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INTERNATIONAL TREATY ISSUES IDENTIFICATION AND ANALYSIS

Summarizing Environmental Security Monthly Scanning
—April 2004–April 2005—

The purpose of this study—and of the monthly scanning reports—is to assess worldwide environmental-related issues in order to identify and analyze events that might trigger future international environmental treaties, conventions, or protocols and/or modifications to the existing ones.

Environmental security is environmental viability for life support with three sub-elements:

A. Preventing or repairing military damage to the environment
B. Preventing or responding to environmentally caused conflicts
C. Protecting the environment due to the moral value of the environment itself

A. Preventing or repairing military damage to the environment

ENVIRONMENTAL SECURITY RISES ON THE INTERNATIONAL POLITICAL AGENDA

CONFLICT AND POST-CONFLICT ENVIRONMENTAL SECURITY ISSUES

Nanoshells Dramatically Improve Sensing Capability

Molecular Pattern Matcher for Chemical Detection

Nanoporous Ceramic Uses for Heavy Metals Cleanup

Iron Nanoparticles for Environmental Cleanup

Dirty Bomb Clean-Up Technology for Porous Structures

New and Improved Land Mine Destruction Technique

Bionanotech Particles Can Detect Bacteria in 20 Minutes

Nanodevices for Biomolecules Detection

Nanotubes that Detect and Kill Biological Agents

Bacterial Integrated Circuits

Military Applications of Silicon-Based Ultraviolet Sensors

Technology for Perchlorates Cleanup

Aquatic Plant Removes POPs from Wetlands

Motion Detector Allows Naked Eye to See Motion of 10 Nanometers

Designer Bacteria Could Help Cleanup Pollution and Produce Hydrogen

New More Efficient Microbial Fuel Cell Cleans Wastewater and produces Hydrogen

Proposed T-Rays (TeraHertz) Devices Could Detect Almost Anything

Automated Water Safety Sensor Units

Arsenic-polluted Water Decontamination Using Sulphate

Water Nanofilters

Sandia National Laboratories funded to develop improved Desalination and Arsenic Removal Technology

Low-cost, Non-polluting Sewage Treatment System

More environmental-friendly technologies to be used by the Army

New Power Sources Needed for the Soldiers of the Future

Flexible Plastic Solar Cells Converting 30% of Sun's Power into Usable Energy

Flexible Solar Cells could be sewn in Clothing

Nanotechnology Used to Produce Hydrogen for Fuel Cell Cars

Korean Nanotechnology production techniques Cut Costs and Environment Impact

'On-Off Switch' for Buckyball (C60) Toxicity

Zircon Options for Nuclear Waste Storage

Biodegradable Mobile Phones

B. Preventing or responding to environmentally caused conflicts

FOOD SHORTAGE

Biodiversity for Food Security is the theme of this year's World Food Day

WATER

Decade “Water for Life” Launched

UN Conference ‘Water for Food and Ecosystems’

World Water Week Warns of Wars over Water

Prospects for Conflict over Water Rise in Several Regions

China River Basin Issues

Project to Address the Aral Sea Disaster

New Reports on Water-related Issues

UNEP’s Governing Council Focuses on Water and Sanitation

Could large-scale ocean zoning prevent conflicts?

NATURAL DISASTERS

Natural Disasters as an Environmental Security Issue

Additional Environmental Security Role for the UN Security Council

OSCE Workshop on Environmental Risks and Security in Earthquake Areas

Asian Tsunami Triggers Global Early Warning System

MIGRATION

UN Establishes New Agency for Internally Displaced People

South Asian Environmental Migration

C. Protecting the environment due to the moral value of the environment itself

ENVIRONMENTAL SECURITY-RELATED INTERNATIONAL REGULATIONS THAT HAVE BEEN COMING INTO FORCE SINCE APRIL 2004

- African Rain Forest Protection—International Treaty signed in February 2005
- Gothenburg Protocol on Air Pollution to enter into force in May 2005
- EU Greenhouse Gas Emission Trading Scheme (EU ETS) became formally active on January 1, 2005
- Kyoto Protocol came into force in February 2005
- Maritime "Mandatory Area to be Avoided" in New Zealand—established by IMO—became effective December 2004
- Oil Spill Fines Increase—effective March 2005
- Plant Genetic Resources for Food and Agriculture—FAO International Treaty—entered into force in June 2004
- Preventing Terrorist Access to Weapons of Mass Destruction—UN resolution adopted in April 2004
- Single-hull Oil Tanker Phase-out entered into force in April 2005
- Stockholm Convention on POPs came into force in May 2004

PROPOSED TREATIES AND/OR CHANGES TO EXISTING ONES

- UN Convention against Nuclear Terrorism
- Treaty on Access to Clean Water
- Clean Air for Europe Initiative to Limit Air Pollution
- Changes to Gothenburg Protocol— the Convention on Long-range Transboundary Air Pollution
- REACH Program Closer to Entry Into Force
- Stockholm Convention on POPs to be Expanded
- Rotterdam Convention on PIC for Certain Hazardous Chemicals and Pesticides in International Trade to be Expanded
- Mercury Pollution Global Assessment and Control
- Time to Strengthen the 1972 Biological Weapons Convention
- EU to Ban the use of Cadmium in Batteries
- EU Environment Ministers Propose post-Kyoto Protocol Climate Policies

European Parliament Resolution to Protect Whales From Sonar

EU "Polluter Pays" Law

EU to Set Higher Targets for Cuts in Energy Consumption

EU New Law To Control Bird Flu Epidemics

IMPROVED COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

International Conference on Environmental Compliance and Enforcement

Emerging Forces in Environmental Governance, UNU Report

UK Suggests Environmental Court similar to Australia and New Zealand

OECD Environment Ministers Call for more Ambitious Policies

Aarhus Clearing House Launched

Overview of Explosive Remnants of War Protocol

Comprehensive Test Ban Treaty Organization to be Restructured

Southwest Pacific Islands Might "Localize" Environment-protection Legislation

Improved Cooperation Among International Organizations to Fight Marine Pollution

EC Reports EU Environmental Law Enforcement by EU Members is Poor

Increasing Capacity of Space Technology to Assist Environmental Security

Global Earth Observing System of Systems

NASA's Eyes in the Sky to Help Global Conservation

Open Skies Treaty may also Serve Environmental Agreements

European Geosciences Union General Assembly

SAFETY ISSUES

Nuclear Safety

UN Agency to Intensify Tracking of Illicit Nuclear Trafficking

Multilateral Approach Needed To Keep Nuclear Arms from Terrorists

Increasing Calls for Improved Management of Nuclear Materials and Nonproliferation

Call for Comprehensive Nuclear-Test-Ban Treaty to Come into Force

Comprehensive Test Ban Treaty Organization to be Restructured

U.S. and Allies Should Change Priorities, Says New Book On Terrorism

A Single set of International Standards is proposed for Nuclear Power Plants from Design to Decommissioning

Technology and Biological Weapons: Future Threats--Report

Potential Negative Implications of Some New Technologies

Nanotechnology

China Creates World's First National Standards for Nanotechnology

International Council on Nanotechnology (ICON) Created

Nanotechnology Health Concerns Highlight Need for International Technology Convention

Wise-Nano Project of the Center for Responsible Nanotechnology

Nanotechnology Assessment Reports

Nanotechnology Forecasting and Assessment Programs

Studies on Potential Environmental and Health Impacts of Nanotechnology

Other Technologies' Potential Negative Implications

Microwave Frequencies used for Environment-sensing are in Jeopardy

Research Confirms Military and Industry Sonar Harms Whales

Personal Computer Dust Health Implications

Chemicals could be the Cause of 'Gulf Syndrome'

POLLUTION ISSUES

Pollutants Travel Globally

Health Impacts of Fuels

Vehicle Emissions in Europe

Europe Embarks on Environment and Health Action Plan

Australia Cuts Sulfur Content in Transport Fuels

WASTE MANAGEMENT

Basel Convention on the Transboundary Movements of Hazardous Wastes

EU Pollution Prevention Strategy to Focus on Recycling of Waste

NEW MEASURES TO PROTECT BIODIVERSITY

Intensified Efforts Needed to Save Biodiversity

World's Largest Environmental Forum to Set Priorities

The Little Green Data Book, 2005

Invasive Species of Genetically Modified Animals for Reconnaissance and/or Cleanup

Maritime Issues

Could large-scale ocean zoning prevent conflicts?

Improved Cooperation Among International Organizations to Fight Marine Pollution

IMO Establishes First "Mandatory Area to be Avoided" in New Zealand

The U.S. Might Ratify the Law of the Sea

U.S. Commission on Ocean Policy Emphasizes Ecosystem-Based Management

Southwest Pacific Islands Might "Localize" Environment-protection Legislation

Maritime Worker Security

Climate Change

Human Footprint on Earth Ecosystem at Critical Stage and *Millennium Ecosystem Assessment Synthesis Report*

UN Framework Convention on Climate Change Conference

New Evidences of Climate Change

Desertification Threatens 20% of the World's Population – UN Secretary-General Says That Climate Change Is a Factor

Arctic Warming Much Faster Than Expected

Antarctica Glaciers Could Melt Faster than Expected

Large Ice Deposits Melting as Consequence of Global Warming

A Sample of Counter Global Warming Activists around the World

Ambitious Post-Kyoto EU Emissions Goals

Small Island States Adopt Position on Addressing Climate Change

UN Conference On Small Island States and Climate Change

Dust and Climate Change

States to Sue the Energy Producers Over Global Warming

Other Environmental Protection Developments

Nine New Hotspots Added to World's Protected Areas

Nineteen new Biosphere Reserves Added to UNESCO's MAB Network

New UNESCO World Heritage Sites

Europe Declares Thousands of Protected Natural Sites

New Ecological Network Has Environmental Implications

Asia and Pacific Countries Adopt Declarations on the Environment

UK Cooperation with India and Others on the Environment and Sustainable Development

India Drafting New National Environment Policy

New Zealand's Largest Environmental Management Forum

Chinese Automobile Industry's Potential Environmental Emphases

NEW ORGANIZATIONS WITH MANDATES WITH EVENTUAL ES IMPLICATIONS

Interpol Creates Global Information Center to Combat Bioterror Threat

Carpathian Mountain office of the United Nations Environment Programme

Russia's Green Movement Plans to Become a Political Party

China Climate Change Organization Formed

Liberia's First Environment Center Opened

NEW INITIATIVES AIMING TO INCREASE ECO-EFFICIENCY

Efforts for Increasing Corporate Eco-responsibility

Online Database of Sustainable Consumption Initiatives in North America Launched

Military Implications and Sources

A. Preventing or repairing military damage to the environment

ENVIRONMENTAL SECURITY RISES ON THE INTERNATIONAL POLITICAL AGENDA

UN Reform Report Stresses Environmental Issues
The UN Secretary General has issued an extensive report on UN reform, entitled "In Larger Freedom: towards development, security and human rights for all", with environmental issues cited in all sections. It states that "threats to peace and security in the twenty-first century include not just international war and conflict but […] also include poverty, deadly infectious disease and environmental degradation since these can have equally catastrophic consequences." [para.78] It proposes that the Secretariat include better responses to "humanitarian emergencies and its handling of environmental issues", that "National investment and policy priorities" improve environmental management and policy reforms, and calls on countries to adopt time-bound environmental targets. "Ensuring environmental sustainability" should be one of the global actions priorities. It specifically requires [para.212] a more coherent framework of global environmental governance, for effective implementation, coordination and monitoring of the over 400 international environmental treaties already in force. This is reiterated in the Annex—For decision by Heads of State and Government calling for a "more integrated structure for environmental standard-setting, scientific discussion and monitoring, and treaty compliance." The Reform Report will be discussed and adopted at the summit of world leaders in September 2005 at the UN. [March 2005, Military Implications and Sources]

UN Report Recommends Basis for Global Security Consensus
It is not likely that all UN Member States will agree with all 101 recommendations in the UN report: *A more secure world: Our shared responsibility*. Report of the High-level Panel on Threats, Challenges and Change; however, it goes further than any UN report thus far to address the security challenges of the 21st century. Since no State can protect itself wholly by its own actions, the report provides an agenda to establish collective security. Both national security and human security are addressed. Environmental degradation, social equity, health, and transnational organized crime are raised to a par with threats from weapons of mass destruction and terrorism. The report also addresses UN reform, guidelines for the use of force, and defines terrorism (which reduces an impediment to creating better international agreements to address it). [December 2004. Military Implications and Sources]

UNU Institute for Environment and Human Security Founded
The United Nations University has established an Institute for Environment and Human Security in Bonn, Germany (UNU/EHS) which aims to provide research-based, policy-relevant advice and training to enhance the capacity of societies to cope with catastrophic events. As its priority, UNU/EHS will focus on human and environmental security and vulnerability assessment in flood plains and deltas with particular emphasis on urban settlements. Its interdisciplinary and

multicultural core team will engage in the development and implementation of research and training programs. [June 2004. Military Implications and Sources]

Conference on Environment, Security and Sustainable Development in The Hague
Environmental Security in the 21st Century was the title of the Conference on Environment, Security and Sustainable Development organized by the Institute for Environmental Security in The Hague, May 9-12, 2004. Attended by senior decision makers and representatives from governments, NGOs, development institutions, the private sector, and academia, the Conference discussed the role of environmental security in making the world a safer and more sustainable place. The conference aimed to find integrated, science-based, diplomatic and legal solutions for increasing environmental security. The Conference's concluding document, *Pathways to Environmental Security*, will include recommendations related to the conference's objectives. [May 2004. Military Implications and Sources]

Reports Stressing the Link between Environment and Security
The *10th anniversary report* of the Woodrow Wilson Center Environmental Change & Security Project highlights the fundamental role of the environment for global peace building. Top thinkers identified and analyzed key themes with crucial impact on conflict prevention over the next ten years: population, environment, and health. UNEP executive director, Klaus Toepfer, said that "Environmental security is the disarmament policy of the future."

World Watch Institute State of the World 2005: Redefining Global Security calls for new approaches to global security by addressing poverty, disease, and environmental decline, "the true axis of evil" as stated by the Institute's president, Christopher Flavin.

The Optimist, Green Cross International's magazine (now available online), is highlighting current problems and opportunities for achieving sustainable and equitable development as the true path towards global peace and security. With articles ranging from the environmental legacy of the Cold War to cultural and poverty issues, it covers the wide landscape of security components.

Outgrowing the Earth: The Food Security Challenge in an Age of Falling Water Tables and Rising Temperatures, the new book by Lester R. Brown, Founder and President of the Earth Policy Institute, investigates the impact of water shortage and climate change on food security and implicitly security in general. The book also suggests some practical steps to overcome food shortage and its implications. [January 2005. Military Implications and Sources]

World Wildlife Fund's *The Living Planet Report 2004* examines humanity's ecological footprint, and the state of nature and resource use in 149 countries. It reveals that humanity is running an "ecological debt," consuming over 20 percent more natural resources than the Earth can produce, destroying ecological balance, depleting groundwater, and damaging biodiversity. The report urges us to live within the means of our planet, and adopt and implement policies to reverse the ecological debt trend: increase biocapacity; reduce world population; diminish per person consumption; and improve resource efficiency. The WWF is urging governments to reduce the

rate of biodiversity loss by 2010 and create national and regional targets for creating networks of protected areas to safeguard biodiversity, as agreed at several UN Summits.

Environment and Security: Transforming Risks into Cooperation – The Case of the Southern Caucasus, highlights the link between environment and security in the Southern Caucasus, arguing that environmental degradation and competition for natural resources could worsen the situation in this area already vulnerable to conflicts. The report gives an overview of human security in the regional context and then looks at specifics for the three countries, Armenia, Azerbaijan, and Georgia. It examines both the negative effects of conflict in the region and the opportunities environmental issues present for cooperation and confidence building. The report is part of the Environment and Security Initiative (ENVSEC).

Blood and Soil: Land, Politics and Conflict Prevention in Zimbabwe and South Africa by the International Crisis Group (ICG) analyses the link between land reform in the region and instability and violence, offering practical policy suggestions.
[October 2004. Military Implications and Sources]

A more secure world: Our shared responsibility. Report of the High-level Panel on Threats, Challenges and Change
It is not likely that all UN Member States will agree with all 101 recommendations in the UN report: *A more secure world: Our shared responsibility*. Report of the High-level Panel on Threats, Challenges and Change; however, it goes further than any UN report thus far to address the security challenges of the 21st century. Since no State can protect itself wholly by its own actions, the report provides an agenda to establish collective security. Both national security and human security are addressed. Environmental degradation, social equity, health, and transnational organized crime are raised to a par with threats from weapons of mass destruction and terrorism. The report also addresses UN reform, guidelines for the use of force, and defines terrorism (which reduces an impediment to creating better international agreements to address it). [December 2004. Military Implications and Sources]

Environment and Security—The Role of the United Nations is the summary report of a panel of experts in the fields of water, climate change, and natural resources who assessed the link between environment and security and how the UN could prevent environment-related conflict, and even use the environment to build peace between nations. The report suggests that the UN more efficiently integrate the environment into its security agenda and recommends that the "Security Council mainstream environmental issues into its security operations, add environmental conflict experts to its staff, and facilitate sharing conflict-related environmental data and analysis across UN agencies." The report is part of the UN Foundation's United Nations and Global Security Initiative. [September 2004. Military Implications and Sources]

UNEP's latest report, *Understanding Environment, Conflict, and Cooperation* was launched by Klaus Toepfer at the conference, Environment, Development, and Sustainable Peace: Finding Paths to Environmental Peacemaking, held at Britain's Wilton Park, September 16-19. The report features papers by several environmental security experts, analyzing different aspects of the link between environment and conflict, institutional implications, early warning, and opportunities

raised by environment and security initiatives. [September 2004. Military Implications and Sources]

Emerging Forces in Environmental Governance. A recent book published by the United Nations University presents arguments for overhauling international environmental governance. It argues that a new environmental coordinating body is needed to solve problems associated with the proliferation of multiple organizations that administer various treaties, conduct research, and maintain the information required to ensure consistent enforcement of existing international environmental agreements. Enforcement options presented include creation of a World Environment Court, a UN Environmental Security Council with binding enforcement powers, and expansion of the UN Security Council mandate to include environmental security. [June 2004. Military Implications and Sources]

South Asia in the World: Problem Solving Perspectives on Security, Sustainable Development, and Good Governance, UNU Publication. This 460-page book analyses South Asian regional economic, social, security, and environmental issues. Several chapters are dedicated to security issues, and two chapters specifically address environment and security related issues: "Environment: Critical links between environment and development in South Asia" and "The environmental challenge to human security in South Asia" [June 2004. Military Implications: and Source]

World Health Organization (WHO) updated *Guidelines for Drinking-water Quality* recommends a completely new approach to water management, shifting from reactive action (responses to outbreaks), to preventive action, by managing drinking water quality in a holistic, systematic way: from source to tap. [September 2004. Military Implications and Sources]

Environmental Role for Army

The growing trend of governments to use the military in peacetime for enforcing environmental legislation indicates an increased recognition that environmental conditions are an essential part of national security.

Chinese Army Environmental Role Increases

A recent statement by a senior military official has identified environmental protection as a security role of the Chinese military. [April 2004. Military Implications and Source]

Environmental Role for Army in Brazil

Brazil has established an agreement between its environmental and defense ministries to provide military support to environmental enforcement efforts. Although Brazil has used its army in such a role since the late 1990s, this marks the first time that a formal agreement has been signed outlining the responsibilities of the two agencies in directly addressing deforestation. [July 2004. Military Implications and Source]

On 6 August 2004, the Brazilian Institute of the Environment and Renewable Natural Resources and the Army Command of Land Operations signed an agreement for the Army to provide logistic support and guarantee the security of operations to monitor, control, and combat

deforestation in the Amazon. In addition, approximately 0.5% of Brazil's total defense budget has been allocated for this effort. [August 2004]

Note: A report by Conservation International reveals that Brazil's tropical savanna is disappearing at a faster rate than Brazil's Amazon and Atlantic rain forests and might disappear by 2030 if current clearing practices continue. This environmental group will meet with Brazil's government at the end of July to further discuss the situation.

Environmental Role for Army in Lebanon
A recent editorial in a Lebanese newspaper called for the Lebanese Army to take on an environmental role in the country in the absence of a wartime mission. [July 2004. Military Implications and Sources]

Former EPA Administrator Calls for U.S. Leadership in Environmental Protection
At the conference on the Making of Environmental Law at the Woodrow Wilson International Center for Scholars, Russell E. Train, former Administrator of the Environmental Protection Agency, presented his recent book, Politics, Pollution, and Pandas, and called for US leadership in this field. Although the U.S. was the world leader in environmental protection in the 1970s, he said, it is now widely viewed as a laggard or even as an impediment to progress. With other panelists at the conference, he urged the need for new US leadership in environmental protection. [September 2004. Military Implications and Source]

Environmental Security Stressed by World Islamic Forum for Dialogue for Inclusion to Proposed International Charter on Values for the United Nations
At a recent conference on religions and cultures, Dr. Hamid ibn Ahmed Al-Rifae, president of the World Islamic Forum for Dialogue (WIFD) presented WIFD's proposals for inclusion in a new charter on values. Three fundamental points were stressed: Unity of human family; human dignity and justice; and environmental security. This paper was presented in preparation for the development of an international charter on values to be submitted to the United Nations. [May 2004. Military Implications and Sources]

CONFLICT AND POST-CONFLICT ENVIRONMENTAL SECURITY ISSUES

UNMOVIC Could Become Permanent Agency
Former chief U.N. weapons inspector, Hans Blix, recently suggested that the U.N. Monitoring, Verification and Inspection Commission (that searched for weapons of mass destruction in Iraq prior to the war), could become a permanent U.N. inspections body with a "more active role that the UN Security Council envisages for itself in the sphere of weapons of mass destruction". In another address, Blix urged the U.S. to better share data and information with the U.N. teams. [June 2004. Military Implications and Sources]

Environmental Destruction During War Aggravates Instability
On the occasion of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict, observed on November 6, UN officials highlighted again that environmental degradation, mostly destroying natural resources in wartime, worsens conflicts inside and between nations and re-launched the call for cleanup of the remnants of war. Although legal protection for the environment during war-time is covered by several existing international laws, there might be a "need to go further than this piecemeal coverage, and develop clear standards, appropriate sanctions and credible enforcement mechanisms to ensure that environmental damage is avoided, deterred or punished. We may well need to add a 'green' chapter to the long established rules of war set out in the Geneva Conventions" said Kofi Annan, UN Secretary-General. Klaus Toepfer, Director of the United Nations Environment Programme, stressed that "Joint projects to clean up sites, agreements and treaties to better share resources such as rivers and forests, and strengthening cooperation between the different countries' ministries and institutions may hold the key to building trust, understanding and more stable relations." [November 2004. Military Implications and Sources]

UNEP Post-Conflict Assessments and "Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security" Woodrow Wilson Center Project
As a contribution to the United Nations' High-Level Panel on Threats, Challenges, and Change, the Environmental Change and Security Project of the Woodrow Wilson International Center for Scholars (WWICS) launched the project Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security. This new WWICS project will invite panels to address three issues: "What is the link between environment and security? What can be done about it? What contributions can be made by collective action mechanisms such as the United Nations?
As part of this process, Pekka Haavisto, Chairman, UNEP Post-Conflict Assessment Unit, made a well-structured presentation May 25 at the WWICS highlighting the UNEP's work on post-conflict assessment, links between environmental conditions and conflict, and NATO countries' work on techniques and equipment for minimizing environmental damage during conflicts. [May 2004. Military Implications and Sources]

UN Annual Treaty Event Produced 93 Actions from 32 Countries
A special event was held this month [September 2004] at the UN to get countries to speed up the process of their acceptance of international agreements. The focus this year was on treaties that protect civilians, especially during times of armed conflicts. Some 32 countries participated by completing 93 actions--accessions, ratifications or signatures to treaties that protect the rights of civilians, covering subjects from armed conflicts to transnational crime, pesticides and chemicals. [September 2004. Military Implications and Sources]

Sustainable Development and Conflict
The UN Commission on Sustainable Development's Twelfth Session (CSD-12) was held in New York from 14 to 30 April. This meeting was the first substantive review of progress on targets set by world leaders at the 2002 World Summit on Sustainable Development in Johannesburg,

which include many of the eight UN Millennium Development Goals (MDGs). CSD-12 discussions centered on halving by 2015 the number of people without access to safe drinking water and basic sanitation, and significantly improving the lives of at least 100 million slum dwellers by 2020. A number of the thematic issues reviewed included the intersection of conflict and natural disaster subjects with environmental and natural resource topics. [May 2004. Military Implications and Sources]

OSCE-UN Launches Environmental Security Initiative in Southern Caucasus

The Organization for Security and Cooperation in Europe (OSCE), the UN Environmental Programme (UNEP), and the UN Development Program (UNDP) launched the Environmental Security Initiative through a series of consultations in Armenia, Georgia, and Azerbaijan May 10th-18th. The initiative began with consultations among government officials, non-governmental organizations, and local and international experts, discussing environmental risk factors that have the potential to hamper security in Armenia. Other workshops focused on the role of environmental security in economic growth and poverty reduction in Georgia and on environmental concerns with security implications in Azerbaijan, including trans-boundary water pollution and freshwater quality as well as contamination of the Caspian Sea and deforestation. The purpose of the Environment and Security Initiative is to eliminate environmental problems that might cause political tensions. [May 2004. Military Implications and Sources]

OSCE Security Forum Urges Destruction of Thousands of Tons of Dangerous Ammunition and Weapons

In a special meeting held on September 29 in Vienna, the OSCE's Forum for Security Co-operation (FSC) discussed the best strategies to secure and/or destroy the vast stocks of deteriorating weapons and munitions left over from the Cold War across Eastern and South-Eastern Europe, the Caucasus, and Central Asia. The life-threatening stocks represent a huge problem because of their quantity (very large—Ukraine alone identified 120,000 tons on its territory overdue for destruction), placement (in populated areas and next to important infrastructure), composition (some are nuclear), and costs (their destruction or secure storage exceeds the countries' financial capabilities). Representing an imminent human and environmental hazard, and terrorism risk, it is critical to urgently deal with the situation. [September 2004. Military Implications and Sources]

Congressman Leach Calls for New Actions to Address Asian Environmental Security Problems

Representative James A. Leach, chairman of the Subcommittee on Asia and the Pacific of the House International Relations Committee, said before the committee September 22, 2004 that, "By almost any objective measure, it would appear the scale of the environmental challenges in Asia demands a more robust response from countries within the region as well as the international community," and he invited policy input. [September 2004. Military Implications and Sources]

Israeli Trench Raises Environmental Concerns
An Israeli concept for digging a 2.5-mile long trench along the Gaza Strip – Egypt border to reduce weapons smuggling has generated some environmental concerns. Specifically, flooding the trench with seawater could cause contamination of groundwater in the area. [June 2004. Military Implications and Sources]

Russian Military Exercise to Include Environmental Issues
Russia is planning to conduct a military exercise in June 2004 that will include responding to an environmental disaster resulting from a terror attack. As Russia is scaling up its military exercises from the 1990s, environmental issues are being included in the exercise scenarios. [June 2004. Military Implications and Sources]

Military Introduction of Tree Pathogen in Italy
Researchers at the University of California, Berkeley, and in Italy, have shown the origin of a tree pathogen threatening Italian pine trees to be the US Army units that occupied the area 60 years ago. "This study suggests that when planning military operations abroad, there is a need, and a responsibility, to check for potential micro-organisms that could be introduced to foreign lands, and to take measures to prevent them from spreading." The research in Italy supports a common suspicion among plant pathologists in Europe that certain diseases in that region are linked to US Army bases. Although there does appear to be a correlation, there is no proof yet that other US bases are the cause of similar tree die-offs elsewhere in Europe. [April 2004. Military Implications and Source]

UN to Help Tackle Iraq Pollution
UNEP in collaboration with the Iraqi Ministry of the Environment will start a long-term, large-scale environmental clean-up process. The project will begin with an assessment across the country to determine the areas with highest threats, and prioritize areas for cleaning. For the pilot project, five high priority sites are likely to be chosen out of more than 300 environmental 'hot spots'. [September 2004. Military Implications and Source]

Iraq Marshlands to be Restored
UNEP announced an $11 million program, funded by the government of Japan, to restore the damaged marshlands of Iraq. The project will use environmentally sound technologies to restore drinking water and sanitation systems to the Marsh Arabs. [July 2004. Military Implications and Source]

Kosovo Cleanup
Two environmental "hot spots" identified by the UN in the wake of the Kosovo Conflict have been cleaned up and the condition of two others has been declared to be improved, bringing to an end a four-year remediation project run by the United Nations Environment Programme. Remaining remediation activities have been handed over to the Government of the Republic of Serbia. [May 2004. Military Implications and Source]

TECHNOLOGICAL BREAKTHROUGHS WITH ENVIRONMENTAL SECURITY IMPLICATIONS

New technologies should be considered both for designing more environmentally friendly new weapons as well as for the detection and cleanup actions.

Computer technology and Robotics

Battle Simulators to Reduce Environmental Stresses from Military Exercises
The Department of Defense has just acquired two massive new simulation-oriented computer complexes, which should substantially reduce environmental stresses from large-scale battlefield exercises. Each cluster consists of 256 dual 3-GHz Linux processors; they will be delivered to the USAF Maui HPCC (Maui High Performance Computing Center) and ASC (Aeronautical Systems Center) CMSRC (Center Major Source Resource Center) at Wright-Patterson AFB, and will be used by the Joint Forces Command's Joint Experimentation Directorate (J9). These systems will allow large-scale, high-resolution combat simulations that weren't possible with the previous hardware. [See also previous AC/UNU Millennium Project environmental scanning items: Software algorithms for ecoterrorism prediction and simulations to improve environmental policy efforts, by identifying plausible futures linked to key environmental issues, August-September 2003; and Virtual Earth Simulation might help reduce environmental impact of military operations, March 2004.]

