our New Northwest Passage
http://thetyee.ca/Views/2006/01/30/DefendNorthwestPassage/

Alex Wolfe, Ass. Prof., Department of Earth and Atmospheric Sciences, Univ. of Alberta, and leading international researcher of Arctic region. "Futures First Tuesday" Teleconference

Canadian Arctic Shelf Exchange Study
http://www.cases.quebec-ocean.ulaval.ca/CASES06_detailed_agenda_Final.pdf

Northwest Passage to Become "Canadian Internal Waters"

Military Implications:
[Similar to previous on the same issue] It is likely that discussions for clear international regulations concerning Northwest Passage navigation will increase rapidly and more military action will be called for to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in other countries and international organizations in developing adequate national and international regulations and enforcement procedures regarding the Arctic region. By exercising sovereignty, Canada could impose its own rules and regulations for the Northwest Passage, including the right to request vessels to conform to certain environmental and construction standards to avoid disasters in this fragile region.
Sources:
Canada troops mount big Arctic sovereignty patrol
http://www.alertnet.org/thenews/newsdesk/N09308393.htm

Northwest Passage gets political name change
http://www.canada.com/edmontonjournal/news/story.html?id=6d4815ac-4fdb-4cf3-a8a6-4225a8bd08df&k=73925&p=1

World Resources 2005 -- The Wealth of the Poor: Managing Ecosystems to Fight Poverty

Military Implications:
Since poverty and environmental degradation are recognized as important components of conflict generation, the report might be a source of inspiration for conflict reduction measures. Relevant military personnel should study the report for insights on using the environment and community-based decision making as active elements for poverty reduction and reducing and/or preventing conflict. Opportunities should be sought in Afghanistan. Marsh restoration in Iraq could be a success story.
Sources:
World Resources 2005 -- The Wealth of the Poor: Managing ecosystems to fight poverty
http://population.wri.org/pubs_description.cfm?PubID=4073

News Release: Major report stresses natural resources as path out of poverty
http://population.wri.org/newsrelease_text.cfm?NewsReleaseID=336

State of the World 2006

Military Implications:

The report is an excellent source of information for anyone interested in a good picture of humanity's footprint on the ecosystem, and of trends, and possible future developments.
Source:
State of the World 2006: China and India Hold World in Balance
http://www.worldwatch.org/press/news/2006/01/11/

Vital Signs 2005

Military Implications
Worldwatch Institute reports are a valuable source of information to feel the pulse of the planet and assess ecological, social, and not lastly, security implications of today's habits. Its findings should be considered in any policymaking—as any decision, in any domain, touches the environment.
Source:
Vital Signs 2005, Worldwatch Institute
http://www.worldwatch.org/pubs/vs/2005/

ENVIRONMENTAL CAUSES TRIGGERED MIGRATION

Future Sea-level Rise will make Freshwater Brackish

Military Implications:
[Similar for all on this issue] Combined effects of seal-level rise and forecasted weather extremes expected from global warming are highly likely to generate requirements for rescue and social instability management missions. Also, plans will be required for "hardening" and moving military installations now on low-lying islands and littoral areas, such as the Pacific islands and Diego Garcia (which relies heavily on a fresh water lens water supply).
Sources:
High Tides Flood Funafuti
http://www.tuvaluislands.com/news/archives/2006/2006-03-04.htm

Meteorologists Warn of King Tides to Sweep in Today
http://www.pacificislands.cc/pina/pinadefault2.php?urlpinaid=20566

'Move Tuvalu Population To A Fiji Island To Ensure Survival, Scientist Says' Feb.20th, 2006
http://www.tuvaluislands.com/news/archives/2006/2006-02-20.htm

"Hayes Tuvalu Radio New Zealand International"

First People Displaced Due to Rising Sea Levels

Military Implications: [Similar as previous issue]
Sources:
Vanuatu Villagers May Be First Climate Change 'Refugees'
http://www.news.vu/en/news/environment/051221-Vanuatu-Villagers-May-Be-First-Climate-Change-Refugees.shtml
Tuesday 06 December 2005-Pacific Island villagers may be first climate change refugees: UNEP
http://radio.un.org/story.asp?NewsID=3513 (Audio)

Rising Sea Level Triggers Rising Refugee Move

Military Implications: [Similar as previous issue]
Source:
Early Signs: New Zealand's Climate Refugees
http://www.loe.org/shows/segments.htm?programID=06-P13-00013&segmentID=6 (audio transcript)

Several Small Asia/Pacific Countries at Risk because of Rising Sea Levels

Military Implications:
The military should contribute to the elaboration of a comprehensive strategy to cope with the consequences of global warming in the Pacific region and also be prepared to anticipate and react to eventual regional security-related situations that will impact all littoral zones, not just small island nations.
Source:
SOS call as island nations go under
By Cynthia Banham and Richard Macey, *The Sydney Morning Herald*, January 5, 2006
http://www.smh.com.au/news/national/sos-call-as-island-nations-go-under/2006/01/04/1136050496795.html

FRESHWATER

4th World Water Forum

Military Implication:
Military personnel who assess potential conflicts related to water and other water management issues should review the actions and reports produced in conjunction with the World Water Forum for implications to their plans and collaboration opportunities for reducing water problems internationally. The militaries of leading countries should develop a panel on the role of the militaries around the world in solving water problems for the 5th World Water Forum to be held in Istanbul, Turkey, in March 2009.
Sources:
4th World Water Forum
http://www.worldwaterforum4.org.mx

At Mexico forum, UN official outlines plans to improve water access globally
http://www.un.org/apps/news/story.asp?NewsID=17827&Cr=water&Cr1=

Summary Of The 4th World Water Forum
http://www.iisd.ca/ymb/worldwater4/html/ymbvol82num15e.html
Water: A Crisis of Governance. Says Second UN World Water Development Report
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=471&ArticleID=5153&l=en

Global International Waters Assessment Report Launched
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=471&ArticleID=5234&l=en

UN-HABITAT launches its second global report on water and sanitation
http://www.unhabitat.org/programmes/water/waterReport2006.asp

Changes in Surface Water Supply Across Africa with Predicted Climate Change
http://www.sciencemag.org/cgi/content/abstract/1119929v1 (abstract)

Water supply 'unstable' for most of Africa
http://www.scidev.net/news/index.cfm?fuseaction=printarticle&itemid=2702&language=1

Call for International Intervention to Save the Jordan River

Military Implications:
This is a clear example of a situation where international military cooperation could prevent or reduce conflict exacerbated by environmental deterioration. The military should explore how it can collaborate in the region to turn around the deterioration of the Jordan River.
Sources:
Rehabilitating the Jordan River Valley Through Cross-Border Community Cooperation
http://www.wilsoncenter.org/index.cfm?topic_id=1426&fuseaction=topics.event_summary&event_id=177929
Vanishing Jordan River Needs Global Rescue Effort
http://www.ens-newswire.com/ens/may2006/2006-05-16-10.asp
Third International Symposium on Transboundary Waters Management
http://www.uclm.es/congresos/twm/Index.htm

Future Sea-level Rise will make Freshwater Brackish

Military Implications:
[Same as in previous reports on the same issue] Combined effects of seal-level rise and forecasted weather extremes expected from global warming are highly likely to generate requirements for rescue and social instability management missions. Also, plans will be required for "hardening" and moving military installations now on low-lying islands and littoral areas, such as the Pacific islands and Diego Garcia (which relies heavily on a fresh water lens water supply).
Sources:
High Tides Flood Funafuti
http://www.tuvaluislands.com/news/archives/2006/2006-03-04.htm

Meteorologists Warn of King Tides to Sweep in Today
http://www.pacificislands.cc/pina/pinadefault2.php?urlpinaid=20566

'Move Tuvalu Population To A Fiji Island To Ensure Survival, Scientist Says' Feb.20th, 2006
http://www.tuvaluislands.com/news/archives/2006/2006-02-20.htm

"Hayes Tuvalu Radio New Zealand International"

Asia's Water Security in Jeopardy

Military Implications:
Relevant military personnel should study this report to find opportunities for improving water management via military-to-military assistance.

Source:
Asia's Water Security Under Threat
Water for Near Half the World's Population under Threat at the Roof of the World
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=452&ArticleID=4916&l=en

NATURAL DISASTERS

New Developments for Addressing Natural Disasters

Military Implications:
The military, as an important pillar in post-disaster situations, should take an active part in all the disaster risk assessment and preparedness discussions, both for know-how and expertise sharing, as well as be part of the design team for the best capacity-building efforts, and programs to deal with disaster prediction and mitigation.
Sources:
Welcome to the website of the Third International Conference on Early Warning (EWC III)
http://www.ewc3.org/

UN announces new conference on early warning systems against natural hazards
http://www.un.org/apps/news/story.asp?NewsID=15150&Cr=early&Cr1=warning

UN weather agency outlines ambitious programme in natural disaster mitigation
http://www.un.org/apps/news/story.asp?NewsID=15036&Cr=climate&Cr1=change

Tsunami Warning and Mitigation System in the Indian Ocean

Military Implications:
Relevant military personnel should study the Consolidated Report to find implications for military cooperation. They should also review the warnings from the WMO about implementation of the new systems and how the military might help the system be more coherent. [Similar to previous on the same issue: Military logistics personnel should continue to cooperate and make recommendations for national preparedness plans and eventually update previous military plans to support disaster responses for the Indian Ocean basin. If not involved yet, military liaison officers with the Department of State and the National Oceanic and Atmospheric Administration (including other government systems linked to NOAA) should consider contributing in the development of the Indian Ocean early warning system and also follow its developments to assure best cooperation in case of necessity.]
Sources:
Assessment of Capacity Building Requirements or an Effective and Durable Tsunami Warning and Mitigation System in the Indian Ocean: Consolidated Report for Countries Affected by the 26 December 2004 Tsunami
http://ioc3.unesco.org/indotsunami/nationalassessments.htm

WMO Natural Disaster Prevention and Mitigation
http://www.wmo.int/disasters/tsunamiprojects.htm

Tsunami Warning System on Track For Mid-2006 – UN
http://www.planetark.com/dailynewsstory.cfm/newsid/34228/story.htm

A year on from the Asian tsunami, satellites are aiding regional rebuilding
http://www.esa.int/esaEO/SEMF2J8A9HE_environment_0.html

Asian Nations Fail to Agree on Regional Tsunami Warning Alerts
http://www.bloomberg.com/apps/news?pid=10000080&sid=ajwWayeTVxTs&refer=asia

Researchers Warn of More Quakes in Southeast Asia
By Axel Bojanowski, Spiegel online, December 23, 2005
http://service.spiegel.de/cache/international/0,1518,392020,00.html

UN Tsunami Early Warning Systems Extended to Mediterranean, Northeast Atlantic

Military Implications:
[Similar to previous months on the same issue] Relevant military logistics personnel should cooperate and make recommendations for national preparedness plans and eventually update previous military plans to support disaster responses for the systems' areas. If not yet involved, military liaison officers with the Department of State and the National Oceanic and Atmospheric Administration (including other government systems linked to NOAA) should consider contributing in the development of the global early warning system and also follow its developments to assure best cooperation in case of necessity.
Sources:
Tsunami early warning system for the Mediterranean and Northeast Atlantic launched in Rome
http://portal.unesco.org/en/ev.php-URL_ID=30917&URL_DO=DO_TOPIC&URL_SECTION=201.html

UN tsunami early warning systems extended to Mediterranean, Northeast Atlantic
http://www.un.org/apps/news/story.asp?NewsID=16657&Cr=tsunami&Cr1=

ICSU Launched Global Disaster Research Program

Military Implications:
The military should consider collaborating with ICSU's new hazards program to share expertise and find out about the program's implications for improving its own policies and procedures.
Sources:
At Pivotal Event in China, the International Council for Science Releases New Strategy to Strengthen International Science for the Benefit of Society
Launching of a major polar research programme, a new interdisciplinary initiative on disaster mitigation, and long-term actions on other key challenges for science and society
http://www.icsu.org/3_mediacentre/RELEASES/28thGA_Strategic_Plan_eng.pdf

Global disaster research programme launched
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2427&language=1

Better Disaster Planning to Avoid Environmental Catastrophes

Military Implications:
Natural disasters are forecasted to increase in frequency and severity with global warming and continued urban concentrations of large populations, threatening environmental security on a broader scale. Due to military logistic capabilities of many countries, it is reasonable to assume

an increased military role in natural disaster management around the world. Special attention should also be given to collaborating with local industries handling environmentally hazardous materials to maximize their security in case of natural or human-caused disasters. Also, it is important that adequate plans are in place for disaster management, and for post-incident surveys and cleanup, and that these plans are integral parts of local disaster relief plans. As an example, USEUCOM should cooperate with the EC efforts, and integrate its preparations with those of the national authorities.

Sources:

'Toxic Gumbo': Surprises for Chemicals Policy, Bart Mongoven
September 14 2005 22 48 GMT (by subscription only; contact STRATFOR for access)
https://www.stratfor.com/products/enhanced/read_article.php?selected=Analyses&id=255542

EU Parliament Calls for Better Disaster Responses
http://www.planetark.com/dailynewsstory.cfm/newsid/32431/story.htm

Asian countries to enhance disaster reduction co-operation
http://news.xinhuanet.com/english/2005-09/28/content_3553846.htm

Annan urges global emphasis on disaster planning to mitigate death and destruction
http://www.un.org/apps/news/story.asp?NewsID=16005&Cr=disaster&Cr1=

Arctic Observing Integrated Network

Military Implications:

Considering the rapid changes of the arctic system in recent years, and their consequences for the environment, human health, and security, it is likely that the proposal for such an international network will find its way into implementation. Potential oil reserves and overlapping jurisdictions could lead to security issues (The median line method for national control would divide the Arctic sea between countries according to their length of nearest coastline. This would give Denmark the Pole itself but Canada would gain as well. The sector method would take the North Pole as the center and draw lines south along longitudes. This would penalize Canada; but Norway and, to a lesser extent, Russia would gain.) The military should consider participating in the network from the very beginning, to contribute know-how and expertise for its design and later on to implementation and operations

Sources:

Toward an Integrated Arctic Observing Network
http://www.nap.edu/catalog/11607.html

Draft Political Turmoil Global Energy Scenario (See “The Arctic”)
http://www.acunu.org/millennium/energy-political.html

ENERGY SECURITY

World Energy Outlook 2005 -- Middle East and North Africa Insights

Military Implications:

Relevant military personnel should consider the *World Energy Outlook* as a source of information for security issues analysis, and for formulation of future energy-related policies and strategies.
Source:
World Energy Outlook 2005 -- Middle East and North Africa Insights
http://www.iea.org/bookshop/add.aspx?id=200 (for purchase)

Energy and Security: Toward a New Foreign Policy Strategy

Military Implications:
A military expert might review the book for implications for the military and distribute the findings to relevant personnel.
Sources:
Energy and Security: Toward a New Foreign Policy Strategy. Edited by Jan H. Kalicki and David L. Goldwyn. Johns Hopkins University Press, 2005, 640 pp. $65.00 (paper, $29.95)

Book Launch--Energy and Security: Toward a New Foreign Policy Strategy (video)
http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=139630#

Economic, Social, and Environmental (*Foreign Affairs* review)
http://www.foreignaffairs.org/20051101fabook84621/jan-h-kalicki-david-l-goldwyn/energy-and-security-toward-a-new-foreign-policy-strategy.html

Increasing Oil Demand in China and India Raise Security Concerns

Military Implications:
Beneficial environmental restraints and agreements in many regions of the world are likely to be victims of desperation for energy at this time in history when many forces are converging to harm human society. Nations near the edge of environmental and food sufficiency collapse could become additional failed states and competitors. The world's current and rising dependence on oil and gas may possibly trigger new regulations at national, regional, and international levels to protect national energy sources and avoid eventual unethical deals that might jeopardize international security. In addition to possible security aspects that would have direct implications for it, the military should enhance its efforts on energy conservation and development of alternative energy sources—both for its own interest and as a contribution to national security. Security is just one more reason (in addition to climate change and others) why reducing reliance on oil has become vital.
Source:
New rules in global rivalry for oil
The growing Asian demand for energy could alter US strategy.
By Mark Trumbull | Staff writer of The Christian Science Monitor
http://www.csmonitor.com/2005/0804/p01s04-wogi.html
Giving China a bloody nose. The Economist, Aug 4th 2005
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=4254062&subjectID=381586&fsrc=nwl&emailauth=%2527%252E%252573P%252CSK%25231%252A%2520%250A (by subscription only)

China Rationing Gasoline And Diesel Fuel
http://www.terradaily.com/news/china-05zzzzzo.html

China and India Vie for Company With Oil Fields in Kazakhstan
By Keith Bradsher, NY Times, August 16, 2005
http://www.nytimes.com/2005/08/16/business/worldbusiness/16oil.html?pagewanted=all&oref=login (by subscription only)

China and India Sign Precedent-Setting Energy Agreement

Military Implications:
Military planners should use this precedent to explore possibilities for a more global agreement for the peaceful management of the "oil peak" transition. Since conservation is one of the areas included in the Memorandum for Enhancing Cooperation, it is likely that some regulations and enforcements might follow. The military should closely follow new developments and outcomes of the Memorandum and see how they might affect its planning and actions.
Sources:
China, India sign energy agreement
http://www.chinadaily.com.cn/english/doc/2006-01/13/content_511871.htm (article stored for a limited time on the website)

Petroleum Minister's Opening Remarks At The Delegation Level Talks With Chairman, NDRC Of China http://pib.nic.in/release/release.asp?relid=14918

Sino-India energy accord difficult in practice: analysts
http://www.dailytimes.com.pk/default.asp?page=2006%5C01%5C14%5Cstory_14-1-2006_pg5_24

Energy Efficiency Guide for Asian Industries Debuts in Bangkok
http://www.ens-newswire.com/ens/jan2006/2006-01-18-03.asp

Take your partners. *The Economist*, Jan 19th 2006
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=5420659&subjectID=381586&fsrc=nwl&emailauth=%2527%252E5%252F4Q%252CKH%2521A%25244%250A (by subscription only)

State of the World 2006: China and India Hold World in Balance
http://www.worldwatch.org/press/news/2006/01/11/

UN Commission on Sustainable Development Fosters Energy Security

Military Implications:
The UN CSD and UNEP reports should be reviewed for military implications and opportunities for cooperation on environmental security.
Sources:
UN Department of Economic and Social Affairs. Division for Sustainable Development.
http://www.un.org/esa/sustdev/csd/review.htm
Summary of The Fourteenth Session Of The Commission On Sustainable Development
http://www.iisd.ca/vol05/enb05238e.html

UNEP DTIE contribution to CSD 14 (Class of 2006: Industry Report Cards on Environment and Social Responsibility) http://www.unep.fr/outreach/csd14/

EU Commission Sets Long-term Energy Goals

Military Implications
[Same as in April 2005 report] It is not clear yet what the enforcement procedure will be; nevertheless, military forces stationed in the EU region should prepare to increase energy efficiency in meet the new targets.
Source
EU Wants 20 Percent Cut in Energy Use by 2020
http://www.planetark.com/dailynewsstory.cfm/newsid/31375/story.htm

New European Energy Policy Developments

Military Implications:
The military should consider following the EU new energy and car standards policies and the consequently emerging strategies, for eventual impacts on energy-related planning and to ensure that its activities in the region comply with the new energy policy framework. Also, since the car standards will apply as well to imported cars, the military should review its vehicles standards in/for the European theater to comply with the new standards.
Source:
Fuelling our future: the European Commission sets out its vision for an Energy Strategy for Europe
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/282&format=HTML&aged=0&language=EN&guiLanguage=en
EU Leaders Seek Stronger Renewable Energy Targets
http://www.planetark.com/dailynewsstory.cfm/newsid/35802/story.htm
EU Ministers Push for Tougher Car Pollution Rules
http://www.planetark.com/dailynewsstory.cfm/newsid/35571/story.htm
Germany Sets BioFuel Quota in Fuel
http://www.petrolworld.com/news/europe/?guid=7e7bda97-cf92-4f58-9a26-91b14acb626e

C. Protecting the Environment Due to Its Inherent Moral Value

ENVIRONMENTAL SECURITY-RELATED INTERNATIONAL REGULATIONS THAT HAVE BEEN COMING INTO FORCE SINCE JUNE 2005 (listed in alphabetical order)

Nuclear Terrorism Convention Signed by 82 Countries at the UN Summit

Military Implications:
[Similar as in April 2005 report] The military should assess what new opportunities have been made possible as a result of this international agreement for improving security; and then recommend policy, training, and institutional or physical changes needed to exploit these opportunities.
Sources:

Russia to be the first to sign nuclear terrorism convention
http://en.rian.ru/russia/20050907/41321867.html (article available for a limited time on the website; full text in the Appendix)

Heads of State sign convention on nuclear terrorism
http://www.un.org/apps/news/story.asp?NewsID=15807&Cr=world&Cr1=summit

Ninety-nine nations participate in UN treaty event during 2005 World Summit
http://www.un.org/apps/news/story.asp?NewsID=15898&Cr=world&Cr1=summit

Nuclear Trafficking Latest Statistics Released
http://www.iaea.org/NewsCenter/News/2005/traffickingstats.html

The Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter entered into force on March 24, 2006

Military Implications:
Since the 1996 Protocol is more restrictive and pragmatic in regulating dumping of contaminants, the military should ensure that its procedures comply with the new requirements—even if the U.S. is not a Contracting Party—to avoid critics and eventual penalties, depending on the region where the incident might occur. Also, it is important to study the key provisions included in Annex 2 to the Protocol, since all permits and permit conditions have to comply with those provisions.
Source:
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and 1996 Protocol Thereto
http://www.londonconvention.org/

The Agreement on International Carriage of Dangerous Goods by Inland Waterways (ADN) Closer to Entry into Force

Military Implications:
[Similar to the above] The military in the region should study the available documents [the Agreement will be similar to the already existing one for the Rhine] and follow the drafting process in order to be prepared to cooperate and comply with the new requirements.
Sources:
Bulgaria joins the ADN Agreement http://www.unece.org/press/pr2006/06trans_p02e.htm

The ADN http://unece.org/trans/danger/adn-agree.html

Ratification began for the International Convention for the Control and Management of Ships' Ballast Water and Sediments

Military Implications:
Military personnel involved in maritime operations and their civilian contractors should be aware of the new standards and requirements to ensure that their ships and operations are compliant. Also, as "Annex - Section C Additional measures" stipulates that a "Party, individually or jointly with other Parties, may impose on ships additional measures to prevent, reduce, or eliminate the transfer of Harmful Aquatic Organisms and Pathogens through ships' Ballast Water and

Sediments", the shipping companies (military or their civilian contractors) should communicate and be kept informed on the different States' measures.
Sources:
Australia Signs Treaty to Limit Hitchhikers in Ballast Water
http://www.ens-newswire.com/ens/jun2005/2005-06-02-03.asp
International Convention for the Control and Management of Ships' Ballast Water and Sediments adopted in 2004 http://www.imo.org/Environment/mainframe.asp?topic_id=548

Carpathian Convention Comes Into Force

Military Implications:
[Similar to previous on the same issue] The newly protected areas and new restrictions introduced by the Convention might have implications on training grounds, military base procedures, and information disclosure. The military and its contractors should be sure to comply with the requirements of the Convention in the States parties in keeping with provisions of Status of Forces Agreements when operating in the countries that have to adhere.
Sources:
Mountain Region in the Heart of Europe gets Legal Protection
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=467&ArticleID=5072&l=en

The Convention on the protection and sustainable development of the Carpathians
http://www.carpathianconvention.org/index.htm

REACH

REACH Approved by European Council

Military Implications:
[Similar to previous on the same issue] Assessment of the REACH system's latest proposed changes and their impacts on military operations in Europe in relation to existing SOFAs and other agreements remains important. As currently proposed, the REACH system still implies the registration of all compounds in volumes over 1 metric tonne per year in use within the EU.
Sources:
REACH: Commission welcomes Council's agreement on new EU chemical legislation
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1583&format=HTML&aged=0&language=EN&guiLanguage=en
REACH http://europa.eu.int/comm/environment/chemicals/reach.htm
Stavros Dimas, Member of the European Commission, Responsible for Environment policy Speaking notes – political agreement on REACH
http://europa.eu.int/rapid/pressReleasesAction.do?reference=SPEECH/05/787&format=PDF&aged=0&language=EN&guiLanguage=en

REACH Draft Voted by the European Parliament

Military Implications:
[Same as previous on the same issue] Assessment of the REACH system's latest proposed changes and their impacts on the U.S. Forces in Europe in relation to existing SOFAs and other agreements remains important. As currently proposed, the REACH system still implies the

registration of all compounds in use by military forces operating within the EU. If implemented, that could raise security issues, as well as create major record keeping problems.
Sources:
No thanks, we're European
Nov 24th 2005, Frankfurt, From *The Economist* print edition
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=5218539&subjectID=348924&fsrc=nwl&emailauth=%2527%2529%2520667%255CSDUA%25294%250A (by subscription only; full text in the Appendix)
European Parliament backs REACH
http://www.eupolitix.com/EN/LegislationNews/200511/6624384b-eba7-4ca2-bfe8-53222f42d9f5.htm
FACTBOX - All about the EU Chemicals Reform Bill REACH
http://www.planetark.com/dailynewsstory.cfm/newsid/33530/story.htm

The REACH Debate Continues

Military Implications:
[Same as in previous reports on the same issue] Assessment of the REACH system's latest proposed changes and their impacts on the U.S. Forces in Europe in relation to existing SOFAs and other agreements remains important. As currently proposed, the REACH system still implies the registration of all compounds in use by military forces operating within the EU. If implemented, that could raise security issues, as well as create major record keeping problems.
Sources:
EU Lawmakers Ease Chemicals Rules, Fight Looms
http://www.planetark.com/dailynewsstory.cfm/newsid/32806/story.htm
EU Likely to Reach Deal on Major Chemicals Bill
http://www.planetark.com/dailynewsstory.cfm/newsid/32934/story.htm
Towards Belgrade-2007
European Eco-Forum Newsletter, 21 Oct 2005 (email newsletter)

REACH Closer to Finale

Military Implications:
[Same as in May 2004 report on the same issue] Assessment of the REACH system's latest proposed changes and their impacts on the US Forces in Europe in relation to existing SOFAs and other agreements remains important. As currently proposed, the REACH system still implies the registration of all compounds in use by military forces operating within the EU. If implemented, that could raise security issues, as well as create major record keeping problems.
Source:
Feature - Reaching Balance: Europe Weighs Health Verses Industry
http://www.planetark.com/dailynewsstory.cfm/newsid/32150/story.htm

RoHS (EU Restriction of Hazardous Substances) Directive

RoHS Closer to Deadline (July 1)

Military Implications:
[Same as previous on the same issue] Military commands deployed in EU Member States should be prepared to comply with the new directives and consider substitutes for hazardous substances, if not already in place.

Source:
EU's lead-free law will also affect U.S. IT products
http://www.computerworld.com/hardwaretopics/hardware/story/0,10801,110944,00.html?source=NLT_AM&nid=110944

Denmark to Sue EU Over Annulling Flame Retardant Ban

Military Implications:
[Similar to previous Item on the same issue and related to items 6 in this report] Military commands deployed in EU Member States should be prepared to comply with the new directives and consider substitutes for hazardous substances, if not already in place. Also, they should follow developments in individual EU states, since there is not necessarily always consensus on regulation of various substances.
Sources:
Denmark to Sue EU Over Flame Retardant Linked to Birth Defects
http://www.ens-newswire.com/ens/jan2006/2006-01-04-01.asp

COMMISSION DECISION amending for the purposes of adapting to the technical progress the Annex to Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment [see article 3]
http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2005/l_271/l_27120051015en00480050.pdf

RoHS & WEEE -- Info Guide to Compliance for the RoHS and WEEE Directive
http://www.rohsguide.com/

E-waste Management Directive Came into Effect on August 13, 2005

Military Implications:
Military commands deployed in EU Member States should be prepared to comply with the new directives and consider substitutes for hazardous substances, if not already in place.
Sources:
New recycling law takes effect in the European Union
http://www.physorg.com/news5795.html

Commission Decision of 18 August 2005
amending Directive 2002/95/EC of the European Parliament and of the Council for the purpose of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment
http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2005/l_214/l_21420050819en00650065.pdf

Gothenburg Air Pollution Protocol Entered into Force on May 17, 2005

Military Implications:
[Same to previous reports on this item] The military should study the new requirements and adjust its materiel and practices to comply with the Gothenburg Protocol, as appropriate under Status of Forces Agreements. It should also follow the outcomes of the expert group on fine particles for eventual implications for its operations. The establishment of international air

pollution engineering requirements gives the military the opportunity of adhering to a universal standard rather than multiple countries' standards.
Source:
New Air Pollution Protocol to take effect on 17 May 2005
http://www.unece.org/press/pr2005/05env_p02e.htm

EU Imposes New Battery Restrictions

Military Implications:
[Similar to previous on related issues] In countries covered by the new legislation, military equipment using batteries should be adapted to comply with the EU regulations. The military should consider substitutes, participate in the collection action, and pay attention to disposal, as well as to use of any materiel that could release cadmium. It should set up battery recycling programs in all areas, as an environmental stewardship activity, even where not legally required.
Source:
EU to mandate battery recycling
http://www.computerworld.com/newsletter/0,4902,111106,00.html?nlid=PM

PROPOSED TREATIES AND/OR CHANGES TO EXISTING ONES

Convention on Biological Diversity and the Cartagena Protocol

Military Implications:
The military should note the outcomes of the two meetings and be prepared to comply with the new requirements, including genetically modified organism (GMO) labeling of food containers it brings into Protocol member countries and new measures for protecting biodiversity.
Sources:
Third meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety http://www.biodiv.org/doc/meeting.aspx?mtg=MOP-03

Summary of The Third Meeting of The Parties to The Cartagena Protocol on Biosafety
http://www.iisd.ca/vol09/enb09351e.html

Africans missing at key biosafety talks http://www.panos.org.uk/global/cbd2006_summit1.asp

Eighth Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity http://www.biodiv.org/doc/meeting.aspx?mtg=COP-08

Global Biodiversity Outlook 2 http://www.enn.com/today.html?id=10107

Conserving Biological Diversity Becomes a Sacred Quest
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=471&ArticleID=5162&l=en

Eighth Conference of the Parties to the Convention on Biological Diversity (COP-8)
http://www.iisd.ca/biodiv/cop8/

Cartagena Protocol on Biosafety—Second Working Group on Liability and Redress

Military Implications:
[Similar to previous on this issue] Unless some waiver provisions have been developed and implemented, the military should prepare their supply systems for compliance with the new

procedures, including GMO labeling of food containers it brings into Protocol member countries. Relevant military personnel should consider reviewing the concluding report for eventual inputs for the next meeting(s). (Member of the U.S. delegation: JP Passino, FAS Biotech Group, International Organizations and Agreements, email: john.passino@usda.gov)
Sources:
Second Meeting of the Open-ended Ad Hoc Working Group on Liability and Redress under the Biosafety Protocol. 20-24 February 2006 | Montreal, Canada
http://www.iisd.ca/biodiv/wglr2/20february.html

Cartagena Protocol on Biosafety
http://www.biodiv.org/biosafety/default.asp

Nuclear Safety

Nuclear Theft, Smuggling, and Sabotage Countermeasures

Military Implications:
Relevant military personnel should be prepared to participate in intra-US ratification processes and consider including the new guidelines in its nuclear security plan, and assist other nations in implementing the amended CPPNM, identifying their vulnerabilities, training their staff or even carrying out physical protection work.
Source:
States Agree on Stronger Physical Protection Regime
http://www.iaea.org/NewsCenter/PressReleases/2005/prn200503.html

Review Conference of the Non-Proliferation Treaty

Military Implications:
[See also *Multilateral Approach Needed To Keep Nuclear Arms from Terrorists* and *Increasing Calls for Improved Management of Nuclear Materials and Nonproliferation* in the February and January 2005 environmental security monthly scanning reports, respectively.]
The military should seek alternative means that might be more effective to work with the appropriate agencies to facilitate the NPT negotiations to improve global nuclear safety.
Sources:
Non-Proliferation of Nuclear Weapons 2005 Review Conference
http://www.un.org/events/npt2005/
NPT Conference to Deadlock
http://www.nti.org/d_newswire/issues/2005_5_27.html#D7AE4A63
Nuclear Weapon Ban only Guarantee They Will Never again Be Used, Says Secretary-General in Remarks to Mayors for Peace
http://www.unis.unvienna.org/unis/pressrels/2005/sgsm9853.html

Post-Kyoto Protocol

Post-Kyoto Agenda Agreed

Military Implications:
There is compelling evidence of the consequences of anthropogenic climate change, and the growing world option for action. The military should continue to accelerate their efforts to

reduce its greenhouse gas emissions. New international environmental security-related policies and cooperation to avoid potentially large-scale disasters and conflicts seem inevitable.
Sources:
UN conference agrees agenda for negotiations on new emission reduction targets under the Kyoto Protocol
http://unfccc.int/files/press/news_room/press_releases_and_advisories/application/pdf/20060526_final_26_may_press_release-english.pdf
Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention. First workshop, 15-16 May 2006, Bonn, Germany
http://unfccc.int/meetings/dialogue/items/3669.php
Press Conference by Acting Head of United Nations Climate Change Secretariat
http://www.un.org/News/briefings/docs/2006/060512_UNFCCC.doc.htm