Related news: Sandia National Labs announced that they are assembling the world's fastest yet smaller and most cost-effective supercomputer. Red Storm, the new supercomputer, is expected to become operational in January 2005. [August 2004. Military Implications and Sources]

Scientific Models Could Help Navy Avoid Whales During Sonar Tests
Duke University biologists are developing scientific models based on sets of environmental parameters that could predict different marine species' presence in proximity to sonar testing areas, helping to prevent eventual harm to the animals. The research was triggered when several whales of three species beached in January near Oregon Inlet just after a Navy training exercise used sonar at 240 nautical miles from Oregon Inlet. Although the incident might be a coincidence, the new model might help eliminate the possibility of such accidents. [February 2005. Military Implications and Source]

Future Computer-Human Interface Means Cyber Viruses Could Infect Humans
As the human-computer interface continues to evolve into a continuum, it is reasonable to assume cyber viruses will one day be able to transfer into electronic components that will have been added into the human nervous system, and so have biological effects. Kevin Warwick, professor of cybernetics at Reading University, and a cyborg pioneer, warned that the emergence of computer-human connection and the production of synthetic viruses comes with great advantages, but also a huge risk: computer viruses will be able to infect augmented humans as they do PCs. [November 2004. Military Implications and Source]

Self-Assembling Robots
The M-TRAN II robot, developed by the Japanese Distributed Systems Design Research Group, represents a new generation of modular robots, with a flexible design able to rearrange itself into countless different shapes and create dramatically different patterns of movement. [March 2005. Military Implications and Sources]

Scorpion Robot for Complex Roving Missions
The Scorpion robot, developed by Frank Kirchner from the University of Bremen, Germany, is able to access difficult terrains that are inaccessible to larger, wheeled vehicles. A prototype is currently being evaluated at NASA's Ames Research Center at Moffett Field, CA. Although developed mostly for other planets' exploration, the Scorpion robot could also be used on Earth, to investigate difficult or dangerous territories inaccessible to humans or larger vehicles. [February 2005. Military Implications and Sources]

Roach-like Robots for Better Post-conflict Clean-Up and Survivor Detection
Researchers at Stanford, Berkeley, and Poly-PEDAL labs designed the Sprawl family of hexapedal robots, based on the cockroach model. These robots are fast, stable, independent, and lower cost. They could be deployed for landmine detection and for survivor location in natural or other disasters. [July 2004. Military Implications and Source]

Robots that Can "Recharge" by Eating
Researchers at the University of the West of England, Bristol, are working on creating robots with artificial digestive systems and corresponding metabolisms that would allow robots to 'eat' to recharge their electrical needs. The robots would collect bacteria from sewage sludge, break it down into sugars, and convert the biochemical energy into electricity that powers the robot. [January 2005. Military Implications and Source]

Robot Swarms
Advances in robotics and artificial intelligence make possible the development of large "swarms" of cheap robots that rangein size for a broad set of applications. Operating off simple individual instruction sets, swarms of robots can nevertheless potentially interact in a complex

manner, performing a myriad of tasks, including a number of supporting environmental missions. The ability to produce large quantities of simple robots that interact with each other decreases the unit costs of robotics and potentially increases the number of tasks that such swarms can perform. [June 2004. Military Implications and Sources]

On-chip Antenna to Solve Communication Problems among Microscopic Sensors
University of Florida electrical engineers have installed a radio antenna less than one-tenth of an inch long on a computer chip and demonstrated that it can send and receive signals across a span of several feet. By covering a large area with a number of such radio chips, each powerful enough to transmit information to the next radio, one can create a single large network that could be monitored from a distance. [May 2004. Military Implications and Sources]

New Technologies for Detection and Cleanup

Microbes Can Help Build Nanodevices for Detection
University of Wisconsin scientists have electrically stimulated bacteria to self-assemble into nano-bio-electrical circuits that could detect toxins like anthrax in near real-time. These circuits have the potential to make building atomic-scale machines far easier than current methods, and create a new class of biological sensors. This ability to a) manipulate individual bacteria by electrical means, b) form them into nanostructures, and c) use their biochemical properties for useful applications, such as the detection of toxins, provides an alternative to the painstaking manufacture and assembly of nano systems by larger more costly systems. Nanotechnology self-assembly to create larger devices (bottom up construction) has been seen as a more distant future possibility. This breakthrough brings low-cost, precision mass production a step closer to reality. [March 2005. Military Implications and Sources]

Real-Time Antibody-based Bioterrorism Detection System
A major weakness in most bioterrorism detection technologies is the time lag between sample collection and laboratory verification of the presence of target pathogens. Scientists at the United Kingdom's Defence Science and Technology Laboratory at Porton Down have developed biological sensors based on antibodies. Being based on antibodies, these sensors can detect a bioterrorist attack in real-time, and can distinguish among different pathogens. Since this and other systems being developed by other countries will be important to "scale up" for all countries, international standards and agreements for their deployment and monitoring seem inevitable. [April 2004. Military Implications and Source]

Russian Discovery of New Bacterial Cleanup Technique
Scientists from the G.K. Skryabin Institute of Biochemistry and Physiology of Microorganisms of the Russian Academy of Sciences in Pushchino have discovered that the bacterium *Pseudomonas putida* can transform the toxic by-products contained in reaction masses (RMs) that arise when mustard gas residue is destroyed by chemical detoxification. This technology, if

extended to other hazardous materials and brought to the point of practical application, could be an alternative to incineration or a process called bituminization for the final cleanup of CW sites. Both those methods are expensive and environmentally risky. [March 2005. Military Implications and Sources]

Bacteria-modified Yellow Lupine to Remove Toluene from Soil

A bacteria-modified yellow lupine seems to be very effective in removing toluene from soil. The scientists who have created it say that, depending on the type of bacteria utilized, the approach can be used to develop different varieties for cleaning up other chemical pollutants. [April 2004. Military Implications and Source]

New Genetically Modified Plant to Detect Landmine Explosive

Researchers at the University of Alberta, Canada, will receive support over the next two years from the Department of National Defence's Canadian Centre for Mine Action Technologies to work on genetically modifying a plant, related to canola, by inserting a TNT-sensitive gene into its DNA. After its seed is planted in suspected minefields and the plants' roots come into contact with TNT, their leaves or flowers will change color, alerting people to the presence of landmines. The project is one small part of a larger joint U.S.-Canadian military threat detection effort called Project BIOS, or biological input-output systems, funded in the United States by DOD. Anthony Faust, of the Defence Department's landmine detection, who came up with the idea of landmine-detecting plants, said that while the Canadian project deals with landmine detection, the American project deals with biological systems as chemical sensors. [May 2004. Military Implications and Sources]

A Radioactive Element's Rate of Decay Has Been Speeded Up

Japanese scientists from Tohoku University in Sendai have decreased the half-life of beryllium-7 by about half a day, which represents almost 1%, the most dramatic result obtained so far. While this is a promising success, researchers admit that the possibility of significantly speeding up the process remains "somewhat remote". However, Peter Möller, from the Los Alamos National Laboratory in New Mexico, says that re-creating conditions such as those found in the interior of a hot star (which we don't know yet), might considerably enhance the effect that the Japanese scientists have obtained. [September 2004. Military Implications and Sources]

Nanoshells Dramatically Improve Sensing Capability

Research at Rice University's Nanophotonics Laboratory has shown that a class of nanoparticles known as nanoshells can enhance the sensitivity of chemical sensing by a factor as high as10 billion. This is accomplished by using them to produce "surface enhancement" in Raman scattering, an optical technique for chemical analysis. The nanoshells are a few hundreds of nanometers in diameter and consist of a glass sphere coated with a layer, typically gold or silver, whose thickness can be varied to "tune" the shell to a specific optical wavelength. According to Prof. Naomi Halas, the Laboratory Director, this "creates an opportunity to design all-optical

nanoscale sensors—essentially new molecular-level diagnostic instruments—that could detect as little as a few molecules of a target substance, which could be anything from a drug molecule or a key disease protein to a deadly chemical agent." [January 2005. Military Implications and Sources]

Molecular Pattern Matcher for Chemical Detection
A new paper describes an improved technique for fast, portable, accurate, and flexible quantitative detection of organic molecules such as those which are degradation products of nerve agents. In the reported test, molecules of methylphosphonic acid (MPA) were embedded in an organosilane layer, and then washed away, leaving behind an imprint which, when later filled with another MPA molecule, produced a detectable electrical signal. [May 2004. Military Implications and Sources]

Nanoporous Ceramic Uses for Heavy Metals Cleanup
A nanoporous ceramic developed by U.S. researchers at Pacific Northwest National Laboratory, can be used to remove mercury from water, having as an immediate application treating wastewater from coal-fired power stations. However, researchers say that the thiol-SAMMS material could also remove mercury from water streams resulting from the vitrification of radioactive wastes, battery manufacturing, fluorescent lamp recycling and dental preparations. Also, the technology could be adapted to target other substances such as lead, chromium or radionuclides instead of mercury. [May 2004. Military Implications and Source]

Iron Nanoparticles for Environmental Cleanup
A new study from Oregon Health & Science University's OGI School of Science & Engineering, in collaboration with Pacific Northwest National Laboratory (PNL) and the University of Minnesota, shows that some iron nanoparticles may be effective in cleaning up carbon tetrachloride in contaminated groundwater. The researchers studied two types of iron nanoparticles, one with a shell of sulfur-rich magnetite and the other with a coating of oxidized boron. When applied to carbon tetrachloride contamination, the former produced a mix of harmless chemicals while the latter yielded chloroform, a highly toxic material. These fundamental results should aid greatly in the development of nano-iron-based cleanup methods for contaminated sediments and soil as well as for groundwater, and for their application to a range of more complex organic pollutants. [January 2005. Military Implications and Sources]

Dirty Bomb Clean-Up Technology for Porous Structures
New technology to safely capture and dispose of radioactive elements from outdoor porous structures (brick and concrete) is being developed by Argonne Laboratory's Chemical Engineering Division in Illinois. The new decontamination system is based on engineered nanoparticles and a super-absorbent gel. It is expected to be available in 18 months. [July 2004. Military Implications and Source]

New and Improved Land Mine Destruction Technique
A British de-mining specialist corporation, Disarmco, in partnership with ordnance and explosive experts at Cranfield University at Shrivenham, have developed a new environmentally friendly and low-cost mine destruction device, codenamed "Dragon". The device is based on a high-temperature pyrotechnic torch, which burns the explosive material in the mine rather than detonating it, a technique that can cause destruction and contamination over a substantial area. According to the university, "The torches are made in situ in … [a] portable unit and do not require any specialist knowledge or expensive training in order to be used safely by local communities employed in decontamination efforts." [April 2005. Military Implications and Sources]

Bionanotech Particles Can Detect Bacteria in 20 Minutes
A team of researchers at the University of Florida created a bioconjugated nanoparticle that can detect single pathogenic bacteria in just 20 minutes. Although demonstrated just for E. coli, researchers say that by changing the antibodies employed, the ultrasensitive particles can be modified to detect a wide variety of bacteria. The team continues to work for enlarging the technique's scope by creating bioconjugated nanoparticles to detect multiple bacteria simultaneously. The new technique is a promising method for detecting bioagents in food and clinical and environmental samples, and for early medical diagnosis. It could also prove important for assisting the enforcement of current and future international treaties that address organic transfers across national borders. [October 2004. Military Implications and Sources]

Nanodevices for Biomolecules Detection
Two U.S. research teams designed nano-devices for virus detection. The nanoelectromechanical device by Cornell University can detect an insect baculovirus, while the nanowire field effect transistors developed by Harvard University can detect single influenza viruses. These techniques enlarge the capability to detect different viruses simultaneously.
Argonne National Laboratory scientists developed a magnetic sensor for bacteria and virus detection. The device relies on measuring the Brownian relaxation of magnetic nanoparticles when they are bound to target biomolecules. The team is now working to improve the sensitivity of the technique. All three methods could be used in medicine and/or the detection of bacteria and viruses in the environment. [October 2004. Military Implications and Sources]

Nanotubes that Detect and Kill Biological Agents
With funding from the U.S. Department of Defense's Army Research Office, University of Pittsburgh researchers have found a technology for developing nanotube structures that act both as biosensor and biocide. The objective is to produce a paint that would change color in contact with biological and/or chemical agents and also neutralize the toxic substances. The antimicrobial nanotube structures are the product of a single-step synthesis of a hydrocarbon and a salt compound (quaternary ammonium). [September 2004. Military Implications and Sources]

Bacterial Integrated Circuits
University of Tennessee scientists have developed a device to collect signals from specially altered bacteria. These Bioluminescent Bioreporter Integrated Circuits (BBICs) have already been used for environmental monitoring. [June 2004. Military Implications and Sources]

Military Applications of Silicon-Based Ultraviolet Sensors
A photodetector sensitive to ultraviolet light was produced by researchers at the University of Illinois at Urbana-Champaign. They used standard lithographic techniques to deposit thin films of silicon nanoparticles on silicon substrates with small conductive pads of gold to complete the assembly. Electricity flows when ultraviolet light strikes the nanoparticles. In addition to commercial applications, the silicon-based ultraviolet sensors could have military and security functions as ultraviolet-based detectors for missile-warning systems and airborne biological agents. They could also be useful in detection of violations of future environmental treaties; and hence might be considered in the implementation section of future treaties. [July 2004. Military Implications and Sources]

Technology for Perchlorates Cleanup
Sub-Surface Waste Management (SSWM) of Delaware has developed a technology for rapid cleanup of perchlorates from soil and groundwater. The new technology is based on a special blend of microbes and nutrients that can degrade perchlorates in soils within approximately a week of initial inoculation. [August 2004. Military Implications and Source]

Aquatic Plant Removes POPs from Wetlands
Scientists at the Georgia Institute of Technology have discovered that duckweed, a common floating aquatic plant, can remove persistent organic pollutants (POPs) from wetlands, particularly chlorinated, fluorinated and mixed chloro-fluoro compounds. It remains to be determined how to dispose of the plants after they absorb and store the compounds. [August 2004. Military Implications and Source]

Motion Detector Allows Naked Eye to See Motion of 10 Nanometers
Sandia National Laboratories have developed a motion detector 1,000 times more sensitive than any known so far. It has the ability to sense a motion of 10 nanometers with the naked eye. The device is based on a formerly unrecognized property of optics: light diffracted from very small gratings that move very small lateral distances undergoes a relatively big, and thus easily measurable, change in reflection. That change can be amplified for human visibility, or it can be fed to additional instruments for a variety of measurement and automated control and analysis functions. Such high sensitivity detectors would have extensive applications from improving

earlier warnings of earthquakes to detecting future nanotech weapons and surveillance equipment. [October 2004. Military Implications and Sources]

Designer Bacteria Could Help Cleanup Pollution and Produce Hydrogen
Craig Venter (who led the Human Genome Project) and his colleague Hamilton Smith are trying to construct the entire genomes of living creatures to create organisms by design. The team first created a virus from its chemical elements in November 2003 and now is trying to create bacteria. The Department of Energy's "Genomes to Life" program coordinates the research and hopes to use future "designer" bacteria to create hydrogen and methane, and clean up nuclear waste. Although it is already known how to use bacteria for some forms of environmental cleanup, building bacteria from scratch would allow the design of very specific bacteria for very specific tasks, including prevention of the designer bacterium's ability to reproduce in the environment beyond the original intended purpose. [December 2004. Military Implications and Sources]

New More Efficient Microbial Fuel Cell Cleans Wastewater and produces Hydrogen
The BioElectrochemically-Assisted Microbial Reactor (BEAMR) is an anaerobic, electrically-assisted microbial fuel cell (MFC). It produces four times the amount of hydrogen from dissolved organic matter such as human, agricultural, and industrial waste and simultaneously cleans the wastewater used as its feedstock than bacteria achieve in normal fermentation. It uses 0.25 volts of electrical boost, about one-tenth the voltage needed for electrolysis of water, which helps it surmount the fermentation energy barrier limit. This form of decentralized renewable energy production could make fuel-cell-based transportation and wastewater treatment more efficient, but further study will be needed for commercialization. The National Science Foundation and U.S. Dept. of Agriculture supported this Pennsylvania State University research. [April 2005. Military Implications and Source]

Proposed T-Rays (TeraHertz) Devices Could Detect Almost Anything
New devices that use terahertz rays (T-rays have a 1000 times higher frequency than microwaves) to see through clothing and packaging can precisely identify chemical and biological weapons, explosives, or conventional weapons. Even hermetically sealed anthrax and plastic guns would be detected. The potential applications of T-rays are huge, ranging from military and security, to the medical sector, and are even promising for nanotechnology. Research is preliminary, but T-ray palm devices might one day detect cancers in the body, determine from a distance the chemicals in a hazardous waste spill, or find victims trapped under rubble, says one of the researchers, Dr. James Kolodzey, of the University of Delaware. Scientists from America, Europe, Asia and Australia shared the latest advances in T-ray technology at the international workshop on TeraHertz for Defence and Security, at Adelaide University, Australia. [December 2004. Military Implications and Source]

Automated Water Safety Sensor Units
Sandia National Laboratory teamed with CH2M Hill of Englewood, Colo., an engineering and construction firm, and Tenix Investments (Australia's largest defense and technology contractor) to develop a monitoring device that can detect currently unmonitored biological agents—such as germs, toxins and bacteria—in water systems. Initial commercial units and wider deployment are anticipated from late 2005 to mid 2007. [December 2004. Military Implications and Sources]

Arsenic-polluted Water Decontamination Using Sulphate
Detecting and detoxifying water contaminated with arsenic could become faster, easier, and cheaper according to recent research by the University of Illinois. Tests so far demonstrate that changing the chemical composition of water, by adding sulphate to it, could stimulate the bacteria that control arsenic concentration, precipitating arsenic, which is then easily removable from the water. The research remains to be tested in the field. [November 2004. Military Implications and Source]

Water Nanofilters
Carbon nanotube water filters might replace traditional filtration systems, which are difficult to clean and must be changed frequently. The new technology, developed by a team of researchers from Rensselaer Polytechnic Institute in Troy, NY, and the Banaras Hindu University in Varanasi, India, consists of a quartz tube filled with tightly packed radially oriented nanotubes. The water molecules can squeeze out through nanometer-sized gaps in the walls, but bacteria like E. coli and viruses like the 25-nanometer-wide poliovirus get stuck. The resistant structures can be cleaned repeatedly. [October 2004. Military Implications and Sources]

Sandia National Laboratories funded to develop improved Desalination and Arsenic Removal Technology
Sandia will conduct a $6 million research program to develop techniques for desalination ($3 million) to increase the supply of drinking water and removal of arsenic ($3 million) from water sources. The groundbreaking ceremony for the Tularosa Basin National Desalination Research Facility in Alamogordo was held on June 29th. [June 2004. Military Implications and Sources]

Low-cost, Non-polluting Sewage Treatment System
Nothing escapes into the ground or water supplies from BIPU (bio-remedial in field personnel unit), a low-cost, non-polluting, flush toilet sewerage system. It holds solids in a special plastic chamber where they break down, while the liquid content is removed and evaporates in an elevated absorption system. The system is produced by Tasmanian Environmental Solutions at George Town, Tasmania. It has been used in Tasmania for several years, and the UN used 150 BIPU systems during the East Timor peacekeeping operations. [October 2004. Military Implications and Sources]

More environmental-friendly technologies to be used by the Army

New Power Sources Needed for the Soldiers of the Future

At the request of the U.S. Army, the National Academies' Board on Army Science and Technology conducted research to assess the present and future technological needs for effective power systems for the "soldier of the future." The report presents a review of various technology options, suggests future design concepts, and makes recommendations for more energy-efficient technology development and system design. [September 2004. Military Implications and Sources]

Flexible Plastic Solar Cells Converting 30% of Sun's Power into Usable Energy

Researchers at the University of Toronto, Canada have invented an infrared-sensitive material that could turn the sun's power into electrical energy at 5 times higher efficiency than present methods. This flexible plastic solar cell harnesses infrared light from the sun (half of the sun's spectrum not previously accessed) and forms a flexible film on the surface of cloth, paper or other materials, becoming a 'portable' energy source. [January 2005. Military Implications and Sources]

Flexible Solar Cells could be sewn in Clothing

A European Union research project called H-Alpha Solar has developed light, flexible solar panels that could be sewn on fabrics and placed on surfaces to charge objects such as cell phones. When in full production, it is estimated to cost about 1 euro ($1.34) per watt. [December 2004. Military Implications and Sources]

Nanotechnology Used to Produce Hydrogen for Fuel Cell Cars

Using nanotechnology, scientists from the Department of Physics and Astronomy, and Laboratory for Surface Modification, Rutgers, The State University of New Jersey, might have found an efficient and environmentally friendly solution for the hydrogen fuel cell-powered car industry. The nanostructured catalyst-based hydrogen production technology seems also to provide solutions for safe and easy distribution by "binding hydrogen with atmospheric nitrogen into ammonia molecules," so that the "resulting liquid could be handled like gasoline and diesel fuel", thus avoiding the high costs involved in building a new infrastructure for fuel cells. Using this technology, "pure hydrogen could be extracted under the vehicle's hood on demand, as needed by the fuel cell, and the remaining nitrogen released back into the atmosphere. The atmosphere is normally four-fifths nitrogen, so the nitrogen emissions are not viewed as polluting" comments an Environment News Service article. [April 2005. Military Implications and Sources]

Korean Nanotechnology production techniques Cut Costs and Environment Impact

Prof. Taeghwan Hyeon and associates at Seoul National University's School of Chemical Engineering have announced the development of a safe and inexpensive way to directly produce

a large amount of monodisperse (uniformly sized) nano-crystals using non-toxic salts. Hyeon said that these are truly revolutionary findings, enabling large-scale production of nano-particles at low cost—just 250 won (about 25 cents) per gram. His team used metal salts as a reactant to regularly produce as much as 40 grams in a single reaction. Although the technique reduces the environmental impact in production, it does not mean it reduces the environmental impact of the nanomaterials after production and application. [December 2004. Military Implications and Sources]

'On-Off Switch' for Buckyball (C60) Toxicity

Researchers at Rice University's Center for Biological and Environmental Nanotechnology (CBEN) have demonstrated that adjusting the surface properties of buckyballs can control the nanoparticles' toxicity. They identified specific surface alterations that can reduce or augment buckyballs' toxicity depending on the purpose for which they are designed. Although just at the cytotoxicity level, these findings are important for buckyball toxicological risk assessment, and more extensive toxicological studies are already planned. However, this should not be confused with the concept of creating "off-switches" for future nanoweapons, a requirement in need of research and development. [September 2004. Military Implications and Sources]

Zircon Options for Nuclear Waste Storage

Cambridge-MIT Institute (CMI) in the UK discovered that the mineral zircon ($ZrSiO_4$) might be a solution for long-term nuclear waste storage. Computer simulations show that when radioactive materials heavily damage the zircon, the atoms rearrange themselves to form a protective shell around the damaged area. Once the principle is proven and it's fully understood what is going on at the atomic level, then it will be possible to explore alternative materials that could be produced on a much larger industrial scale. [July 2004. Military Implications and Source]

Biodegradable Mobile Phones

Researchers at the University of Warwick, together with high tech materials company PVAXX Research and Development Ltd, and Motorola, designed a mobile phone that can be turned into compost and even flower when discarded. The phones are made of a new high tech biodegradable material, which disintegrates in a few weeks when buried in compost, and grows a flower from a seed placed in the phone's cover. [December 2004. Military Implications and Source]

Degradable Plastic Could Reduce Environment Footprint

David R. Tyler, a chemist at the University of Oregon, and his colleagues have developed a molybdenum/chlorine-containing plastic which degrades to dust in three days under exposure to light. Items made from this material would, of course, have to be limited to those concealed from illumination until used, and then be required to function for only a short time. However, this disintegration property would offer a simple, environmentally friendly solution to disposal of used devices meeting the above constraint. [April 2005. Military Implications and Sources]

Nanomaterials Help Stop Bullets
Bulletproof vests' performance could be improved by chemically attaching different nanoparticles to already well-known materials such as Kevlar, says Professor Victor Castano, of the Universidad Nacional Autónoma de México. Ceramic nanoparticles would make the material UV-shielded, and chemically functionalized nanoparticles linked to organic structures could be used for waterproofing. [November 2004. Military Implications and Source]

Technologies that Could Trigger New Forms of Arms Race

Chinese Use of Weather Modification Technologies Might Cause Disputes
Severe droughts in China, particularly in major cities in the central Henan province, led Chinese authorities to the use of weather modification technologies to produce rain. The bombardment of clouds in one area provoked discontent in the neighboring ones who claimed a loss of moisture. [July 2004. Military Implications and Source]

Nanobacteria in Clouds could Spread Disease
Nanobacteria in clouds could become pathogenic airborne contaminants. They could play a crucial role in the spread of disease and in the formation of rain drops, according to Dr Andrei P. Sommer of the University of Ulm, Germany, and Professor Chandra Wickramasinghe of Cardiff University, UK. Nanobacteria are microorganisms 100 times smaller than ordinary bacteria and can self-replicate. The wind can blow disease-carrying nanobacteria from the ground all the way to the stratosphere where they can oscillate between dormant and active states, as they move between high and low-humidity regions in clouds and then return to different areas on the earth via rain. [April 2005. Military Implications]

B. Preventing or responding to environmentally caused conflicts

FOOD SHORTAGE

Food shortage induced by degrading environmental conditions is increasing worldwide.

***Biodiversity for Food Security* is the theme of this year's World Food Day**
The theme of this year's World Food Day (October 16th), *Biodiversity for Food Security*, emphasizes the importance and linkage between biodiversity and food, and ultimately human security. The connection between food scarcity, migration, and conflict is increasingly recognized by international organizations, which are focusing more attention on ways to address this complex environmental security issue. [June 2004. Military Implications and Source]

Responsible freshwater management is key to avoid conflict in some areas

Decade "Water for Life" Launched

The International Decade for Action "Water for Life" was officially launched on World Water Day, March 22, 2005. This is intended to focus world attention on improving policies and strategies to achieve the international commitments and targets concerning water-related issues by 2015. The actual debates and policy recommendation issuance are expected to occur in April 2005 at the 13th session of the UN Commission on Sustainable Development. [March 2005, Military Implications and Sources]

UN Conference 'Water for Food and Ecosystems'

The recent UN conference 'Water for Food and Ecosystems,' attended by 26 ministers and more than 600 delegates from 140 countries, emphasized the need for "a true valuation of water" and called for better strategies for balancing water use between agriculture and environment. It called for better management of water, taking into account socio-economic and environmental concerns, basic human rights, and cultural factors, and adopted a list of actions to improve the efficient use of water, highlighting the importance of public/private partnerships in achieving the goals. Water policy and strategy issues were also discussed at the 23rd session of the UNEP Governing Council/Global Ministerial Environment Forum held 21-25 February 2005, at Nairobi, Kenya. {February 2005. Military Implications and Sources]

World Water Week Warns of Wars over Water

Scientists at the World Water Week conference held in Stockholm, August 16–20, 2004, have stated that the risk of wars being fought over water is rising because of explosive global population growth and widespread complacency. A report prepared by the International Water Management Institute extrapolated present water consumption to a point of conflict over water. The conference called for increased water infrastructure investments. Water tables are falling on all continents. About 40% of humanity lives in the 260 major international water basins shared by more than two countries. According to the recently released joint WHO-UNICEF report, more than 1 billion people drink unsafe water and over 2.6 billion (40% of the world's population) have no access to basic sanitation. [August 2004. Military Implications and Sources]

Prospects for Conflict over Water Rise in Several Regions

Rapidly melting glaciers in the **Himalayas** could cause vast flooding followed by long-term, severe water shortages in the region, according to World Wildlife Fund's report, An Overview of Glaciers, Glacier Retreat, and Subsequent Impacts in Nepal, India and China. Water from the Himalayas feeds into seven great Asian rivers, ensuring the water supply of hundreds of millions of people. Flooding and then water shortage will inevitably cause mass migration.

The reduced capacity of the **Jordan River** and the ecological disaster caused by its over-exploitation triggered discussions between Israel and Jordan. However, no agreement has been reached. The problems are worsened by Jordan's plan to construct a new dam on the Yarmuk

River, the largest tributary of the Jordan. Friends of the Earth Middle East (FoEME) tries to mitigate the situation by organizing discussions and joint activities; it also launched the idea of placing the Jordan River on UNESCO's World Heritage List due to its tremendous ecological and cultural significance.

The risk of conflict over water for countries along the river **Nile** or its tributaries increases as the 1929 treaty is being increasingly contested. The treaty allows Egypt to use Nile water only for irrigation or power generation. Meantime, under the umbrella of the Nile Basin Initiative launched by the Nile riparian states in 1999, Italy is funding a new project to improve water management among the ten Nile Basin countries. Implemented with assistance from FAO, the project will integrate technical water resource and water use data with demographic, socio-economic and environmental information to examine how specific policies and projected water use patterns will affect water resources in the region. [March 2005, Military Implications and Sources]

In central **Kenya**, Kikuyu and Maasai tribal fighters clashed over scarce water supplies, killing at least 14 people in two days. Thousands fled the fighting site, some were injured, and dozens of houses were burned. Although officials stopped the fight, tensions remained high.

India and Pakistan talks over the Baglihar hydropower dam on the Chenab River failed. Pakistan is objecting to the construction of the dam that would affect the flow of the Chenab into its territory, and contravenes a 1960 water-sharing treaty negotiated by the World Bank. The long-running dispute threatens to cause another setback to an already fragile peace process. [January 2005. Military Implications and Sources]

At a recent regional meeting, **Bangladesh and Nepal** continued to object to **India**'s plans to divert water from 37 rivers to its drought-prone areas by building reservoirs, dams, and canals. Bangladesh is claiming the plan would reduce its water levels, threaten the livelihoods of millions of people, turn parts of Bangladesh into desert, and damage the impoverished country's fishing and farming sectors. Nepal is also claiming the project would cause unseasonable flooding in Nepal, where most of the rivers flowing through India and Bangladesh originate. As with the simmering Indian-Pakistani water situation, this water diversion is a potential trigger for armed conflict. Although India's new government has seemed willing to discuss the issue, the fact remains that India has a long-term water scarcity problem that it must somehow address. [August 2004. Military Implications and Sources]

China River Basin Issues

Promoting Sustainable River Basin Governance—Crafting Japan-U.S. Water Partnerships in China, a publication by the Woodrow Wilson Center's China Environment Forum and Japan Institute of Developing Economies, is the result of cooperation between Chinese, U.S., and Japanese water experts on improving Chinese river basin management. The report explores areas of collaboration between the three countries on three central issues: (1) river basin management institutions, (2) financing, and (3) public participation.