Second European Climate Change Program and post-Kyoto Negotiations

Military Implications:
[Similar to previous on this topic] ECCP II will affect U.S multinationals and military stationed in countries covered by it. The military and its contractors should be prepared to anticipate and accommodate the necessary changes. Since the state-of-knowledge of carbon sequestration to address greenhouse gases is not well established, the military should consider the options available and research necessary to develop its own carbon sequestration strategies.
Sources:
Stavros Dimas, Member of the European Commission, Responsible for Environment
Developing the European Climate Change Programme, Stakeholder conference launching the Second European Climate Change Programme, Brussels, 24 October 2005
http://europa.eu.int/rapid/pressReleasesAction.do?reference=SPEECH/05/635&format=HTML&aged=0&language=EN&guiLanguage=en
EU Must do More to Fight Climate Change—Dimas
http://www.planetark.com/dailynewsstory.cfm/newsid/33141/story.htm

G8 Environmental Results Are Limited to Post-2012 Concerns

Military Implications
If not yet involved, the military environmental community should set up liaison with the US delegation to the November dialogues to ensure that its concerns are taken into account in those proceedings, and should also follow the progress and results of the meeting, in order to be prepared for future international agreements that may come about from these efforts.
Sources:
More than hot air. The G8 summit made quiet progress on climate change
The Economist, Science & Technology, Global warming. Jul 14th 2005
http://www.economist.com/research/articlesBySubject/displayStory.cfm?amp;emailauth=%2527%25290%253A04%255COOV1%25254%250A&fsrc=nwl&subjectid=348924&story_id=4174286&login=Y (by subscription only)
Investment in Forests, Rivers and Wetlands Will Pay Dividends, UN Environment Chief Tells G8 Leaders
http://www.enn.com/aff_PF.html?id=739

G8 Climate Plan Of Action Delivers Little Change
http://www.ens-newswire.com/ens/jul2005/2005-07-08-02.asp

Marine Environment

Network of Marine Protection Areas to be Adopted by 2012

Military Implications:
[Similar to previous on related issues] In consultation with such organizations as the U.S. Commission on Ocean Policy, relevant military personnel should participate in designing the MPAs network, both to serve as expertise contributors and to be informed of eventual ocean zoning plans. Being involved in the system will improve anticipation of new requirements for the military.
Sources:
Interview - Scientists Draft Blueprint to Protect World Oceans
http://www.planetark.com/dailynewsstory.cfm/newsid/33162/story.htm

The First International Marine Protected Areas Congress, Geelong, Australia 23-28 Oct. 2005
http://www.impacongress.org/ (to be updated)

Nations urged to "think as big as the oceans are vast" (IUCN Press release)
http://www.iucn.org/en/news/archive/2005/10/pr_impac_opening.pdf

New Baltic Sea Action Plan Based on Ecosystem Approach

Military Implications:
The military in the region should study the available documents and follow the drafting process in order to be prepared to cooperate and comply with the Baltic Sea Action Plan requirements.
Sources:
HELCOM Baltic Sea Action Plan receives strong support at Stakeholder Conference
http://www.helcom.fi/press_office/news_helcom/en_GB/StakeholderConf_Outcome/

New Baltic Sea Action Plan Relies on Ecosystem Approach
http://www.ens-newswire.com/ens/mar2006/2006-03-10-01.asp

Coalition Urges UN to Consider Legislation to Curb Harmful Ocean Sounds

Military Implications
[Similar to previous reports on the same issue] It is reasonable to speculate that scientific evidence and comprehensive global assessment might trigger new international regulations to limit the use of harmful undersea sonars. The frequency and nature of legal actions against military practices denote an increased liability of the military even for operations not explicitly polluting the environment (such as the use of sonar, radar and microwave.)
Source:
Coalition Urges UN Curbs on Harmful Ocean Sounds
http://www.enn.com/today.html?id=7912

UNU Report Urges the Need For a New Treaty on Deep-Sea Research

Military Implication

Natural resources under the deep sea have already caused some tensions, such as between China and Japan, and potential profitability of deep-sea research might accelerate this trend. Military planners should participate in designing a new framework as the lack of such regulatory framework or agreement may undermine regional stability, as well as deep-sea ecosystems.

Sources:

Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects
http://www.ias.unu.edu/binaries2/DeepSeabed.pdf

Tapping the oceans' treasures: Bioprospecting in the Deep Seabed
http://www.ias.unu.edu/news/details.cfm/ArticleID/680/search/yes

'Treaty needed' to regulate deep-sea bioprospecting
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2151&language=1

Toxic Substances

Over 4,000 Chemicals in Use in Canada to be Assessed for Safety

Military Implications:

As a result of the assessment, it is likely that many of these chemicals will be banned or come under new regulations in Canada that will influence other countries' regulations. The military should keep updated on the latest findings to anticipate the need for eventual chemical substitutions.

Source:

Canada's Chemical Reaction
http://www.theglobeandmail.com/servlet/story/LAC.20060527.CHEMICALS27/TPStory/Environment (article available for a limited time on the website)

Mercury Instruments May Be Banned in EU

Military Implications:

The military should review its future plans for such devices, and ensure that adequate acceptable substitutes will be available if the prohibition comes into effect in the countries of the EU where US forces are stationed.

Sources:

Commission proposes to ban mercury in fever thermometers
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/193&format=HTML&aged=0&language=EN&guiLanguage=en

EU Plans to Ban New Thermometers with Toxic Mercury
http://www.planetark.com/dailynewsstory.cfm/newsid/35234/story.htm

EU Sets 2011 Deadline to Ban Mercury Exports

Military Implications:

The military should consider doing its part in curbing mercury pollution by promoting best available techniques for reducing mercury use, emissions, wastes and surplus stockpiles, and

participating in partnerships with organizations and countries requesting assistance. If Europe is one of its mercury suppliers, then the military should make the proper arrangements to find another source for its needs. In the long-run, mercury substitutes should be found.
Source:
EU sets 2011 deadline to ban mercury exports
http://www.alertnet.org/thenews/newsdesk/L24190898.htm

EU Committee Proposes Banning Fluorinated Gases

Military Implications:
[Similar to that of March 2004 on the same issue] Hydrofluorocarbon (HFC) 134a use will be banned in car air conditioning systems from 2011 for new vehicle models and from 2017 for all new vehicles sold in the EU. The situation regarding military equipment or foreign-owned vehicles is not clear. Military components operating in the EU should review their affected materiel to ensure that it all will meet these standards when they are enacted. In addition, the standards might also impact future generations of equipment developed for fielding in Europe.
Sources:
EU Lawmakers Back Cutting Greenhouse Gases in Cars
http://www.planetark.com/dailynewsstory.cfm/newsid/33186/story.htm

EU committee adopts ban on fluorinated gas
http://news.webindia123.com/news/showdetails.asp?id=136808&n_date=20051014&cat=World

Stockholm Convention

Stockholm Convention to be Updated

Military Implications
[Similar to previous on the same issue] Although the U.S. is not Party to the Convention, it should be prepared to comply with its requirements when acting in countries Party. Thus, in addition to the preparation for phaseout of the 12 already listed POPs, it should consider the military implications of the additional five newly listed substances and initiate their replacement.
Sources:
Persistent Organic Pollutants Review Committee (POPRC)
http://www.pops.int/documents/meetings/poprc/
First meeting of the Expert Group on Best Available Techniques and Best Environmental Practices, 28 November – 2 December 2005, Geneva, Switzerland
http://www.pops.int/documents/meetings/bat_bep/EGBATBEP1/participantinfo/default.htm
India ratifies Stockholm convention on POPs
http://southasia.oneworld.net/article/view/120912/1/

New Chemicals Proposed to be Added to Stockholm Convention on POPs

Military Implications
Although the U.S. is not Party to the Convention, it should be prepared to comply with its requirements when acting in countries Party. Thus, in addition to the preparation for phaseout of the 12 already listed POPs, it should consider the military implications of the additional four new substances and initiate their replacement.

Sources:
Governments to take decisive action to implement UN-backed treaty against organic pollutants
http://www.un.org/apps/news/story.asp?NewsID=14200&Cr=pollut&Cr1=
Stockholm Convention on Persistent Organic Pollutants http://www.pops.int/

Sweden Calls for World Ban on PFOS Chemical

Military Implications
[Similar as May 2005] Although the U.S. is not Party to the Convention, the military should be prepared to comply with its requirements when acting in countries Party. Thus, in addition to the preparation for phase-out of the 12 already listed POPs, it should consider the military implications of the new additional substance suggested for ban and initiate its replacement.
Source:
Sweden Calls for World Ban on PFOS Chemical
http://www.planetark.com/dailynewsstory.cfm/newsid/31243/story.htm

Waste Management

Basel Convention on Hazardous Wastes to be Made More Effective

Military Implications:
It is likely that the spectrum of the Basel Convention on the Transboundary Movements of Hazardous Wastes will be extended to cover the new waste management problems. The military should follow the work of the Open Ended Working Group for preparing the 2006 biannual ministerial conference both to give its input and to be prepared for eventual new developments. Also, under the partnership principle, the military and its contractors should initiate partnerships and programs for environmentally sound wastes management.
Sources:
Press advisory for the OEWG4 - Basel Convention talks to address mobile phones, obsolete ships and new guidelines for the environmentally sound management of wastes
http://www.basel.int/press/paOEWG4.doc

Secretariat of the Basel Convention
http://www.basel.int/

Global Environmentally Sound E-waste Disposal System is Needed

Military Implications
Although the U.S. is not a party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, it has to ensure that it complies with the Convention's requirements when operating in one of the 166 States Parties. Also, the military should ensure the application of environmentally sound recycling procedures for disposing of its inoperative or non-salvageable electronic equipment.
Sources:
Roadmap Set for the Environmentally Sound Management of Electronic Waste in Asia-Pacific under the Basel Convention
http://www.basel.int/press/pr251105.doc

The Digital Dump: Exporting Re-Use and Abuse to Africa Report
http://www.ban.org/BANreports/10-24-05/index.htm

Technology; Poor Nations Are Littered With Old PC's, Report Says
http://www.nytimes.com/2005/10/24/technology/24junk.html?pagewanted=print (by subscription only)

EU New Strategy on Waste Recycling

Military Implications:
[Same as previous on similar issues] Military commands deployed in EU Member States should be prepared to comply (in accord with Status of Forces Agreements) with the new directives and consider substitutes for hazardous substances, if not already in place.
Sources:
Thematic Strategy on the prevention and recycling of waste
http://europa.eu.int/comm/environment/waste/strategy.htm
EU Waste Policy – The Story behind the Strategy
http://europa.eu.int/comm/environment/waste/pdf/story_book.pdf [Note: the parts of the strategy that might be of most interest: 6.6. Simplification: fine tuning to improve implementation—Box 13. Changes to the regulation structure. (Pp. 22), Box 14. How the "end of waste" criteria work. (pp. 23), and 6.6.3. The distinction between recovery and disposal—Box 15. How to distinguish between recovery and disposal (pg 24)]

Higher Targets for Packaging Recycling and Recovery

Military Implications:
Military commands deployed in EU Member States should be prepared to comply with the new directives and consider substitutes for hazardous substances, if not already in place.
Sources:
Packaging waste: higher recycling and recovery targets due to be implemented in EU Member States. Reference: IP/05/1057 Date: 18/08/2005
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1057&format=HTML&aged=0&language=EN&guiLanguage=en

Air Pollution and Greenhouse Gases

EU Thematic Strategy on Air Pollution for the CAFE Programme

Military Implications:
Military development and acquisition agencies need to be aware of and responsive to these changes. Military personnel stationed in EU Member States should review their equipment and activities to comply with the requirements in the Thematic Strategy on Air Pollution and the new Ambient Air Quality Directive, and monitor the other Thematic Strategies and developments that could lead to new binding regulations.
Sources:
Commission proposes clean air strategy to protect human health and the environment

http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1170&format=HTML&aged=0&language=EN&guiLanguage=en

The CAFE Programme. Implementation of the Thematic Strategy on Air Pollution
http://europa.eu.int/comm/environment/air/cafe/

Environment 2010: Our Future, Our Choice. The Sixth Environment Action Programme of the European Community
http://europa.eu.int/comm/environment/newprg/index.htm

EC Proposed Strategy to Curb Greenhouse Gas Emissions from Air Travel

Military Implications:
Although the proposed strategy seems to refer just to civil carriers, one should not conclude that at some point, when the regulation becomes final, that there will be exemptions for military aviation, particularly for aircraft based on EU soil. Hence, relevant military personnel should follow the evolution of this new strategy in order to be prepared to comply, if that situation arises.
Source:
Climate change: Commission proposes strategy to curb greenhouse gas emissions from air travel
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1192&format=HTML&aged=0&language=EN&guiLanguage=en

Meeting of the Parties (MOP-2) to the Aarhus Convention

Military Implications:
[Same as in previous reports on this item] The U.S., although a member of the United Nations Economic Commission for Europe (UNECE), whose member states entered into the Aarhus Convention, is not a signatory to the Convention. However, the U.S. military forces in Europe should comply, within the scopes of respective Status of Forces Agreements, with the environmental laws imposed by the EU on host nations, and the potential secondary ramifications for host nation contractors used by US military forces. Also, the military along with national and regional organizations in the countries Party to the convention could contribute to strengthening environmental democracy by helping the efforts for effective implementation of the Convention.
Source:
Aarhus Convention; Second Meeting of the Parties
http://www.unece.org/env/pp/mop2.htm

New "European Citizens' Initiative" Could Affect Environmental Politics

Military Implications:
Monitoring the campaign and eventual ECI should provide a heads-up on potential future changes in European environmental regulations that could affect the military.
Sources:
An alliance of European civil societies have launched a campaign entitled the "European Citizens' Initiative"
http://www.epha.org/a/2225

European Citizens' Initiative http://www.citizens-initiative.eu/

IMPROVED COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

Improving Effectiveness of Multilateral Environmental Agreements

Military Implications:
There is a growing willingness to create a coherent structure for the MEAs, which could lead to modifications that would affect the military. Since the Chair's Summary states "compliance with and implementation of the obligations contained in MEAs are directly related to the political, economic, social and legal acceptability of those obligations to the Parties," the military, due to its know-how and as part of its Army Strategy for the Environment, should consider contributing input to the development of the action plan and new compliance and enforcement strategies. Increases in international compliance discipline will affect scrutiny of military environmental management.
Sources:
Envisioning the Next Steps for MEA Compliance and Enforcement
http://www.unep.org/dec/support/mdg_meeting_col.htm

MEA Enforcement and Compliance Meeting Bulletin
http://www.iisd.ca/ymb/unepmea/ymbvol121num1e.html

Environmental Performance Index to Help Improve Policymaking

Military Implications:
The military should consider using the Environmental Performance Index or variations of it for setting goals and priorities for improved environmental sustainability. It could be used for individual bases, divisions, and/or the military as a whole.
Source:
Pilot 2006 Environmental Performance Index
http://www.yale.edu/epi/

EC Legislation Reform First Targets Environment-related Rules

Military Implications:
Relevant military personnel should monitor this modernization of the EU's environmental regulations enforcement and administrative procedures. The Army (US Army Europe (USAREUR) and the European Command (USEUCOM)) and its contractors acting in EU countries should review their SOFAs to ensure that all EC stipulations concerning environmental protection are duly respected. Given the difficulty and infrequency of SOFA revision, special attention might be required in future interpretation of existing SOFAs, to avoid problems with their host nations vis-à-vis their EU obligations.
Source:

Better regulation continued: Commission wants to simplify over 1,400 legal acts
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1343&format=HTML&aged=0&language=EN&guiLanguage=en

European Commission Enforces Environmental Pollution Legislation

Military Implications:
This Court's ruling helps harmonize and strengthen the enforcement of EU environmental legislation. The Army (US Army Europe (USAREUR) and the European Command (USEUCOM)) and its contractors acting in the EU countries should review their SOFAs to ensure that all EC stipulations concerning environmental protection are duly respected. Given the difficulty and infrequency of SOFA revision, special attention might be required in future interpretation of existing SOFAs, in order to not unfairly embarrass host nations vis-à-vis their EU obligations.
Sources:
The European Community Has The Power To Require The Member States To Lay Down Criminal Penalties For The Purpose Of Protecting The Environment
http://curia.eu.int/en/actu/communiques/cp05/aff/cp050075en.pdf
Better Regulation
http://europa.eu.int/rapid/pressReleasesAction.do?reference=MEMO/05/340&format=HTML&aged=0&language=EN&guiLanguage=en

EU Starts Legal Action Against Member States on Breaches of Environmental Law

Military Implications:
The military stationed in EU countries—especially Italy—should review their operations and planning to make sure they fully comply with EU environmental law and seek ways to help their military counterparts in environmental compliances. These legal actions are part of a series of environment-related infringement decisions against EU Member States that the Commission is beginning.
Sources:
Italy: Commission takes legal action over 11 breaches of environmental law (IP/05/1303)
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1303&format=HTML&aged=0&language=EN&guiLanguage=en
Water policy: Commission takes legal action against Italy, Spain and Greece over key directive (IP/05/1302)
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1302&format=HTML&aged=0&language=EN&guiLanguage=en

Preparatory Process Started for the EfE 6th Ministerial Conference

Military Implications:
Relevant military personnel should contact the U.S. representative on the Conference Executive Committee (Mr. Chuck Ashley, First Secretary for Environment, Science & Technology, International Economic Affairs Section, U.S. Mission to UNECE, Geneva) to share eventual items that they would like to have included in the Conference agenda and to be kept informed on eventual new developments in existing or upcoming international regulations that might affect military activities in Europe.