Meanwhile, the lower Min River, which is one of the Yangtze's major tributaries, is essentially dry as a result of dams built in its upper section; consequently, the downstream communities do

not get water for domestic use and irrigation for millions of hectares of farmland, causing food and water shortage in a heavily populated area. [April 2005. Military Implications]

Project to Address the Aral Sea Disaster

The Government of Uzbekistan and the World Bank have instituted a Drainage, Irrigation and Wetlands Improvement Project, described as "the first meaningful intervention in the Aral Sea Basin to break a vicious cycle of high water applications, water logging and secondary soil salinisation", said Masood Ahmad, head of the World Bank team designing the project. According to a World Bank statement, the agreement hopes to improve the local economy, and the water quality of the Amu Darya River by safe disposal of drainage effluent and enhancing the quality of wetlands in the Amu Darya delta. The team leader added that the project would begin to address the problem by substantially improving drainage conditions and significantly improving water use efficiency in the irrigation sector. [February 2005. Military Implications and Sources]

New Reports on Water-related Issues

The Environment, Development, and Sustainable Peace Initiative, a joint project of Adelphi Research, the WWICS Environmental Change and Security Project, and the National University of Costa Rica, has published in March 2005 two papers analyzing the role of water for security: *Regional Water Cooperation as Confidence Building: Water Management as a Strategy for Peace*, by Aaron T. Wolf. The report analyzes the shift of the "environmental security" concept from a presumed causal relationship between environmental stress and violent conflict to a more intricate framework of "human security" that considers a complex set of relationships between environment and society. Water has been identified as the most critical factor in many areas—from political to economic, social, and environmental. While looking at 'Indicators of Tension,' the paper also suggests some opportunities and types of policy recommendations to mitigate possible water-related disputes: the new technologies for water negotiation and management (including modeling and monitoring tools); watershed commissions developed for those basins that do not have them, and strengthened for those that do; improved water-related funding assistance; and better involvement and focus of civil society, private industry and research organizations.

Environmental Conflicts and Regional Cooperation in the Lempa River Basin: The Role of Central America's Plan Trifinio, by Alexander López. Assessing current environmental trends in the Central American context, the report focuses on the region's international river basins and uses the Lempa example to analyze areas of conflict and cooperation; factors that could reduce conflict potential; and the effectiveness of the Trifinio Plan and its role in facilitating post-conflict dialogue and confidence building among the three signatory countries: Honduras, Guatemala, and El Salvador.

The U.S. National Academies have created the Water Information Center, a new Web site that provides free access to more than 100 Academies reports on water-related issues http://water.nationalacademies.org/ [March 2005, Military Implications and Sources]

Water, Conflict, and Cooperation, a "policy brief" featured in the latest Woodrow Wilson Center Environmental Change and Security Project Report (10), argues that water scarcity issues are

both a threat and an opportunity for the UN system. Effective UN water policies and management could enhance cooperation and reduce the potential for conflict. The authors suggest the creation of a "one-stop shop" – pooling the many UN organizations that work on water issues – so that nations and organizations would get the best synergies of personnel, technologies, and advice to improve their water improvement systems.

Making Water a Part of Economic Development: The Economic Benefits of Improved Water Management and Services, by the Stockholm International Water Institute and WHO, argues that efficient water management for human security could accelerate economic growth, sustainable development, and improving health. The report demonstrates that economic benefits far outweigh the costs and suggests three major investment priorities: access to safe water and basic sanitation; protection of the integrity of aquatic and water-related terrestrial ecosystems; and water-resource management. The report was released at the UN headquarters in conjunction with the 13th Meeting of the Commission on Sustainable Development (CSD). [April 2005. Military Implications and Sources]

UNEP's Governing Council Focuses on Water and Sanitation

A recent international gathering of environment ministers focused on the need to boost water and sanitation services for over two billion people in human settlements. The meeting also showcased water saving and water supply technologies that can play a key role in meeting the Millennium Development Goals and the World Summit on Sustainable Development's Plan of Implementation. These call for governments to halve, by 2015, the proportion of people without access to safe and sufficient water and basic sanitation supplies. Ministers and officials from over 150 nations also discussed the need to boost the science base of UNEP in areas including environment and conflict and environment and poverty. [April 2004. Military Implications and Sources]

Could large-scale ocean zoning prevent conflicts?

Increasing numbers of environmental lawyers and environmentalists believe that future conflicts could be prevented by large-scale ocean zoning for oil, fishing and wind farms, as well as that there is an immediate need for regulations to protect the oceans' natural resources. "We're now able to do on the open ocean what we once did on our western frontier—eradicate the wildlife, extract the minerals and alter or pollute the habitat," says David Helvarg, president of the Blue Frontier Campaign. Many variations of coastal zoning have been established around the world, which may one day lead to new large-scale ocean zoning within a more comprehensive integrated planning mechanism for local, regional and international standards and regulations for 'pro-active rather than re-active' ocean management. [March 2005. Military Implications and Sources]

NATURAL DISASTERS

The increasing number of natural disasters, the toll of lost lives, the devastating impact on human habitat and environment, as well as the financial implications for aid and reconstruction brought natural disasters to a leading place on the international agenda.

Natural Disasters as an Environmental Security Issue
Recent natural disasters increased environmental security concerns. The last few years' storms, droughts, and heat waves increased poverty and migrations in regions already vulnerable to conflict. David Anderson, former Canadian Environment Minister, said that global warming posed a greater long-term threat to humanity than terrorism. Although natural hazards cannot be avoided, their dramatic consequences can be reduced by preparedness and risk reduction measures including early warning systems, environmental protection, land-use planning, technology development, and education. The World Meteorological Organization (WMO) says that early warning and advance planning, and building a "culture of prevention" could halve the rates of death and destruction in the decade following 2010 compared with this decade. To address these goals, the WMO has launched the Natural Disaster Mitigation and Prevention Programme. The new Early Warning Promotional Platform for natural disasters has been set up in Bonn, Germany, under the auspices of the International Strategy for Disaster Reduction (ISDR). Several international organizations are working closely with the Secretariat for the ISDR in preparing the World Conference on Disaster Reduction to be held in Kobe, Japan, January 18-22, 2005. [October 2004. Military implications and Sources]

Additional Environmental Security Role for the UN Security Council
Klaus Toepfer, Executive Director of UNEP, said that the restructuring of the UN Security Council might be necessary to address the environment-conflict nexus more efficiently. He stated, "One of the options being discussed is to create a subdivision under the Security Council that focuses on environment-related security concerns." [October 2004. Military Implications and Sources]

OSCE Workshop on Environmental Risks and Security in Earthquake Areas
The Organization for Security and Co-operation in Europe (OSCE) held an international workshop on environmental risks and security in earthquake-prone areas, as part of the preparations for the World Conference on Disaster Reduction to be held in January in Kobe. More than 250 participants from 52 countries addressed such issues as raising public awareness, education and training on social consequences of earthquakes, preparedness, and risk and disaster reduction. Ambassador Vladimir Pryakhin, Head of the OSCE Office in Yerevan said that these issues are "closely linked with the provision of national security to the country and the region." [November 2004. Military Implications and Source]

Asian Tsunami Triggers Global Early Warning System

Tsunami Triggers an Early Warning System for Indian Ocean
If a system like the Tsunami Warning System in the Pacific, headquartered in Hawaii, existed for the Indian Ocean, many lives would have been saved this December. This realization will lead to international agreements to create a Tsunami early warning system in the Indian Ocean (and possibly the Atlantic, leading to a global system). The Governments of Japan, India, and Australia announced that they will create such a system headquartered in India. This will be a top priority for the World Conference on Disaster Reduction to be held in Kobe, Japan January 18-22, 2005. [See also item above *Natural Disasters Raise the Environment on the Global Security Agenda*] The establishment of globally connected early warning for natural disasters seems inevitable. [December 2004, Military Implications and Sources]

Tsunami Triggers an Early Warning System for Indian Ocean and Beyond
The Tsunami Warning System in the Indian Ocean, followed by a global one, topped the discussions of the World Conference on Disaster Reduction held in Kobe, Japan, January 18-22, 2005. [See also items Tsunami Triggers an Early Warning System for Indian Ocean of December 2004, and Natural Disasters Raise the Environment on the Global Security Agenda of October 2004 environmental security report.] The tsunami warning system for the Indian Ocean should be launched by June 2006 with the rest of the world to follow a year later, said Koichiro Matsuura, head of UNESCO. UNEP's Executive Director Klaus Toepfer stressed that such a system should be extended to all forms of natural and man-made disasters, including climate change. Grassroots groups were unhappy with the conference's outcomes, as it failed to set concrete plans of action and targets with political commitment and measures to hold nations accountable for their pledges. Germany plans to hold an international conference later this year on how to enhance early warning systems and limit the damage from natural disasters. It has already hosted two disaster early warning conferences in 1998 and 2003. The EU is considering setting up an international reaction force made up of about 5,000 experts identified by national governments, trained together and placed under central co-ordination in an emergency, with rapid reaction teams in different disaster situations. [January 2005. Military Implications and Sources]

Regional Governance Key for Tsunami Early Warning and Recovery
The first Network of Regional Governments for Sustainable Development Summit was held at Lake Toba, Indonesia, March 10-12, 2005, under the theme "Global Partnership on Rehabilitation and Reconstruction of Post-Disaster Settlements." The Lake Toba Call declaration summarizes the agreements reached by the participants, mainly focusing on creating partnerships at the regional level within the UN system for disaster early warning systems and post-disaster rehabilitation, and to guarantee that the local governments could work properly in a network of regional governments to ensure sustainable development not only at local, but also at regional and international levels. [March 2005. Military Implications and Sources]

MIGRATION

Migration caused by environmental degradation might trigger new conflicts.

UN Establishes New Agency for Internally Displaced People
Only three of the current 21 conflicts are trans-border wars, the remaining 18 are internal conflicts. There are about 50 million internally displaced people (IDPs) who have fled their homes due to conflicts, environmental causes, and government orders. In order to address the IDPs issues, the United Nations established the Inter-agency Internal Displacement Division on July 1st. It will initially focus on the major countries of internal displacement - Sudan, Uganda, Somalia, Liberia, Burundi and Colombia; and will negotiate access to the Democratic Republic of the Congo (DRC) and Sri Lanka. If continued environmental deterioration forces increased migration and conflict within countries that UNHCR is not authorized to reach, then IDP could play an important role in conflict prevention. [July 2004. Military Implications and Source]

South Asian Environmental Migration

A recent editorial summarized environmental migration issues in South Asia and suggested that there is an environmental migration vector in place between Bhutan and Nepal. See also related items China River Basin Issues and Himalaya melting implications under Prospects for Conflict over Water Rise in Several Regions. [April 2004. Military Implications and Source]

C. Protecting the environment due to the moral value of the environment itself

ENVIRONMENTAL SECURITY-RELATED INTERNATIONAL REGULATIONS THAT HAVE BEEN COMING INTO FORCE SINCE APRIL 2004

Currently there are over 400 environmental-related international treaties, conventions, and protocols.[1] Regulations entered into force since April 2004 and additions to existent treaties or subjects for new treaties are included below.

African Rain Forest Protection—International Treaty signed in February 2005
At the Second Summit of Heads of State and Government of Central Africa on the Conservation and Sustainable Management of the Central African Forest Ecosystems, on February 5th, Central African countries signed a landmark regional conservation treaty, establishing cross-border partnerships to help save the world's second largest rain forest. The treaty will make it easier for countries to jointly track and combat poachers, manage funds for training and conservation, and harmonize laws in different countries that regulate logging. In his message, Secretary-General Kofi Annan stressed the linkage between forest ecosystems and security in the region. [February 2005. Military Implication and Sources]

[1] *In larger freedom: towards development, security and human rights for all.* Report of the UN Secretary-General, UN, March 2005

Gothenburg Protocol on Air Pollution to Enter into Force on May 17
The Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) will enter into force on 17 May 2005. The Protocol 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 Gothenburg Protocol controls several pollutants and their effects and sets targets for emission cuts by 2010 for sulphur dioxide, nitrogen oxides and volatile organic compounds (VOCs), and ammonia, as well as specific emission sources (e.g. combustion plants, electricity production, dry cleaning, cars and trucks). [March 2005. Military Implications, Sources]

Changes to Gothenburg Protocol— the Convention on Long-range Transboundary Air Pollution
U.S. ratification brought the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to just two ratifications away from its entry into force. This eighth Protocol to the Convention on Long-range Transboundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe (UNECE) sets emission ceilings for 2010 for four pollutants: sulphur, NOx, VOCs, and ammonia, regulating emissions by sources (e.g. combustion plant, electricity production, dry cleaning, cars and trucks), and requiring the use of best available techniques to keep emissions down. In the meantime, an expert group is conducting work on fine particles; the results might lead to either amendment of the Gothenburg Protocol or a new protocol specifically on fine particles.

Two new persistent organic pollutants (POPs) may be considered for addition to the Protocol on POPs, pentabromodiphenyl ether (PBDE) and perfluorooctane sulphonate (PFOS).

As the 1979 Convention presently covers just Europe, the U.S., and Canada, efforts will increase to extend it towards the east, involving East European, Caucasian and Central Asian countries. [December 2004. Military Implications, Sources]

EU Greenhouse Gas Emission Trading Scheme (EU ETS)
European Union (EU) Directive 2003/87/EC entered into force on 25 October 2003 to implement carbon dioxide allowance trading, which became formally active on January 1, 2005. Over-the-counter allowance trading had begun even before January 1, though formal markets will not be established until later in Spring 2005. Approximately 12,000 industrial plants and energy producers in the EU had to begin monitoring and reducing CO2 emissions to meet limits set for 2005 and 2007. The EU has agreed under the Kyoto Protocol to reduce emissions by 8% compared to 1990 levels. Entities exceeding their assigned limits must either find methods to reduce them or to buy unused allowances from entities that are operating under their own limits. Plans for four nations have not been approved so far: Czech Republic, Greece, Italy and Poland. The EU Commission is empowered to accept or reject all or parts of any nation's plan. Transportation emissions are not included in the requirements, but could be added at some later time. [January 2005. Military Implications and Sources]

Kyoto Protocol Came into Force in February 2005
The UN Kyoto Protocol to the 1992 UN Framework Convention on Climate Change (UNFCCC) came into force on February 16, 2005. Under the Protocol, the industrialized Member States are bound to reduce their combined greenhouse gas emissions that contribute to global warming by at least 5% under 1990 levels by 2012. The six major greenhouse gases covered by the Protocol are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6). So far the Protocol was ratified by 128 states. Plans for post-Kyoto climate change policies and strategies have already begun. A "G8 Plus" group (including key developing industrial countries China, India and Brazil) could emerge to advance Kyoto by helping emerging industrial nations to develop "clean" technologies based on G8 scientific advances. [February 2005. Military Implications and Sources and Previous Items Related to Kyoto Protocol]

Maritime Mandatory Area to be Avoided in New Zealand—established by IMO
The New Zealand Maritime Safety Authority has successfully petitioned the International Maritime Organization (IMO) to have the area around the Poor Knights Islands designated as a "Mandatory Area to be Avoided" (MAA). The Poor Knights area became the first place on the planet to be protected by the new IMO classification, which was created to protect ecologically fragile areas. As a consequence, ships longer than 45 meters (148 feet) must stay at least 5.5 miles (8.8 kilometers) east of the Poor Knights, starting December 1, 2004. [May 2004. Military Implications and Source]

Oil Spill Fines Increase—effective March 2005
Oil pollution damage compensation under the 1992 Civil Liability Convention will be substantially enhanced with the entry into force of the Supplementary Fund for Compensation for Oil Pollution Damage at the beginning of March 2005. Under the new Protocol, payments for an oil spill will be raised and capped at 750 million Special Drawing Rights (about $1.152 billion).

Meantime, the EU agreed on stronger measures against ships polluting European waters. Each EU country would be allowed to charge a minimum penalty for marine pollution. The fines are between 150,000 and 300,000 euros (about $398,500) for less serious cases, and between 750,000 and 1.5 million euros for more serious cases, although member states may set higher fines if they want. The new rule is pending approval by the European Parliament. The EU ambassadors will also seek agreement for proposing that ships' captains' personal liability be included in international maritime conventions. [December 2004. Military Implications and Sources]

Plant Genetic Resources for Food and Agriculture—FAO International Treaty—Entered into Force in June 2004
The FAO's International Treaty on Plant Genetic Resources for Food and Agriculture entered into force on 29 June 2004. Countries can now share breeding material from several countries

without the need for bilateral agreements for each country. An international fund will be established by payments from those who commercialize plants bred with material from the Multilateral System created by the treaty. The fund will be used to help developing countries improve general conservation, sustainable use of plant genetic resources, and gene bank conservation. It is expected to increase agricultural genetic diversity, which has been reduced considerably; and hence, play a crucial role in the conservation and sustainable use of plant genetic resources increasing food security. [June 2004. Military Implications and Sources]

The EU Ended its Ban on Genetically Modified Foods
By authorizing the import of GM sweet corn, the EU ended its five-year ban on GM food. The Bt-11 maize imports are authorized for the next 10 years. [May 2004. Military Implications and Sources]

Preventing Terrorist Access to Weapons of Mass Destruction—UN resolution
The UN Security Council unanimously adopted on April 28, 2004 a binding resolution criminalizing the production and/or acquisition of weapons of mass destruction by non-state actors. The Council decided that "all States…shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them." Being considered under Chapter VII of the UN Charter, the resolution is enforceable by the Security Council through tribunals, embargoes, or military force after all peaceful means of persuading delinquent Member States have been exhausted. However, during the debate, it was underlined that the Council would have to get separate approval for the means of enforcement. During the next two years a committee designated by the Security Council will monitor the implementation of the resolution and within six months all States are expected to present reports on their efforts to execute the provisions. [April 2004. Military Implications and Sources]

Single-hull Oil Tanker Phase-out Entered into Force
Single-hull oil tanker phase-out—implementation of MARPOL Annex I regulations 13G and 13H—entered into force on April 5, 2005 for all States Party to the MARPOL Convention. [April 2005. Military Implications and Source]

Stockholm Convention on POPs Came Into Force in May 2004
The 2001 Stockholm Convention banning the most dangerous Persistent Organic Pollutants (POPs) came into force on May 17, 2004. The UN-backed treaty is banning hazardous pesticides, dioxins and polychlorinated biphenyls (PCBs), as part of the UN effort to eliminate the worst health-threatening pollutants. The twelve POPs covered so far by the Convention are: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, polychlorinated biphenols (PCBs), hexachlorobenzene, dioxins and furans. [May 2004. Military implications and Sources]

Proposed Treaties and/or Changes to Existing Ones

UN Convention against Nuclear Terrorism

The International Convention for the Suppression of Acts of Nuclear Terrorism was adopted by the General Assembly on April 13, 2005 and will be open for signature on 14 September at the high-level plenary meeting scheduled for the 60th session of the UN General Assembly. The Convention creates an enforced legal framework to counter nuclear terrorism. It will provide for a definition of acts of nuclear terrorism, and covers nuclear safety, crisis and post-crisis situations in accordance with the International Atomic Energy Agency (IAEA) standards. Under its provisions, States are supposed to cooperate by sharing information and assisting each other in preventing terrorist attacks, and the alleged offenders must be prosecuted or extradited. [April 2005. Military Implications and Sources]

Treaty to on Access to Clean Water

Mikhail Gorbachev wants the UN World Summit in September to declare that access to safe water is a human right and embody this right in a new international treaty. His speech at the 13th meeting of the UN Commission on Sustainable Development called for a legally binding treaty with adequate implementation mechanisms to guarantee the right to clean water and sanitation to all. This former head of the Soviet Union declared that providing clean water for everyone is a bigger challenge than ending the nuclear arms race during the Cold War. [April 2005. Military Implications and Sources]

Clean Air for Europe Initiative to Limit Air Pollution

Clean Air for Europe (CAFE) is an integrated action plan prepared by the EC to further improve the quality of the air for Europeans. An EU Directive of 1999 set limits for some air pollutants, including particulate matter (PM10 - airborne particles with a diameter of 10 micrometers or less), nitrogen dioxide, sulphur dioxide and lead. The limits are to be met by 1 January 2005, with the exception of nitrogen dioxide, which is 2010. The CAFE is the next step, and the Commission is expected to adopt it by mid-2005. European citizens were invited to comment by the end of January about the quality of the air they breathe and suggest measures to improve it. [January 2005. Military Implications and Sources]

Changes to Gothenburg Protocol— the Convention on Long-range Transboundary Air Pollution

U.S. ratification brought the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to just two ratifications away from its entry into force. This eighth Protocol to the Convention on Long-range Transboundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe (UNECE) sets emission ceilings for 2010 for four pollutants: sulphur, NOx, VOCs, and ammonia, regulating emissions by sources (e.g. combustion plant, electricity production, dry cleaning, cars and trucks), and requiring the use of best available techniques to keep emissions down. In the meantime, an expert group is conducting work on fine

particles; the results might lead to either amendment of the Gothenburg Protocol or a new protocol specifically on fine particles.

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REACH Program Closer to Entry Into Force

The Registration, Evaluation and Authorization of Chemicals (REACH) legislation for controlling hazardous chemicals is likely to enter into effect in 2006 or shortly thereafter. It has already passed the legislative process, but the EU Commission has to approve it, and some modifications are possible. Manufacturers, importers and users who exceed the established threshold of 1,000 metric tons/yr will have to provide physical, chemical and toxicological data. Lifecycle safety and environmental risks for specific uses will have to be provided. "High concern" and "very high concern" are designations for chemicals that will need 1) tight management or possible substitution or 2) "are carcinogenic, mutagenic, or toxic to reproduction (CMRs); persistent, bio-accumulative and toxic (PBTs); very persistent and very bio-accumulative (vPvBs); persistent organic pollutants (POPs); or have equivalent properties", respectively. Owing to the EU's large trade volume, impacts of this legislation will be worldwide. Provision is made for an agency to securely handle proprietary information. Some 30,000 chemicals are expected to be controlled by this legislation/policy. Full registration of a given chemical must be completed within three years of final enactment of REACH, or manufacture, importation and use will have to cease. As with the U.S. Toxic Substances Control Act, REACH supplements the Rotterdam Convention. [March 2005. Military Implications, Sources and Related items]

Leading Cancer Specialists call for REACH Strengthening

At a colloquium organized by the French Association for Research on Treatments Against Cancer at UNESCO Headquarters, a transatlantic group of leading cancer specialists presented scientific evidence on the necessity of strengthening the Registration, Evaluation and Authorization of Chemicals (REACH) policy, in order to better control carcinogenic chemicals. The participant experts stated that REACH was much weakened under the pressure of the chemicals industry from both sides of the Atlantic. Corinne LePage, a French lawyer, wants to "advance the idea that polluting is a crime against humanity." [See also items related to the REACH program in the AC/UNU Millennium Project environmental security reports of January 2004, August and April 2003, and November 2002.] [May 2004. Military Implications and Sources]

Stockholm Convention on POPs to be Expanded

The 2001 Stockholm Convention banning the most dangerous Persistent Organic Pollutants (POPs) came into force on May 17, 2004. The UN-backed treaty is banning hazardous pesticides, dioxins and polychlorinated biphenyls (PCBs), as part of the UN effort to eliminate

the worst health-threatening pollutants. The twelve POPs covered so far by the Convention are: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, polychlorinated biphenols (PCBs), hexachlorobenzene, dioxins and furans. Many experts consider the "dirty dozen" list too short. The first Conference of the Parties to the Convention (COP 1) to be held in Punta del Este, Uruguay, in early 2005 will establish a committee for evaluating other potential chemicals and pesticides to be added to the list. The COP will also finalize guidelines for promoting "best environmental practices" and "best available techniques" that can reduce or eliminate releases of the most toxic POPs. [May 2004. Military implications and Sources]

The First Meeting of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants (POPs) will be held in Punta del Este, Uruguay from 2-6 May, 2005 and is anticipated to be attended by 800 government officials and observers from 130 countries. The Conference is expected to establish a process for evaluating future POPs candidates to add to the list, and to discuss best policies and strategies for implementing the Convention's requirements with Guidelines on Best Available Techniques and Environmental Practices. [April 2005. Military implications and Sources]

EU Ratified the Stockholm Convention and Proposes new POPs to be banned
EU ratified the Stockholm Convention that bans the use of POPs. The treaty entered into force on May 17, 2004. So far it has been ratified by 83 countries, among them 13 EU member states. As Party to the Treaty, the European Commission says that it has already prepared a list of nine additional POPs to propose to be banned under the Convention. [November 2004. Military implications and Source]

The European Union has proposed banning additional chemicals beyond those found on the Stockholm Convention's list. The chemicals include: hexachlorobutadiene, octabromodiphenyl ether, pentachlorobenzene, polychlorinated napthalenes, short-chained chlorinated paraffins, pentabromodiphenyl ether, chlordecone, hexabromobifenyl, and hexachlorocyclohexane. [August 2004. Military implications and Source]

Rotterdam Convention on PIC for Certain Hazardous Chemicals and Pesticides in International Trade to be Expanded
The first Conference of the Parties to Rotterdam Convention on Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was held in Geneva, 20-24 September 2004. The delegates approved 14 new hazardous substances to be added to the initial 27 substances already on the UN-backed treaty list. The conference also established a Chemical Review Committee to assess future proposals to add new chemicals and pesticides to the PIC list, as well as finalize other administrative procedures necessary for good operations. The fourteen new additions are: binapacryl; toxaphene; ethylene dichloride; ethylene oxide; monocrotophos; DNOC and its salts; dustable powder containing a combination of benomyl at or above 7 per cent, carbofuran at or above 10 per cent and thiram at or above 15 per cent; amosite, actinolite, anthophyllite and tremolite asbestos; tetraethyl lead and tetramethyl lead; parathion; and chrysotile asbestos. [September 2004. Military Implications and Sources]

Mercury Pollution Global Assessment and Control
As part of the effort towards a legally binding treaty to control mercury pollution, environment ministers attending UNEP's 23rd Governing Council and Global Ministerial Environment Forum in Nairobi, Kenya, requested UNEP to conduct a study on the amounts of mercury being traded and supplied around the world. The EU called for a clear framework with bans and deadlines, but the Governing Council was not ready to go that far at this time and decided instead on a partnership formula. The first pilot partnership projects should begin by September. The program will be reviewed in two years and assessed to determine whether further action (including a legally binding treaty) is needed. Similar global assessments were suggested for cadmium and lead to better understand the health and environment effects of these heavy metals and establish whether global action is needed to address them. [See also Senators Urge U.S. Support for Global Mercury Treaty of October 2004, EU Parliamentary Committee Moves to Strengthen Air Pollution Laws of January 2004, and UN Protocol to Restrict Heavy Metal Emissions in Europe Came Into Force in December 2003 environmental security reports.]
Note: the EU Executive Commission recently proposed a ban on mercury exports by 2011. Europe is the world's largest supplier of mercury. [February 2005. Military Implications and Sources]

Senators Urge U.S. Support for Global Mercury Treaty
A bipartisan group of seven Senators introduced a resolution urging the U.S. to collaborate with international partners to prepare a comprehensive strategy for reducing global mercury pollution and mercury use. The Senators introducing the proposal include: Mark Dayton (D-MINN), Jim Jeffords (I-VT), Lincoln Chafee (R-RI), Paul Sarbanes (D-MD), Joe Lieberman (D-CT), Patrick Leahy (D-VT), and Frank Lautenberg (D-NJ). They suggest starting international negotiations for a binding international agreement to limit mercury use, trade, mining, and pollution, to be considered at the next UNEP Governing Council meeting in February 2005. [October 2004. Military Implications and Sources]

EU to Ban the use of Cadmium in Batteries
As part of its effort for reducing environmental pollution from heavy metals, the EU has decided to ban the use of cadmium in consumer batteries. Cordless power tools, medical equipment, emergency lighting, and alarm systems are exempted so far, but in 2008 when the law will be reviewed, the European Commission might propose a complete ban—as previously suggested by such countries as Sweden and Denmark. The environmental ministers also set collection targets for portable batteries. After adapting their national legislation to the new EU regulations, in the first four years, 25% of all used batteries should be collected on their territories; while after eight years the rate rises to 45%. The new legislation is awaiting European Parliament approval. [December 2004. Military implication and Source]

EU Environment Ministers Propose post-Kyoto Protocol Climate Policies
Now that the Russian ratification will bring the Kyoto Protocol into force, the European environment ministers are planning to initiate talks within the UN on climate policies that would follow after 2012 (when the Protocol's first commitment period ends). The next UN Climate

Conference (COP10) will be this December in Buenos Aires and the European Council will meet next spring on its climate policy objectives. The EU's general climate objective is to pursue polices leading to temperatures that would not exceed pre-industrial levels by more than two degrees Celsius. Meanwhile, the European Environmental Ministers are planning to ban the more destructive fluorinated gases in certain products, which European Environment Commissioner Margot Wallström said "have huge global warming potential - in some cases almost 24,000 times that of carbon dioxide." The Ministers also plan to regulate leakage of these gases prior to their complete phase-out. They propose to ban the use of fluorinated gases in double-glazing, fire extinguishers, car tires and recreational items. There was also a call for concrete action to reduce emissions from international aviation and shipping industries. [October 2004. Military Implications and Source]

European Parliament Resolution to Protect Whales From Sonar

The European Parliament has passed a resolution calling on its 25 member states to halt the deployment of high-intensity active naval sonars until a global assessment of their cumulative environmental impact on marine mammals, fish and other marine life has been completed. The resolution also asks the European Commission to conduct an assessment study of current practices and their impact in European waters. The issue is expected to be on the agenda of two upcoming events: the second meeting of the Parties to a European regional cetacean conservation treaty November 9 to 12 that will vote on a resolution on the harmful effects of military sonar on marine life, and the final stakeholders meeting on the EU Marine Strategy, November 10-12. [See also items *Research Confirms Military and Industry Sonar Harms Whales*, and *US military waived in respecting environmental law* under 'Other New Technologies Potential Implications' further in this report.] [October 2004. Military Implications and Sources]

EU "Polluter Pays" Law

The full European Parliament approved the final draft of the Polluter Pays law on March 31, 2004. Despite huge pressure from the business sector, no exceptions were included. However, there is an exception for the military: Paragraph 6 of Article 4 stipulates that "This Directive shall not apply to activities the main purpose of which is to serve national defence or international security nor to activities the sole purpose of which is to protect from natural disasters." [April 2004. Military Implications and Sources]

EU to Set Higher Targets for Cuts in Energy Consumption

The European Parliament's Industry Committee approved a proposal for raising energy consumption cuts from the earlier target of 10% to 11.5% over the period 2006-2015. The new schedule is to cut 3% from 2006 to 2009, 4% from 2009 to 2012, and an additional 4.5% from 2012 to 2015. During the Brussels European Council Summit at the end of March, the EU heads of state and government reiterated the importance of implementing the Lisbon Strategy for growth, competitiveness and social cohesion in today's knowledge-based world, and addressed climate change and sustainable development. They also emphasized EU preparations for the

September UN Summit and its substantial role in achieving the Millennium Development Goals. [April 2004. Military Implications]

EU New Law To Control Bird Flu Epidemics
The European Commission adopted a draft Directive for a law to control bird flu viruses. The new legislation will require EU states to introduce and reinforce surveillance and control measures against low pathogenicity viruses, in order to prevent mutation into a more harmful strain, mostly one that would be transmissible between humans. The new law is expected to enter into force January 1, 2007, replacing the existing one. [April 2005. Military Implications and Source]

IMPROVED COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

For many environmental regulations, enforcement seems to be not strong enough or there is little understanding worldwide of how they should apply. With the aid of new technologies (such as space surveillance) and meetings discussing the international regulations, it is expected that the situation will improve considerably in the near future.

Developing countries' compliance with environmental regulations is expected to improve via new modes of international assistance. International organizations, NGOs, and developed countries' governments join efforts to help developing countries understand the importance of a healthy environment, improve their practices to be more environment-friendly, and to understand and comply with the international environmental legislation in place.

International Conference on Environmental Compliance and Enforcement
Participants from over 60 countries and 125 organizations explored strategies to improve compliance with domestic and international environmental law at the 7th International Conference of the International Network on Environmental Compliance and Enforcement (INECE) held in Marrakech, Morocco, from 10-15 April 2005. Papers from the conference stressed the relationship of compliance and enforcement to the rule of law to help achieve a system of good governance and ultimately meet sustainable development objectives. Supporting materials are available on the interactive INECE website.

INECE is the only global network of independent experts dedicated to pursuing the rule of law, good environmental governance, and sustainable development at all levels of governance. It links the environmental compliance and enforcement efforts of more than 4,000 practitioners - inspectors, prosecutors, regulators, parliamentarians, judges, and NGOs - from over 120 countries, through training and capacity building programs, raising awareness, and enhancing enforcement cooperation. [April 2004. Military Implications and Sources]

***Emerging Forces in Environmental Governance,* UNU Report**
A recent book published by the United Nations University presents arguments for overhauling international environmental governance. It argues that a new environmental coordinating body is needed to solve problems associated with the proliferation of multiple organizations that

administer various treaties, conduct research, and maintain the information required to ensure consistent enforcement of existing international environmental agreements. Enforcement options presented include creation of a World Environment Court, a UN Environmental Security Council with binding enforcement powers, and expansion of the UN Security Council mandate to include environmental security. [June 2004. Military Implications and Sources]

UK Suggests Environmental Court similar to Australia and New Zealand
A report for the UK Department for Environment Food and Rural Affairs (DEFRA) has recommended that a specialized court and judges be established to address environmental and "overdevelopment" issues. If the UK environmental court were to be established, becoming the third such national court in the world (after Australia and New Zealand), then increased environmentalist pressure for such a court in the US and other countries will increase. There have even been suggestions for a UN Environmental Security Council. It is reasonable to assume that increasing environmental law with increasing technological capacity to identify infractions will put increased pressure on courts to become more capable of addressing these matters. [August 2004. Military Implications and Sources]

OECD Environment Ministers Call for more Ambitious Policies
At the 20-21 April 2004 meeting, the OECD environment ministers agreed that more ambitious policies supported by stronger political will are needed to meet the environmental targets that they set for 2010 in the OECD Environmental Strategy. A new Environmental Outlook will also be produced. [April 2004. Military Implications and Sources]

Aarhus Clearing House Launched
Aarhus Convention implementation is made more effective by the launch of a new clearinghouse http://aarhusclearinghouse.unece.org, which provides information on citizens' environmental rights. [September 2004. Military Implications and Sources]

Overview of Explosive Remnants of War Protocol
The Arms Control Web site published a comprehensive overview of the current state of affairs of the abandoned ammunition and unexploded ordnance and the Explosive Remnants of War (ERW) Protocol. The ERW is Protocol V to the Convention on Certain Conventional Weapons (CCW), aiming to make governments clean up battlefields after armed conflicts end. [September 2004. Military Implications and Source]

Comprehensive Test Ban Treaty Organization to be Restructured
The Comprehensive Test Ban Treaty (CTBT) Organization will undergo considerable restructuring over the next two years as it progresses from the buildup phase to testing and evaluation, and operation and maintenance. The recently released Report of the 22nd Session of the organization's preparatory commission, held at the end of June 2004, offers some details of

the plans. The CTBT will enter into force when 44 required states (Annex 2 States) ratify the treaty; thus far, 32 have ratified it. [July 2004. Military Implications and Sources]

EC Reports EU Environmental Law Enforcement by EU Members is Poor
European environmental law implementation presents "serious shortcomings" according to the "Fifth Annual Survey on the implementation and enforcement of EU environmental law" covering the year 2003. Timely transposing of environmental laws passed at the European Union level into national laws is the main problem. In 2003, environmental law non-compliance represented over a third of the cases brought before the European Court of Justice. The survey found that most of the infringements were related to air quality, waste disposal and treatment, water quality, nature protection and environmental impact assessments. The report also suggests a more proactive policy in enforcing compliance by designing more "enforcement-friendly" environmental laws, and offering more support to nations in the implementation process. [August 2004. Military Implications and Sources]

Southwest Pacific Islands Might "Localize" Environment-protection Legislation
In contrast to the preceding item, in the southwestern Pacific ecosystem-based management of coastal areas might become very much decentralized. "The island nations of the south-western Pacific are considering allowing citizens to reclaim legal control of their local seas, in the hope they can use their traditional knowledge, customs and laws to protect fish stocks and biodiversity," says a New Scientist article. In this plan, villages will own the seas immediately adjacent to them, and can set up environment-protecting restrictions for them, with the legal backing of the central government. [April 2004. Military Implications and Sources]

Improved Cooperation Among International Organizations to Fight Marine Pollution
The fight against marine pollution gained strength with the signing of a Memorandum of Understanding between the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the UNEP Regional Seas Programme. The effort is designed to implement environmentally sound management of hazardous wastes in order to prevent coastal and marine pollution. It is based on collaboration of the 13 Basel Convention Regional Centres (BCRCs) with the various Regional Seas Programmes, and reciprocal technical and legal training support. [The Basel Convention regulates the movement of hazardous waste; it covers toxic, poisonous, explosive, corrosive, flammable, ecotoxic, and infectious wastes that are being moved from one country to another.]

IMO Secretary-General Efthimios E. Mitropoulos and the European Commissioner responsible for the environment, Stavros Dimas, also had a meeting this month focusing on better collaboration between the two organizations to enhance marine environmental protection from pollution from ships and related activities. They agreed on the need for ratification, by as many States as possible, of the newest IMO conventions such as the Ballast Water Management Convention and the Convention on Anti-fouling Systems, to enable them to come into force soon.

The amendments to the MARPOL Convention—including the revised phase-out schedule for single-hull tankers and a new regulation on the carriage of heavy grades of oil—will enter into force on April 5, 2005; and, on May 19, 2005, Annex VI of MARPOL on regulations for the prevention of air pollution from ships will be effective. [March 2005. Military Implications and Sources]

Increasing Capacity of Space Technology to Assist Environmental Security

The global environmental monitoring system is becoming increasingly capable of detailed diagnosis. The mission of the **Aura spacecraft launched by NASA** is to give scientists information on the nature and movements of pollutants and their effect on the atmosphere and the ozone holes. Over the next several years four more U.S. and French satellites should be launched, forming a set of environmental monitors. **Global Earth Observation System of Systems (GEOSS),** a new collaboration between 17 U.S. federal agencies and nearly 50 countries will monitor data from thousands of manned and unmanned land, air, and sea stations from around the world as well as from space for a continuous assessment of the earth's vital signs. The National Oceanic and Atmospheric Administration leads the effort. The coalition members are scheduled to release a 10-year plan in February 2005. **Global Monitoring for Environment and Security (GMES)** launched a new *Observing the Earth* Portal to better highlight GMES's global monitoring activities and results. [July 2004. Military Implications and Sources]

Global Earth Observing System of Systems

International Agreement on Earth Environmental Observing System

At the second Earth Observation Summit on 25 April 2004, in Tokyo, representatives from 47 countries approved the framework document for implementing the observation plan, including the measures and goals for an observation network to be set up in ten years from 2005. According to a news agency report, "The document adopted nine goals for observation, including minimizing damage from natural disasters and human-induced hazards, recognising environment-related factors affecting human health and welfare, improving management of energy and water resources, and others. The document also emphasized the importance of building up an international observation network to share information gained through satellites, observatories and ships, and to cover spots left unobserved under the current observation network." [April 2004. Military Implications and Sources]

Global Earth Observing System of Systems Gets 10-Year Mandate

At the Third Earth Observation Summit held in Brussels, February 16, 2005, representatives of 54 nations and over 40 international organizations formally adopted the 10-year plan for implementing the Global Earth Observing System of Systems (GEOSS). The plan provides a framework and institutional mechanism to connect Earth observation tools used by different nations and agencies independently. GEOSS will facilitate environmental monitoring, a better understanding of the environment and trends of change, and building of an early warning system. Part of GEOSS, the Global Monitoring for Environment and Security (GMES) initiative jointly led by the European Commission and ESA is designed to collect and manage data and

information for both environment and civil security purposes. [February 2005. Military Implications and Sources]

NASA's Eyes in the Sky to Help Global Conservation
NASA and the World Conservation Union (IUCN) signed an agreement to use the space agency's satellite system to map the earth, monitor global environment change, and help conservation efforts. Although the focus will be to discover unknown species of plants and animals and pinpoint their habitats, this is an important project for international collaboration for biodiversity protection in general. [November 2004. Military Implications and Sources]

Open Skies Treaty may also Serve Environmental Agreements
Participants in the Seminar on the Environmental and Ecological Use of the Open Skies Regime discussed the possible use of the Treaty's system for ecological purposes, such as natural disaster cases, urbanization, and enforcement of international environmental regulations. The main purpose of the Open Skies Treaty is to enhance military transparency through observation flights, to facilitate the monitoring of compliance with existing or future arms control treaties, and to assist in conflict prevention and crisis management. The Treaty entered into force on January 1 2002, and currently has 31 States-Party, including the United States. [October 2004. Military Implications and Sources]

European Geosciences Union General Assembly
The annual European Geosciences Union General Assembly took place in Vienna from 24 to 29 April 2005 with about 8,000 scientists presenting over 3,000 papers from the fields of Earth and planetary sciences. Space science has become essential for monitoring climate change effects, geophysical changes and pollution, and for enhancing natural hazard awareness and management. [See also above item *Increasing Capacity of Space Technology to Assist Environmental Security*] [April 2005. Military Implications and Sources]

SAFETY ISSUES

Nuclear Safety

UN Agency to Intensify Tracking of Illicit Nuclear Trafficking
At its 48th General Conference, IAEA warned that nuclear and radiological terrorism didn't diminish in spite of the efforts to expand and accelerate preventive actions. The IAEA Illicit Trafficking Database includes about 600 illicit incidents involving unauthorized acquisition, possession, use, transfer, or disposal of nuclear material and/or other radioactive or dangerous material. Non-participating States are encouraged to join the 80 Member States to increase the program's efficiency. [September 2004. Military Implications and Source]

Multilateral Approach Needed To Keep Nuclear Arms from Terrorists
Multilateral Approaches to the Nuclear Fuel Cycle, a study carried out by a group of experts from 26 countries at the request of the International Atomic Energy Agency (IAEA), concluded that multilateral cooperation is essential for curbing "burgeoning and alarmingly well organized nuclear supply networks, and from the increasing risk of acquisition of nuclear or other radioactive materials by terrorist and other non-State entities." The report suggests multilateral arrangements—by region or by continent—to strengthen controls over fuel manipulation, transparent fuel movement, enrichment, reprocessing and disposal and storage of spent fuel. The study is now widely circulated and will be discussed at the Nuclear Nonproliferation Treaty (NPT) Review Conference in May. International cooperation was also the call of UN Secretary General Kofi Annan at the 41st Conference on Security Policy held in Munich this month.

IAEA Director, Mohamed ElBaradei, warned that terrorist groups might have already obtained a nuclear weapon, or the material necessary to create one. He is proposing seven measures to strengthen the NPT, which will be presented at the May NPT Review Conference, including a five-year moratorium on construction of uranium enrichment facilities.

In the meantime, nuclear materials are moving around without control. Indian Police found weapons-grade uranium on two men who were arrested on suspicion of being drug peddlers. 253.6 grams (8.8 ounces) of substance was identified as 99% uranium by the Bhabha Atomic Research Center. The origin and destination of the uranium are currently being investigated. Russian police seized 40 kg of uranium-238 from a person who claimed to be using it as 'weight lifting equipment'. [February 2005. Military Implications and Sources]

Increasing Calls for Improved Management of Nuclear Materials and Nonproliferation
International Atomic Energy Agency (IAEA) Director-General Mohamed ElBaradei, concerned about terrorism and the proliferation of nuclear materials, urged the international community to reinforce the Nuclear Non-Proliferation Treaty (NPT) and draw a concrete roadmap and timetable for irreversible nuclear disarmament. Senator Joseph Biden (D-Del.) introduced a bill this month [January 2005] that proposed to re-establish U.S. efforts to convert Russian nuclear weapons production sites to civilian use, as part of the counterterrorism bill, Targeting Terrorists More Effectively Act of 2005. Nuclear proliferation and threats top the discussions of the Geneva Conference on Disarmament that began on January 27. The May 2005 NPT Review Conference will further discuss nonproliferation initiatives and a new disarmament action plan.

The Institute for War and Peace recently reported on a former Grozny chemical factory wrecked by war, poverty and lawlessness, where dangerous radioactive cobalt lies practically unguarded and already caused the death of several people. In Armenia, the Metsamor aging nuclear power station is a problem given its location and the need to fly in fuel on Russian planes through Georgian airspace—equivalent to "flying around a potential nuclear bomb" states Alexis Louber, head of the EU delegation in Armenia. [January 2005. Military Implications and Sources]

The menace of poor safety conditions at nuclear sites around the world persists. Recent massive landslides in Kyrgyzstan in an area with 20 neglected spent nuclear fuel depositories threaten the whole of Central Asia with nuclear ecological disaster. Furthermore, UN officials and non-

proliferation experts are concerned that nuclear materials smugglers could be using the drug trafficking routes in Central Asia, exploiting the present instability in the region—such as the political turmoil in Kyrgyzstan. According to the IAEA, the disappearance of radioactive material from facilities in Central Asia after the breakup of the Soviet Union in 1991 was a "widespread phenomenon." [April 2005. Military Implications and Sources]

Call for Comprehensive Nuclear-Test-Ban Treaty to Come into Force

At the recent CTBT ministerial meeting, the participants issued a joint statement calling on all non-signatory States, particularly the 12 whose ratification is mandatory for the treaty's entry into force, to ratify the document. Representatives of Finland and Japan stressed that this is essential in view of the present threats to security emphasized by the use and proliferation of nuclear weapons technologies and knowledge that has not been adequately addressed. [See previous item *Comprehensive Test Ban Treaty Organization to be Restructured*] [September 2004. Military Implications and Sources]

Comprehensive Test Ban Treaty Organization to be Restructured

The Comprehensive Test Ban Treaty (CTBT) Organization will undergo considerable restructuring over the next two years as it progresses from the buildup phase to testing and evaluation, and operation and maintenance. The recently released Report of the 22nd Session of the organization's preparatory commission, held at the end of June 2004, offers some details of the plans. The CTBT will enter into force when 44 required states (Annex 2 States) ratify the treaty; thus far, 32 have ratified it. [July 2004. Military Implications and Sources]

U.S. and Allies Should Change Priorities, Says New Book On Terrorism

The Four Faces of Nuclear Terrorism from the Monterey Institute in California recommends new priorities based on risk (likelihood multiplied by impact) and concludes that addressing the availability of highly enriched uranium should be put at the top of the list: "The United States must dramatically revise U.S. efforts to protect fissile materials abroad so as to make securing, consolidating, and eliminating highly enriched uranium (HEU) the leading and most urgent task, taking clear precedence over addressing the dangers posed by plutonium, which must, nonetheless, remain an important priority. The overarching principal guiding policy should be to move toward a world in which fewer countries retain HEU, fewer facilities within countries possess HEU, and fewer locations within those facilities have HEU present." [August 2004. Military Implications and Source]

A Single set of International Standards is proposed for Nuclear Power Plants from Design to Decommissioning

The Conference on Topical Issues in Nuclear Safety, with 274 delegates from 37 countries held last month [October 2004] in Beijing, recommended that the International Atomic Energy Agency (IAEA) develop a single set of international standards for all nuclear installations from design to decommissioning. Given the growing diversification and globalization of the industry,

the sooner these standards are developed and implemented, the better. [November 2004. Military Implications and Sources]

Reducing Proliferation Risks by Converting 60 High- to Low-Enriched Uranium Research Reactors Could Take 10 Years

A key to lowering risks induced by the proliferation of weapons-grade uranium is converting civil nuclear research reactors to run on low-enriched uranium (LEU) instead of high-enriched uranium (HEU). So far 31 research reactors have been converted to low-enriched uranium and 7 have been partly converted. However, IAEA estimates it could take 10 years to convert some 60 civilian research reactors that are still running on HEU that are targeted for this conversion. Approximately 200 experts from across the globe discussed these conversion issues at the International Meeting on Reduced Enrichment for Research and Test Reactors (RERTR) held in Vienna, November 8-11. [November 2004. Military Implications and Sources]

Revival of Nuclear Power in Asia Poses Security Concerns

China is planning to build two large new nuclear reactors per year for the next 16 years. While much of the rest of the world is turning away from this energy source, 16 of the 27 nuclear power plants now being built worldwide are in China, India, Japan and South Korea. The political-military issues of this are addressed in the new edition of The Military Balance by the London-based International Institute of Strategic Studies. [October 2004. Military Implications and Sources]

China to Control NBC and Missile Exports, Possibly Join MTCR

Speaking at the 5th Sino-US Conference on Arms Control, Disarmament and Nonproliferation, Vice Foreign Minister Zhang Yesui announced a set of laws and regulations to control exports of nuclear, biological, chemical, and missile technologies. These presumably represent the full embodiment and extension of the similar biological weapons and missile provisions announced in August and October 2002. Zhang also indicated China's willingness to join the Missile Technology Control Regime (MTCR). [July 2004. Military Implications and Source]

International Cooperation to Address Radioactive Waste Emergent Disaster in Central Asia

"Radioactive waste in northern Tajikistan is the biggest human-made disaster in Central Asia," said an Environmental Officer of the OSCE at a two-day conference on radioactive waste disposal sites in northern Tajikistan and its consequences on the environment and health of the local population. During the Soviet era, nuclear waste in Tajikistan was not managed well. As a result, it is now claimed that 10 million people in the basin of the Syr-Darya River have been affected by nuclear waste. Over 200 participants from countries of the Commonwealth of Independent States, as well as representatives of the UN, the EU, the U.S., and Iran came to Dushanbe to share their expertise in addressing this problem, which has also been a cause of tension with neighboring states, namely Uzbekistan, Kyrgyzstan and Kazakhstan. The

conference recommendations will be submitted to the International Atomic Energy Agency (IAEA) and the OSCE Permanent Council for a further action plan. [November 2004. Military Implications and Source]

UN Investigators Warn of Illegal Uranium Mining in DRC
UN investigators warned that illegal mining at a closed uranium mine in the Democratic Republic of the Congo poses a terrorism risk. UN authorities "recommended that this mine be secured and put in the charge of a private operation for much more disciplined operations, with the aim of avoiding risks including the high rate of radioactivity ... and uranium trafficking with those who shouldn't get it in their hands." The potential threats of transnational organized crime in cooperation with terrorists for illegal uranium mining are significant. [July 2004. Military implications and Sources]

Israeli Dimona Nuclear Reactor
Ben Gurion University, the Water Authority, and the Center for Atomic Researches in Wadi Sureek have published findings of elevated radiation levels in the Negev and Arava aquifers near the Dimona reactor. This follows warnings from the Palestinian Environment Quality Authority last year of the potential environmental threat of the aging Dimona reactor. [July 2004. Military Implications and Sources]

Russian Submarines' Dismantlement an International Concern
Russia intends to raise the issue of foreign aid to assist in the dismantlement and destruction of its obsolete submarine fleet at the upcoming G8 summit. Current proposals to extend existing programs for securing nuclear materials (and destroying biological and chemical agents) to other countries worry Russia because of potential dilution of funds appropriated for this purpose. [May 2004. Military Implications and Sources]

FDA Approves Dirty Bomb Antidotes
The Food and Drug Administration (FDA) approved the commercialization of two products designed to help deal with consequences of terrorists using dirty bombs. The drugs (penetate calcium trisodium injection, Ca-DTPA; and penetate zinc trisodium injection, Zn-DTPA) help speed elimination of radiation from the body and are especially effective for treating contamination from plutonium, americium and curium. [August 2004. Military Implications and Source]

Small Disposable Nuclear Power Plants Raise Environmental Concerns
The U.S. Department of Energy's Lawrence Livermore National Lab is developing a "small sealed transportable autonomous reactor" (SSTAR) that can meet the energy needs of developing countries without the risk of diverting fissile material to weapons programs. The reactor will

have partial breeder capability, and will incorporate a mechanical system to move a generation point along a linear fuel store. A satellite-based alarm system to guard against tampering is planned. The reactors can be transported to a location, and without needing refueling or maintenance, generate power in the 10-100 MW range for up to 30 years. A prototype is hoped for by 2015. [September 2004. Military Implications and Sources]

New reports from the National Academy of Sciences on Nuclear Safety

Monitoring Nuclear Weapons and Nuclear-Explosive Materials, a new report by the Committee on International Security and Arms (CISAC) of the National Academy of Sciences (NAS), outlines technical and collaborative approaches that could help policy-makers minimize the proliferation of nuclear weapons, prevent terrorists from acquiring them, and reduce risks posed by existing nuclear arsenals. The report emphasizes that transparency, monitoring, and verification of all categories of nuclear weapons and material are crucial. It also addresses some of the institutional and technical approaches related to these issues. However, it doesn't make recommendations on policy or action priorities. There are 30,000 existing nuclear weapons in the world of which the U.S. and Russia possess 95%. Nevertheless, the report notes "enough additional nuclear-explosive material exists in military and civil nuclear facilities worldwide to make something like 100,000 additional nuclear weapons", possibly by non-nuclear weapon states and/or terrorist groups.

Another NAS report, *Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report* addresses the safety issues of spent nuclear fuel storage at commercial nuclear reactors. It makes recommendations to the U.S. Nuclear Regulatory Commission on measures to reduce terrorist attack possibilities, as well as implementation of these measures. It calls for plant-by-plant vulnerability analyses and prompt communication of the results for timely implementation of the measures to reduce potential risks.

Policy-makers, industry representatives, and experts representing the world's nonproliferation and nuclear power communities gathered for the 14th International Security Conference organized by Sandia National Laboratories on April 4-6 near Washington, D.C. to bolster discussions about the nuclear fuel cycle and strategies to reduce proliferation risks involving civilian nuclear fuels. [April 2005. Military Implications and Sources]

Chemical and Biological Safety Issues

Time to Strengthen the 1972 Biological Weapons Convention

Because the knowledge of how to weaponize diseases and alter their genetic properties is increasing, the sooner these capabilities are controlled, the safer the world will be. To this end, international experts met in Switzerland December 5-9 to strengthen the 1972 Biological Weapons Convention. Discussions focused on enhancing international surveillance capabilities for infectious diseases and improving national and international response to suspected use of biological or toxic weapons. In addition to a verification regime, Switzerland proposed more

attention to biological weapon disarmament to prevent proliferation and terrorist access. Agreements necessary to manage these threats have not been achieved. An international code of conduct for scientists will be considered in 2005 at the Meeting of Experts (13-24 June) and the Meeting of States Parties (5-9 December). The Sixth Review Conference in 2006 will assess the Convention's operation and implementation.

Bioweapons Report 2004, produced by the Bioweapons Prevention Project, assesses the global state of technology that could be used to create biological weapons and the state of regulations addressing such efforts. It concludes that the BWC "lacks effective mechanisms for monitoring and verifying whether or not states parties are complying with their treaty obligations," and unless updated at its 2006 review conference, the BWC will become irrelevant. The report also forecasts scientific advances by 2011, indicating that a more responsive mechanism is needed for reviewing scientific developments other than the five-year review conferences. Australia and Indonesia have scheduled a February regional workshop in Melbourne on the BWC and strategies to reduce the possibility of bioterrorism in South Asia. Other countries of the region will also be invited. [December 2004. Military Implications and Sources]

Chemical Weapons Convention Annual Conference

The ninth annual Conference of the States Parties to the Chemical Weapons Convention (CWC) was held in The Hague, from 29 November to 3 December 2004, to re-enforce efforts to eliminate chemical weapons and their production facilities. Although this was the largest meeting thus far and countries representing 90% of the world's chemical industry are States Party to the Convention, some States of concern remain outside its control. An interesting precedent was created when Libya's request was approved to convert chemical weapons production facilities into a pharmaceuticals plant to produce low-cost treatments for AIDS/HIV, malaria and tuberculosis for the African market. The Chinese representative called on Japan to get rid of the chemical weapons it left in China during World War II. She noted that 2000 Chinese casualties were caused by these weapons since the end of the War, underlining the need to make the Convention more effective and timely for the destruction of such weapons, as well as creating the relevant facilities for preventing chemical weapons proliferation and acts of chemical terrorism. [December 2004. Military Implications and Sources]

SIPRI 2004 Yearbook Warns about Genetic Weapons

The annual yearbook of the Stockholm International Peace Research Institute includes a warning of the potential for new classes of biological weapons. [June 2004. Military Implications and Source]

Citation Statistics May Reveal Covert Weapons Work

A team at the NM Institute of Mining & Technology has reported, in Nature, a statistical technique for using the interlocking network of authors and citations among scientific papers to detect covert research projects. Applying the method to a Soviet laboratory's body of publications, the scientists were able to detect a 10-year period during which it was engaged in bioweapons studies. [June 2004. Military Implications and Source]

Chemical Munitions on San José Island, Panama
Several chemical munitions have been found recently on San José Island, Panama, a chemical weapons testing site up to 1948. Although the US has offered to dispose of the munitions found to date and provide funding for the equipment needed for any further cleanup, Panama has been unwilling to release Washington from further responsibility. Since the Panamanian government has refused the offer, the US government considers the matter closed. [August 2004. Military Implications and Sources]

Bioterrorism and Epidemics Threats

UNEP Report Warns of Increasing Changes in Infectious Disease Patterns due to Environmental Encroachments
The United Nations Environmental Programme (UNEP)'s Global Environment Outlook Year Book for 2004/2005 warns that the loss of forests, increasing construction of roads and dams, urban growth, agricultural expansion, mining, and pollution of coastal waters are causing major rises in the incidence of infectious diseases, including the appearance in humans of diseases such as Nipah, which had previously been found only in animals. [February 2005. Military Implications and Sources]

UN Report Recommends New Powers to Combat Bioterrorism and Epidemics
The UN report *A More Secure World: Our Shared Responsibility* recommends expansion of the UN's capacity to investigate and intervene in a country when a suspicious disease outbreak occurs, whether the epidemic has a natural or terrorist origin. The Security Council should cooperate with the WHO to respond to and support international action including "cordon operations" for quarantine and international public health access. If existing International Health Regulations (IHR) "do not provide adequate access for WHO investigations and response coordination, the Security Council should be prepared to mandate greater compliance." The report's recommendations will be considered at the fall summit of Heads of State. The eventual changes required to IHR—the rules that govern the WHO—might get to a vote in May.
Note: The recommendations might get serious support, in light of governments' response times to cases of SARS in 2003 and recent avian flu outbreaks. [February 2005. Military Implications and Sources]

Interpol Warns World Unprepared for an Eventual Bio-terrorist Attack
Interpol chief Ronald Noble warns that there is substantial evidence of a possible biological attack by Al Qaeda, "which could cause contagious disease to be spread," and "no entity in the world is prepared for it." Some 400 police officers and health officials from around the world will attend a bio-terrorism conference organized by Interpol beginning March 1, in Lyons, France, to improve cooperation and information sharing between intelligence agencies and police

departments to better combat bioterrorism threats. [February 2005. Military Implications and Sources]

United Nations Upgrades Early Warning System for Health and Terror Alerts
The United Nations launched the Global Public Health Intelligence Network II (GPHIN II), an upgrade of the GPHIN emergency-preparedness system designed to alert national health agencies to imminent health and terror emergencies. This Internet-based "early warning" system will gather and disseminate preliminary reports of public health threats on a continuous basis to the WHO and public health officials worldwide, helping early detection of potential public health threats including infectious disease outbreaks around the world, whether they are naturally occurring or the result of an act of bioterrorism. The program was developed by Canada's Ministry of Health with support from Nuclear Threat Initiative's Global Health and Security Initiative. [November 2004. Military Implications and Sources]

New NAS Website on Biosecurity
The Policy and Global Affairs division of the National Academy of Sciences launched a new website that is a collection of resources, studies and other activities at the National Academies related to biosecurity. So far, the categories are: biosecurity, publications, reports in preparation, and other activities. [November 2004. Military Implications and Sources]

Bird Flu Outbreak Causes Urge for World Readiness
The H5N1 virus has killed at least 42 people in Asia in 2004, including 30 in Vietnam. WHO warned at mid-January that the bird flu virus was endemic in Asia and it appeared to be evolving towards a possible human outbreak. The "New England Journal of Medicine" reported this month on the first documented human-to-human transmitted case of bird flu, which occurred in Thailand last September. Infectious disease experts warn that the H5N1 virus could be more dangerous than SARS, as an H5N1 infected victim could appear healthy even while carrying the virus. The outbreak of the deadly virus in Asia prompted the EU to check Europe's preparedness to cope with an eventual pandemic. [January 2005. Military Implications and Sources]

Bird flu Will be a Much Bigger Killer than SARS, According to WHO
WHO's director of their Western Pacific Regional Office said that the conservative estimate is that bird flu (H5N1) could infect 30% of the world, killing 2-7 million people, but it could go as high as 50 million deaths. SARS killed 800 people last year with a mortality rate of around 15%, while H5N1 kills up to 33%. The Asian practice of selling live chickens and ducks, and slaughtering them in front of customers, should be stopped, and a central abattoir or restriction of slaughtering to a few areas should be substituted. Hong Kong scientists have been fighting to end the widespread practice of killing live chickens in markets since 1997, when the H5N1 virus first spread to humans and killed six people in the territory.