Sources:
"Environment For Europe" Process, Meetings of the Working Group of Senior Officials
http://www.unece.org/env/wgso/Belgrade/wgsoMeetings.htm (to be updated)
Towards Belgrade-2007
European Eco-Forum Newsletter, Special Issue, 21 Oct 2005 (e-mail newsletter)

Asian Regional Forum on Combating Environmental Crime Formed

Military Implications:
Relevant military personnel in the Asia region should explore liaison with the Forum and methods of collaboration. Since international crime tends to destabilize nations through graft and corruption and different forms of international crime tend to be inter-connected, such collaboration would support national defense goals.
Source:
Regional Forum On Combating Environmental Crime Formed
http://www.world-wire.com/news/0915050002.html

Indonesia Joins the Partnership to Improve Environmental Governance

Military Implication
Military environmental expertise should be offered to assist Indonesian military authorities in meeting their obligations. There is a trend toward improving transparency and citizens' participation in the decision-making process concerning environmental matters. Increased scrutiny of environmental impacts associated with military activities is expected as public involvement continues to rise.
Sources:
Partnership for Principle 10
http://www.pp10.org/index.htm
Indonesia joins partnership to improve environmental governance, public access to information
http://governance.wri.org/newsrelease_text.cfm?NewsReleaseID=360

Biological Weapons Convention

PrepCom to Set Agenda for the BWC Review Conference

Military Implications:
[Similar to previous on the same issue] Without better international controls, terrorist access to biological weapons seems inevitable. Great progress has been made on bioweapons sensors over the past several years, some of which have been referenced in these monthly reports for AEPI. Relevant military personnel should consider making recommendations for the Review Conference to strengthen the BWC.
Source:
At UN, parties to Biological Weapons Convention plan to review effectiveness
http://www.un.org/apps/news/story.asp?NewsID=18286&Cr=biological&Cr1=weapon

Biological Weapons Convention Meeting To Prepare For 2006 Comprehensive Review
http://www.unog.ch/unog/website/news_media.nsf/%28httpNewsByYear_en%29/4C9CAE0B7A909C4FC125715A002FDB60?OpenDocument

Recommendation for a Biosecurity Watchdog

Military Implications:
Military and governments from around the world should examine the report's recommendations and consider their implementation accordingly. Also, a follow-up with Canada on its eventual recommendation of a global biotech watchdog organization should be considered.
Sources:
Globalization, Biosecurity, and the Future of the Life Sciences (prepublication copy)
http://newton.nap.edu/books/0309100321/html

Working together against bioterror
http://www.utoronto.ca/jcb/home/news_bioterror.htm

Talks to Prepare for BWC Negotiations Conclude
http://www.nti.org/d_newswire/issues/2006_2_15.html#809EF5F4

Codes of Conduct for Scientists to Strengthen the Biological Weapons Convention

Military Implications:
Military personnel with a responsibility for, or legitimate interest in, issues covered by the BWC should be involved in the process of development, dissemination, and adoption of codes of conduct designed to improve international controls, and to counter terrorist access to biological weapons. Also, since the Review Conference is supposed to address concrete implementation issues, relevant military personnel should also consider contributing expertise and know-how for developing the enforcement framework.
Source:
States Parties To Biological Weapons Convention Conclude Meeting After Discussing Scientific Codes Of Conduct. UN News, 9 December 2005
http://www.unog.ch/unog/website/news_media.nsf/(httpNewsByYear_en)/3BBAC5D174CFA3EFC12570D1005C756C?OpenDocument

<u>Chemical Weapons Convention</u>

Five Countries Organize CWC National Authorities

Military Implications:
Since the U.S. is Party to the CWC, the military, if not already doing so, should consider collaboration and offer assistance to the newly established authorities to fulfill their countries' obligations under the treaty.
Source:
OPCW Press Releases 2006 (see press releases #26: United Republic of Tanzania Establishes OPCW National Authority; #25: Haiti Establishes OPCW National Authority; # 24: Suriname Establishes OPCW National Authority; #23: Yemen Establishes OPCW National Authority; #22: Niue Establishes OPCW National Authority)
http://www.opcw.org/pressreleases/2006/index.html

Software *Toolkit* for Control of Hazardous Chemicals

Military Implications:
Although the U.S. is not party to either of the two Conventions, the military should consider using the software to inventory and manage its materiel containing PCBs and assessing the eventual hazards; as well as, continue phasing it out in host countries that are Party to the Conventions, where it has such materiel.
Source:
Secretariat of the Basel Convention http://www.basel.int/
Launch of a PCB Inventory and Management Decision Supportive Tool
http://www.basel.int/press/PCB_Toolkit.doc

Climate Change

Compliance Body Set Up for Kyoto Protocol

Military Implications:
This would increase Kyoto Protocol-related regulations in the States Party. The Army should make sure it complies with local requirements in States Party.
Sources:
Groundbreaking Kyoto Protocol Compliance system launched
http://unfccc.int/files/press/news_room/press_releases_and_advisories/application/pdf/20060303_compliance_committee_1st_meeting.pdf

Economic Implications of the Kyoto Protocol
http://europa.eu.int/comm/environment/integration/newsalert/pdf/14na4.pdf

Montreal Conference on Climate Change Reached New Agreements

Military Implications:
Although the U.S. is a Party to the UN Framework Convention on Climate Change, it is not a Party to the Kyoto Protocol; nevertheless, the U.S. has agreed to be more engaged in the forthcoming international policy discussions on climate change. COP 12 and COP/MOP 2 to be held November 6-17, 2006 would be an opportunity to present the Army Strategy for the Environment and increase international cooperation. For more information, contact: the UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Web: http://www.unfccc.int. Kenya has offered to host the two conferences.

Military personnel should study their respective host countries' addresses at the conference to identify areas for cooperation. Complete webcast records of these speeches are available online at: http://unfccc.streamlogics.com/unfccc/agenda.asp. Relevant military personnel should follow the negotiations for emission reduction targets for the second commitment period of the Kyoto Protocol (2013-2017) to anticipate potential changes in domestic and international policy. The Five Year Plan of Action on Adaptation should be studied to anticipate potential requests for assistance from developing countries to cope with the impacts of climate change. The decisions from COP 11 and COP/MOP 1, including subsidiary body reports and NGO sessions, should be studied for opportunities to further implement the Army Strategy for the Environment.
Sources:

United Nations Climate Change Conference (COP 11 and COP/MOP 1)
http://unfccc.int/meetings/cop_11/items/3394.php

Summary Of The Eleventh Conference Of The Parties To The UN Framework Convention On Climate Change And First Conference Of The Parties Serving As The Meeting Of The Parties To The Kyoto Protocol: 28 November – 10 December 2005 (The report begins on the third page of this source at the heading "REPORT OF COP 11 AND COP/MOP 1")
http://www.iisd.ca/vol12/enb12291e.html

UN conference agrees on future steps to tackle climate change
http://www.un.org/apps/news/story.asp?NewsID=16889&Cr=climate&Cr1=change

Climate change: successful conclusion of UN Conference in Montreal - statement by Environment Commissioner Stavros Dimas
http://europa.eu.int/rapid/pressReleasesAction.do?reference=MEMO/05/473&format=HTML&aged=0&language=EN&guiLanguage=en

UN Meeting Fails to Agree on Post-Kyoto Strategy

Military Implications:
[Same as in the previous reports on this topic] Although the U.S. is not a signatory to the Kyoto Protocol, its implementation will affect U.S multinationals and military stationed in countries Party to the Convention. The military and its contractors should be prepared to anticipate and accommodate the necessary changes. Also, as noted in previous reports: the military might be required to provide exact data on their greenhouse gas emissions in countries Party to the Convention. The Kyoto Protocol requires each country that is a Party to the Convention to develop and regularly update a greenhouse gas "inventory" listing its polluting sources. Since the state-of-knowledge of carbon sequestration to address greenhouse gases is not well established, the military should consider the options available and research necessary to develop its own carbon sequestration strategies.
Sources:
Bonn Talks To Promote Progress On Climate Change Convention
http://www.un.org/News/Press/docs/2005/envdev849.doc.htm
Post-2012 climate talks stalled at UN conference
http://www.euractiv.com/Article?tcmuri=tcm:29-139557-16&type=News
Greenhouse Gas Trade Growing Sharply - World Bank
http://www.planetark.com/dailynewsstory.cfm/newsid/30772/story.htm

EU Not On Track Meeting Kyoto Requirements

Military Implications:
[Similar to others on this topic] The incredible amount of research providing compelling evidence of the effects of climate change, as well as the increased number and quality of tools providing information for policy making, will increase action to curb current environmental trends as evidenced by the first item in this report. The military and its contractors should continue to develop technologies to reduce its environmental impact and coordinate with others on forecasting future impacts and roles for military responsiveness.
Sources:

UK study warns on Kyoto targets
Business Day, December 28, 2005
http://www.businessday.co.za/articles/world.aspx?ID=BD4A131870

Possible Tougher European Carbon Limits
ANALYSIS - CO2 Price Crash Signals Tougher EU Pollution Goals
http://www.planetark.com/dailynewsstory.cfm/newsid/36186/story.htm
Majority of Britons Want New Environmental Law
http://www.planetark.com/dailynewsstory.cfm/newsid/36194/story.htm
European Cities Pledge to Slash Greenhouse Gas Emissions
http://www.ens-newswire.com/ens/may2006/2006-05-09-06.asp

Meeting of Asia-Pacific Partnership on Clean Development and Climate

Military Implications:
Relevant military personnel and civilian contractors should consider being involved in the development of the Partnership Work Plan and the other actions of the Partnership, to contribute to their elaboration and use as tools and framework for policy-making to curb greenhouse gas emission and increase energy efficiency. Military operations might also benefit from new approaches brought by others to this process that might reduce the military environmental footprint.
Sources:
Asia-Pacific Partnership for Clean Development and Climate (APP)
http://www.state.gov/g/oes/climate/c16054.htm
Charter for the Asia-Pacific Partnership on Clean Development and Climate
http://www.state.gov/g/oes/rls/or/2006/59162.htm
Communiqué for the Asia-Pacific Partnership on Clean Development and Climate
http://www.state.gov/g/oes/rls/or/2006/59158.htm
World's Big Polluters Fund Cleaner Fossil Fuels
http://www.planetark.org/dailynewsstory.cfm/newsid/34475/story.htm
Why NZ wasn't at the Climate Change Conference
http://www.scoop.co.nz/stories/SC0601/S00013.htm

U.S., Australia, and Asia-Pacific Countries Coalition for Clean Development

Military Implications:
Considering that the partnership includes the two most populated countries and emerging polluters, achievement of their energy security and green gas reduction is an important part of global security in general, and of the Pacific region in particular. This is one more initiative that should encourage all sectors (including the military) to contribute the best they can to improve clean energy production.
Sources:
Australia Joins New Asia-Pacific, Partnership On Clean Development And Climate
http://www.pm.gov.au/news/media_Releases/media_Release1482.html
Asia-Pacific Countries Join U.S., Australia to Control Climate
http://www.ens-newswire.com/ens/jul2005/2005-07-28-04.asp

World's Mayors Sign Municipal Version of the Kyoto Protocol

Military Implications:
Managers of military facilities in or adjacent to major cities should anticipate being expected to participate in local civilian programs. Since military bases are like cities unto themselves, those responsible for base environmental management might review the 21 actions for applicability in their respective situations.
Source:
Urban Environmental Accords. Green Cities Declaration
http://www.wed2005.org/pdfs/Accords_v5.25.pdf?PHPSESSID=ace872ed53a0d9fa5677c21935e59549

Forests

Sixth UN Forum on Forests Agrees to Multi-Year Work Plan

Military Implications:
The International Agreements on Forests and the multi-year work program should be reviewed for opportunities to express the Army Strategy on the Environment, other military implications affecting its exercises, and eventual support for compliance offered to local authorities in some areas.
Sources:
Sixth Session of the United Nations Forum on Forests (UNFF-6)
http://www.iisd.ca/forestry/unff/unff6/
Sixth Session of UN Forum on Forests Opens at Headquarters
http://www.un.org/News/Press/docs/2006/envdev883.doc.htm

Call for Legally Binding Agreement for Forests' Conservation

Military Implications:
About 90% of the existing forest cover is in only 24 countries, and comprises the homes to 1.6 billion people whose livelihoods depend on the forests. The degree to which these forests are destroyed is the degree to which potential migration-related conflicts are possible. Hence, protection and conservation efforts create a return of security and stability in those regions. The military should join forces (military-to-military assistance) with relevant international agencies and local governments to help improve forest management and security in those countries where the national military plays a role in such programs. For example, the government of Brazil declared forest conservation a security issue and uses the military to implement forest conservation programs. Eventually, the Forum's efforts may lead to binding international agreements (at least at regional levels) for more forest area protected zones. The Army should be prepared to comply with eventual new regulations that might become applicable to US Forces.
Sources:
UN Forum of Forests: http://www.un.org/esa/forests/index.html
WWF, World Bank Would Trim Global Deforestation 10 Percent by 2010
http://www.ens-newswire.com/ens/may2005/2005-05-26-04.asp
UN Forest Forum Concludes Two-Week Session At UN Headquarters; Fails to reach full agreement on future global plan
http://www.un.org/News/Press/docs/2005/envdev859.doc.htm

Marine Environment

Stronger Guidelines for UN Fish Stocks Agreement

Military Implications:
Since the U.S. is Party to the treaty, military activities might be affected by any changes to the Agreement. Also, it is likely that fostering international cooperation and creating regional management organizations will call for military know-how and eventual help for the treaty's enforcement.
Sources:
At UN, countries agree on guidelines to better manage the world's fish stocks
http://www.un.org/apps/news/story.asp?NewsID=17937&Cr=fish&Cr1=

Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
http://www.un.org/Depts/los/convention_agreements/review_conf_fish_stocks.htm

Marine Biodiversity Protection Regulations Need Improvement

Military Implications:
These cases show that the present regulations covering marine conservation lack an adequate enforcement system and may one day be altered. If so, then the military might at some point be asked to help in monitoring compliance.
Sources:
17 Governments Ask Japanese to Stop Antarctic Whaling
http://www.ens-newswire.com/ens/jan2006/2006-01-19-03.asp
Whaling Protest: Greenpeacer Knocked Overboard, Sea Shepherd Out of Fuel
http://www.ens-newswire.com/ens/jan2006/2006-01-16-03.asp
Whaling Battle Heats Up the Icy Southern Ocean
http://www.ens-newswire.com/ens/jan2006/2006-01-09-05.asp
UN Law Of Sea Tribunal Extends Deadline In Case Of Chile v. European Community
http://www.un.org/apps/news/story.asp?NewsID=17065&Cr=Chile&Cr1=EU
Fisheries scoreboard: Member States must do more to prevent overfishing
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/52&format=HTML&aged=0&language=EN&guiLanguage=en

Europe to Harmonize Marine Pollution Legislation

Military Implications:
Relevant military personnel should be alert to both changes that add requirements or simplify them. Although international law limits this Directive's power to ships that enter an EU port, increased international cooperation could generate new regulations and marine environmental pollution monitoring systems elsewhere. [See also *Improved Cooperation Among International Organizations to Fight Marine Pollution* in March 2005 and *International Maritime Organization (IMO) wants global rather than many different local or regional rules* of January 2003 environmental security monthly reports.]