Although bird flu has killed 32 people in Thailand and Vietnam this year, and millions of chickens, ducks and other birds have been culled across Asia, the virus is expected to mutate,

allowing it to infect human populations with no immunity. The next indicator of this possibility is expected to be increased infections among pigs. Clinical trials for a vaccine against H5N1 have begun, but even successful results might still have a time lag of half a year, while many humans could be infected and killed. [November 2005. Military Implications and Source]

Avian Flu Danger at Rise

According to CDC Director Dr. Julie Gerberding, the avian flu is the "most important threat that we are facing right now." Recent evidence that the avian flu can move between species increases the concern that large-scale human-to-human transmission is possible, and could lead to a pandemic if the virus mutates. A new National Academy of Sciences study of the 2003 bird flu outbreak in the Netherlands confirmed that the avian influenza virus could spread from human to human. The study published in the January/February 2005 issue of the Journal of the American Medical Association shows that both direct and indirect transmission of the virus is possible (over half of those who worked directly with infected birds, and nearly two-thirds of people who had direct contact with farmers tested positive for bird flu antibodies.) Japanese researchers found flies infected with H5N1 virus after the 2004 outbreak among chickens in Japan.

Veterinary officials from 28 countries participating to the recent international conference on avian influenza in Asia also stressed the gravity of the situation and concluded by calling upon the governments in the region and the international community to make combating bird flu a top priority and examine the likelihood of an influenza pandemic and strategies for prevention and response. Shigeru Omi, chief of WHO Asia, warned "the world is now in the gravest possible danger of a pandemic." The conference was held on February 23-25 in Ho Chi Minh City, Viet Nam, jointly organized by the UN FAO, the World Organization for Animal Health (OIE), and the WHO. [February 2005. Military Implications and Sources]

New Worldwide Avian Influenza Network (OFFLU)

At the recent international conference on bird flu held in Paris, the World Organization for Animal Health (OIE), the Food and Agriculture Organization (FAO), and the World Health Organization (WHO) launched the new Worldwide Avian Influenza Network (OFFLU) to improve health security by a better collaboration between veterinary and public health services at local, regional and global levels. Reference laboratories specializing in avian influenza in animals will be coordinated by OIE and FAO, and laboratory networks focusing on human influenza will be coordinated by WHO. Also at the conference, the Democratic People's Republic of Korea has formally requested assistance from the international community for fighting avian influenza. On April 25th, it was announced that the outbreak has been successfully contained.

Europe Drafts New Law To Control Bird Flu Epidemics

The European Commission adopted a draft Directive for a law to control bird flu viruses. The new legislation will require EU states to introduce and reinforce surveillance and control measures against low pathogenicity viruses, in order to prevent mutation into a more harmful strain, mostly one that would be transmissible between humans. The new law is expected to enter into force January 1, 2007, replacing the existing one.

Bird Flu less Deadly but more Infectious
The human mortality rate from bird flu in Vietnam dropped considerably over the past year, from about 70% of the people with confirmed cases, to about 20%. The good news is that avian influenza seems to be less deadly than was thought. The downside of the news is that the virus might be more infectious, increasing the probability of an outbreak in Southeast Asia and, hence, worldwide. The fact that people can be infected/carry the virus without even showing symptoms further aggravates the situation and alarms international health organizations. [April 2005. Military Implications and Sources]

Bioterrorism Via Smuggled Ebola-contaminated Bushmeat from Africa
Underground networks of African poachers have been selling illegal bushmeat for decades. Might these networks be contacted one day by bioterrorists? Experts speculate that Ebola-contaminated bushmeat could be smuggled into a country by bioterrorists to trigger an Ebola outbreak. The World Health Organization (WHO) and Médecins Sans Frontières (MSF) are currently working in Gabon and the Congo with active cases of Ebola. [January 2005. Military Implications and Sources]

Future Computer-Human Interface Means Cyber Viruses Could Infect Humans
As the human-computer interface continues to evolve into a continuum, it is reasonable to assume cyber viruses will one day be able to transfer into electronic components that will have been added into the human nervous system, and so have biological effects. Kevin Warwick, professor of cybernetics at Reading University, and a cyborg pioneer, warned that the emergence of computer-human connection and the production of synthetic viruses comes with great advantages, but also a huge risk: computer viruses will be able to infect augmented humans as they do PCs. [November 2004. Military Implications and Source]

Russia No Longer Funding Bioterrorism Countermeasures Research
Lev Sandakhchiyev, Director General of the Vektor State Science Center of Virology and Biotechnology in Novosibirsk, announced that from 2005 Moscow would not fund any more research for biological terrorism countermeasures, Interfax reported on February 1, 2005. "Russia has effectively wound up its program to develop protection against pathogens" said the Russian scientist, and he added that there are no "real, constructive programs" among Russia, the U.S. and Europe for cooperating to counter the threat of biological terrorism. [February 2005. Military Implications and Sources]

Bioterrorism, Preparedness, Attack and Response 4
This new book edited by: John Blair, Texas Tech University, Lubbock, Texas; Myron Fottler, University of Central Florida, Orlando, Florida, and the Hon. Albert C. Zapanta, Office of the Secretary of Defense, Pentagon, reviews how bioterrorism could affect the healthcare system of the United States. The book gives one of the broadest overviews of the issues of bioterrorism preparedness thus far.

Contents:
Part I: Biological Agents and Terrorist Agents
The Bioterrorism Formula: Facing the Certainty of the Uncertain Future; The International Threat of Biological Weapons: Legal and Regulatory Perspectives; Cocktails, Deceptions and Force Multipliers in Bioterrorism; Modeling the Environmental Jolt of Terrorist Attacks: Configurations of Asymmetrical Warfare;

Part II: Chaos, Complexity and Change
Chaos and Complexity in a Bioterrorism Future; The Environmental Jolt of Likely Bioterrorism; Changing Organizations for Their Likely Mass-Casualties Future.

Part III: Organizations Respond? or Not
Multiprovider Systems as First Line Responders to Bioterrorism Events: Challenges and Strategies; Bioterrorism Visits the Physician's Office; Responding to Bioterrorism: A Lesson in Humility for Management Scholars; Bioterrorism Preparedness and Response: A Resource Guide for Health Care Managers.

Part IV: Defending the Homeland: Changes and Challenges
The Role of the Reserve Forces in Defending the Homeland; Civil-Military Relations in an Era of Bioterrorism: Crime and War in the Making of Modern Civil-Military Relations; Integration or Disintegration? An Examination of the Core Organization and Management Challenges at the Department of Homeland Security. [September 2004. Military implications and Source]

***The Threat of Pandemic Influenza: Are We Ready?* Workshop Summary (2005)**
The Institute of Medicine of the National Academies published summaries of the workshop held June 16-17, 2004, addressing the increased concern about the prospect of an influenza pandemic and exploring the issues that must be resolved to prepare and protect the global community. The summary report, The Threat of Pandemic Influenza: Are We Ready? outlines lessons learned from previous influenza pandemics; the avian influenza outbreak in Asia and its implications for human health; influenza pandemic preparedness strategies and planning opportunities and obstacles in different domains and geographical levels.

This month a Vietnamese family of five was infected by Asia's bird flu epidemic, which has killed 49 people since the end of 2003.

Although North Korea has confirmed initial cases of bird flu, South Korean officials suspect that it is far more widespread and is taking steps to protect its border with its northern neighbor. [May 2005. Military Implications and Sources]

Technology and Biological Weapons: Future Threats
Technology and Biological Weapons: Future Threats, a report published by Bradford University, UK, is an overview of present biological warfare possibilities, with case studies and possible future threats involving the vulnerability of the immune system. The report analyses the possible dual use of research in the area in order to show potential misuses. It finally shows that all biotechnology and bioinformatics areas discussed in the paper are of particular concern for the

future for both promoting and combating biological warfare. The authors warn that if governments do not act fast enough, then one day, "… it will be virtually impossible to defend ourselves." [October 2004. Military Implications and Sources]

Potential Negative Implications of Some New Technologies

Nanotechnology

China Creates World's First National Standards for Nanotechnology
The first national standards for nanomaterial in the world will come into effect in China on April 1st. Research on 15 nanomaterials standards is underway, but, so far, seven items are included: a Glossary, four standards for nanoproducts (nickel powder, zinc oxide, titanium dioxide, and calcium carbonate), as well as two for testing of gas adsorption BET and the granularity of nanopowder. [March 2005. Military Implications and Source]

International Council on Nanotechnology (ICON) Created
The International Council on Nanotechnology (ICON) is a coalition of academic, industry, regulatory, and non-governmental organizations working together to ensure that nanotechnology benefits humanity without negative implications for health and the environment. ICON activities' categories include: science and engineering research into the potential environmental and health impacts of engineered nanostructures; social science research into public perceptions toward new technology, and the role that regulatory and other governmental policies can and should play in nanotechnology stewardship; collaborative policy activities that develop international standards for engineered nanostructure terminology and metrology, safety guidelines, and best laboratory practices; public communication and outreach that tracks all relevant technical data on nanotechnology's potential risks; and presentation of this information in terms and formats that are accessible by laypersons. ICON is located and coordinated by The Center for Biological and Environmental Nanotechnology (CBEN) at Rice University. [November 2004. Military Implications and Sources]

Nanotechnology Health Concerns Highlight Need for International Technology Convention
Buckyballs are spheres formed by a specific number and arrangement of carbon atoms. They are very important for a range of nanotechnology applications, but, according to research presented at a recent meeting of the American Chemical Society, buckyballs can cause extensive brain damage in fish. Other studies have shown that such particles can enter the brain. The fish studies, however, were the first to link nanoparticles to the destruction of brain tissue. Additional studies are underway to determine if coating such nanoparticles affects toxicity.
In reaction to this and other nanotechnology-related health issues, the ETC Group suggests, "The international community must formulate a legally-binding mechanism to govern the products of new technologies, based on the Precautionary Principle, one that addresses their health, socio-economic and environmental implications. International assessment should be incorporated

under a new International Convention for the Evaluation of New Technologies (ICENT)." [April 2004. Military Implications and Sources]

Wise-Nano Project of the Center for Responsible Nanotechnology
The Wise-Nano project of the Center for Responsible Nanotechnology is a collaborative website for researchers from around the world addressing the facts and implications of advanced nanotechnology and what to do about them. [November 2004. Military Implications and Source]

Nanotechnology Assessment Reports

Scientific Forward Look on Nanomedicine is a foresight study by the European Science Foundation, assessing the application of nanotechnology to medicine. This study included over 100 international experts from academia, industry, private foundations and governmental agencies, who reviewed future developments, opportunities and challenges facing this emerging field worldwide. The study analyzes the current state-of-the-art in nanomedicine, identifies Europe's strengths and weaknesses, and provides recommendations on future research priorities and organizational matters.

Response To The Royal Society And Royal Academy Of Engineering Report: 'Nanoscience and nanotechnologies: opportunities and uncertainties' is a 'response report' to the independent study conducted by the UK Royal Society and the Royal Academy of Engineering (published in July 2004) on the opportunities and uncertainties concerning nanotechnology to ensure that England has an adequate regulatory system for responsible nanotechnology development. This 'response report' sets out the UK Government's agenda on nanotechnologies; and will be reviewed by an independent body after two and five years.

'Potential Environmental Pollution and Health Hazards Resulting from Possible Military Uses of Nanotechnology with Implications for Research Priorities Helpful to Prevent and/or Reduce Such Pollution and Hazards' is the result of a two-round Delphi by the Millennium Project of the American Council for the UNU that assembled a 25-member expert panel to identify and rate these issues. [March 2005. Military Implications and Sources]

ETC Report on Nanotechnology Impact on Food and Agriculture
The ETC Group recently released a report, "Down on the Farm: The Impact of Nano-Scale Technologies on Food and Agriculture", that addresses nanotechnologies' impact on farmers, food and agriculture. The report recommends that until the clear implications of nanotechnology use in agriculture and food chain are known, its use be guided by the Precautionary Principle or even prohibited until a regulatory regime specifically designed to examine these nano-scale products finds them safe. The report also addresses the 'green goo' issue related to potential dangers associated with synthetic biology or nanobiotechnology and, given the extreme risks (that even mainstream scientists are beginning to acknowledge), calls for an immediate moratorium on laboratory experimentation and environmental release of these materials until there is thorough knowledge of their health, environmental and socio-economic implications. [November 2004. Military Implications and Sources]

Nanotechnology Forecasting and Assessment Programs

The Project on Emerging Nanotechnologies launched by the Woodrow Wilson Center (WWC) and the Pew Charitable Trusts will assess possible health and environmental implications of nanotechnology and potential nanotechnology risk management strategies. It will be a reliable source of information for businesses, governments, and the public through reports, analyses and regular meetings with leaders in the field.

The Institute of Nanotechnology, a global leader in nanotechnology matters, will officially launch the European Nanotechnology Trade Association (ENTA), on June 1, 2005, to act as an interface between nanotechnology businesses across Europe and: governments, science and industry policy makers; and the public and watchdog organizations 'to ensure transparency and that new nanotechnologies are developed in a safe and responsible manner.' [April 2005. Military Implications and Sources]

The U.S. Environmental Protection Agency (EPA) awarded 12 grants to universities to investigate the potential health and environmental impacts of nanomaterials. Six of the grants awarded will investigate if manufactured nanomaterials could have any negative health effects or environmental impacts, while the other six grants will study the fate and transport of nanomaterials in the environment. The grants were awarded through EPA's Science to Achieve Results research grants program.

The National Toxicology Program, a part of the U.S. National Institutes of Health, will be conducting animal studies to investigate the effects of nanoparticles in the lungs and on the skin, and their uptake and distribution into and through the body.

Other U.S. agencies, including the Occupational Safety and Health Administration and the Food and Drug Administration, have also begun to pay attention to the field.
[November 2004. Military Implications and Sources]

Studies on Potential Environmental and Health Impacts of Nanotechnology

Nanoscience and Nanotechnologies: Opportunities and Uncertainties, by the UK Royal Society and the Royal Academy of Engineering reviews the state of knowledge and ignorance about potential health, safety and environmental impacts of nanotechnology, plus an assessment of the social and ethical issues of its future. Although clearly stipulating that there is no ground for a moratorium on nanotechnology research, the report calls for more research into the health, safety, and environmental impacts of nanotech. It recommends establishment of "an Interdisciplinary centre (probably comprising several existing research institutions) to undertake research into the toxicity, epidemiology, biopersistence and bioaccumulation of manufactured nanoparticles, their exposure pathways, and methods and instrumentation for monitoring them in the environment." [August 2004. Military Implications and Source]

Nanotechnology and worker safety and health
A meeting was held in Washington on 18 May at which officials from the Dept. of Labor's Occupational Safety and Health Administration (OSHA) and CDC's National Institute of Occupational Safety and Health (NIOSH) discussed with interested parties from government and business the current state of work on the relationship between nanotechnology and worker safety and health. The major conclusion to be drawn from the meeting is that almost no data on this problem is yet available. Both agencies are conducting and sponsoring research in the area, but even fundamental information on the mechanisms involved, such as dermal absorption, and the role of metal particles embedded in nanomaterials, is lacking. It is estimated that there will be a million new nanotechnology workers, and there are many programs underway to clarify the safety and health situation. [May 2004. Military Implications and Sources]

Soot Particulates may Cause Genetic Mutations in Mice
McMaster University researchers reported that mice breathing filtered air have 52 % lower mutation rates that those mice exposed to soot in open air from a steel mill. It is not known if such particles can make their way through the blood system to affect sperm-forming cells. Although more research is needed, and it is currently unknown if people could inherit pollution-damaged DNA, this is a new area for serious attention. It is clear that High Efficiency Particulate Air (HEPA) electronic filters offer an effective way of removing particulate matter from the air. [May 2004. Military Implications and Sources]

Implications of Nanotechnology for Environmental Health Research comprises the results of a workshop by the Institute of Medicine's Roundtable on Environmental Health Sciences, Research and Medicine, aiming to assesses promises and implications of nanotechnology in order to develop a research agenda to address critical issues related to the impact of nanotechnology on heath and the environment. In addressing priorities, policy, and government implications, the report concludes that for efficient assessment of potential hazards of nanotechnology, the following are required: an adequate nomenclature; an effective risk-benefit analysis; and both a research framework and strong leadership. [April 2005. Military Implications and Sources]

Other Technologies' Potential Negative Implications

Microwave Frequencies used for Environment-sensing are in Jeopardy
Interference caused by increasing microwave activities from such applications as mobile phones, wireless computer communications, collision avoidance systems, and possible new military communications technologies are ruining the reliability of satellite data for weather forecasting and climate change. In a recent interview with the BBC, Dr Stephen English, manager of the Satellite Radiance Assimilation Group at the UK Met Office, called attention to the serious impact on climate change research of allowing various terrestrial radio services to use narrow bands in the microwave spectrum which are uniquely suited for making satellite-based meteorological observations that yield vital data for such research. He told the BBC, "Microwave observations are vital because they see through clouds—this is not possible in any other frequency band. We only need a few narrow-frequency bands for Earth remote-sensing, but most of these are unique, so there is no alternative. These bands are primarily used for temperature,

water vapor, sea ice, clouds (ice and liquid), and rainfall and snowfall estimation." According to the BBC, a meteorologists' working group on frequency management says protecting key regions of the microwave spectrum for passive remote-sensing is "a dramatic challenge", because of "the huge pressure of the commercial and military telecoms". [December 2004. Military Implications and Sources]

Research Confirms Military and Industry Sonar Harms Whales

The newly released report by the scientific committee of the International Whaling Commission (IWC) indicates that there is compelling evidence that sonar used by the military and the oil and gas industry harms whales. Scientists are unsure why sonar causes whale stranding, internal bleeding, and death. The use of low-frequency sonar is already limited by an agreement worked out between the US Navy and environmental groups whereby the Navy scales back its low-frequency sonar deployment from 75% of the world's oceans to approximately 1% of that area. Now the Natural Resources Defense Council (NRDC) is targeting the more common mid-frequency sonar.

The IWC report may reinforce the actions of U.S. animal welfare groups that threaten to sue the U.S. Navy over the use of mid-frequency sonar that harms whales. The groups sent a petition to the European Parliament that asks countries to immediately mitigate the effects of mid-frequency sonar. [July 2004. Military Implications and Sources]

Personal Computer Dust Health Implications

A report by the Computer Take Back Campaign and the Clean Production Campaign blames brominated flame retardants used in computer casings and other electronics for a host of neurological and reproductive health problems. In order to avoid using materials with these flame retardants, some companies have begun replacing flammable materials with nontoxic flame-resistant materials. The European Union has already banned the use of some of these chemicals in electronic products by 2006, and several states in the US have taken legislative steps to do so as well. [June 2004. Military Implications and Sources]

Chemicals could be the Cause of 'Gulf Syndrome'

A new study by a federal panel of medical experts concluded that there is high probability that some '91 Gulf War veterans suffer from inexplicable illnesses due to exposure to neurotoxins such as sarin, (from an Iraqi weapons depot blown up by American forces in 1991); pyridostigmine bromide (a drug given to troops to protect against nerve gas); and pesticides used to protect soldiers in the region. This is a new view, inconsistent with previous panels' conclusions. [October 2004. Military Implications and Sources]

Pollution Issues

Pollutants Travel Globally
Researchers have begun studying whether gases from the United States are responsible for pollution in Europe. Specific emphasis is being placed on the transport of pollutants contributing to ozone depletion. [See also item *Space Technology use for Environmental Security* in this report.] [July 2004. Military Implications and Sources]

A new and larger study by the International Consortium for Atmospheric Research on Transport and Transformation, or ICARTT, an air quality study billed as the largest and most comprehensive yet done, reveals that pollutants from Asia, in particular China, are reaching the East Coast of North America and are presumably continuing eastward toward Europe and Africa. [August 2004. Military Implications and Sources]

Health Impacts of Fuels
According to a new study published in the International Journal of Cancer, the risk of ovarian cancer increases with increased exposure to diesel exhaust. Likewise, exposure to gasoline engine exhaust also was found to increase the risk of ovarian cancer. However, the study's findings contradict those of previous studies linking other types of cancers to engine exhausts. Meanwhile, a study in Occupational and Environmental Medicine showed that living near a fuel station might quadruple the risk of acute leukemia in children. [August 2004. Military Implications and Sources]

Vehicle Emissions in Europe
Emissions from sport utility vehicles and vehicles powered by diesel engines are at the core of vehicle emissions control efforts in Europe. Italy, France, and the UK have already implemented or indicated intent to implement local policies to discourage or ban the use of such vehicles. The health impact of emissions from such vehicles is the source of this emerging policy debate. [July 2004. Military Implications and Source]

Europe Embarks on Environment and Health Action Plan
The European Commission has launched an action plan for the period 2004-2010 to reduce pollution health impacts. The new EU system will be focusing on a better understanding of the link between the environment and health, by integrating information on the state of the environment, the ecosystem and human health, and also addressing the eventual effect of emerging environmental issues on health. [June 2004. Military Implications and Source]

Australia Cuts Sulfur Content in Transport Fuels
As part of the government's strategy to dramatically reduce urban air pollution, Australia introduced tough new fuel standards by reducing sulfur in unleaded gasoline and in diesel over the next five years. The new standards are estimated to save A$3.4 billion in hospital and medical costs by 2020. [July 2004. Military Implications and Source]

WASTE MANAGEMENT

Basel Convention on the Transboundary Movements of Hazardous Wastes
The COP7 of the Basel Convention on the Transboundary movements of hazardous wastes focused on increasing electronic waste issues, and disposal of old military vessels and decommissioned fishing boats. Under the theme 'Partnership for meeting the global waste challenge,' the participants agreed that partnership between governments; partnership with the private sector, international organizations and NGOs; and synergies with other chemical management conventions, such as the Rotterdam and Stockholm Conventions, are key for environmentally sound waste management policies. [October 2004. Military Implications and Sources]

EU Pollution Prevention Strategy to Focus on Recycling of Waste
The EU environment ministers held an informal meeting 14-16 May 2004 in Waterford, Ireland. The main topic on the ministers' agenda was the EU's proposed Thematic Strategy for the prevention and recycling of waste. Originally introduced for consultation in May 2003 and focusing on a life-cycle approach, the proposed strategy calls for waste reduction targets of 20% by 2010 for hazardous waste, municipal waste, and industrial waste. To boost recycling, the proposal also set a legally binding target of 40% reduction in disposal by landfill and incineration by 2010, and a zero-disposal target for 2050. The European Parliament is already on record as endorsing future legislation giving preference to waste disposal over re-use and recycling only when there is clear evidence that it is more environmentally friendly, and has also rejected compulsory waste reduction plans, favoring voluntary agreements instead. As an outcome of the May 2004 meeting, the life-cycle approach was confirmed as the mechanism to follow, but specific targets for waste reduction were not endorsed. [May 2004. Military Implications and Sources]

NEW MEASURES TO PROTECT BIODIVERSITY

Intensified Efforts Needed to Save Biodiversity
The International Conference on Biodiversity, Science and Governance hosted by UNESCO in Paris, 24-28 January 2005, concluded that strong science and effective governance mechanisms, strategies, and concrete actions to curb the current trend of biodiversity loss are needed by the 2010 target date set at the 2001 World Summit on Sustainable Development. With more than 7,000 animal species and 60,000 plant species threatened, some scientists estimate that the current rate of extinction is a thousand times greater than at any other time in the course of human history. Biological diversity is the basis of environmental viability for all life support. [January 2005. Military Implications and Sources]

World's Largest Environmental Forum to Set Priorities
About 3000 environmental leaders in government, business, NGOs, universities, and international organizations attended the 3rd IUCN World Conservation Congress in November 2004 in Thailand. It would address the issue of natural resource conservation relative to economic and population growth. The Congress is proposed to have three elements: IUCN Commission Meetings, the World Conservation Forum, and the Members Business Assembly. The Commission meetings would set the priorities for conservation work for the coming four years, addressing species extinction, management of protected areas, laws to conserve nature, ensuring that fair benefits flow to rural people from natural resources, building understanding of how ecosystems function, and improving public understanding of conservation. The World Conservation Forum would discuss and define solutions for problems such as the loss of species and ecosystems, globalization and related health concerns, poverty alleviation, and economic and legal steps to ensure the sustainable use of natural resources. [May 2004. Military Implications and Sources]

The Little Green Data Book, 2005
"The Little Green Data Book 2005," a joint product of the World Bank's Development Data Group and Environment Department is a quick reference on key environmental data for over 200 countries (one country per page). It presents 47 environment indicators and data, structured under the headings of agriculture, forests, biodiversity, energy, emissions and pollution, water and sanitation, and 'greener' national accounts. Unfortunately the current book's data are only through 2003; nevertheless, it helps the reader get the big picture in a small resource. It can be ordered by sending a email to eadvisor@worldbank.org or it can be downloaded at: http://lnweb18.worldbank.org/ESSD/envext.nsf/44ByDocName/TheLittleGreenDayaBook2005/$FILE/2005Littlegreendatabook.pdf [April 2005. Military Implications and Sources]

Invasive Species of Genetically Modified Animals for Reconnaissance and/or Cleanup
As there have been international issues with genetically modified plant and food controversies, it is likely that there will be with genetically modified animals as well, says the report *Issues in the Regulation of Genetically Engineered Plants and Animals* released on April 1, 2004 by the Pew Initiative on Food and Biotechnology. The report examines the U.S. Government readiness to deal with biotechnology issues and examines a range of options to enhance the regulatory review process to address the new challenges imposed by this new field. The report's authors said the most challenging issue facing these agencies is the development of biotech animals. "One concern is that they could escape and mate with wild relatives, spreading new genetic traits throughout wild populations," the 178-page report said." [May 2004. Military Implications and Source]

Maritime Issues

Could large-scale ocean zoning prevent conflicts?
Increasing numbers of environmental lawyers and environmentalists believe that future conflicts could be prevented by large-scale ocean zoning for oil, fishing and wind farms, as well as that

there is an immediate need for regulations to protect the oceans' natural resources. “We’re now able to do on the open ocean what we once did on our western frontier—eradicate the wildlife, extract the minerals and alter or pollute the habitat,” says David Helvarg, president of the Blue Frontier Campaign. Many variations of coastal zoning have been established around the world, which may one day lead to new large-scale ocean zoning within a more comprehensive integrated planning mechanism for local, regional and international standards and regulations for ‘pro-active rather than re-active’ ocean management. [March 2005. Military Implications and Sources]

Improved Cooperation Among International Organizations to Fight Marine Pollution
The fight against marine pollution gained strength with the signing of a Memorandum of Understanding between the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the UNEP Regional Seas Programme. The effort is designed to implement environmentally sound management of hazardous wastes in order to prevent coastal and marine pollution. It is based on collaboration of the 13 Basel Convention Regional Centres (BCRCs) with the various Regional Seas Programmes, and reciprocal technical and legal training support. [The Basel Convention regulates the movement of hazardous waste; it covers toxic, poisonous, explosive, corrosive, flammable, ecotoxic, and infectious wastes that are being moved from one country to another.]

IMO Secretary-General Efthimios E. Mitropoulos and the European Commissioner responsible for the environment, Stavros Dimas, also had a meeting this month focusing on better collaboration between the two organizations to enhance marine environmental protection from pollution from ships and related activities. They agreed on the need for ratification, by as many States as possible, of the newest IMO conventions such as the Ballast Water Management Convention and the Convention on Anti-fouling Systems, to enable them to come into force soon.

The amendments to the MARPOL Convention—including the revised phase-out schedule for single-hull tankers and a new regulation on the carriage of heavy grades of oil—will enter into force on April 5, 2005; and, on May 19, 2005, Annex VI of MARPOL on regulations for the prevention of air pollution from ships will be effective. [March 2005. Military Implications and Sources]

IMO Establishes First “Mandatory Area to be Avoided” in New Zealand
The New Zealand Maritime Safety Authority has successfully petitioned the International Maritime Organization (IMO) to have the area around the Poor Knights Islands designated as a “Mandatory Area to be Avoided” (MAA). The Poor Knights area became the first place on the planet to be protected by the new IMO classification, which was created to protect ecologically fragile areas. As a consequence, ships longer than 45 meters (148 feet) must stay at least 5.5 miles (8.8 kilometers) east of the Poor Knights starting December 1, 2004. [May 2004. Military Implications and Source]

The U.S. Might Ratify the Law of the Sea
This month [November 2004] marked the tenth anniversary of the entry into force of the Law of the Sea. There are indications that the U.S. Senate is now ready to agree to the U.S. ratifying the law in order to keep its important place at the table of negotiations. [November 2004. Military Implications and Sources]

U.S. Commission on Ocean Policy Emphasizes Ecosystem-Based Management
A preliminary report by U.S. Commission on Ocean Policy released on April 20, 2004 recommends changing the current fragmented system for managing oceans and coastal areas to an ecosystem-based management approach. For a new, coordinated, and comprehensive national ocean policy within the federal government, the Commission proposes a three-phase plan, and establishing a National Ocean Council (NOC) within the Executive Office of the President. [April 2004. Military Implications and Sources]

Southwest Pacific Islands Might "Localize" Environment-protection Legislation
In contrast to the preceding item, in the southwestern Pacific ecosystem-based management of coastal areas might become very much decentralized. "The island nations of the south-western Pacific are considering allowing citizens to reclaim legal control of their local seas, in the hope they can use their traditional knowledge, customs and laws to protect fish stocks and biodiversity," says a New Scientist article. In this plan, villages will own the seas immediately adjacent to them, and can set up environment-protecting restrictions for them, with the legal backing of the central government. [April 2004. Military Implications and Sources]

Maritime Worker Security
The necessary ratifications have been received for the Seafarers' Identity Documents Convention (Revised) (ILO-185) to go into force on 9 February 2005. ILO-185 will set international standards for seafarer identification documents ("SID") that will provide reliable, positively verifiable, and internationally recognized identification and be acceptable in lieu of a visa for purposes of shore leave. This agreement will ease the enforcement of treaties for protection of the maritime environment against attack. [August 2004. Military Implications and Source]

Climate Change

Unless more ambitious targets are set for reducing global warming, large ice deposits, in particular the Greenland ice sheet, Himalaya, and Kilimanjaro are almost certain to melt away, raising sea levels, flooding many populated areas, followed by long-lasting drought. Mass migration, food and water shortages might trigger more serious conflicts than ever before in human history. Without improved ecology-centered policies, revised consumption patterns, better education, and implementation of new eco-friendly technologies, the situation will worsen in the next 50 years, seriously endangering life on earth.

In an article of *Foreign Affairs* of 25 April 2005, UN Secretary-General, Kofi Annan, listed environmental degradation and infectious disease among today's greatest threats undermining "states as the basic units of the international system". Referring to the post-Kyoto period, he called for a new international regulatory framework that would include all countries to fight global warming. [Source]

Human Footprint on Earth Ecosystem at Critical Stage and *Millennium Ecosystem Assessment Synthesis Report*

Two recent studies at the National Center for Atmospheric Research in Boulder Colorado have indicated that global warming will continue to increase even if its causative factors are brought under better control. The investigators, Gerald Meehl and Tom Wigley, used three computer simulations, two extremely detailed, to derive the predictions that, even assuming greenhouse gas content stayed at the 2000 level, there would still be a minimum 0.9° F rise in the global temperature, and a 4" ocean level elevation by 2100, causing severe dislocations. In the worst case, the temperature change could be as much as 6.3°F, with a one-foot rise in the ocean with no further input of greenhouse chemicals.

At the recent meeting in London, environment and energy ministers from 20 of the world's biggest polluters discussed the best policies for sustainable growing non-polluting economies. Britain emphasized that environment-centered economic policy and international cooperation are the only effective way to prevent a crisis caused by global warming.

The UN Secretary-General's report for the reform of the UN also lists climate change as one of the three major challenges for the international community that requires particularly urgent action.

Millennium Ecosystem Assessment Synthesis Report, conducted by 1,300 experts from 95 countries, reveals that approximately 60 % of Earth's vital ecosystem services are being degraded or used unsustainably. Without improved ecology-centered policies, revised consumption patterns, better education, and implementation of new eco-friendly technologies, the situation will worsen in the next 50 years, seriously endangering life on earth. This is the first report in a series of seven synthesis reports and four technical volumes that assess the state of global ecosystems and their impact on human well-being. It has been released together with a statement by the Millennium Ecosystem board of directors entitled "Living beyond Our Means: Natural Assets and Human Well-being." [March 2005. Military Implications and Sources]

UN Framework Convention on Climate Change Conference

About 6,000 scientists, decision-makers, and activists attended the Tenth Session of the Conference of Parties (COP 10) of the UN Framework Convention on Climate Change (to which is attached the Kyoto Protocol) held in Buenos Aires, 6-17 December 2004. The conference discussed ways to reduce global warming and its effects. It also discussed post-Kyoto policy plans. Although no specific actions and/or regulations were adopted, progress was achieved on the issue of mitigation and adaptation to possible effects of climate change. The Buenos Aires

Programme of Work on Adaptation and Response Measures adopted by the conference includes further scientific assessments of vulnerabilities and options for adaptation, expert papers on various aspects of climate change risks, and recommendations for sustainable development planning. A seminar of governmental experts is planned for next May in Bonn to continue discussions on the issue. [December 2004. Military Implications and Sources]

New Evidences of Climate Change

Decrease of Himalayas' Snowfall Threatens Arabian Sea Marine Life and Aggravates Climate Change. Research conducted by a team of the U.S. Bigelow Laboratory for Ocean Sciences concludes that decreased winter snowfall in the Himalayas is threatening marine life in the distant Arabian Sea and could also aggravate global warming by augmented phytoplankton that produces nitrous oxide, a powerful greenhouse gas. [April 2005. Military Implications and Sources]

New scientific evidence shows that the amount of solar radiation reaching the earth's surface is decreasing. The decrease in the radiation is caused by the increase of particulate pollution in the atmosphere, which renders it more reflective, causing sunlight to produce less heat, apparently offsetting to some extent the greenhouse-gas-caused global warming tendency. However, considering that CO2 (the warming factor) levels are projected to rise over coming decades while the particles (the cooling factor) are fairly under control, scientists estimate that by 2100, there could be a temperature rise of 10ºC, rendering many parts of the world uninhabitable.

Similar results were generated by the biggest-ever climate-modeling experiment, which revealed that greenhouse gases could cause global temperatures rise some 11ºC (20º Fahrenheit) by 2100, which is more than double the amount predicted by the UN Panel on Climate Change. This ongoing exercise involves more than 95,000 people from 150 countries who download the 'climateprediction.net' climate model screen saver. Over four million model years were simulated. The project is funded by the Natural Environment Research Council and coordinated by Oxford University.

Meeting The Climate Challenge, a report by the Institute for Public Policy Research in the UK, the Center for American Progress in the U.S., and the Australia Institute, has found that global warming is 10 years away from the point of no return. It states that the critical point will be when temperatures rise by two degrees centigrade above the average world temperature prior to the industrial era. Considering that global average temperature has already risen by 0.8 degrees since then, and the critical point will be when CO2 reaches 400 ppm, at the current level of 379 ppm and rising by more than 2 ppm annually, it means that the no-return point will be reached in about 10 years. The report suggests G8 countries should generate at least 25% of their energy from renewable sources by 2025, and double their research spending on low-carbon energy technologies by 2010.

Indian scientists say that global warming caused by pollution has affected the movement of the monsoon that is now difficult to predict and influences the life of millions of people.

In view of the latest evidences, Prime Minister Tony Blair promised to enhance climate change policy efforts during this year as he heads the G8 group and the European Union.
[January 2005. Military Implications and Sources]

Researchers from the University of Texas Medical Branch (UTMB) in Galveston have discovered that environmental alterations, such as replacing forests with ranchland, combined with genetic mutations, can produce new, more infectious, viruses. The paper published in the August 3 *Proceedings of the National Academy of Sciences* details the background research and future focus of the group of researchers. [August 2004. Military Implications and Sources]

Impacts of Europe's Changing Climate, a report released by the European Environment Agency (EEA) on August 18, reveals that the continent is warming more rapidly than the rest of the world.

Science published the results of a new computer model developed by the National Center for Atmospheric Research (NCAR) in Boulder, Colorado that shows global warming might trigger more frequent and intense heat waves, mostly in cities in the U.S. and Europe.

A Johns Hopkins University researcher, leading a team from several universities, forecast that Eastern US cities will experience hotter summers and more smog; and that, by the end of this century, the heat index will rise in the range of 5 to 15 degrees Fahrenheit, translated mainly into deterioration of the air quality and related health consequences.

Our Changing Planet, which summarizes recent and planned climate change research by 13 government agencies and was submitted to the U.S. Congress this month with a covering letter signed by the president's Secretaries of Commerce and Energy, along with his science adviser, might change the Bush administration's attitude on global warming. The report states that heat-trapping gases, such as carbon dioxide, are the only likely causes of global warming during the last 30 years, and also reveals other newly identified risks.

Scientists at the recent EuroScience forum in Stockholm concluded that humans will have more impact on the environment than Nature and identified important hot-spots.

In the meantime, an analysis by Princeton University scientists shows that there are technologies that could be immediately implemented to aggressively curb global greenhouse gas emissions, but the political will is lacking. [August 2004. Military Implications and Sources]

Desertification Threatens 20% of the World's Population—UN Secretary-General Says That Climate Change Is a Factor
June 17 marked the tenth anniversary of the Convention to Combat Desertification, and the UN Secretary General took advantage of the occasion to issue a widely publicized appeal for strong international action to stop this threat to a fifth of the world's population, one that is consuming almost 1400 square miles per year. Climate change is recognized as one of the causes of this creeping plague, and the Secretary General's message is certain to increase worldwide pressure for US and Russian ratification of the Kyoto Protocol on climate change. A recent analysis in an English-language St. Petersburg newspaper speculated that Russia's ratification is being delayed only by planning for the division of the enormous financial dividend Russia stands to gain from the credit sharing mechanisms of the Protocol.

Note: A new standards system suggested by the Climate, Community and Biodiversity Alliance (CCBA) aims to address global warming by efficient land management.
[June 2004. Military Implications and Sources]

Arctic Warming Much Faster Than Expected
The Arctic Climate Impact Assessment (ACIA) report reveals that the Arctic is warming nearly twice as fast as the rest of the planet, with dramatic physical, ecological, social, and economic consequences for the whole planet. At least half of the summer sea ice in the Arctic is projected to melt by the end of this century, along with a portion of the Greenland Ice Sheet, possibly raising global sea levels by 1 meter by 2100 and 7 meters in the long-term, threatening millions of people living in coastal areas. The possible disappearance of summer sea ice endangers Arctic animal species such as ice-living seals and polar bears, with devastating consequences for local people for whom these animals are a primary food source.

Impacts of a Warming Arctic: Arctic Climate Impact Assessment is the result of four years of research by an international team of about 250 scientists, and was commissioned by the Arctic Council—a ministerial intergovernmental forum comprising the eight Arctic countries and six Indigenous Peoples organizations—and the International Arctic Science Committee—a non-governmental organization for facilitating arctic research. At its Fourth Ministerial Meeting held in Reykjavik, November 24, the Arctic Council failed to devise a plan to address the problem, as the U.S. delegation opposed including any specific recommendations in the council's joint declaration. The Arctic peoples and tropical islanders plan to create an alliance to campaign against global warming and lobby industrial nations to cut greenhouse gas emissions, even threatening to file official complaints against the U.S. [November 2004. Military Implications and Sources]

Antarctica Glaciers Could Melt Faster than Expected
Two separate NASA-funded researches conclude that the glaciers in Antarctica are melting much faster than expected, and contain more ice than previously estimated, meaning considerable sea level rise in case they break up. [September 2004. Military Implications and Sources]

Antarctic glaciers shrinking accelerating. A joint study by the British Antarctic Survey (BAS) and U.S. Geological Survey (USGS) reveals that in Antarctica 87% of 244 glaciers studied are in retreat due to global warming, and that average retreat rates have accelerated over the past years. Antarctica contains more than 90% of the world's ice. Antarctic melting could dangerously raise sea levels, thus drowning low-lying island states and regions. [April 2005. Military Implications and Sources]

Large Ice Deposits Melting as Consequence of Global Warming
A study of climate change by Jonathan Gregory, of the Centre for Global Atmospheric Monitoring at the University of Reading, using modeling techniques and reported in *Nature*, paints a gloomy picture of the possible future course of global warming and the melting of large ice deposits, in particular, the Greenland ice cap, if rigorous efforts are not undertaken immediately to reduce greenhouse gases. Not starting for perhaps fifty years and taking place over several centuries, this could cause a 7-meter rise in the ocean level, flooding many populated areas. A most disturbing further conclusion is that the change could become irreversible. [April 2004. Military Implications and Sources]

A Sample of Counter Global Warming Activists around the World
Unless major actions to reduce greenhouse gases are taken worldwide, parts of Australia could become uninhabitable, warned participants at the recent International Climate Change Taskforce meeting. An Australian court has ordered that an expert planning panel assess the greenhouse gas pollution consequences before any extension of the Hazelwood power station in the Australian State of Victoria begins. Environmentalists petitioned that sites in Belize, Nepal and Peru be considered for UNESCO's World Heritage in Danger List in order to be protected from the effects of climate change. China and the European Commission of the European Union announced a five year, €42.9 million energy and environment program in Beijing to improve energy efficiency in China and combat climate change. Britain and Germany, whose greenhouse gas reductions are among the biggest in the world, are enhancing their fight against global warming through a new partnership backed by leading industrialists, businessmen, and scientists. A range of innovative recommendations for environment-friendly industry will be presented to the countries' leaders. The importance of the event was highlighted by its opening by Her Majesty Queen Elizabeth II during her State Visit to Germany. [November 2004. Military Implications and Sources]

Ambitious Post-Kyoto EU Emissions Goals
EU environmental ministers seek to push for more ambitious EU emissions targets after the current Kyoto target period [see Kyoto Protocol], proposing a reduction of developed nations' greenhouse gases emissions of 15-30 percent by 2020 and 60-80 percent by 2050 relative to 1990. However, while keeping the 2020 target, the EU heads of state and government omitted the 2050 goal, with the provision to review it later in the light of future developments. The UN Secretary-General's UN reform report asks for a more inclusive international framework for mitigating climate change, and calls on all states for a better mobilization to develop tools for

stabilizing greenhouse gas emissions beyond 2012, with broader participation by all major emitters. [March 2005. Military Implications and Sources]

Small Island States Adopt Position on Addressing Climate Change
The UN meeting of Small Island Developing States (SIDS) held in Mauritius, January 10-14, concluded with the adoption of the Mauritius Declaration and Strategy that emphasizes the need for developing robust global early warning systems to protect against natural disasters, and measures and strategies to cope with rising ocean levels and other consequences of climate change. As part of fighting pollution, the SIDS asked for regulation of radioactive wastes transported through their national waters. [January 2005. Military Implications and Sources]

UN Conference On Small Island States and Climate Change
The International Meeting to Review Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, scheduled for 10-14 January 2005 in Mauritius, will address the impact of climate change on the environment, economic development, and security of the Small Island States and will examine the results of the last decade's efforts to address the issue.
Note: Community Climate System Model, version 3 (CCSM3), a powerful new climate modeling system at the National Center for Atmospheric Research (NCAR) reveals that global temperatures may rise more than previously projected if humanity doesn't act on reducing green gas emissions. [June 2004. Military Implications and Sources]

Dust and Climate Change
At a recent meeting of the International Geographical Congress, the issue of dust as a hidden climate problem was raised. The deposition of dust can affect the environment in several ways, including climate change, soil salinization, disease transmission, ocean fertilization, ice cap reflectivity change, air pollution, and the neutralization of acid rain. Professor Andrew Goudie of Oxford University claims that in parts of Africa, which appear to be the major sources of global dust, annual dust production has increased tenfold in the last 50 years. Research is scheduled for next year to determine whether dust in some parts of the world is more important than pollution in affecting climate change. [August 2004. Military Implications and Sources]

States to Sue the Energy Producers Over Global Warming
California and seven other states are to sue five large energy producers who they contend are responsible for nearly 10% of the greenhouse gases emissions of the United States. The suit demands substantial pollution cuts by the companies, saying the carbon dioxide from energy producers is a 'public nuisance.' [July 2004. Military Implications and Sources]

Other Environmental Protection Developments

Nine New Hotspots Added to World's Protected Areas

The new report by Conservation International, Hotspots Revisited, the result of a four-year project by nearly 400 ecologists, reveals nine more crisis areas for biodiversity. The 34 identified 'hotspots' harbor half of the world's plant species, three-quarters of the most threatened mammals, birds, and amphibians, and 42% of land vertebrates. The new website launched by Conservation International (www.biodiversityhotspots.org) features complete and updated information on the 'hotspots' around the world. [February 2005. Military Implications and Sources]

Nineteen new Biosphere Reserves Added to UNESCO's MAB Network

The International Coordinating Council of UNESCO's Man and the Biosphere (MAB) Programme have added 19 new sites in 13 countries to UNESCO's World Network of Biosphere Reserves. The MAB Network now consists of 459 sites in 97 countries. The biosphere reserves are places recognized for promoting development in the service of both socio-economic development and biodiversity conservation. [November 2004. Military Implications and Sources]

New UNESCO World Heritage Sites

The UNESCO World Heritage Committee began its 10-day session on June 28, 2004 in Suzhou, China. It is expected that 48 new sites (33 cultural and 8 natural sites) will be added this year to the list of UNESCO World Heritage. [June 2004. Military Implications and Sources]

Europe Declares Thousands of Protected Natural Sites

The European Commission adopted a list of more than 7,000 nature sites in the Atlantic and Continental regions of the EU to become part of NATURA 2000, the network of protected sites with the objective of halting the decline of biodiversity by 2010. [December 2004. Military Implications and Source]

New Ecological Network Has Environmental Implications

The National Science Foundation announced the formation of a Design Consortium and Project Office for the National Ecological Observatory Network (NEON), field and lab instrumentation deployed across the United States and integrated via a cutting-edge information network into a continent-wide research platform designed to answer scientific questions at regional and continental scales to enable ecological forecasting. According to an NSF scientist, "It will … [bring] together ecologists, engineers, social, physical, computer, and earth scientists—to investigate ecological phenomena that span large geographical areas and long periods of time." NEON is important because of the significant role of ecological monitoring and evaluation in

monitoring the state of the environment as it is protected by domestic law and international agreements. [September 2004. Military Implications and Sources]

Asia and Pacific Countries Adopt Declarations on the Environment
At the Fifth Ministerial Conference On Environment And Development in Asia and the Pacific that took place in Seoul, Republic of Korea, 24-29 March 2005, ministers and senior officials from 52 Asian and Pacific countries pledged green-friendly approaches to development in the region. The delegates adopted the Ministerial Declaration on Environment and Development in Asia and the Pacific (2005), the Regional Implementation Plan for Sustainable Development in Asia and the Pacific (2006-2010) and the Seoul Initiative on Environmentally Sustainable Economic Growth. These instruments set clear implementation actions to promote environmentally friendly economic policies, including promoting partnerships and economic tools to improve ecological efficiency, reviewing national laws and identifying, assessing, monitoring, and capacity building to manage disaster risks.

The leaders' group from the Pacific Islands Forum held its first meeting on the Pacific Plan, a Forum initiative. One of the four areas of concern is sustainable development and environmental security. The Pacific Islands Forum is the association of the 16 independent island states of the Pacific. Its objective is "to enhance the economic and social well-being of the people of the South Pacific". The Plan lays out how the region can improve cooperation in the four areas; it will be further developed during the coming months. [March 2005. Military Implications and Sources]

UK Cooperation with India and Others on the Environment and Sustainable Development
As the result of a meeting between their ministers of environment, the UK and India have decided to enhance cooperation in dealing with issues related to sustainable development. These issues include emission of greenhouse gases, joint research on climate change, wildlife conservation, and reforestation. The UK Minister, Elliot Morley, also stated that this year, within the G8, the UK would focus on multifaceted and complex areas of climate change and Africa, and that these talks with India are the first in a series of dialogues that the UK will initiate with developing countries with rapidly growing economies, the next being China. [February 2005. Military Implications and Sources]

India Drafting New National Environment Policy
Having received inputs from the constituent states and others, the Ministry of Environment and Forests in India is about to begin preparing the final draft of the new National Environment Policy. This comprehensive new document will replace a variety of single-issue statements and will incorporate the concepts of sustainable development. The policy addresses all levels of concern, from local to global, and is based on seven objectives and 15 guiding principles. [January 2005. Military Implications and Sources]

New Zealand's Largest Environmental Management Forum
The Environmental Institute of Australia and New Zealand (EIANZ) will hold its annual Environmental Conference in Christchurch, New Zealand, 29 March – 1 April 2005. This will be the largest Australasian environmental management event to be held in New Zealand; more than 300 specialists are expected to attend. According to the conference announcement, concurrent sessions will explore case studies in resource management, environmental management systems; integrated planning and systems-thinking; environmental assessment and reporting; and communication and environmental education. Field trips and technical tours will include the Living Streams restoration program, a Maori perspective of resource management at Te Waihora/Lake Ellesmere; the Kowhai Organic Farm at Lincoln University and ecosystem protection in Canterbury's braided rivers. The meeting is designed to be environment-friendly; delegates can make their travel carbon-neutral by paying a CO2 carbon offset charge ranging from $3 to $26. These funds will be used for regeneration of native forest. [December 2004. Military Implications and Sources]

Chinese Automobile Industry's Potential Environmental Emphases
China is the world's fastest-growing car market and may surprise the world at how fast it becomes a major automobile producer of next generation cars (as it surprised the world at how fast it became the world leader in mobile phone usage). 150 experimental and advanced-technology vehicles were on display at the Challenge Bibendum, an exhibition of eco-friendly cars held in Shanghai. The China Daily speculates that the rising cost of oil and the forthcoming Olympics (2008) and World Expo (2010) are strong incentives to make China a green car leader, rather than following the gasoline model. [October 2004. Military Implications and Source]

NEW ORGANIZATIONS WITH MANDATES WITH EVENTUAL ENVIRONMENTAL SECURITY IMPLICATIONS

Interpol Creates Global Information Center to Combat Bioterror Threat
At a recent Interpol conference, police and health specialists decided to create a global information center to fight the threat of bioterrorism and asked for greater cooperation between law enforcement and health organizations. The health sector representatives called for an alert system that would allow quick response in case of an epidemic—whether of natural origin or from a bioterrorism source. Three training workshops are scheduled: the first in South Africa at the end of this year, the next two in 2006 in Chile and China. The information center on bioterrorism will be located at the Lyon Interpol headquarters and be available to all 182 members of the organization. [March 2005. Military Implications and Source]

Carpathian Mountain office of the United Nations Environment Programme
The United Nations Environment Programme (UNEP) has opened a new office at the Vienna International Centre, which will act as the Interim Secretariat of the Framework Convention on the Protection and Sustainable Development of the Carpathians. The office will also promote environmental cooperation in Central and Southeastern Europe. Four of the Convention's

signatories (the Czech Republic, Hungary, Poland and Slovakia) have requested the European Commission to adhere to the Convention and support its implementation. [July 2004. Military Implications and Sources]

Russia's Green Movement Plans to Become a Political Party
The Green movement finally made a public appearance in Russia, with a press conference on 15 October, led by Alexei Yablokov. A major figure in their campaign to become a recognized political party is Alexander Nikitin, the former naval officer who was acquitted of espionage for revealing pollution hazards in Russia's submarine program. Yablokov claims that 50-60% of the population is concerned about a healthy environment and would support a trusted green party. It is unclear if this group can overcome the substantial bureaucratic obstacles to forming a new party to participate in the 2007 parliamentary election, but their efforts are certain to bring the environment much more strongly into the forum of public discussion in the country. [October 2004. Military Implications and Source]

China Climate Change Organization Formed
China National Council of International Human Dimensions Programme on Global Environmental Change (CNC-IHDP) was launched by Chinese scientists and humanities researchers to increase Chinese involvement in international discussions on the impact of global climate change. The new organization run by the Chinese Academy of Sciences will coordinate the efforts of researchers in all fields to promote China's research on global climate and environmental changes, and to investigate the relationship between those changes and sustainable development, globalization and human safety, and global land change and urbanization. [September 2004. Military Implications and Source]

Liberia's First Environment Center Opened
The UNHCR has opened an environmental protection agency in Liberia to ensure that the repatriation of thousands of refugees will not have a negative impact on the environment already devastated by 14 years of war. The agency will educate the repatriates on how to use and revive the environment as they resume their daily activities. [March 2005. Military Implications and Sources]

NEW INITIATIVES AIMING TO INCREASE ECO-EFFICIENCY

In an effort to set up more ambitious targets for reducing global warming and greenhouse gas emissions, several organizations launched new eco-efficiency initiatives.

Efforts for Increasing Corporate Eco-responsibility
The "Responsible Investment Initiative" launched by the United Nations Environment Programme (**UNEP**) aims to develop by September 2005 a set of globally recognized principles for responsible investment to be considered by the major institutional investors. The initiative is

framed in support of the Global Compact, a U.N. effort to enlist the support of the public and private sector for 10 key principles relating to human rights, labor and the environment, and is based on the recent study, "The Materiality of Social, Environmental and Corporate Governance Issues to Equity Pricing," launched at the UN Global Compact Leaders Summit on 24 June in New York. The new principles will protect both the planet and long-term shareholder value by integrating environmental, social and governance concerns into investor and capital market considerations.

The World Resources Institute (**WRI**) and World Business Council for Sustainable Development (WBCSD) recently published the revised edition of The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, a framework for corporate GHG accounting and reporting, and a tool for helping companies more efficiently manage their GHG emissions. The next steps are: developing of Web-based GHG calculation tools; establishing complementary sector-specific protocols; and working on a new standard focused on the quantification of GHG mitigation projects. [July 2004. Military Implications and Sources]

Online Database of Sustainable Consumption Initiatives in North America Launched
The Commission for Environmental Cooperation (CEC) launched on 21 April 2004 a new online database cataloguing information about sustainable consumption and production initiatives in North America: http://nasca.icspac.net/db/ [April 2004. Military Implications and Sources]

Military Implications and Sources

A. Preventing or repairing military damage to the environment

Environmental Security rises on the international political agenda

UN Reform Report Stresses Environmental Issues
Military Implications:
Relevant military personnel should identify what recent military technology could be made available to better monitor compliance with international treaties and to inform their diplomatic counterparts prior to the September UN Summit of potential improvements as proposed in the UN report. Since much of the world does not have adequate environmental agencies, military agencies will probably become involved, if environmental management and policy implementation are to be improved. Hence, a diverse range of military-to-military assistance could be a significant part of US diplomatic input to the UN Summit.

Sources:
The Secretary-General Statement To The General Assembly
New York, 21 March 2005
http://www.un.org/largerfreedom/sg-statement.html

In larger freedom: towards development, security and human rights for all
Report of the Secretary-General
http://www.un.org/largerfreedom/contents.htm

UN Report Recommends Basis for Global Security Consensus
Military Implications
Military personnel responsible for exploring changing military doctrine should study the report, noting especially the changing scope for international cooperation to reduce threats from a broader range of sources. Those monitoring the evolution of the concept of "human security," which includes environmental security, should consider the report as an indicator of increasing international acceptability of human security as an organizing principle for international affairs and military policy. Full participation in evolution of these concepts will help ensure that military organizations are allowed both to retain and acquire functions relevant to their normal missions and to prevent being saddled with non-relevant ones.
Source:
A more secure world: Our shared responsibility
http://www.un.org/secureworld

UNU Institute for Environment and Human Security Founded

Military Implications

The military should quickly set up liaison with this new organization in order to be in a position to benefit from its work when engaged in operations other than war (OOTW), such as assisting with humanitarian efforts following natural or environmental disasters in SOFA countries, or training foreign armed forces for such activities. Also, US forces have a wealth of experience to share with UNU/EHS. Methodologies developed by UNU/EHS could also be useful in post-conflict cleanup. As the principal point of contact for the UNU in Washington, D.C., the AC/UNU could explore potential relationships with the new institute, if requested.

Sources

United Nations University Institute for Environment and Human Security (UNU-EHS)
http://www.ehs.unu.edu

Flood-menaced population to double by 2050
http://www.planetark.org/dailynewsstory.cfm/newsid/25522/story.htm

Two billion vulnerable to floods by 2050; number expected to double or more in two generations
New UNU Institute in Germany to Advise Governments on Mitigating "Human Security" Threats http://www.innovations-report.de/html/berichte/umwelt_naturschutz/bericht-30168.html

Conference on Environment, Security and Sustainable Development in The Hague

Military Implications:

Military personnel with environmental security related responsibilities should consult the documents presented at the conference (available on-line from sources below) and the concluding document, Pathways to Environmental Security, which is expected to present policy and practical recommendations, including guidelines for addressing environment and security issues. The military might consider playing an active part in the follow-up working groups and sessions planned to be established on specific themes developed at the conference.

Sources:

The Hague Conference on Environment, Security and Sustainable Development
http://www.envirosecurity.net/conference/

The Environment: Threat to Security or Opportunity for Peace?
Woodrow Wilson Center, Environmental Change and Security Project
http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=74688

Howling At A Waning Moon: Dispatches from the Hague Conference on Environment, Security, and Sustainable Development, and a U.N. meeting in Nairobi
http://bobwhitson.typepad.com/howlings/2004/05/dispatches_from_3.html

Dispatches from the Hague Conference on Environment, Security, and Sustainable Development
Geoffrey Dabelko, at The Hague
http://www.gristmagazine.com/dispatches/dabelko051004.asp?source=daily

Reports Stressing the Link between Environment and Security

Military Implications

Those with environmental security responsibilities should add these reports to their library, be familiar with the insights in these reports, and consider their military implications.

Sources:

Can Securing the Environment Win the Peace?
10th Anniversary Report Examines the Next Steps for Environment, Population, and Security
http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=104334

State of the World 2005: Redefining Global Security
http://www.worldwatch.org/press/news/2005/01/12/

Optimist, Green Cross International
http://www.optimistmag.org/gb/0003/one.php?id=256 (might require subscription)

Outgrowing the Earth: The Food Security Challenge in an Age of Falling Water Tables and Rising Temperatures http://www.earth-policy.org/Books/Out/index.htm

The Living Planet Report 2004 available online at: www.panda.org/livingplanet

WWF Press release, 21 Oct. 2004
http://www.panda.org/news_facts/newsroom/news.cfm?uNewsID=15976

Environment and Security: Transforming Risks into Cooperation--The Case of the Southern Caucasus. Report downloadable http://www.iisd.org/pdf/2004/envsec_transforming_risk_en.pdf

Caucasus - Transforming Risks into Co-Operation. Joint OSCE/UNEP/UNDP News Release
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=408&ArticleID=4650&l=en

Blood and Soil: Land, Politics and Conflict Prevention in Zimbabwe and South Africa. Africa Report N°85 http://www.icg.org/home/index.cfm?l=1&id=2998

A more secure world: Our shared responsibility

Military Implications

Military personnel responsible for exploring changing military doctrine should study the report, noting especially the changing scope for international cooperation to reduce threats from a broader range of sources. Those monitoring the evolution of the concept of "human security," which includes environmental security, should consider the report as an indicator of increasing international acceptability of human security as an organizing principle for international affairs and military policy. Full participation in evolution of these concepts will help ensure that military organizations are allowed both to retain and acquire functions relevant to their normal missions and to prevent being saddled with non-relevant ones.