Source:
Europe Unites Against Marine Polluters
http://www.ens-newswire.com/ens/jul2005/2005-07-11-04.asp

Nuclear Safety

Increasing Nuclear Safety and Security

Military Implications:
[Similar to others on the same issue] The military should assess what new opportunities have been made possible as a result of this international meeting and agreements for improving security; and then recommend policy, training, and institutional or physical changes needed to exploit these opportunities.
Sources:
International Conference On Effective Nuclear Regulatory Systems
http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=150

World nuclear regulators agree to meet again in three years
http://www.platts.com/HOME/highlights/2006/homep_inrc_031306.xml

Slovakia first to ratify UN-administered pact on nuclear terrorism
http://www.un.org/apps/news/story.asp?NewsID=17912&Cr=terror&Cr1

Russia Accepts London Convention on Dumping of Radioactive Wastes

Military Implications:
Although Russia already has considerable help from Western countries (including the U.S.) in managing nuclear waste, it is possible that more support will be needed to take all practicable steps to comply with the Resolution's provisions. (Note: the U.S. is Party to the London Convention.)
Source:
Russian Federation accepts ban on dumping of radioactive wastes under 1972 London Convention
http://www.imo.org/home.asp
The London Convention http://www.londonconvention.org/main.htm

Ozone Protection

Seventh Conference Of The Parties To The Vienna Convention For The Protection Of The Ozone Layer and Seventeenth Meeting Of The Parties To The Montreal Protocol On Substances That Deplete The Ozone Layer

Military Implications:
Military authorities should keep track of which chemicals the Europeans may propose to be banned, and seek substitutes. Military-to-military assistance might include technical assistance to help developing countries achieve their compliance with the Montreal Protocol and the Vienna Convention.
Sources:

Report of the Seventh Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the Seventeenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer
http://hq.unep.org/ozone/Meeting_Documents/mop/17mop/17mop-11.e.pdf

Summary Of The Seventh Conference Of The Parties To The Vienna Convention For The Protection Of The Ozone Layer And Seventeenth Meeting Of The Parties To The Montreal Protocol On Substances That Deplete The Ozone Layer: 12-16 December 2005
http://www.iisd.ca/vol19/enb1947e.htmlLINE

With ozone layer as fragile as ever, governments agree sharp cuts in methyl bromide plus $470 million package for phasing out harmful chemicals (Press release)
http://hq.unep.org/ozone/Public_Information/press_releases/cop7mop17_press_release161205.e.pdf

Montreal Protocol Web site
http://www.unep.org/ozone/Treaties_and_Ratification/2B_montreal%20protocol.asp

REACH (Registration, Evaluation and Authorization of Chemicals)

New UK Chemical Data Base for Regulatory Compliance

Military Implications:
The military should investigate this new resource for its possible usefulness to components operating in the European theater and therefore subject to the REACH regulations.
Source:
ReachReady www.reachready.co.uk

Stockholm Convention

Stockholm Convention Meeting to Look at Concrete Actions and Policies

Military Implications
[Similar to previous on the same issue] Although the U.S. is not Party to the Stockholm Convention, it should be prepared to comply with its requirements when acting in countries Party. Thus, it should closely follow the COP discussions on specific actions and policies to help the Convention's implementation and enforcement. Also, in addition to the preparation for phaseout of the 12 already listed POPs, it is essential to consider the military implications of the additional newly suggested substances and initiate preparations for their replacement.
Sources:
National Plans for Eliminating 12 Extremely Hazardous Chemicals
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=475&ArticleID=5263&l=en
Second Meeting of the Conference of the Parties of the Stockholm Convention
http://www.iisd.ca/chemical/pops/cop2

National Initiatives for Implementing the Stockholm Convention

Military Implications

[Similar to previous on the same issue] Although the U.S. is not Party to the Convention, it should be prepared to comply, within Status of Forces agreements, with its requirements when acting in countries Party.

Sources:

Second meeting of the Conference of the Parties (CoP-2) of the Stockholm Convention
http://www.pops.int/documents/meetings/oewg_nc/notice.htm

National Plans for Eliminating 12 Extremely Hazardous Chemicals
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=475&ArticleID=5263&l=en

Waste Management

Taiwan Cracking Down on Environmental Violators

Military Implications

In order to comply with the law and avoid incidents that would damage the perception of the US, military organizations responsible for projects in Taiwan could take immediate steps (possibly through the Technical Liaison Section of the American Institute in Taiwan) to ensure that their contractors and sub-contractors on the island are scrupulously following the environmental regulations.

Source:

Taiwan's Enviro-Spies
By Matt Kovac, *The Christian Science Monitor*
http://www.cbsnews.com/stories/2005/08/24/tech/main792375.shtml

E-waste Directives to be Enforced in the UK

Military Implications:

The military deployed in the EU Member States should make sure it is prepared to comply with the WEEE and ROHS directives, as "producers" include not just manufacturers, but also importers and exporters of electrical and electronic equipment into the UK. Recycling of electric and electronic equipment and substitution of hazardous substances should be considered, if not already in force.

Sources:

The WEEE Legislation
http://www.weeedirectory.com/the+weee+legislation.aspx

Directive on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS)
http://www.weeedirectory.com/Portals/0/Reports/finalrohs_directive.pdf

INTERNATIONAL STANDARDS

ISO to Establish Standardization in the Field of Nanotechnologies

Military Implications:

Relevant military personnel should consider contacting the U.S. representatives (American National Standards Institute) on TC 229 Nanotechnologies to provide input on concerns and/or methodologies and also to be kept informed and prepared to comply with the eventual standards to be set.

Sources:

Nanotechnologies – inaugural meeting
http://www.iso.org/iso/en/commcentre/events/2005/nano.html

> Committee participation
> http://www.iso.org/iso/en/stdsdevelopment/tc/tclist/TechnicalCommitteeParticipationListPage.TechnicalCommitteeParticipationList?COMMID=5932

International S&T Information System Proposed

Military Implications:

This new initiative could open new avenues to advance environment-related research to enhance environmental security. Relevant military personnel in Paris might monitor ICSU's progress for eventual implications for environmental security research disclosure and collaboration.

Sources:

Global project seeks to promote access to science
David Dickson, Source: SciDev.Net, 17 November 2005
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2484&language=1

> The Global Information Commons for Science Initiative
> http://www.codata.org/wsis/GlobalInfoCommonsInitiative.html
>
> Global forum for free sharing of research data planned
> http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2435&language=1

UNESCO Draft Declaration on Bioethics and Human Rights

Military Implications:

Military medical, research, procurement and ethics organizations (such as the Joint Services Conference on Professional Ethics – JSCOPE) should evaluate this draft declaration and be prepared to participate in intra-US pre-ratification processes. Although the Declaration doesn't have the power of law, it sets a common international platform for bioethics standards that domestic laws and practices should respect in order to make sure they are in conformity with human rights laws. This common international framework is also intended to encourage States to "take appropriate measures, both at the national and the international level, to combat bioterrorism, illicit traffic in organs, tissues and samples, genetic resources and genetic-related materials." The military should take appropriate measures to implement the Declaration's principles to use "common" language at the international level when dealing with bioethics issues. Also it might consider establishing independent, multidisciplinary and pluralist ethics committees, as set out in Article 19 of the Declaration.

Sources:

Towards a declaration on universal norms on bioethics
http://portal.unesco.org/shs/en/ev.php-URL_ID=1883&URL_DO=DO_TOPIC&URL_SECTION=201.html
Ethics, science and human rights come together
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2218&language=1
JSCOPE Home Page
http://atlas.usafa.af.mil/jscope/

ANSI to Carry Out Survey on Needs for Nanotech Standards

Military Implications:
Relevant military personnel should consider participating in the survey to provide input for the international standards in the field of nanotechnology.
Sources:
Nanotechnology Survey Launched to Assess Industry Needs
http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=1202

The survey: www.zoomerang.com/survey.ZGI?p=WEB22598kqraad

SAFETY ISSUES

Environmental Testing

Assessment of Toxicity Testing for Environmental Agents

Military Implications:
Relevant military personnel should consider studying the two reports for inputs in improving military practices for toxicity assessment of environmental agents, as well as to be prepared for new protocols and strategies.
Source:
Toxicity Testing for Assessment of Environmental Agents: Interim Report (2006)
http://darwin.nap.edu/books/0309100925/html

Chemical and Biological safety issues

New International Strategy for Chemicals Management and 9th Special Session of the UNEP Governing Council

Military Implications:
Relevant military personnel should monitor the new developments concerning international environmental governance and eventually consider providing input for the next discussions. The SAICM should be reviewed for potential insights in anticipating potential new international requirements (new treaties and revisions of existing treaties), improving the general framework

of military environmental performance and as a source of input for eventual assistance provided to developing countries in improving their chemicals safety management.
Sources:
International Conference on Chemicals Management, Dubai, 4-6 February 2006
http://www.chem.unep.ch/ICCM/ICCM.htm

9th Special Session of the Governing Council /Global Ministerial Environment Forum
7 - 9 February 2006, Dubai, UAE
http://www.unep.org/gc/gcss-ix/

New Global Chemicals Strategy Given Green Light by Governments
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=469&ArticleID=5137&l=en

9th Special Session of the Governing Council /Global Ministerial Environment Forum 2006
4-9 February 2006, Dubai, United Arab Emirates
http://www.gcssdubai.com/welcome.htm

Summary Of The International Conference On Chemicals Management And Ninth Special Session Of The UNEP Governing Council/Global Ministerial Environment Forum
http://www.iisd.ca/vol16/enb1654e.html

Micro-reactors Challenge Chemical Weapons Convention Effectiveness

Military Implications:
The military should collaborate with the Organization for the Prohibition of Chemical Weapons to assess the threats that these new techniques might pose and to work out ways of countering their dangers. It should also offer assistance to other countries in the effort to prevent non-state actors from using them for malicious purposes, and encourage those countries to fully implement UN Security Council Resolution 1540 on non-proliferation of weapons of mass destruction, which calls on nations to adopt legislation to criminalize WMD proliferation activities and to develop and implement appropriate, effective export controls.
Source:
Technological advances could reduce effectiveness of Chemical Weapons Convention
http://www.llnl.gov/pao/news/news_releases/2005/NR-05-08-04.html

New Web Site on Biomonitoring Technology

Military Implications:
In addition to other websites (e.g., FacsNet http://www.facsnet.org/, NAS http://www.nas.edu/) this site is a good information and risk assessment tool. The military should monitor these web sites (most offer e-mail alerts when new developments are added) and use them as supplementary information in evaluating health impacts of different agents it uses and/or of the environmental conditions where personnel are deployed.
Source:
Biomonitoring Info
http://www.biomonitoringinfo.org/

Soviet-Era Anti-plague Institutes Still Pose Environmental Threat

Military Implications

The military should take immediate steps to cooperate with these institutions and with other organizations to extend the threat reduction effort to this overlooked sector. A number of these sites are located in Central Asia, an area of great current strategic concern, and any incidents there, or even in Russia itself, would undoubtedly find the US military called on for assistance. It is important that CBW forces become familiar with these facilities and offer help in arranging for their proper secure operation.
Source:
Soviet Germ Factories Pose New Threat
By Joby Warrick, Washington Post, August 20, 2005; A01
http://www.washingtonpost.com/wp-dyn/content/article/2005/08/19/AR2005081901507.html
(by subscription only; full text in the Appendix)

Russia to Destroy All Chemical Weapons Arsenal by 2012

Military Implications:
Relevant military should explore all possible approaches to share expertise to speed the program's success.
Source:
Russia to Destroy Chemical Weapons Arsenal
By Agence France-Presse, Moscow
http://www.defensenews.com/story.php?F=987059&C=europe

EU and Japan Respond to Risks from Low Dose Chemicals

Military Implications
Because of the extensive use of these chemicals in all sorts of materiel, the military should closely follow both these researches and their consequences. It is possible that the work described will result in changes to prescribed allowable levels in regulations and agreements, including prohibition of the use of some compounds.
Sources:
Wall St. Journal series: "levels of risk"
http://familiesagainstcancer.org/?id=229
Direct source (by subscription only): A Little Dab'll Do Ya In
Micro-exposure to common chemicals may cause big health problems
http://users1.wsj.com/lmda/do/checkLogin?a=t&d=wsj&sd=users1&url=http%3A%2F%2Fonline.wsj.com%2Farticle_print%2F0%2C%2CSB112224731634594459%2C00.html (by subscription only)

Bioterrorism and Epidemics Threats

World Health Assembly adopts new International Health Regulations

Military Implications:
The new WHO regulations should be distributed to relevant military commands so they can determine the implications for their operations and potentials for collaboration with WHO country offices and the Global Outbreak Alert and Response Network (GOARN). Such reviews should also include the new matrix developed by WHO for helping countries identify whether

new health incidents are of international concern. Military organizations should be ready to use it on their own initiatives (and for their own protection) in countries that are not well prepared to respond to the new regulations.
Sources:
World Health Assembly adopts new International Health Regulations
http://www.who.int/mediacentre/news/releases/2005/pr_wha03/en/index.html
Fifty-eighth World Health Assembly
http://www.who.int/mediacentre/events/2005/wha58/en/index.html
Resolution containing the revised International Health Regulations
http://www.who.int/gb/ebwha/pdf_files/WHA58/A58_55-en.pdf

Avian Influenza

Worries over Avian Influenza Pandemic Increase

Military Implications
[Similar as in previous reports] It seems wiser to overreact to these projections about bird flu's impacts than to underreact. Infection rates of any animals should be monitored as a lead indicator for eventual virus mutation and/or human infections. The organizations working on vaccine development should collaborate to find the best match and to assure mass production, while governments should collaborate on organizing vaccine administration. The military stationed in those regions should have vaccine available for force protection, as soon as it becomes available. Additionally, preventive health staff resources should be augmented by training environmental management personnel at military facilities to assist in collecting and identifying wildlife (living and dead/dying) that might become or be reservoirs/transmitters of avian flu. This could be particularly useful in areas where bird migrations could move the virus from area to area.
Sources:
UN Health Chief Sounds Alarm on Bird Flu
http://www.planetark.com/dailynewsstory.cfm/newsid/32534/story.htm

Canada to host big October conference on avian flu
http://www.alertnet.org/thenews/newsdesk/N1538733.htm

Concern grows over drug resistance in bird flu strains
http://www.scidev.net/content/news/eng/concern-grows-over-drug-resistance-in-bird-flu-strains.cfm

World has slim chance to stop bird flu pandemic
http://www.alertnet.org/thenews/newsdesk/SYD202011.htm

Global strategy to fight bird flu in animals faces serious funding gap
http://www.fao.org/newsroom/en/news/2005/107804/index.html

Singapore Scientists Invent Quick Bird Flu Test
http://www.planetark.com/dailynewsstory.cfm/newsid/32695/story.htm

Bird Flu Spreads Increasing Threats of a Human Pandemic

Military Implications
[Same as in previous reports on the same issue] The military should continue to coordinate with the networks of WHO and CDC country representatives and their local information collection

system and help strengthen these networks to become more globally integrated with the use of pattern recognition and analytic software.
Sources:
Containing outbreak 'would only delay a flu pandemic'
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2671&language=1

UN bird flu coordinator advocates multi-prong effort to control deadly virus
http://www.un.org/apps/news/story.asp?NewsID=17458&Cr=bird&Cr1=flu

The aves, and ave nots. Avian influenza is spreading to many new countries. But migrating wild birds may not be the only culprits. *The Economist*, Feb 24th 2006
http://www.economist.com/agenda/displaystory.cfm?story_id=5515929&fsrc=nwl (by subscription only)

Bird flu update: 27 February 2006
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2681&language=1

Avian Flu Updates

Military Implications:
The military should continue to coordinate with the networks of WHO and CDC country representatives and their local information collection system and help strengthen these networks to become more globally integrated with the use of pattern recognition and analytic software.
Sources:
Bird flu update: 24 October 2005. SciDev.Net 24 October 2005
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2434&language=1
UN task forces battle misconceptions of avian flu, mount Indonesian campaign
http://www.un.org/apps/news/story.asp?NewsID=16342&Cr=bird&Cr1=flu
Woodrow Wilson center, Global Health Initiative
Emerging Pandemic: Costs and Consequences of an Avian Influenza Outbreak
http://wilsoncenter.org/index.cfm?topic_id=116811&fuseaction=topics.event_summary&event_id=142787
Health Ministers Pledge Coordinated Fight Against Bird Flu
http://www.ens-newswire.com/ens/oct2005/2005-10-27-02.asp
European scientists develop H7N1 avian flu vaccine
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1354&format=HTML&aged=0&language=EN&guiLanguage=en
Bird flu: UN-sponsored conference draws up six-point action plan
http://www.un.org/apps/news/story.asp?NewsID=16500&Cr=bird&Cr1=flu
G-7 and WHO Meet to Discuss WMD, Avian Flu Threats
http://www.nti.org/d_newswire/issues/2005_11_18.html#D55B4003
South Asia to set up disease and disaster centres
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2480&language=1
Pandemics Signal the Urgency of Achieving One Health
http://app.e2ma.net/app/view:CampaignPublic/id:263.156624355/rid:a7eb241b8ab0d130184acf8736e4445b

New Avian Flu Early Warning System Based on Migratory Bird Maps
http://www.ens-newswire.com/ens/nov2005/2005-11-21-01.asp

Two Viral Diseases Lie in Wait

Military Implications:
The military should review, and if necessary, revise, their OOTW (Operations Other Than Warfare) epidemic plans to make sure that they are adequate to handle possible epidemics in the areas subject to these diseases, which include Africa and Southeast Asia.
Source:
Deadly New Virus Draws Experts to "Hot Zones"
Bijal P. Trivedi, National Geographic Today, January 21, 2003
http://news.nationalgeographic.com/news/2003/01/0121_030121_tvvirushunter.html

Hendra and Nipah viruses: different and dangerous
Nature Reviews Microbiology 4, 23-35 (January 2006) | doi:10.1038/nrmicro1323
http://www.nature.com/nrmicro/journal/v4/n1/abs/nrmicro1323.html (abstract; full article by subscription only)

African Countries are Vulnerable to Bioterrorism

Military Implications:
The military should consider military-to-military assistance and training in the expertise needed to build the necessary institutional and technological systems to deter and recover from bioterrorism.
Source:
African science policy 'must address bioterror threat'
Peter Wamboga-Mugirya, SciDev.Net, 13 October 2005
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2412&language=1

Nuclear Safety

IAEA Annual Report for 2004

Military Implications:
Since nuclear security is mainly a national responsibility, the Annual report along with other IAEA documents should be reviewed by military and relevant agencies for improving and strengthening anti-nuclear preparedness and increasing general nuclear safety around the world.
Sources:
IAEA Annual Report for 2004
http://www.iaea.org/Publications/Reports/Anrep2004/index.html
IAEA Issues Annual Report for 2004
http://www.iaea.org/NewsCenter/News/2005/annual_report2004.html

Nanotechnology

Industry/Environmentalist Cooperative Effort on Nanotechnology Risks

Low Environmental Risk from Nanomaterial Manufacturing

Nanomaterials in Drinking Water May be Hazardous

Roadmap for Characterizing Nanomaterial Health Effects

Military Implications

A risk management framework is the intended result of these efforts. It will be applicable to all concerned organizations (including the military) to help ensure the environmental safety of nanotech materials, processes, and applications. Relevant military personnel should be kept informed of the evolution of these studies so that they can be prepared to take appropriate measures to ensure that nanomaterials used in military applications are not hazardous to the environment and human health and will comply with future regulations and international agreements.

Sources:

DuPont, Environmental Defense Create Framework for Nanotechnology
http://www2.dupont.com/Media_Center/en_US/daily_news/article20051012b.html

Relative Risk Analysis of Several Manufactured Nanomaterials: An Insurance Industry Context
http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/asap/abs/es0506509.html

Nanotech processing 'greener' than oil refining, study
http://www.physorg.com/news6998.html

Nanomaterial hazard
http://www.physorg.com/printnews.php?newsid=6222

Experts Give Scientists Road Map on Nanotechnology Research
http://www.nytimes.com/2005/10/06/technology/07nano.ready.html

Principles for characterizing the potential human health effects from exposure to nanomaterials: elements of a screening strategy
http://www.particleandfibretoxicology.com/content/2/1/8/abstract

Nanotechnology—Health Implications of Quantum Dots

Military Implications

[Similar to others on the same issue] This study, along with similar others, could help the military improve the environmental health risks assessment of nanotechnology.

Source:

A Toxicologic Review of Quantum Dots: Toxicity Depends on Physicochemical and Environmental Factors
Environmental Health Perspectives • VOLUME 114 | NUMBER 2 | February 2006
http://www.ehponline.org/members/2005/8284/8284.pdf

Nanotechnology: Environmental Implications and Solutions

Military Implications

The work may be useful as an introduction to pollution problems in general, but members of the military environmental community wanting detailed technical guidance on nano effects will have to look elsewhere.
Sources:
Nanotechnology: Environmental Implications and Solutions. Book Review
http://ehp.niehs.nih.gov/docs/2005/113-7/newbooks.html
Nanotechnology: Environmental Implications and Solutions
By Louis Theodore and Robert G. Kunz
Hoboken, NJ: John Wiley & Sons, 2005. 378 pp. ISBN: 0-471-69976-4, $99.95 cloth

UK Launches $8.5M Nanotech Risk Research

New Database of Nanotechnology Risk Studies

EPA Nanotechnology White Paper

Military Implications
The military should consider cooperation with and/or observe the work of different programs in addressing nanotech environmental and health implications, and eventually incorporate relevant findings into its own nanotech planning and research.
Sources:
Nanotech risks: UK launches US$8.5m research plan
http://www.scidev.net/content/news/eng/nanotech-risks-uk-launches-us85m-research-plan.cfm
Nanotechnology. Health and Environmental Implications. An inventory of current research
http://www.nanotechproject.com/index.php?id=18
Too Tiny for Trouble? Scientists Take a Look
By Barnaby J. Feder, New York Times, November 29, 2005
http://www.nytimes.com/2005/11/29/science/29nano.html (by subscription only)

External Review Draft Nanotechnology White Paper
http://www.epa.gov/OSA/nanotech.htm

German NanoCare Project to Evaluate Nanoparticles

Military Implications:
The military should establish relations with the project, and ensure that it keeps informed about the results of the research efforts. NanoCare's work will also be available through a portal and data base on the Web.
Sources:
Bayer joins nanotechnology research project
http://www.pharmaceutical-business-review.com/article_news.asp?guid=30C47C4C-F0EC-42EA-84BA-2DA6FF8C92BF

Project site: http://www.nanopartikel.info/ (in German, under construction)

Nanotech Consumer Products Data Base

Military Implications:
The database might provide useful input to nanotech risk assessments.

Source:
A Nanotechnology Consumer Products Inventory
http://www.nanotechproject.org/index.php?id=44

Online List Details 200+ First Generation Nano Products Available Today on Store Shelves and via Internet
http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/03-10-2006/0004317584&EDATE

New Patent Office Nanotech Index Should Speed Research

Military Implications:
Military personnel concerned with nanotechnology should become familiar with this new and detailed scheme, in order both to use it to track nanotech material in the PTO and to consider using it to organize nanotech information internally.
Source:
USPTO Poised to Ring in a New Era of Simplified Search and Better Visibility for Nano Patents
http://www.nsti.org/news/item.html?id=35

Nanotech Health, Safety, and Environment Working Group Set Up by ISO/ANSI

Military Implications
Military components with responsibility for nanotech environmental concerns should consider contacting Heather Benko, ANSI program administrator (hbenko@ansi.org; 212-642-4912) for eventual collaboration and participation in the activities of the working group.
Source:
ISO Nanotechnologies TC 229 Meets in London
U.S. to convene Working Group on Health, Safety, and the Environment
http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=1084

NIOSH to Form Field Research Team for Assessing Nanotechnology Processes Safety

Military Implications:
Military personnel working with occupational safety and health applications and implications of nanotechnology should be up-to-date with NIOSH database content to ensure that all the health and safety standards and recommendations are implemented in the respective nanotech labs and processes.
Source:
NIOSH To Form Field Research Team for Partnerships in Studying, Assessing Nanotechnology Processes
http://www.cdc.gov/niosh/updates/upd-12-28-05.html

Managing the Effects of Nanotechnology

Military Implications:

Relevant military personnel should study the report, since it is likely that some of the recommendations will find their way into an updated legal framework concerning nanotech-related practices.
Source:
Managing the Effects of Nanotechnology
http://www.wilsoncenter.org/index.cfm?fuseaction=events.event_summary&event_id=162112

Lux Report Addressing Nanotech Health, Environmental, and Safety Risks

Military Implications:
[Same as in May 2005 monthly report] Together with the Millennium Project's study on Potential Health and Environmental Implications of use of Nanotechnology, and other literature and information already available, this report is a source of information and an awareness-raising instrument deserving careful analysis to aid in avoiding and mitigating future, real and perceptual issues.
Source:
Nanotechnology's Environmental, Health, And Safety Risks Can Be Addressed Responsibly Today
http://www.nanoinvestornews.com/modules.php?name=News&file=article&sid=4380
Lux Research information: http://www.luxresearchinc.com

European Nanotechnology Action Plan

Military Implications:
Those responsible for health and environmental impacts of future usage of nanotechnology should review the plan for new concepts, standards, and procedures.
Sources:
The Nanotechnology Service of the European Commission (EU Nanotech latest news)
http://www.cordis.lu/nanotechnology
Looking small, thinking big – keeping Europe at the forefront of nanotechnology
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/717&format=HTML&aged=0&language=EN&guiLanguage=en

Buckyballs Might Affect the Environment

Military Implications
Although—in addition to the other nanotech functions—the antibacterial effect of buckyballs could have many positive applications (e.g. clean-up), the impact on the ecosystem has to be addressed before their industrial production or use. The military should follow and encourage research in this area, and review existing and future buckyball applications in the light of the new findings. Also, as the researchers mention, international regulations will probably emerge to regulate nanotechnology and nanoparticles production and use, to ensure that best practices are applied for human and environment safety.
Sources:
New research raises questions about buckyballs and the environment
http://www.eurekalert.org/pub_releases/2005-05/acs-nrr050905.php
C60 in Water: Nanocrystal Formation and Microbial Response
http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/asap/abs/es048099n.html

Buckyballs Could Damage DNA

Military Implications

The military should consider cooperation with and/or observe the work of different programs in addressing nanotech environmental and health implications, and eventually incorporate relevant findings into its own nanotech planning and research.

Source:

Buckyballs could disrupt functioning of DNA
NewScientist.com News Service Dec. 9, 2005
http://www.newscientist.com/article.ns?id=dn8439

Buckyballs no Risk to DNA

Military Implications:

This is one more position to be added to others concerning nanotechnology health and safety issues for military personnel with such research responsibilities. The jury is still out.

Source:

Buckyballs no cause for alarm
By Eliza Barlow, *Edmonton Sun*, January 3, 2006
http://www.edmontonsun.com/News/Edmonton/2006/01/03/1376977-sun.html

Grant for Review of Best Practices in Nanotech Safety

Military Implications:

The military components concerned with nanotech occupational safety and health should establish liaison with the study to discuss issues of mutual interest, and should obtain a copy of the final results.

Source:

International Council on Nanotechnology studies occupational safeguards
http://www.physorg.com/news11773.html

OECD Workshop on the Safety of Manufactured Nanomaterials

New Essays in Nanotech Journal

Nanotechnologies for Wearable and Non-Wearable Textiles

Nanotechnologies for Anti-Bacterial and Self-Cleaning Coatings

Military Implications

These papers can be a good source of information as nanotechnology evolves and its applications expand. Military components concerned with long-range environmental security planning should follow this kind of material in order to be prepared for future developments and applications of nanotechnology.

Sources:

Report of the OECD Workshop on the Safety of Manufactured Nanomaterials Building Co-operation, Co-ordination and Communication
http://appli1.oecd.org/olis/2006doc.nsf/43bb6130e5e86e5fc12569fa005d004c/b69b32217944d8a1c125715e0038d403/$FILE/JT03208175.PDF

Nanotechnology Perceptions. A Review of Ultraprecision Engineering and Nanotechnology
http://pages.unibas.ch/colbas/ntp (synopsis; full text by subscription only)
The Institute of Nanotechnology. State of the Art and Future Outlook Reports
http://www.nano.org.uk/reports.htm (synopsis; reports available for purchase)

Upcoming Conferences on Nanotechnology Safety

Military Implications:
If not yet done, relevant military personnel should consider attending these conferences, for information sharing and also networking with others working on environmental problems in different other parts of the world.
Sources:
Nanoparticles for European Industry –Manufacture, Scale-Up, Stabilization, Characterization and Toxicology http://www.nano.org.uk/conferences/nanoparticles/flyer.pdf

International Symposium on Nanotechnology in Environmental Protection and Pollution
http://www.isnepp.org/

Nanotechnology's Bottom-up Approach Gets a Boost

Military Implications
Such a road map could help military R&D agencies set priorities and timing for investments for a broad array of applications from nanosensors to detect toxins, to medical devices to repair tissues at the cellular level.
Source:
News Release: Foresight Nanotech Institute Launches Nanotechnology Roadmap
http://www.foresight.org/cms/press_center/128

Nanotechnology Protest

Military Implications
As the use of nanotechnology in military materiel spreads, the military community should increase the body of knowledge about nanotech risks, and ensure that this knowledge is communicated to procurement agencies, military personnel and their families, and the general public. This would also provide a knowledge base to support better decisions for R&D and applications. An opportunity still exists to be prepared, but may be closing.
Source
When Nanopants Attack
http://www.wired.com/news/medtech/0,1286,67626,00.html?tw=rss.TOP

Potential Health Threats Of Some New Technologies

Publication of Data Dangerous to the Environment

Military Implications

Since the mouse-pox story of three or four years ago, military and research labs around the world have introduced the “sensitive information” notion that actually does exactly what this item suggests. The GenBank data base idea could increase attention to this issue leading to better enforcement of the international agreement with sanctions. The military might explore cooperating with other organizations developing approaches (perhaps analogous to "sensitive but unclassified") for the public availability of scientific data that could be hazardous to the environment or health.
Source:
Ray Kurzweil calls for 1918 flu genome to be 'un-published'
http://www.kurzweilai.net/news/frame.html?main=news_single.html?id%3D4934

Underwater Sounds from Human Sources Endangering Marine Life

Military Implications:
Relevant military personnel should study the report for its possible impact on new regulations and also for suggestions on how to reduce harm from military marine activity. The Low Frequency Active (LFA) sonar has been banned in 75% of the world's oceans since 2003. It is likely that under the compelling evidence that marine mammals are threatened by increasingly intense underwater noise from human activities, efforts will increase to internationally regulate any-intensity sonar and underwater explosions that might be harmful. This might affect the U.S. Navy plans to site an Undersea Warfare Training Range off Florida, Virginia, or North Carolina.
Sources:
Sounding the Depths II. The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life
http://www.nrdc.org/wildlife/marine/sound/contents.asp

Fishing Nets Major Risk for Small Cetaceans
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=457&ArticleID=5044&l=en

Study Says Mobile Phones Raise Tumor Risk

Military Implications:
While this question of a hazard from the use of electronic handsets is being resolved, the military (in addition to closely following the scientific efforts) should be investigating what steps would need to be taken, if the fears prove well founded, and such devices become the subject of restrictive regulations. It seems likely that this could become a major issue in the European theater, in view of the locale of the studies.
Sources:
Long mobile phone use raises brain tumor risk
http://go.reuters.com/newsArticle.jhtml?type=technologyNews&storyID=11714735

Heavy Use of Mobile Phones Increases Cancer Risk, Study Finds
http://environment.about.com/od/healthenvironment/a/cancerphones.htm (Article stored for a limited time on the website)

Phthalates May Trigger Lupus

Military Implications

The use of phthalates is already considerably restricted, e.g. in toys. This research, if further work confirms its findings, is likely to result in even more stringent regulations. The military should prepare for eventual new regulations and consider phthalate alternatives.

Source:

Phthalate Linked to Lupus in Mice
http://ehp.niehs.nih.gov/docs/2005/113-12/forum.html#phtl

Toxicogenomic Technologies and Risk Assessment of Environmental Carcinogens: A Workshop Summary

Military Implications:

Military personnel working in the toxicity risk assessment field should consider this report for eventual insights useful for advancing their own research.

Source:

Toxicogenomic Technologies and Risk Assessment of Environmental Carcinogens: A Workshop Summary
http://www.nap.edu/catalog/11335.html

GM Food Protein Revealed to Cause Allergic Lung Damage in Mice

Military Implications:

These new results on possible hazards from consumption of GM food could result in more stringent controls on its production and use. The military should review its use of such products and ensure that it is prepared to deal with potential new international regulations concerning them.

Source:

GM pea protein causes allergic damage in mice
http://www.newscientist.com/article.ns?id=dn8347

POLLUTION ISSUES

Safe Toxin Levels Unknown

Military Implications:

The military should carefully follow progress in this line of research, and be prepared for moves to strengthen the parts of international agreements dealing with non-carcinogenic environmental pollutants.