Source:

A more secure world: Our shared responsibility
http://www.un.org/secureworld

Environment and Security—The Role of the United Nations
Military Implications
Relevant military personnel should be encouraged to read the report. It is likely that the High Panel's conclusions will find their way into new UN approaches toward environmental security aspects. Further, the Security Council might integrate environmental concerns into its security agenda, which could trigger changes in some peacekeeping operations. Military and civilian personnel with environmental security responsibilities should study the report and eventually contact the WWICS's project Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security for specific insights that the High-Level Panel provided.
Sources:
Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security
ECSP Contributes to the United Nations' High-Level Panel on Threats, Challenges, and Change
http://wwics.si.edu/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=76009

Environment and Security—The Role of the United Nations
Report of the Roundtable Conference, June 2, 2004
http://www.un-globalsecurity.org/pdf/reports/Environment_Security.pdf

Understanding Environment, Conflict, and Cooperation
Military Implications
Military and civilian personnel with environmental security responsibilities should study the report for new insights and also to sense shifts in the way attitudes and approaches regarding environmental security are changing on the international agenda.
Sources:
Environment, Development, and Sustainable Peace: Finding Paths to Environmental Peacemaking
September 16-19 at Wilton Park in the United Kingdom
http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=87325

Understanding Environment, Conflict, and Cooperation. UNEP report
http://mirror.unep.org/PDF/ECC.pdf

Emerging Forces in Environmental Governance, UNU Report
Military Implications
Centralized coordination of international environmental treaty activities and the provision of appropriate enforcement powers to a central body would, in theory, change the way military operations are conducted by military forces. All military forces in such a scenario would have to comply with the same basic environmental standards for equipment, training and operations. In addition, all military forces would be subjected to the same post-conflict liabilities for any environmental degradation.
Sources:
Experts weigh need to overhaul environmental governance system as world ecosystems worsen
United Nations University, 2 June 2004
http://www.eurekalert.org/pub_releases/2004-06/unu-ewn060204.php

Emerging Forces in Environmental Governance
Edited by: Norichika Kanie and Peter M. Haas
http://www.unu.edu/unupress/new/ab-EmergingForces1095.html

South Asia in the World: Problem Solving Perspectives on Security, Sustainable Development, and Good Governance, UNU Publication
Military Implications:
Over half the book relates to detailed overviews of South Asian environment and security issues from perspectives of scholars from the region. For example: Melting pot of global fault lines; Nuclear weapons and nuclear war in South Asia: The unknown future; International security in a nuclear South Asia; Interstate conflict in South Asia; Terrorism and political agitation in post-colonial South Asia (Jammu-Kashmir and Sri Lanka); South Asian contributions to United Nations peacekeeping operations; Critical links between environment and development in South Asia; The environmental challenge to human security in South Asia; Diffusion of international peace; International rivers and bilateral relations in South Asia; Regional cooperation: Security organisation for South Asia (SOSA): Mechanism for conflict resolution in South Asia; SAARC as an institutional framework for cooperation in South Asia; Human security: The Perspective of children and women in South Asia; '9/11', Afghanistan, and South Asia: Post-Taliban Afghanistan and South Asian security; South-west Asia after the Taliban; and The changing geopolitics of Central, West and South Asia after 11 September.
Source:
South Asia in the World: Problem Solving Perspectives on Security, Sustainable Development, and Good Governance
Edited by: Ramesh Thakur and Oddny Wiggen
http://www.unu.edu/unupress/new/ab-SouthAsia1093.html

WHO *Guidelines for Drinking-water Quality*
Military Implications
Military units deployed in water-scarce regions are often required to help local populations restore or develop safe drinking water sources, and/or deal with water-induced outbreaks. The new WHO guidelines might be useful to their operations. Also, the military, through its widespread activities, can help incorporate the new WHO requirements for drinking water safety plans in regulations across the world.
Sources:
WHO Guidelines for drinking-water quality, third edition
http://www.who.int/water_sanitation_health/dwq/guidelines/en/

WHO issues revised drinking water guidelines to help prevent water-related outbreaks and disease. Press release, 21 September 2004
http://www.who.int/mediacentre/news/releases/2004/pr67/en/

Environmental Role for Army

Chinese Army Environmental Role Increases
Military Implications:
This explicit statement encouraging peacetime enhancement of domestic security through environmental projects builds upon previous Chinese statements that identified the environment as a potential target in wartime. Together, these statements could be viewed as an emerging doctrine that defines the dual role of the Chinese military relative to the environment (i.e., in using the environment to provide domestic security in peacetime as well as in using it for military advantage as a challenge to enemies in wartime.) Monitoring of further statements by top Chinese military officials on this subject is prudent in order to effectively engage in cooperative environmental projects with China, such as the current work by a Department of Energy national lab on Chinese water systems.
Source:
Army urged to lead in environmental protection efforts
Xinhua Net, 1 April 2004
http://news.xinhuanet.com/english/2004-04/01/content_1396736.htm (article available for a limited time on the website)

Environmental Role for Army in Brazil
Military Implications:
Although Brazil is not the only country to use its military for deforestation-related operations, its forest resources are significant enough to warrant watching the impact the military will have in this role. Monitoring the Brazilian Army's operations for lessons learned may be useful for generating insights for the U.S. military and for potential environmental missions for coalition forces. There are international interests in addressing the deforestation of South American rain forests for environmental and for counter-drug purposes. As a result, the Southern Command might consider potential updates to its regional engagement plan based on this recent development.
Sources:
Brazilian Army to Help Protect Rainforest. VOA News, 14 July 2004
http://www.voanews.com/article.cfm?objectID=47C5D181-A200-41BE-A1EB01728513AD0A (article available for a limited time on the website)

Brazilian Army to Join Fight Against Deforestation. Associated Press, 14 July 2004
http://www.enn.com/news/2004-07-14/s_25815.asp (article available for a limited time on the website)

Brazil Calls Army to Battle Deforestation. Maurício Cardoso, Agência Brasil, Brazil, Aug. 2004
http://www.brazzil.com/2004/html/articles/aug04/p116aug04.htm (article stored for a limited time on the web site)

Brazil's Savanna is Set to Disappear by 2030, says Report. Reuters, 20 July 2004
http://www.enn.com/news/2004-07-20/s_25996.asp (article available for a limited time on the website)

Environmental Role for Army in Lebanon

Military Implications:

The editorial illustrates the increasing international interest in domestic environmental roles that armed forces can play. Monitoring any subsequent policy shifts that may occur in Lebanon itself or among the nations in the region with regard to the use of the military in an environmental role may provide insights for the U.S. military and for potential environmental missions for coalition forces. The military might conduct an international survey to establish a database or table listing each country's military environmental roles and key activities. Such a resource could be periodically updated to document trends and offer military-to-military collaboration on environmental security. Also, at some point in the development of the "Army Strategy for the Environment" working paper, it might be circulated to other militaries for comment and collaboration.

Source:

Pollution: The war to vanquish an insidious enemy should begin now
The Daily Star, 10 July 2004
http://www.dailystar.com.lb/article.asp?edition_id=10&article_id=6094&categ_id=17

Former EPA Administrator Calls for US Leadership in Environmental Protection

Military Implications

By reducing its ecological footprint, the U.S. military could disseminate a strong message that it is seriously committed to environmental protection. This will help reverse a tainted image of the US military abroad and give an opportunity to the U.S. government to lead in this area once again. In addition to continued R&D, the U.S. military should both continue to increase its commitment to such R&D and promote these changes to increase public awareness of its commitment.

Source:

WWICS Conference - The Making of Environmental Law: Past, Present, and Future
September 28, 3:00 p.m. - 5:00 p.m.
http://www.wilsoncenter.org/index.cfm?fuseaction=events.event_summary&event_id=97213

Environmental Security Stressed by World Islamic Forum for Dialogue for Inclusion to Proposed International Charter on Values for the United Nations

Military Implications:

In light of the proposed charter on values, all military organizations and relevant commands may wish to review Dr. Al-Rifae's comments with respect to the Arab world. Specifically, Central Command (CENTCOM) and Pacific Command (PACOM) may want to review their engagement plans to ensure that the common values emerging through this forum, particularly those outlined by Dr. Al-Rifae, are appropriately reflected in engagement priorities for the Middle East and Pacific regions, respectively.

Source:

Academic to Give Input Into New International Charter for Values
Khaled Batarfi, Arab News, 7 May 04
http://www.arabnews.com/?page=1&section=0&article=44465&d=7&m=5&y=2004&pix=kingdom.jpg&category=Kingdom (article available for a limited time on the Arab News web site)

CONFLICT AND POST-CONFLICT ENVIRONMENTAL SECURITY ISSUES

UNMOVIC Could Become Permanent Agency

Military Implications

Since U.N. Security Council approval is needed to make UNMOVIC a permanent agency and the US currently opposes the plan, such permanent establishment might take a long time. Nevertheless, the military should insist on continuous consultation with other administration organizations on the costs/benefits of such a plan. Since administrations do change, it might be wise to begin to consider recommendations for the design of such a new agency.

Sources:

Blix Urges U.S., U.N. Teams To Share Iraq Weapons Data
http://www.unwire.org/UNWire/20040622/449_25136.asp (article available for a limited time on the website)

Environmental Destruction During War Aggravates Instability

Military Implications:

Military policymakers should respond to the UN official's request to examine the best mechanisms to minimize environmental degradation in wartime and to enhance after-war cleanup and restoration. As the military has the knowledge, infrastructure, and expertise in this domain, it should be a key element in shaping the war-related international environmental legislation and its national implementation around the world.

Sources:

Statement by Mr. Kofi Annan, United Nations Secretary-General. Message On The International Day For Preventing The Exploitation Of The Environment In War And Armed Conflicts
http://www.unep.org/PDF/SG_message_conflict.pdf

International Day for Preventing the Exploitation of the Environment in War and Armed Conflicts. Statement by Klaus Toepfer, Executive Director of UNEP
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=413&ArticleID=4659&l=en

UNEP Post-Conflict Assessments and 'Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security' - Woodrow Wilson Center Project

Military Implications:

Interested military personnel with environmental security responsibilities should contact the WWICS's new project, 'Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security', to participate on the panels to provide input to the UN's High-Level Panel. Also the website below should be checked for archived streaming video of Mr. Pekka Haavisto's presentation and related presentations, and to follow the WWICS Environmental Change and Security Project work in this area.

Sources:

Protecting the Earth, Preserving Peace: Preventing Environmental Threats to Security

ECSP Contributes to the United Nations' High-Level Panel on Threats, Challenges, and Change
http://wwics.si.edu/index.cfm?topic_id=1413&fuseaction=topics.item&news_id=76009

UNEP Post-Conflict Assessments: New Tool in Improving the Environment in Post-Conflict Countries; Featuring Pekka Haavisto, Chairman, UNEP Post-Conflict Assessment Unit (live webcast archived)
http://wwics.si.edu/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=68772#

UN Annual Treaty Event Produced 93 Actions from 32 Countries
Military Implications
The Treaty Event's success shows the increasing seriousness which nations place on adherence to international agreements that focus on protection of civilians during conflict. This may accelerate the acceptance of proposed international agreements such as the Explosive Remnants of War Protocol and worldwide acceptance of "polluter pays" principles.
Sources:
Annual treaty drive at UN brings 93 actions from 32 countries
UN Press Release, September 24, 2004
http://www.un.org/apps/news/story.asp?NewsID=12037&Cr=treaty&Cr1=

Press Briefing on Focus 2004 Treaty Event
http://www.un.org/News/briefings/docs/2004/KohonaBriefing_040924.doc.htm

Sustainable Development and Conflict
Military Implications:
As the US military is involved in reconstruction and nation building efforts, civil affairs units should keep a number of these thematic issues in mind. Highlighting military efforts that relate to the eight Millennium Development Goals will increase the likelihood for increased international cooperation in future post-conflict situations. Infusing better land management, urban planning, and natural disaster management into reconstruction plans may enhance long-term stability by decreasing the need for subsequent external intervention and assistance in the future.
Source:
Governments urged to embark on a decade of implementation to meet sustainable development targets, as UN Commission concludes
UN Press Release, 30 April 04
http://www.un.org/esa/sustdev/csd/csd12/press_release300404.pdf

OSCE-UN Launches Environmental Security Initiative in Southern Caucasus
Military Implications:
Central Command (CENTCOM) may wish to pay particular attention to the outputs of this initiative, and adjust its regional engagement plan accordingly.

Sources:
Environmental Security Initiative Launched In Southern Caucasus. Azertag, 19 May 04
http://www.azertag.com/en/index.shtml?language=english&catid=&news_year=&news_month=&news_day=&newsid=50525&themes_viewing=&themes_page=&themeid=&news_page=

International organizations launch initiative in southern Caucasus on link between environment and security http://www.osce.org/item/8300.html

OSCE Security Forum Urges Destruction of Thousands of Tons of Dangerous Ammunition and Weapons

Military Implications:
Clearly there is great need for additional military-to-military assistance, which provides a good opportunity to help improve U.S.-European relations, through answering the call of the OSCE-FSC for international cooperation. This OSCE-FSE discussion emphasizes a need for the U.S. to continue and increase its activities in this field for the mutual safety of all.
Source:
OSCE security forum urges destruction of thousands of tonnes of dangerous ammunition and weapons http://www.osce.org/item/8611.html

Congressman Leach Calls for New Actions to Address Asian Environmental Security Problems

Military Implications
AEPI and other related organizations should make military Congressional liaisons aware of their resources to respond to the Congressman's call. Liaison with the United States-Asia Environmental Partnership (US-AEP) should also be sought in responding to the Subcommittee Chairman's call for input.
Source:
Representative James A. Leach, Chairman, Subcommittee on Asia and the Pacific
Asia's Environmental Challenges, September 22, 2004
Distributed by the Bureau of International Information Programs, U.S. Department of State
http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2004&m=September&x=20040922180755ASesuarK0.4200708&t=xarchives/xarchitem.html

Israeli Trench Rises Environmental Concerns

Military Implications:
The environmental implications of the proposed trench point to some potential future considerations by US forces in constructing or breaching such large-scale obstacles. Although the number of places around the globe that such a trench could be constructed and filled with nearby sea water is relatively small, it is plausible that future international restrictions could be developed on the construction of such large military / security structures in order to preserve local aquifers and/or to prevent alteration of the local environment.

Source:
Israel Says Gaza Trench Plan Not Set in Stone
Jeffrey Heller, Reuters, 20 June 2004
http://www.reuters.com/newsArticle.jhtml?type=worldNews&storyID=5463982 (article available for a limited time on the website)

Russian Military Exercise to Include Environmental Issues
Military Implications:
The inclusion of environmental issues in exercise scenarios may indicate that the Russian government is relying on military forces to take a significant role in responding to potential environmental catastrophes. Monitoring of this exercise, as well as those of other nations including an environmental component, could yield some lessons learned for potential future doctrine development of a more active role for the US military in such events, as well as insights into potential combined environmental operations with Russian and other nations' military forces.
Source:
Russia Operates Large Scaled Military Training
Yoo-Seong Hwang Ki-Hyun Kim, Donga, 18 June 2004
http://english.donga.com/srv/service.php3?bicode=060000&biid=2004061920708

Military Introduction of Tree Pathogen in Italy
Military Implications:
There are already precautions in place that military units take when deploying and redeploying to prevent the introduction of exotic species. However, in terms of practical application, any new protective measures may manifest themselves through more stringent phytopathogenic requirements in future SOFAs.
Source:
Researchers say US military accidentally introduced tree pathogen to Italian estate during WWII
Sarah Yang, University of California at Berkeley, 30 March 2004
http://www.berkeley.edu/news/media/releases/2004/03/30_mpath.shtml

UN to Help Tackle Iraq Pollution
Military Implications:
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 and Iraqi Environment Ministry to Assess Key Polluted Sites
Eric Falt, UNEP Press Release, 14 September 2004
http://postconflict.unep.ch/pressiraq14sep2004.htm

Iraq Marshlands to be Restored
Military Implications:
Considering the still large presence of U.S. military forces in the Marshlands area, although direct military assistance to marsh restoration efforts is not likely, they could provide security to restoration teams to ensure that restoration efforts are systematic and successful.
Source:
Iraq: UN announces multi-million dollar plan to restore 'Garden of Eden' marshes
UN News Service, July 23, 2004
http://www.un.org/apps/news/story.asp?NewsID=11447&Cr=Iraq&Cr1

Kosovo Cleanup
Military Implications:
The precedent set by the UN's involvement in post-conflict remediation of a battlespace suggests that the development of a post-conflict battlefield remediation treaty is possible. The US military should monitor the developments in international law on this subject, since the potential ramifications for future doctrine, equipment, and operations are significant. In addition, combatant commands should meanwhile ensure post-conflict environmental considerations are anticipated in development of rules of engagement and in the conduct of regional engagement planning.
Source:
Kosovo Conflict Hot Spots Cleaned Up
UNEP press release, 10 May 04 http://www.enn.com/direct/display-release.asp?objid=D1D1366D000000FC70284EC89E131C45 (article available for a limited time on the website)

TECHNOLOGICAL BREAKTHROUGHS WITH ENVIRONMENTAL SECURITY IMPLICATIONS

New technologies should be considered both for designing new weapons as well as for the detection and cleanup of the existing ones already in place.

Computer Technology and Robotics

Battle Simulators to Reduce Environmental Stresses from Military Exercises
Military Implications
These developments increase the likelihood of new systems for the development of, and training in, new war fighting techniques without requiring deployment of large bodies of actual forces into fragile environments. The military should review the planned applications of these new systems to ensure that environmental relief opportunities are fully exploited.
Sources:
Pentagon turns to Linux for high-end battlefield simulations
Computerworld News Story by Todd R. Weiss, August 17, 2004

http://www.computerworld.com/softwaretopics/os/linux/story/0,10801,95309,00.html?nas=AM-95309

Red Storm to be assembled in New Mexico
http://www.sandia.gov/news-center/news-releases/2004/all/redstormrising.html

Scientific Models Could Help Navy Avoid Whales During Sonar Tests
Military Implications:
If proven efficient, the new model should be helpful not just in training exercises, but might be recognized internationally and help comply with international rules that are already in place in some regions to avoid harm to marine animals. [See European Parliament Resolution to Protect Whales From Sonar in the October 2004 environmental security report]
Source:
Scientist Could Help Navy Avoid Whales During Sonar Tests
http://www.ens-newswire.com/ens/feb2005/2005-02-01-09.asp#anchor5 (by subscription only)

Future Computer-Human Interface Means Cyber Viruses Could Infect Humans
Military Implications:
Security enforcement organizations, including the military, should begin to sponsor research on how to block such cyber-biology virus transfers. In a cyber-human society the civilians as well as military will be much more vulnerable to targeted cyber terrorism and crime.
Source:
Could future computer viruses infect humans? One ex-cyborg thinks they could...
Silicon.com, November 12 2004, by Jo Best
http://networks.silicon.com/webwatch/0,39024667,39125887,00.htm

Self-Assembling Robots
Military Implications:
The applications of these robots are endless, ranging from searching tasks in unknown or difficult environments to: combat, repair and/or cleaning in dangerous circumstances, saving human lives and reducing the environmental footprint of harmful human activity.
Source:
Self-Assembling Robots
http://www.discover.com/issues/apr-05/departments/emerging-technology/

Scorpion Robot for Complex Roving Missions
Military Implications:
As Ray Kurzweil presented at the 24th Army Science Conference last December, robots are completely changing warfare. Seen as a forerunner of the new arsenal, the Scorpion robot technology's practical uses range from reconnaissance to combat and battlefield cleanup. Such technologies are not just saving human lives, but also considerably reducing the environmental footprint of war.

Sources:
Scorpion Robot Could Conquer Worlds
Walking machine may go where wheeled explorers cannot. Jessica Ebert, 10 February 2005; news050207-14 http://info.nature.com/cgi-bin24/DM/y/eSAY0Gyeak0C30aCI0Ee (by subscription only)

Robot Wars. Technology guru Ray Kurzweil offers a vision of future fighting machines. Philip Ball, 08 February 2005 http://info.nature.com/cgi-bin24/DM/y/eSAY0Gyeak0C30aCS0Eo (by subscription only)

Roach-like Robots for Better Post-conflict Clean-Up and Survivor Detection
Military Implications:
The roach-like robots can save lives and considerably reduce logistics in many detection and cleanup activities. The military should consider adding them to their "arsenal" and producing them at industrial scale.
Sources:
Roach Robots
Karen Lurie, Sciencentral News, 8 July 2004
http://www.sciencentral.com/articles/view.php3?language=english&type=24119&article_id=218392297&cat=3_3

Robots that Can "Recharge" by Eating
Military Implications:
Although self-sustaining robots are created in different forms and flexible solar cells (e.g., see previous item) might be more efficient for recharging, the advantage of this technology is that the 'eating robots' could be tailored to 'identify their own food' and used for clean-up of toxic (or non-toxic) waste, by efficiently operating for years without any human intervention, in any environment.
Source:
Ecobot Eats Dead Flies for Fuel. Wired. Com, by Lakshmi Sandhana
http://www.wired.com/news/technology/0,1282,66036,00.html

Robot Swarms
Military Implications:
The 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. 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:
Send In the Swarm
Stuart F. Brown, Fortune, 1 June 2004
http://www.fortune.com/fortune/thisjustin/0,15704,643751,00.html

On-chip Antenna to Solve Communication Problems among Microscopic Sensors
Military Implications:
The concept of "smart dust" emerged in the 1990s as a cheap way to rapidly saturate an area with microscopic sensors that could report on a number of different types of physical data, such as meteorological conditions, environmental contaminants, seismic activity, etc. Such applications have immediate battlefield surveillance utility. The problem that prevented the development of this tool to date was in solving the problem of communication from one microscopic sensor to another. This breakthrough now enables the technology to be developed and fielded, with a host of pre-conflict, intra-conflict, and post-conflict environmental applications.
In addition, it adds to the toolbox of environmental interest groups who may wish to monitor environmental conditions on a military reservation. By letting the wind disperse a large quantity of such smart dust, military installation commanders would likely have no way of knowing that a dispersal of environmental sensors had taken place, and would have no forewarning to preemptively monitor in a comprehensive manner the entire installation in order to preclude misinterpretation of any data collected outside the installation fence line.
Source:
In step toward ultrasmall radio, UF team demonstrates on-chip antenna
Aaron Hoover, University of Florida, 11 May 04
http://www.eurekalert.org/pub_releases/2004-05/uof-ist051104.php

New Technologies for Detection and Cleanup

Microbes Can Help Build Nanodevices for Detection
Military Implications
Such nanotech self-assembly detection systems for bio-warfare and other agents will make more universal detection more cost-effective. In anticipation of continued R&D in this direction, military scientists should create technology roadmaps for a range of applications.
Source:
Harnessing microbes, one by one, to build a better nanoworld
http://www.news.wisc.edu/10831.html

Real-Time Antibody-based Bioterrorism Detection System
Military Implications:
Having a detection system that is based on antibodies provides for real-time detection, which would greatly enhance efforts to quarantine and treat exposed persons. Deployment of such systems would significantly decrease the efficacy of a bioterrorism attack; hence, such systems would be strategic tools in enforcement of international treaties related to bioterrorism. In

cooperation with CDC and the WHO, relevant military personnel should develop guidelines for deployment and prepare military-to-military training in such standards.
Source:
British Scientists Develop Biological Agent Detection System
Global Security Newswire, 15 April 2004
http://www.nti.org/d%5Fnewswire/issues/2004/4/15/0f2b58e2%2D648b%2D494c%2D9ef1%2D0f6e3a26218f.html (article stored for a limited time on the web site)

Russian Discovery of New Bacterial Cleanup Technique
Military Implications
Appropriate military organizations should become familiar with this and similar follow-on technology and monitor its development at the original institution and elsewhere, in order to assess its ability to improve environmentally friendly cleanup of manufacture/storage/training sites and battlefields.
Source:
Could Microbes Solve Russia's Chemical Weapons Conundrum?
http://cwwg.org/nw03.04.05.html

Bacteria-modified Yellow Lupine to Remove Toluene from Soil
Military Implications:
If not already accomplished, the military should establish a database of potential genetically modified organisms that could be used in cleaning up of potentially contaminated training fields or battlefields, or even in disaster/contamination conditions in which they might be asked to help. Also, they should support and prioritize research efforts to develop these possibilities, as well as take into account additional environmental impacts of such GMOs.
Source:
Plants Dispatched to Decontaminate Soil
Scientific American, April 12, 2004
http://cl.extm.us/?fe8812737d65027572-fe3116707360067e731073 (article accessible for a limited time for non-subscribers)

New Genetically Modified Plant to Detect Landmine Explosive
Military Implications
[Same as previous item.] If not already accomplished, military should establish a database of genetically modified organisms that could be used in cleaning up of potentially contaminated training fields or battlefields, or even in disaster/contamination conditions in which they might be asked to help. Also, they should support and prioritize research efforts to develop these possibilities, as well as take into account additional environmental impacts of such GMOs.
Source
Plant research may help detect landmines
By Caitlin Crawshaw, University of Alberta, Canada
http://www.expressnews.ualberta.ca/expressnews/articles/news.cfm?p_ID=5553&s=a

A Radioactive Element's Rate of Decay Has Been Speeded Up
Military Implications:
Although the work is at a very early phase, the result suggests that we might be able to neutralize nuclear waste and pollution faster. As this is a very important issue for the military, it should consider enhancing research efforts and support in the domain.
Source:
Radioactivity gets fast-forward
By Philip Ball, news@nature.com, 17 September 2004
http://www.nature.com/news/2004/040913/full/040913-24.html (by subscription only)

Nanoshells Dramatically Improve Sensing Capability
Military Implications
The military should investigate how this new capacity could be used for chemical, biological, and radiological weapons detection, as well as for assisting in environment monitoring and cleanup.
Sources:
'Nanoshells' enhance sensitivity to chemical detection by factor of 10 billion.
http://www.physorg.com/news2644.html

Study shows nanoshells ideal as chemical nanosensors
http://www.eurekalert.org/pub_releases/2005-01/ru-ssn011105.php

Molecular Pattern Matcher for Chemical Detection
Military Implications
Although technologies exist which can detect chemical warfare agents and their degradation products (as well as most toxic industrial compounds), most of these technologies have two competing drawbacks. Either the technology is relatively bulky, or the technology is not capable of accurately quantifying the concentrations of the chemicals identified without prior calibration. By using photopolymerization or plasma deposition techniques, potentiometric sensors can be developed at the nanoscale for individual compounds. Because the sensors are potentiometric, quantification can be made simultaneously with qualitative identification. Because they are nanoscale in size, thousands of sensors can be constructed in the same space as a typical microchip. It is thus possible to construct handheld or imbedded sensors for force protection applications as well as for treaty enforcement and remediation applications. When combined with recent advances in antenna technology (see preceding item about on-chip antennas), it is now possible to design environmental sensors that could themselves be difficult to detect (and hence difficult to evade). Parallel development of this technology for both environmental and force protection applications thus seems prudent.
Source:
A good impression of a bad chemical
The molecular shape of warfare agents imprinted on a sensor.

Nature.com, Maria Bellantone, May 20, 2004 http://www.nature.com//cgi-taf/gateway.taf?g=3&file=/materials//news/news/040520/portal/m040520-1.html (by subscription only)

Nanoporous Ceramic Uses for Heavy Metals Cleanup

Military Implications:

Finding a single technology that can be adapted and be effective in cleaning up several types of heavy metals is of high value to the military because of the many classes of contaminants found on military installations. Also, as the military is sometimes called on to participate in cleanup operations not related to military actions, the use of this technology might be helpful.

Source:

Nanoporous ceramic hoovers up mercury
Liz Kalaugher, editor of nanotechweb.org; http://nanotechweb.org/articles/news/3/4/6/1

Iron Nanoparticles for Environmental Cleanup

Military Implications

The military should follow research in this area, be prepared to apply this technology to cleanup of the battlefield environment, and, where appropriate, guide investigations toward site types and pollutant materials of military concern.

Sources:

OHSU-Led Study Finds Advantages To Iron Nanoparticles For Environmental Cleanup
http://www.ogi.edu/about/news/dsp_news.cfm?news_id=87261996-0ECC-7C05-146A7FA533655B40

Study finds advantages to iron nanoparticles for environmental clean up
http://www.physorg.com/news2686.html

Dirty Bomb Clean-Up Technology for Porous Structures

Military Implications:

This new decontamination system will save buildings and monuments exposed to terrorists' "dirty bombs" that otherwise might have to be demolished. This will reduce clean-up time, costs, and logistics.

Sources:

Nanoparticles, super-absorbent gel clean radioactivity from porous structures
Argonne National Laboratory, 2 July 2004
http://news.nanoapex.com/modules.php?name=News&file=article&sid=4752

New and Improved Land Mine Destruction Technique

Military Implications:

Military organizations with responsibilities for de-mining equipment should follow up on this development, which appears to offer substantial advantages over other methods in minimizing damage to the environment from mine clearing.

Sources:
Cranfield Leads The Development Of Next Generation Anti-Land Mine Device
http://www.cranfield.ac.uk/university/press/2005/29032005.cfm

Next Generation Anti-Land Mine Device, March 29
http://www.physorg.com/news3531.html

Bionanotech Particles Can Detect Bacteria in 20 Minutes
Military Implications:
Bioconjugated nanoparticles promise to be a quick and easy way to detect and identify pathogenic bacteria, thus providing early warning of infections and biological warfare. Military R&D and preventive medicine personnel should be in contact with this research to explore applications.
Sources:
A rapid bioassay for single bacterial cell quantitation using bioconjugated nanoparticles
National Academy of Sciences, 10.1073/pnas.0404806101
http://www.pnas.org/cgi/content/abstract/101/42/15027

Nanoparticles Enable Speedy E. coli Detection
http://www.sciam.com/article.cfm?chanID=sa003&articleID=0002FFA7-F4A6-1166-B4A683414B7F0000

Nanodevices for Biomolecules Detection
Military Implications:
[Same as the above item] Bioconjugated nanoparticles promise to be a quick and easy way to detect and identify pathogenic bacteria, thus providing early warning of infections and biological warfare. Military R&D and preventive medicine personnel should be in contact with this research to explore applications.
Sources:
Nanodevices target viruses
http://nanotechweb.org/articles/news/3/10/7

Electrical detection of single viruses
National Academy of Sciences, 10.1073/pnas.0406159101
http://www.pnas.org/cgi/reprint/101/39/14017.pdf

Magnetic sensors tackle viruses
http://www.physicsweb.org/articles/news/8/10/11/1

Nanotubes that Detect and Kill Biological Agents
Military Implications:
The antimicrobial nanotube structures are very important for developing security systems against biological and/or chemical weapons. As a result, this technology should be considered for forward deployed security and an item for future military-to-military assistance.