Sources:

Safe levels of major toxins unknown
http://europa.eu.int/comm/environment/integration/newsalert/pdf/2na1.pdf

Wigle D.T. & Lanphear B.P. (2005) "Human health risks from low level environmental exposures: no apparent safety thresholds", PLoS Medicine 2(12)
http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0020350

Drug Metabolites Identified in Wastewater—Removal Possible

Military Implications:
Military organizations charged with medical waste and wastewater treatment research and operations should evaluate the University of Buffalo findings and consider their application by military facilities and field waste treatment units.
Sources:
Pharmaceutical Metabolites Found in Wastewater. March 15, 2006
http://www.buffalo.edu/research/article.html?id=78260009

Pharmaceuticals in the Environment
http://europa.eu.int/comm/environment/integration/newsalert/pdf/13na3.pdf

Dechlorane Plus® Detected in Atmosphere

Military Implications:
The military should consider monitoring further research on this chemical, and be prepared for its eventual addition to the lists of controlled materials attached to international environmental protection agreements. (See also Item *10.2 Denmark to Sue EU Over Annulling Flame Retardant Ban* in this report)
Source:
A new flame retardant in the air
Science News, January 4, 2006
http://pubs.acs.org/subscribe/journals/esthag-w/2006/jan/science/kb_dechlorane.html

Repeated Spills in China Threaten Human Health and the Environment

Military Implications:
Since the Chinese government agreed to incorporate UNEP's recommendations and lessons learned from the incident into policy, legislation and enforcement, and to share the report with Russian authorities, it is likely that some regional if not international regulations and enforcement might follow. In the spirit of international cooperation, the military liaison officers in Beijing should consider contacting the Chinese State Environmental Protection Administration (http://www.zhb.gov.cn/english) and the People's Liberation Army, and offering assistance and advice on handling and preventing such environmental disasters. Relevant military personnel might also consider studying the UNEP report for eventual insights on consequences of such catastrophes and reaction strategies and planning.
Sources:
New Chemical Spills Threaten Water Supply For Millions In China
http://www.terradaily.com/news/New_Chemical_Spills_Threatens_Chinese_Water_Supply.html

Report from the United Nations Environment Programme Mission to China
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=467&ArticleID=5076&l=en

Effects of China's Songhua River Chemical Spill Still Emerging
http://www.ens-newswire.com/ens/jan2006/2006-01-13-05.asp

North American Report on Children's Health and Environment Indicators

Military Implications:
It is likely that the report will be used to improve policies related to environmental pollution and it might trigger new reporting and/or stricter regulations concerning some pollutants that might be found harmful to children's health.
Source:
Children's Health and the Environment in North America
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1917

Plastic Bags Taxed and/or Banned

Military Implications:
Restrictions of this kind could spread to other areas. The military should seek substitutes. Some work is being done on the use of bioplastics made from sucrose or grain, but more R&D is necessary to find economic alternatives to petroleum-based films.
Source:
Plastic Bags Banned, Blamed for West India Floods
http://www.planetark.com/dailynewsstory.cfm/newsid/32217/story.htm

CLIMATE CHANGE

Joint Science Academies' Statement on Climate Change

Military Implications:
This two-page statement should be distributed to military executives (civilian and uniformed). If good scenarios of military implications of climate change have not yet been written, then they should be. The scenarios could be used as an aid to assess specific impacts, inform research and development, and guide procurement of new cost-effective technologies with low greenhouse gas emission. This statement is intended to increase international pressure for stricter controls on pollutant emissions, including stringent national and regional measures, which could affect military training and operations in all theaters.
Source:
Text and signatures of the Joint science academies' statement:
Global response to climate change: Climate change is real
http://nationalacademies.org/onpi/06072005.pdf

Military Implications: [Similar all items on this issue]
Public information officers of the military who might be called upon to address the military's global warming impact should read the book when it is released, as should others in the military involved in the global warming issues. [Similar to previous on this topic]: The incredible amount of research providing compelling evidence of the effects of climate change, as well as the increased number and quality of tools providing information for policy making, contribute on a daily basis to ability for increasing action to curb current environmental trends. The military and its contractors should continue to develop technologies and management procedures to reduce its environmental impact and coordinate with others on forecasting future impacts and roles for

military responsiveness. New international environmental security-related policies and cooperation to avoid potentially large-scale disasters and conflicts seem inevitable.

Sources:

Research Documents Continued Global Warming Effects
European Geosciences Union—Media
http://www.egu-media.net/content/category/3/39/49/
Earth's Ice Melting Under Blanket of Greenhouse Gases
http://www.ens-newswire.com/ens/apr2006/2006-04-04-04.asp

Global Warming Could be the Cause of Significant Disasters
Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment
http://www.sciencemag.org/cgi/content/full/309/5742/1844?ijkey=iqoyPaiwaACR6&keytype=ref&siteid=sci
Global warming 'could create stronger hurricanes'
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2360&language=1
Northern exposure to greatest climate change? CryoSat should find out
http://www.esa.int/esaEO/SEMA0R4Y3EE_planet_0.html
Climate modeling: Northern Hemisphere circulation
http://www.nature.com/nature/journal/v437/n7058/abs/437496a.html
No stopping deaths from climate change
http://abc.net.au/science/news/health/HealthRepublish_1465428.htm
Shishmaref ponders next move as erosion continues
http://www.adn.com/news/alaska/story/7012209p-6914369c.html
Global warming risk 'much higher'
http://news.bbc.co.uk/2/hi/science/nature/5006970.stm
Ice-capped roof of world turns to desert
http://news.independent.co.uk/environment/article362549.ece
Equatorial African Icecaps Melting Away
http://www.ens-newswire.com/ens/may2006/2006-05-17-04.asp
Development, Industrial Development, Air Pollution, Climate Change
http://www.un.org/News/Press/docs//2006/envdev891.doc.htm
Poor will feel greatest impact of climate change, scientist tells UN commission
http://www.un.org/apps/news/story.asp?NewsID=18360&Cr=climate&Cr1=change
The climate of poverty: facts fears and hope
http://www.christian-aid.org.uk/indepth/605caweek/index.htm

New Computer Climate Models Reveal Threatening Conditions
Evolution of carbon sinks in a changing climate
Inez Y. Fung, Scott C. Doney, Keith Lindsay, and Jasmin John
http://www.pnas.org/cgi/reprint/0504949102v1

Climate Model Links Warmer Temperatures to Permian Extinction
http://www.nsf.gov/news/news_summ.jsp?cntn_id=104368

New observations and climate model data confirm recent warming of tropical atmosphere

New observations and climate model data confirm recent warming of tropical atmosphere
http://www.llnl.gov/pao/news/news_releases/2005/NR-05-08-05.html

Earth is Absorbing an Excess of Solar Energy
Experts Say New Data Show Global Warming
http://www.enn.com/today.html?id=7640

Reversal of Global Dimming
Earth Lightens Up
http://www.arm.gov/science/research/show.php?id=R00077
From Dimming to Brightening: Decadal Changes in Solar Radiation at Earth's Surface
Science, Vol 308, Issue 5723, 847-850, 6 May 2005
http://www.sciencemag.org/cgi/content/abstract/308/5723/847?rbfvrToken=d8502253205de84408e9ca3802db700a416cf35b (full article by subscription only)

Melting of Permanent Frozen Areas Accelerates
Heat and light. An unexplained anomaly in the climate seems to have been the result of bad data

The Economist print edition, Science & Technology, Climate change, Aug 11th 2005
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=4269858&subjectID=348924&fsrc=nwl&emailauth=%2527%25290617L%2527BUQ%2526%255C%250A
(by subscription only)

Climate warning as Siberia melts
From issue 2512 of New Scientist magazine, 11 August 2005, page 12
http://www.newscientist.com/channel/earth/mg18725124.500 (by subscription only)

Greenland Conference on Global Warming

Arctic Ocean Could Be Ice-Free in Summer Within 100 Years, Scientists Say
http://uanews.org/cgi-bin/WebObjects/UANews.woa/9/wa/SRStoryDetails?ArticleID=11532

Officials at Global Conference Say It's Time to Take Action on Global Warming
By Jan M. Olsen, Associated Press, August 19, 2005
http://www.enn.com/today.html?id=8564

Polar Ice Melting Faster than Forecasted
Polar ice sheets show net loss http://news.bbc.co.uk/2/hi/science/nature/4790238.stm
Arctic, Antarctic Melting May Raise Sea Levels Faster than Expected
http://www.ucar.edu/news/releases/2006/melting.shtml
Ice and History. Donald Kennedy and Brooks Hanson, *Science*, 24 March 2006
http://www.sciencemag.org/cgi/content/summary/311/5768/1673

Increased Concerns over Rising Sea Level as Effect of Glaciers' Breakup and Melting
Breakup Of Glaciers Raising Sea Level Concern
http://www.sciencedaily.com/releases/2005/10/051023122913.htm

Global Sea Level Rise Forecast to Flood Low-Lying Coastlines
http://www.ens-newswire.com/ens/oct2005/2005-10-18-02.asp

Global sea levels could rise 30 cm by 2100- study
http://www.alertnet.org/thenews/newsdesk/L30704966.htm

Greenhouse Gases at Rise, Show Several Recent Reports
First WMO Greenhouse Gas Bulletin
http://www.wmo.int/web/arep/gaw/ghg/ghg-bulletin-en-03-06.pdf
Global Atmosphere Watch http://www.wmo.int/web/arep/gaw/gaw_home.html
NOAA Issues Greenhouse Gas Index
http://www.noaanews.noaa.gov/stories2006/s2621.htm
Global warming risk 'much higher'
http://news.bbc.co.uk/2/hi/science/nature/5006970.stm
"Little Green Data Book 2006"
http://siteresources.worldbank.org/INTEEI/936214-1146251511077/20906290/LGDB2006PR.pdf

Climate Change Impact on Human Health
Climate Change Futures: Health, Ecological and Economic Dimensions
http://www.climatechangefutures.org/report/index.html

Global Warming Threshold Might Have Been Crossed
James Lovelock: The Earth is about to catch a morbid fever that may last as long as 100,000 years by James Lovelock. *The Independent*, 16 January 2006
http://comment.independent.co.uk/commentators/article338830.ece
Environment in crisis: 'We are past the point of no return'
By Michael McCarthy Environment Editor, *The Independent*, 16 January 2006
http://news.independent.co.uk/environment/article338878.ece
Green campaigners support Lovelock for sparking fresh debate on global warming
By Michael McCarthy, Environment Editor, *The Independent*, 17 January 2006
http://news.independent.co.uk/environment/article339066.ece
Rapidly shrinking Arctic ice could spell trouble for the rest of the world
http://www.realcities.com/mld/krwashington/13593302.htm

Melting Permafrost Releases Methane Twenty Times More Dangerous for Global Warming than CO_2
Most of Arctic's Near-Surface Permafrost May Thaw by 2100
National Center for Atmospheric Research, December 19, 2005
http://www.ucar.edu/news/releases/2005/permafrost.shtml
Arctic Feels the Heat from Climate Change
http://www.planetark.com/dailynewsstory.cfm/newsid/33854/story.htm

Fluctuations of Glaciers VIII 1995–2000 Report
'Fluctuations of Glaciers' Report Launched
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=449&ArticleID=4896&l=en
Fluctuations of Glaciers VIII, 1995–2000 report
http://www.geo.unizh.ch/wgms/fog/fog8.pdf
World Glacier Monitoring Service: http://www.geo.unizh.ch/wgms/

The Year 2005 Hits the Record Books for Climate Extremes
2005 - A year of record climate extremes
http://www.cbc.ca/news/background/kyoto/2005_record.html
2005 on the way to becoming second warmest year ever
http://www.wmo.int/web/Press/Press743_E1.doc

G20 climate summit advocates "clean technologies" Rather than targets to tackle climate change
G20 climate summit pushes technology not targets
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2454&language=1
Global Warming Appears to Double Rate of Sea Level Rise
http://www.ens-newswire.com/ens/nov2005/2005-11-25-09.asp#anchor1
United Nations Climate Change Conference (COP 11 and COP/MOP 1)
http://unfccc.int/meetings/cop_11/items/3394.php

Nordic Countries Suggest Actions to Cope with Global Warming
Conservation of Nordic Nature in a Changing Climate (TemaNord 2005:572)
http://www.norden.org/pub/sk/showpub.asp?pubnr=2005:572

UK Calls for Worldwide Action for Addressing Global Warming
Top UK Scientist Sees Dangerous Rise In Global Warming
http://www.terradaily.com/reports/Top_UK_Scientist_Sees_Dangerous_Rise_In_Global_Warming.html

East Asia and Climate Change
East Asia Update - News Release
http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPHALFYEARLYUPDATE/0,,contentMDK:20865282~pagePK:64168445~piPK:64168309~theSitePK:550226,00.html (see "Download the Report" for more details)
Asia-Pacific Dialogue on Innovative Options for Non-Annex 1 Countries' Participation for Climate Change Action
http://www.iges.or.jp/en/cp/activity07.html
Launch of the State of the Environment in Asia and the Pacific 2005 Report
http://www.unescap.org/unis/press/2006/apr/n19.asp

OTHER BIODIVERSITY PROTECTION MEASURES

International Year of Deserts and Desertification—2006

Military Implications:
Those developing military programs to prevent environmentally induced conflicts should take advantage of the Year to cooperate with other militaries, international agencies, and NGOs to create new policies and strategies to counter desertification and help cope with its consequences.
Sources:

2006 International Year of Deserts and Desertification
http://www.iydd.org/

Life Saving Anti-Drought Measures Must Include Investment in Nature
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=467&ArticleID=5077&l=en

INTERVIEW: Advancing deserts fuel African conflicts
http://www.alertnet.org/thefacts/reliefresources/113804548788.htm

In Kenya, 'Why Does This Keep Happening?'
By Emily Wax, Washington Post Foreign Service, January 8, 2006; Page A20
http://www.washingtonpost.com/wp-dyn/content/article/2006/01/07/AR2006010701024.html
(subscription required)

New Protected Ecological Sites

Seven New Sites Added to World Heritage List

UN Ecological Reserves Network Adds 22 New Sites

Military Implications:
[Similar to previous reports on the same issue] The military should keep up-to-date with the list of protected sites and have its operations planned accordingly. Citing the Army's new "Strategy for the Environment," the military should seek new opportunities to participate in dialogues among scientists, politicians, environmental NGOs, and economic decision-makers for improving biodiversity management strategies as well as in planning its own operations.
Sources:
Seven Natural Wonders Inscribed on World Heritage List
http://www.ens-newswire.com/ens/jul2005/2005-07-15-06.asp

Twenty-three New Biosphere Reserves Added to UNESCO's Man and the Biosphere (MAB) Network
http://portal.unesco.org/unesco/ev.php?URL_ID=28229&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1120062522

Biodiversity Synthesis Report (Millennium Ecosystem Assessment 2)

Military Implications
The findings of this report re-enforce and add to the previous reports of this kind. The military should review the report's findings and analyze their probable effects on military planning, training and operations. It is likely that these findings will lead to new international restrictions protecting the biosphere from human-caused damage.
Sources:
MA releases second report: Biodiversity and Human Well–being (news release)
http://www.maweb.org/en/index.aspx
Biodiversity and Human Well–being (report downloadable)
http://www.maweb.org/proxy/document.aspx?source=database&TableName=Documents&IdField=DocumentID&Id=354&ContentField=Document&ContentTypeField=ContentType&TitleField=Title&FileName=CBDSynthesisFINAL.pdf&Log=True

Desertification Synthesis (Millennium Ecosystem Assessment 3)

Military Implications

[Same as in May 2005 monthly report] The findings of this report reinforce and add to the previous reports of this kind. The military should review the report's findings and analyze their probable effects on military planning, training and operations. It is likely that these findings will lead to new international restrictions protecting the biosphere from human-caused damage.

Source:

MA launches Desertification Synthesis Report on "World Day to Combat Desertification"
http://www.millenniumassessment.org/en/Article.aspx?id=67

Millennium Ecosystem Assessment
http://www.millenniumassessment.org/en/index.aspx

Ecosystems & Human Well-being: Wetlands & Water Synthesis

Ecosystems and Human Well-being: Health Synthesis

Military Implications

[Same as previous on the MA reports] The findings of this report reinforce and add to the previous reports of this kind. The military should review them and analyze their probable effects on military planning, training and operations. It is likely that these findings will lead to new international restrictions protecting the biosphere from human-caused damage.

Sources:

"Ecosystems & Human Well-being: Wetlands & Water Synthesis" launched at Ramsar COP9
http://www.millenniumassessment.org/en/article.aspx?id=71
Ecosystems & Human Well-being: Wetlands & Water Synthesis
http://www.maweb.org/proxy/Document.358.aspx
Ecosystems and Human Well-being: General Synthesis
http://www.millenniumassessment.org//proxy/Document.357.aspx
Human Health Under Threat from Ecosystem Degradation: WHO releases "Ecosystems and Human Well-being: Health Synthesis"
http://www.millenniumassessment.org/en/article.aspx?id=72
Human Health Under Threat from Ecosystem Degradation WHO Media Release
http://www.millenniumassessment.org/proxy/Document.764.aspx
Ecosystem assessment wins top environment award
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=2561&language=1

European environment - State and outlooks 2005

Military Implications:

Europe is already a leader—a position it wants to keep—in environmental conservation and therefore adoption of adequate regulations. Reports like this one are likely to reinforce some existing policies and bring about others to fill the eventual gaps, as well as strengthening the enforcement procedures.

Source:

The European environment - State and outlook 2005
http://reports.eea.eu.int/state_of_environment_report_2005_1/en

One Planet Many People–Atlas of our Changing Environment

Military Implications:
Along with the Millennium Ecosystem Assessment reports and other similar reports addressing ecological changes and the human footprint, this report is important input for policymakers in considering ecologically sustainable strategies.
Source:

One Planet Many People–Atlas of our Changing Environment
http://www.na.unep.net/OnePlanetManyPeople/index.php

Europe 2005: The Ecological Footprint

Military Implications
The report will be used to inform a larger EU effort to design a sustainable development strategy for the region. It is possible that the report—the first of its kind for Europe—will reinforce Europe's ecological policy, possibly triggering new regulations.
Sources:
Europe 2005: The Ecological Footprint (the report)
http://www.wwf.fi/wwf/www/uploads/pdf/ekologinen_jalanjalki_june05.pdf

Europe 2005: The Ecological Footprint (press release)
http://www.footprintnetwork.org/gfn_sub.php?content=europe2005

Mediterranean Threatened by Development Pressures, Says *Blue Plan Report*

Military Implications:
The outcomes of the report might find their way into new environmental regulations. The military should consult the report for eventual implications for their future activities in the region and also as a resource for eventual inputs in improving its own environmental strategies.
Source:
Mediterranean Threatened by Development, says Blue Plan Report
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=475&ArticleID=5248&l=en

Greenpeace Calls for Oceans Natural Reserves

Military Implications:
Well-documented reports with concrete policy suggestions, such as the one by Greenpeace, could trigger some new international regulations for improving oceans' protection. The military should consider the training and operations implications, if these recommendations were eventually to find their way into international agreements.
Source:
Roadmap to Recovery: A global network of marine reserves
http://www.greenpeace.org/international/press/reports/ocean-maps
http://www.greenpeace.org/raw/content/international/press/reports/ocean-maps.pdf (the report)

Tougher Systems to Control GMO Suggested

Military Implications:
The recommendations of the report might find their way into a better-enforced framework to control GM products mixing and movement, including shipments of food aid. The military should be prepared to have up-to-date information on all the characteristics (including GMO content) of the food it moves around the world, in order to prevent avoidable embarrassment.
Sources:
Greenpeace and GeneWatch UK call for urgent adoption of international biosafety standards
http://www.genewatch.org/Press%20Releases/pr85.htm

GM Contamination Report 2005
www.genewatch.org/publications/reports/contamination report final.doc (might take longer to download)

The Debate over Genetically Modified Organisms (GMOs) Continues

Military Implications:
Although most of the European national safeguard measures include bans or restrictions on cultivation, some also refer to regulations on import and use in food and feed. As the EU countries do not have a common GMO policy, it is important to know each country's specifics in order to comply with the respective regulations. Japan introducing stricter control of imports, and Chinese spread of unapproved GMO varieties, might increase other countries' verification procedures for different varieties of GMO food that are banned; hence, all overseas shipping of food (including for military use) should be carefully inspected to certify that they comply with GMO regulations of the receiving country within status of forces agreement limits/freedoms.
Source:
EU Environment Ministers Let Five States Keep GM Crop Bans
http://www.ens-newswire.com/ens/jun2005/2005-06-27-03.asp

Italy Calls for Independent EU Research on GMOs
http://www.planetark.com/dailynewsstory.cfm/newsid/31035/story.htm

Japan Finds US Biotech Corn, now to Test all Imports
http://www.planetark.com/dailynewsstory.cfm/newsid/31062/story.htm

Illegal GMO Rice Spreads across China – Greenpeace
http://www.planetark.com/dailynewsstory.cfm/newsid/31219/story.htm

GMO debate (continue)

Military Implications:
The WTO ruling and biotechnology industry stance on Terminator technology seem to be igniting the ongoing disputes over GMOs. It is likely that the framework of regulations, compliance and enforcement concerning GMOs will be reviewed at international forums to be more comprehensible. The military should be prepared for eventual new labeling and transboundary procedures updates.
Sources:

WTO GE Crop Ruling a Setback for National Safeguards
http://www.iatp.org/

WTO ruling's conclusions and recommendations
http://www.tradeobservatory.org/library.cfm?refid=78475

Monsanto May Commercialize Terminator
http://etcgroup.org/article.asp?newsid=544

New report considers co-existence of GM and non-GM crops and seeds
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/230&format=HTML&aged=0&language=EN&guiLanguage=en

New case studies on the coexistence of GM and non-GM crops in European agriculture
http://www.jrc.es/home/pages/eur22102enfinal.pdf

FAO calls for an international framework for GM trees

Military Implication
Before using GM trees as an option in post-conflict remediation, a risk-assessment of their impact should be conducted to avoid damages to biodiversity. The military should continue to follow the discussions on GMOs and developments of eventual international frameworks.
Sources:
UN body urges caution over GM Trees
http://www.scidev.net/content/news/eng/un-body-urges-caution-over-gm-trees.cfm
Biotechnology in forestry gaining ground
http://www.fao.org/newsroom/en/news/2005/104906/index.html

GM Crops Created Superweed

Military Implications:
This discovery and disclosure might provide more reasons for nations that are already worried about GMOs to increase their countries' verification procedures for different varieties of GMO. Hence, methods should be created for GMO product procurement/acceptance and for inspecting overseas shipping of GMO-containing products to determine compliance with GMO regulations of the receiving country.
Sources:
GM crops created superweed, say scientists
Paul Brown, environment correspondent. Guardian, Monday July 25, 2005
http://www.guardian.co.uk/print/0,3858,5246601-103528,00.html
Monitoring movement of herbicide resistant genes from farm-scale evaluation field sites to populations of wild crop relatives, July 26th 2005
http://www.ceh.ac.uk/news/index.html#fse

Europe to Redouble Efforts to Stabilize Biodiversity by 2010

Military Implications:
The outcomes of the "Biodiversity in Europe" Conference are important both as addressing biodiversity decline causes, and as guidelines for eventual regional and/or global framework of

regulations, compliance and enforcement for reducing it. The military should follow the new developments on the issue and how they might impact its field activities.
Source:
Fourth Intergovernmental conference 'Biodiversity in Europe' and 10th meeting of the Council of the Pan-European Biological and Landscape Diversity Strategy
http://www.strategyguide.org/200602/Documents.html

WHO Project to Minimize Risks of Radon

Military Implications:
While Army environmental policy has for many years included remediation of radon occurrence in facilities at home and abroad, this development opens two new doors. First, host nations are likely to start promulgating standards needing cooperative attention under status of forces agreements. Second, host nation opportunities may arise to use Army radon mitigation management experience, training and technologies as environmental engagement tools.
Sources:
WHO launches project to minimize risks of radon
http://www.who.int/mediacentre/news/notes/2005/np15/en/index.html
General information about radon: http://www.epa.gov/radon

NEW ORGANIZATIONS WITH MANDATES WITH EVENTUAL ES IMPLICATIONS

UN to Enhance Eco-Development Procedures

Military Implications:
[Similar to previous on the same issue] Relevant military personnel should consider collaboration with the UN Eco-Development agency and also follow its work for insights on encouraging civilian contractors in developing countries to adopt the new eco-responsible development models for integrating environmental, social and governance issues into the investment community. In the cases of large military contracts, when applicable, eco-efficiency might be considered as a requisite for proposals. The short-run benefits would be in public relations: showing environmental leadership. In the long run, anticipatory action now could avoid compliance problems in the event that eco-efficiency becomes mandatory.
Sources:
Italy: Trieste Gets UN Eco-Development Agency
http://www.ansamed.info/ansamed/news/sections/generalnews/20051018151133679251.html
A legal framework for the integration of environmental, social and governance issues into institutional investment
http://unepfi.org/investor_law/
Global investors should consider environmental factors, UN-backed study argues
http://www.un.org/apps/news/story.asp?NewsID=16354&Cr=UNEP&Cr1=
UNESCO and Italy take first step towards creation of environmental institute
http://portal.unesco.org/en/ev.php-URL_ID=30252&URL_DO=DO_TOPIC&URL_SECTION=201.html

NEW INITIATIVES AIMING TO INCREASE ECO-EFFICIENCY

UN Launched the Principles for Responsible Investment

Military Implications:
The military, in its effort to improve environmental and social performance, should consider encouraging its contractors to explore the implications of joining and implementing the Principles for Responsible Investment.
Source:
Principles for Responsible Investment website http://www.unpri.org/

New American Association for the Advancement of Science (AAAS) Global Website on Sustainability

Military Implications:
This new resource should be valuable for military environmental managers to help meet sustainability goals, such as in the Army Strategy on the Environment, and to share technical and policy innovations developed by the armed forces. The Army Environmental Policy Institute would seem to be particularly appropriate for membership, as might many other organizations whose operations, research, and planning activities affect and are affected by sustainability issues and opportunities.
Source:
AAAS, Partners Launch Global Web Site on Sustainability Science
From Vol. 312 SCIENCE, 28 April 2006, page 542
http://sustainabilityscience.org

Environmental concerns increase opportunities and challenges for business (Millennium Ecosystem Assessment report 4)

Military Implications
[Same as previous monthly reports on the MA] The findings of this report reinforce and add to the previous reports of this kind. The military should review the report's findings and analyze their probable effects on military planning, training and operations. It is likely that these findings will lead to new international restrictions protecting the biosphere from human-caused damage.
Sources:
Environmental concerns increase opportunities and challenges for business
http://www.millenniumassessment.org/en/Article.aspx?id=70
Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry
http://www.millenniumassessment.org//proxy/document.353.aspx
Millennium Ecosystem Assessment
http://www.millenniumassessment.org/en/index.aspx

UN Envisaging a Treaty for Multinational Corporations

Military Implications:
Since the proposed treaty already gained support from many NGOs and activist groups, including environmental ones, it is likely that in a few years multinational corporations will have

to comply with stricter environmental and social regulations. The military and its contractors should monitor the evolution of each treaty's preparation in order to be ready to participate in negotiations and act in accordance with any eventual new rules. It is also to be expected that, having had specific rules imposed on them, multinational corporations will exercise pressure at national and international levels, requesting that all corporations abide by the same rules.
Source:
Multinational Business and New Policymaking Venues
By Bart Mongoven, Stratfor Strategic Forecastng, August 04 2005
http://www.stratfor.com/products/enhanced/read_article.php?id=253123&ref=050804 (by subscription only; contact STRATFOR for access)

Climate Change Dialogue Initiative Launched

Military Implications:
The Army should consider joining the Climate Change Dialogue initiative as an example of its interest in climate change issues and as part of the Army Strategy for the Environment.
Source:
World lawmakers set up global warming monitor group
http://go.reuters.com/newsArticle.jhtml?type=scienceNews&storyID=11333880&src=rss/scienceNews

Second Australia-New Zealand Climate Change and Business Conference

Military Implications:
The military should consider sharing strategies and logistics with South Pacific countries for dealing with food and other upcoming security issues, considering the potential for environmental refugees and population migration from the Small Island Countries.
Sources:
'2nd Australia-New Zealand Climate Change and Business Conference' in Adelaide
http://www.climateandbusiness.com/

Call for businesses to act on climate change
http://www.stuff.co.nz/stuff/0,2106,3577681a13,00.html

Two Global Alliances for "Greener" Buildings Around the World

Military Implications:
The military should liaise with both SBCI and WBCSD to share and learn best design and construction practices for improved environment-friendly built environments. This is another opportunity to further the *Army Strategy on the Environment*.
Sources:
U.N. Environment Program Launches Green Building Initiative
http://www.greenbiz.com/news/news_third.cfm?NewsID=30459

Buildings of the Future Energy Self-Sufficient, Carbon Neutral
http://www.ens-newswire.com/ens/mar2006/2006-03-29-03.asp

UNEP and 150 Labor Unions Agree on Environmental Objectives

Military Implications:
Military personnel officers and their civilian contractors who work with unions should seek opportunities to cooperate on improved environmental practices. This movement makes labor unions potential new allies for military R&D green materiel developers.
Sources:
Labouring Together for a Cleaner, Greener and More Just Planet
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=467&ArticleID=5078&l=en

WILL 2006 Conference: Trade Unions Agree Action on Environment with Key UN Bodies
http://www.icftu.org/displaydocument.asp?Index=991223286&Language=EN

Prospects for Hydrogen and Fuel Cells

Military Implications:
This IEA study might help relevant military personnel as they consider actions for achieving diversity of the energy supply, solving transportation requirements, and reducing emissions.
Source:
Prospects for Hydrogen and Fuel Cells, 256 pages, ISBN 92-64-10957-9 (2005)
http://www.iea.org/bookshop/add.aspx?id=308 (Press releases and summaries; book available for purchase)

The Future of Technology Assessment

Military Implications:
The report might be a good information and guiding source for military personnel involved in S&T assessment and addressing eventual social, health, and environmental implications of new technologies.
Source:
The Future of Technology Assessment
http://wilsoncenter.org/index.cfm?fuseaction=news.item&news_id=161052

UK Analysis of Current Green Energy Options

Military Implications:
The report should be studied for implications for more energy efficient and less environmentally damaging approaches to energy production and use.
Source:
Parliament Launch of ISIS 2006 Energy Report
http://www.i-sis.org.uk/PLOIER.php and for the executive summary, see:
http://www.i-sis.org.uk/ISIS_energy_review_exec_sum.pdf

Renewables 2005: Global Status Report

Military Implications:
Relevant military personnel should consider the report for insights on potential new regulations concerning renewables in some host countries or regions around the world, as well as for possible insights to improve its own energy-efficiency strategies.

Source:
Renewable Energy Markets Show Strong Growth - REN21 Releases "Renewables 2005: Global Status Report"
http://www.worldwatch.org/press/news/2005/11/06/

Target 2020: Policies and measures to reduce greenhouse gas emissions in the EU

Military Implications:
It is likely that recommendations from this "roadmap for a climate-friendly Europe" might find their way into some technical, political, and economic regulations. Relevant military personnel should consider the report both from point of view of preparedness for potential new regulations and of possible insights to improve military energy-efficiency strategies.
Source:
Target 2020: Policies & Measures to reduce Greenhouse gas emissions in the EU
http://www.panda.org/news_facts/publications/index.cfm?uNewsID=24155

New REN21 Report Links Renewable Energy to Climate Change Solutions

Military Implications:
This report, along with similar others, might be a good resource for improving green energy efficiency strategies and should be reviewed for that purpose.
Source:
New REN21 Report Links Renewable Energy to Climate Change Solutions
http://www.ren21.net/climatechange/default.asp

Chinese Popular and Government Support for Environmental Concerns

Military Implications:
These developments denote that China – a permanent member of the UN Security Council – is likely to take a more pro-environment stand in international discussions. Military liaison officers in Beijing should explore a range of possible environmental security related areas for mutual cooperation with the People's Liberation Army and present the *Army Strategy for the Environment.*
Source:
Environmental awareness and anger grow in China. Poisoned river had affected many directly
By Jehangir S. Pocha, Globe Correspondent. December 4, 2005
http://www.boston.com/news/world/asia/articles/2005/12/04/environmental_awareness_and_anger_grow_in_china/

China to Monitor Economy-Wide Energy Efficiency
http://www.planetark.com/dailynewsstory.cfm/newsid/34254/story.htm

Army Strategy on the Environment
https://www.asaie.army.mil/Public/ESOH/doc/ArmyEnvStrategy.pdf

Russian Green Party Formally Organized

Military Implications

US military representatives in Russia should offer the new party access to material on environmental security, especially as it relates to military planning and operations, while being particularly careful to avoid any appearance of partisan support. They should also monitor the party's effect, if any, on government environment policy, to watch for changes that might affect Russia's position on international environmental issues and regulation. Findings should be shared with organizations like the departmental Deputy Assistant Secretaries for environment, the Army Environmental Policy Institute and the Air Force Center for Environmental Excellence.

Sources:

Veteran Russian ecologists form Green Russia party
http://news.yahoo.com/news?tmpl=story&u=/afp/20050605/sc_afp/russiapoliticsgreens_050605172821

Head of Russia's New Green Party Outlines Tasks, Problems
http://www.rednova.com/news/science/154757/head_of_russias_new_green_party_outlines_tasks_problems/

New Israeli Venture Capital Fund for "Clean Tech" Enterprises

Military Implications

Information to judge the military value of products from successful new “clean” technology companies should be sought by military procurement personnel from this and other such VC sources.

Source

Israeli Start-Ups Work on Environmental Technology
http://www.planetark.com/avantgo/dailynewsstory.cfm?newsid=31333