Source:
Nanotubes Made That Detect and Kill Biological Agents
http://www.ens-newswire.com/ens/sep2004/2004-09-27-03.asp (by subscription only)

Bacterial Integrated Circuits
Military Implications:
Although several challenges exist to using BBICs for military applications, such as developing bacterial strains that luminesce in the presence of military-unique contaminants, and addressing the effects of any number of potential interferants, there are potential environmental uses for this technology. In some environments, BBICs may prove to be the technology of choice for cost, size, or maintenance reasons. The US military may wish to consider adding BBIC technology to its environmental monitoring tool kit.
Source:
Bacterial Integrated Circuits
Karen Miller, Science at NASA, 10 June 2004
http://science.nasa.gov/headlines/y2004/10jun_bbics.htm?list1126820

Military Applications of Silicon-Based Ultraviolet Sensors
Military Implications:
Silicon-based ultraviolet sensors could complement or enhance other techniques used by the military for missile-warning systems and the detection of airborne biological agents.
Sources:
Silicon-Based Photodetector Is Sensitive To Ultraviolet Light
Champaign IL (SPX) Jul 20, 2004
http://www.spacedaily.com/news/chip-tech-04v.html

Technology for Perchlorates Cleanup
Military Implications:
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:
SSWM Bio-Raptor Demonstrates Its Solvents & Rocket Pollution Solution
http://www.spacewar.com/news/2004/milplex-082304-2231-16.html

Aquatic Plant Removes POPs from Wetlands
Military Implications:
In view of the Stockholm Convention on Persistent Organic Pollutants that entered into force in May, and is supported by the US, this cheap natural cleanup plant might prove to be an important discovery. The plant should be added to the Army's cleanup technologies database for further research and possible future use.

Source:
Common Aquatic Plant Removes Pollutants from Wetlands
http://www.ens-newswire.com/ens/aug2004/2004-08-27-09.asp#anchor6 (by subscription only)

Motion Detector Allows Naked Eye to See Motion of 10 Nanometers
Military Implications:
Military R&D personnel should be in contact with this research to explore applications.
Sources:
Device allows naked eye to see motion of 10 nanometers
http://www.sandia.gov/news-center/news-releases/2004/all/nanomeasure.html

Designer Bacteria could help Cleanup Pollution and Produce Hydrogen
Military Implications
This will be very important for post-conflict cleanup and other operations, if it can be proven that new forms of pollution will not be created. The military should prioritize their requirements for such bacteria, and fund it accordingly.
Source:
Let there be bacteria
By Geoffrey Carr. The Economist, 'The World in 2005'
http://www.economist.com/theworldin/science/displayStory.cfm?story_id=3370790&d=2005
(by subscription only)

New More Efficient Microbial Fuel Cell Cleans Wastewater and produces Hydrogen
Military Implications:
The Army should encourage feasibility studies for practical usage and scalability for implementation of this ecologically friendly technology due to its potential for improved mobility and efficiency.
Source:
Microbial fuel cell: High yield hydrogen source and wastewater cleaner
http://live.psu.edu/story/11709

Proposed T-Rays (TeraHertz) Devices Could Detect About Anything
Military Implications:
Military applications, ranging from medicine to weapons detection, make T-ray frequency devices an important technology to pursue, while requiring assessment of negative as well as positive impacts. The relevant military labs should study the outcomes of the TeraHertz for Defence and Security workshop.
Source:
T-Rays Detect Chemical, Biological Weapons, Find Cancers
http://www.ens-newswire.com/ens/dec2004/2004-12-14-02.asp (by subscription only)

Automated Water Safety Sensor Units
Military Implications:
The military personnel responsible for troop safety and/or water cleanup operations should explore the use of this new technology. If it proves practical, then it should also be considered for use in military operations and military-to-military training.
Source:
Sandia, Tenix, and CH2M Hill will develop automated water safety sensor units
Sandia National Laboratories, Press Release, December 6, 2004
http://www.sandia.gov/news-center/news-releases/2004/all/tenix.html

Arsenic-polluted Water Decontamination Using Sulphate
Military Implications:
Military personnel responsible for troop safety and/or cleanup operations in areas that may contain arsenic-contaminated water should explore the use of this new technology. If it proves practical, then it should be considered for military-to-military training in countries with arsenic-contaminated water problems.
Source:
A cheap fix for arsenic-polluted water?
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=1702&language=1

Water Nanofilters
Military Implications:
Military units deployed in drinking water-scarce regions need water purification systems and are often required to help local populations restore or develop safe drinking water sources, and/or deal with water-filtration problems. The new system might be a solution for providing safe drinking water for troops and local population in such areas. Military R&D and preventive medicine personnel should be alerted to examine this technology.
Source:
Nanofilters
By David Cotriss, Innovation News, November 2004
http://www.technologyreview.com/articles/04/11/innovation61104.asp?p=1

Sandia National Laboratories funded to develop improved Desalination and Arsenic Removal Technology
Military Implications:
Given the increasing environmental security issues related to safe drinking water and arsenic contamination in many parts of the world, the military should keep informed about the evolution of this research and explore being involved in the field testing of arsenic removal techniques and observations of desalination technology. There may be implications for both force protection and military-to-military training.

Source:
$6 million appropriation to focus Sandia research on drinking water desalination, removal of arsenic
http://www.sandia.gov/news-center/news-releases/2004/all/water.html

Low-cost, Non-polluting Sewage Treatment System
Military Implications:
The BIPU should be assessed for use at sustainable bases, especially in austere locations where the topography and geology are not suitable for conventional sewage transport and treatment technologies.
Source:
Loo-loo of an idea breaks new ground
Sunday Tasmanian, by Mike Bingham, 26 Sep. 2004
http://www.themercury.news.com.au/printpage/0,5942,10881610,00.html (article available for a limited time on the website)

More environmental-friendly technologies to be used by the Army

New Power Sources Needed for the Soldiers of the Future
Military Implications:
The report should be reviewed for environmental considerations in creating and using more energy-efficient equipment and energy sources.
Sources:
Meeting the Energy Needs of Future Warriors (full report)
http://books.nap.edu/catalog/11065.html?onpi_newsdoc09102004

Press Release: New Power Sources Needed for Soldier of the Future
http://www4.nationalacademies.org/news.nsf/isbn/0309092612?OpenDocument

Flexible Plastic Solar Cells Converting 30% of Sun's Power into Usable Energy
Military Implications:
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.
Sources:
Nanotechnologists' new plastic can see in the dark. University of Toronto, Press release, January 10, 2005 http://www.news.utoronto.ca/bin6/050110-832.asp

Spray-On Solar-Power Cells Are True Breakthrough
Stefan Lovgren, for National Geographic News, January 14, 2005
http://news.nationalgeographic.com/news/2005/01/0114_050114_solarplastic.html

Flexible Solar Cells could be sewn in Clothing
Military Implications
Such small and flexible solar panels can be sewn on military uniforms or rucksacks and used to charge portable devices, reducing the environmental footprint associated with military operations. The U.S. military should add this development to similar technologies it is now supporting.
Sources:
Pliable solar cells are on a roll http://www.newscientist.com/article.ns?id=dn6802
Bendy Solar Panels Provide Portable Energy Supply
http://www.planetark.com/dailynewsstory.cfm?newsid=28621&newsdate=17-Dec-2004

Nanotechnology Used to Produce Hydrogen for Fuel Cell Cars
Military Implications:
If proved valid, this new technology might speed up the transition to fuel cell-powered vehicles. The military should consider following, encouraging, and eventually implementing this new discovery as part of its efforts for a most cost-effective and environmental friendly transportation system. Cautionary Note: The article does not discuss toxic and physical safety hazards of wide use of ammonia. This substance is not the equivalent of gasoline and diesel fuel in these respects. Further, ammonia will be stored and transferred at well above atmospheric pressure.
Sources:
Nanotechnology Used to Produce Hydrogen for Fuel Cell Cars
http://www.ens-newswire.com/ens/apr2005/2005-04-11-09.asp#anchor7 (by subscription only)

Decomposition of Ammonia and Hydrogen on Ir Surfaces: Structure Sensitivity and Nanometer-Scale Size Effects. J. Am. Chem. Soc., Vol. 127, No. 14: April 13, 2005
http://pubs.acs.org/cgi-bin/abstract.cgi/jacsat/2005/127/i14/abs/ja042617c.html (abstract; full article by subscription only)

Korean Nanotechnology production techniques Cut Costs and Environment Impact
Military Implications
The military should closely follow this line of research and be in a position to put it to use to reduce pollution from nanomaterials production.
Sources:
Green breakthrough for nanoscience
News story: http://www.cnn.com/2004/TECH/12/06/explorers.nano/

South Korean scientists report nano-technology breakthrough
http://www.spacedaily.com/2004/041129085754.i9qj56tc.html

'On-Off Switch' for Buckyball (C60) Toxicity
Military Implications:
This discovery is a significant step forward for nanotechnology development, possibly reducing environmental and health concerns related to buckyball toxicity. Since there are likely to be many military applications for buckyballs (C60), the military should consider building on these research efforts.
Source:
Rice finds 'on-off switch' for buckyball toxicity
Public release date: 24-Sep-2004. Contact: Jade Boyd, jadeboyd@rice.edu, Rice University
http://www.eurekalert.org/pub_releases/2004-09/ru-rf092404.php

Zircon Options for Nuclear Waste Storage
Military Implications:
Due to the military's interest in improving logistics for nuclear waste disposal and management, it should join this effort to solve the nuclear safety storage problems. Successful tests could re-invigorate nuclear energy production.
Sources:
Crystal Options for Nuclear Waste
Jo Twist, BBC News Online, 18 July 2004
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/3896463.stm (article stored for a limited time on BBC website)

Biodegradable Mobile Phones
Military Implications:
This technology should be considered to help reduce the military's environmental footprint, not only for discarded cell phones, but for other equipment as well.
Source:
Researchers compost old mobile phones & transform them into flowers
http://www.eurekalert.org/pub_releases/2004-11/uow-rco112904.php

Degradable Plastic Could Reduce Environment Footprint
Military Implications
The military should investigate and follow up on this environmentally significant research, seeking applications for it in training and battlefield materiel.
Source:
Clues to Breaking Down Plastics
http://www.washingtonpost.com/wp-dyn/articles/A23499-2005Apr3.html?referrer=email (article stored for a limited time on the website)

Nanomaterials Help Stop Bullets
Military Implications:
The military should explore such ceramic nanotech approaches, while conducting research on how this might be done without nanofibers breaking off and entering the body with as yet unknown bio-accumulative effects.
Source:
Nanomaterials help stop bullets. By Alan Osborn 23/11/2004
http://www.prw.com/main/newsdetails.asp?id=3444

Technologies that Could Trigger New Forms of Arms Race

Chinese Use of Weather Modification Technologies Might Cause Disputes
Military Implications:
Apparently, the Conventions on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD) don't apply in these cases. However, the severity of water shortages on large areas and the transboundary nature of clouds represent a serious danger of conflict between drought-plagued regions. Also, if these practices get to be used on a larger scale, it is reasonable to consider that the ENMOD Convention will be extended to general (not just military and hostile) use. [See also related item Weather Modification Technologies in the October 2003 Environmental Security monthly report.]
Source:
Hey! You! Get off my Cloud. Reuters, 15 July 2004
http://www.enn.com/news/2004-07-15/s_25857.asp (article available for a limited time on the website)

Nanobacteria in Clouds could Spread Disease
Military Implications:
Research is needed to understand the potential for nanobacteria in weather modification and biological warfare and its prevention. The military in cooperation with WHO and the CDC should explore how to understand this phenomenon and monitor nanobacteria in the atmosphere. Although the Convention on the Prohibition of Hostile Use of Environmental Modification Techniques applies, given the language of the treaty and the difficulty of proving non-compliance, enforcement could be difficult, if nanobacteria were ever to be used as weapons.
Sources:
Nanobacteria in clouds could spread disease, scientists claim. EurekAlert, 6-Apr-2005
http://www.eurekalert.org/pub_releases/2005-04/cu-nic040605.php

Nanobacteria in Clouds May Spread Diseases Around the World
http://www.ens-newswire.com/ens/apr2005/2005-04-11-03.asp (by subscription only)

B. Preventing or responding to environmentally caused conflicts

FOOD SHORTAGE

***Biodiversity for Food Security* is the theme of this year's World Food Day**
Military Implications:
The theme of October 16, 2004 World Food Day "Biodiversity for Food Security" reveals the official recognition of the link between food and security. The relevant military should be encouraged to see the show on "Biodiversity for Food Security." produced at George Washington University Television in cooperation with FAO's Washington office and possibly contribute to some of the issues covered in the program.
Source:
Biodiversity for food security
http://www.fao.org/newsroom/en/news/2004/51140/index.html

WATER

Decade *Water for Life* Launched
Military Implication:
The military is increasingly aware of potential water-related conflicts and is involved in mitigation of water issues in conflict and post-conflict regions. However, the military should use this new decade for water as an opportunity to cooperate with international, regional and local organizations in designing policies and strategies that might help prevent water-related conflicts, as a way to reduce demands on military resources.
Source:
Water for Life website: http://www.un.org/waterforlifedecade/index.html
UN News: http://www.un.org/apps/news/story.asp?NewsID=13724&Cr=water&Cr1=

UN Conference *Water for Food and Ecosystems*
Military Implications
It is likely that the conference will trigger new local, national, and multi-lateral institutional and managerial arrangements to improve sustainable water management ecosystems. The military should seek partnerships with local organizations to participate in these activities. It might initiate research and demonstration of advanced technologies for re-use of wastewater, efficient pumps and water sources, and reducing water waste. Relevant military personnel might contact FAO and work together in critical regions for implementing best practices.
Sources:
Water for food and ecosystems conference http://www.fao.org/ag/wfe2005/index_en.htm

New strategies needed to secure food and safeguard ecosystems
http://www.fao.org/newsroom/en/news/2005/89615/index.html

Summary of the 23rd session of the UNEP Governing Council/Global Ministerial Environment Forum 21-25 February 2005 http://www.iisd.ca/vol16/enb1647e.html

World Water Week Warns of Wars over Water

Military Implications:

The military should increase military-to-military training in rapid response to water crises and in long-term water development and management, keep abreast of bilateral and international water-related negotiations and treaties, and monitor water scarcity and stress points over common water supplies as potential leading indicators of conflict. All countries are supposed to report to the UN on their progress on meeting the UN Millennium Development Goals, which includes goals for water and sanitation. As a result, some might welcome improving their militaries' efforts in these areas.

The military should continue to set an example for water conservation and fresh water production, and encourage improved water management by local authorities. In addition, military doctrine should incorporate the principle of sustainable production and use of water by military forces in order to reduce exacerbation of the problem of water scarcity during deployments. For example, the Army's MIOX that produces about one gallon of clean drinking water from exhaust emissions for every hour of standard vehicle operation should be considered for integration into the design for the Army's future combat vehicles.

Sources:

Scientists Say Risk of Water Wars Rising. Reuters, 23 Aug 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/26728/story.htm

World meeting goals on safe drinking water, falling behind on sanitation: UN
Jonathan Fowler, Canadian Press, Thursday, August 26, 2004
http://www.canada.com/health/story.html?id=e69e9445-1621-47b9-92d0-aba5d040c3ff (article available for a limited time on the website)

One Billion People Still Drink Unsafe Water – UN
http://www.planetark.com/dailynewsstory.cfm/newsid/26800/story.htm

Generating Water from exhaust
http://www.rdecom.army.mil/rdemagazine/200311/itf_tardec_water.html

Prospects for Conflict over Water Rise in Several Regions

Military Implications:

Military plans in these regions should be reviewed to see if further steps (training, technology transfer, policy dialogue, options for international collaboration, etc.) could be taken to prevent potential conflict.

Sources:

An Overview of Glaciers, Glacier Retreat, and Subsequent Impacts in Nepal, India and China.
http://www.panda.org/downloads/climate_change/himalayaglaciersreport2005.pdf

Once mighty Jordan reduced to a trickle
http://www.guardian.co.uk/israel/Story/0,2763,1433272,00.html (article stored for a limited time on the website)

Risk of armed conflict over Nile water
http://www.mg.co.za/articlepage.aspx?area=/breaking_news/breaking_news__africa/&articleid=199809# (article stored for a limited time on the website)

Promoting equitable and sustainable use of Nile water resources
http://www.fao.org/newsroom/en/news/2005/90101/index.html

Military Implications:
Environmental concerns should be more integrated into military futures planning such as the Joint Operations Environment working draft. Since about 40% of humanity lives in the 260 major international water basins shared by more than two countries and the water tables are falling on all continents, the potential for water conflicts is increasing. This is likely to lead to greater demand for military intervention to mitigate such conflicts.

At Least 14 Killed as Kenyan Tribes Clash over Scarce Water Supplies.
Associated Press, January 25, 2005 http://www.enn.com/today.html?id=6991

India, Pakistan Hold Crucial Talks over River Row. Reuters, January 06, 2005
http://www.enn.com/today.html?id=6875

Pakistan says water talks failure will affect peace with India. Islamabad (AFP) January 10, 2005
http://www.spacewar.com/2005/050110135746.m7x8ys5f.html

Military Implications (Bangladesh, Nepal and India)
Military-to-military aid should include methods to address various water conflict scenarios in this region and military analysts should monitor discussions on this subject in the context of long-range regional environmental security issues.
Sources:
Environmentalists decry India's river-linking project
Julhas Alam, Associated Press, 24 Aug 2004
http://www.enn.com/news/2004-08-24/s_26667.asp (article available for a limited time on the website)

S Asian peoples' network for water to face river linking
The New Nation, 22 Aug 2004
http://nation.ittefaq.com/artman/publish/article_11699.shtml (article stored for a limited time on the web site)

China River Basin Issues
Military Implications:
Food and water scarcity in densely populated areas of China could produce mass migration with worldwide consequences. The military should cooperate with international, regional, and local organizations (training, technology transfer, policy dialogue, options for international collaboration, etc.) to prevent potential conflict.
Sources:
Promoting Sustainable River Basin Governance—Crafting Japan-U.S. Water Partnerships in China http://www.ide.go.jp/English/Publish/Spot/28.html

CEF and Japanese partner Institute of Developing Economies publish book on promoting river basin governance in China
http://www.wilsoncenter.org/index.cfm?topic_id=1421&fuseaction=topics.item&news_id=117302

Major Yangtze tributary drying up due to dams, environmental group says
http://www.terradaily.com/2005/050423031949.iz5t0ynm.html

Project to Address the Aral Sea Disaster

Military Implications

The relevant military personnel at CENTCOM should get in touch with this project, and evaluate its relationships to military planning and operations in the area. They should also offer their assistance to the World Bank and the Uzbek government in both providing help and advice, and coordinating on related environmental matters with military operations in the country.

Source:

Uzbekistan: World Bank funds water project in Aral Sea region
http://www.irinnews.org/report.asp?ReportID=39459&SelectRegion=Central_Asia&SelectCountry=UZBEKISTAN

New Reports on Water-related Issues

Military Implications:

These sources should be made known to relevant military personnel for use in updating and improving plans to address water-related security problems. Relevant military personnel should study such reports, as they are likely to be increasingly involved in mitigating water-related conflicts, and improving water conditions in conflict and post-conflict regions. Also, relevant military personnel should collaborate in the design of better water management policies and their implementation and enforcement mechanisms to help prevent water-related conflicts as a way to reduce demands on military resources. Since the public management infrastructure in much of the developing world is the military, then implications for military-to-military assistance should be considered.

Sources:

Regional Water Cooperation as Confidence Building: Water Management as a Strategy for Peace, by Aaron T. Wolf
http://www.sustainable-peace.org//download/EDSP_Papers/Water_Management_as_a_Strategy_for_Peace_72.pdf

Environmental Conflicts and Regional Cooperation in the Lempa River Basin: The Role of Central America's Plan Trifinio, by Alexander López
http://www.sustainable-peace.org//download/EDSP_Papers/Environmental_Conflicts_and_Regional_Cooperation_in_the-Lempa_River_Basin_72dpi.pdf

Water Information Center of the NAS: http://water.nationalacademies.org/

Water, Conflict, and Cooperation
Policy Brief by Alexander Carius, Geoffrey Dabelko, and Aaron Wolf

http://www.wilsoncenter.org/topics/pubs/ecspr10_unf-caribelko.pdf

Making Water a Part of Economic Development: The Economic Benefits of Improved Water Management and Services
http://www.siwi.org/downloads/Reports/CSD_Economics.pdf

UNEP's Governing Council Focuses on Water and Sanitation
Military Implications:
Although the topics covered in the speeches given at this session are not new, the commitment to collective action to ensure access to safe and sufficient water is a further step towards sustainability. Military forces operating overseas will need to be cognizant of the host nations' policies with respect to water access and sanitation, and military operations will need to take into account the implications of military water withdrawals and distribution on local water conservation and sanitation efforts.
Source:
Eighth Special Session Of The United Nations Environment Programme's Governing Council/Global Ministerial Environment Forum
Press release, 29 March 2004, http://www.iisd.ca/vol16/enb1632e.html

Could large-scale ocean zoning prevent conflicts?
Military Implications:
The trends in US coastal states, Canada, New Zealand, Australia and elsewhere point to the eventual possibility of large-scale ocean-wide zoning one day in the future. In consultation with such organizations as the U.S. Commission on Ocean Policy, military planners should participate in designing alternative ocean zoning scenarios and plans in anticipation of a steady increase of international treaties building one on the other toward large-scale ocean zoning. Both readiness training resource availability and conflict reduction potential could be served thereby.

Source:
Zoning Rules to Protect Marine Resources
by Daniel Hendrick
http://www.emagazine.com/view/?2300 (by subscription only)

NATURAL DISASTERS

Natural Disasters as an Environmental Security Issue
Military implications
Since the military has the technology, knowledge, and equipment to assist in building the early warning system for reducing consequences of natural disasters, relevant personnel should be involved in U.S. preparations for the World Conference on Disaster Reduction. Special attention should be given to expanding work with international, regional and national partners on prevention and preparedness initiatives in areas where environment-related conflicts are more likely to occur, both in the near and long term.

Sources:
Timely Access And Response To Accurate Early Warnings Are Crucial For Minimizing Impacts Of Natural Disasters. WMO, International Day for Disaster Reduction, 13 October 2004
http://www.wmo.ch/web/Press/Press715_E.doc

Improve Chain Of Information, Decision-Making In Preparing For Recurring Hazards, Says Secretary-General In Disaster Reduction Day Message
http://www.un.org/News/Press/docs/2004/sgsm9520.doc.htm

World Disasters Report 2004
International Federation of Red Cross and Red Crescent Societies (IFRC)
http://www.ifrc.org/publicat/wdr2004/

Analysis - Global Warming Seen as Security Threat
http://www.planetark.com/avantgo/dailynewsstory.cfm?newsid=27838

Additional Environmental Security Role for the UN Security Council

Military Implications
Military liaisons with the UN Department of Peacekeeping Operations should be made aware of potential environment-related resources of the military that could be made available. Future UN Peacekeeping operations might be triggered by environmental degradation, and such operations could include environmental rehabilitation as well as conflict resolution/prevention. Military training officers might include environment-related factors for those who might be deployed in UN peacekeeping operations (the Red Cross has produced some environmentally relevant manual-like materials that should be consulted in this regard).
Sources:
"Solving the Environmental Problems of the 21st Century" lecture by Dr. Klaus Töpfer Georgetown University, October 7, 2004

The United Nations Environment Programme's Klaus Toepfer Launches Understanding Environment, Conflict, and Cooperation
http://www.ems.org/nws/2004/10/04/the_united_natio

OSCE Workshop on Environmental Risks and Security in Earthquake Areas
Military Implications:
The U.S. military in the area should cooperate where possible with local and regional organizations in assisting with their work on awareness and preparedness initiatives.
Source:
OSCE Office in Yerevan holds workshop on environmental risks and security in earthquake areas http://www.osce.org/news/show_news.php?ut=2&id=4462

Tsunami Triggers an Early Warning System for Indian Ocean

Military Implications

Relevant military logistics personnel should evaluate the current rescue and relief efforts for the Tsunami and make recommendations to update previous military plans to support disaster responses for the Indian Ocean basin. Military liaisons with Department of State and the National Oceanic and Atmospheric Administration (including other government systems linked to NOAA) should be involved in planning for the Indian Ocean early warning system. While international interest is high, proposals for an improved global system for early warning of natural disasters should be considered at the January 2005 World Conference on Disaster Reduction. Military authorities should advise delegates to the conference about possibilities for globally connecting their network of sensors and possibly feeding the information to an international agency linked to national agencies able to issue timely evacuation warnings. Assuming the military will be included in any massive reconstruction efforts, relevant military planners should use this opportunity to apply the new "Army Strategy for the Environment" as much as possible. Some items from this strategy include: "The Army will provide the necessary training in sustainable environmental principles and practices to better use our resources…We will apply an ecosystem-based approach to manage natural resources and will collaborate with stake-holders to protect ecosystems… We will leverage our purchasing power to favor environmentally sustainable products…"

Sources:

Experts Say Tsunami Warning System Would Have Saved Lives
http://www.voanews.com/english/2004-12-28-voa5.cfm

Japan pledges $500 million in tsunami aid (includes technical support for Tsunami Early Warning System to be headquartered in India)
http://seattlepi.nwsource.com/national/apasia_story.asp?category=1104&slug=Tsunami%20Japan (article stored for a limited time on the website)

Australia Offers to Set Up Indian Ocean Tsunami Warning System
http://www.bloomberg.com/apps/news?pid=10000081&sid=auLhWSUbIhnU&refer=australia

India says will set up tsunami warning system
http://www.alertnet.org/thenews/newsdesk/DEL301680.htm (article stored for a limited time on the website)

World Conference on Disaster Reduction http://www.unisdr.org/wcdr/

The Army Strategy for the Environment
https://www.asaie.army.mil/Public/ESOH/doc/ArmyEnvStrategy.pdf

Tsunami Triggers an Early Warning System for Indian Ocean and Beyond

Military Implications:

[Same as previous] Relevant military logistics personnel should evaluate the current rescue and relief efforts for the recent tsunami and make recommendations to update previous military plans to support disaster responses for the Indian Ocean basin. Military liaisons with the Department of State and the National Oceanic and Atmospheric Administration (including other government systems linked to NOAA) should be involved in planning for the Indian Ocean early warning system.

Sources:
World Conference on Disaster Reduction
http://www.unisdr.org/wcdr

UN Ready for Indian Ocean Tsunami Alert System by 2006
http://www.planetark.com/dailynewsstory.cfm/newsid/28972/story.htm

Scientists Get To Work On Early Warning System After Tsunami Disaster
http://www.spacedaily.com/news/tectonics-05k.html

NGOs say disasters summit dropped the ball. AlertNet, By Tim Large, 22 Jan 2005
http://www.alertnet.org/thefacts/reliefresources/11063809863.htm

Germany Plans Disaster Early Warning Conference.
http://www.planetark.com/dailynewsstory.cfm/newsid/28799/story.htm

EU Considers Creating Disaster Reaction Force
http://www.planetark.com/dailynewsstory.cfm/newsid/28811/story.htm

Regional Governance Key for Tsunami Early Warning and Recovery
Military Implications:
Military personnel involved in early warning system design and recovery activities should be aware of the Lake Toba Call and consider the recommendations in planning, strategies, and activities.
Sources:
Lake Toba Call Emphasizes Coop Among Regional Governments In Overcoming Tsunami
http://www.antara.co.id/en/seenws/?id=1733

Network of Regional Governments for Sustainable Development Summit
http://www.dambaintra.org/toba.html

MIGRATION

UN Establishes New Agency for Internally Displaced People
Military Implications
The military has been involved in humanitarian and disaster relief activities for a long time. However, the increasing numbers of internally displaced people, coupled with the increasing destructive capability of weapons available to small numbers of people, make this issue increasingly important. The new UN Office will offer internationally organized priorities and actions that the military should consider. The military should also seek collaboration with the new organization in planning its logistics and actions.
Source:
New UN office seeks to better address plight of 50 million uprooted people
http://www.un.org/apps/news/printnews.asp?nid=11412 (article available for a limited time on the website)

South Asian Environmental Migration
Military Implications:
Although the source is an editorial, it does cite recent studies that identify the magnitude of the environmental migration issue on the South Asian subcontinent. Given the long-standing conflicts within the region, environmental migration may be a confounding factor in attempting to pursue conflict resolution policies in the region. Monitoring of environmental migration patterns in the region might provide some insights into root causes that the military could address through its theater engagement plans.
Source:
Environmental Refugee
Suresh Bhattarai, The Weekly Telegraph, 14 April 2004
http://www.nepalnews.com.np/contents/englishweekly/telegraph/2004/apr/apr14/views.htm

C. Protecting the environment due to the moral value of the environment itself

INTERNATIONAL TREATIES THAT HAVE BEEN COMING INTO FORCE SINCE APRIL 2004

African Rain Forest Protection—International Treaty
Military Implication:
Where military-to-military assistance is appropriate in Africa, use of military satellites, training in ground-truthing, and image analysis might be considered to help in the monitoring of treaty compliance.
Sources:
African leaders sign landmark forest treaty
http://www.smh.com.au/news/Environment/African-leaders-sign-landmark-forest-treaty/2005/02/06/1107625045175.html?oneclick=true (by subscription only)

Forests Central To Anti-Poverty, Sustainable Development Efforts, Says Secretary-General In Message To Brazzaville Summit http://www.un.org/News/Press/docs/2005/sgsm9707.doc.htm

Gothenburg Protocol on Air Pollution to Enter into Force on May 17
Military Implications:
The military should study the new requirements and adjust its equipment and practices to comply with the Gothenburg Protocol. 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

Air Pollution Protocol Boosted by U.S. Ratification. Executive Body wraps up jubilee session
http://www.unece.org/press/pr2004/04env_p21e.htm

Protocols to the Convention on Long-range Transboundary Air Pollution
http://www.unece.org/env/lrtap/status/lrtap_s.htm

EU Greenhouse Gas Emission Trading Scheme (EU ETS)

Military Implications:

While regulatory and financial impacts will take time to evolve, military energy and environmental managers in Europe should track and be prepared for cost increases for purchased energy and for requests to reduce carbon emissions. Host governments will be under pressure to behave as well as industry, but probably without mechanisms for owning emission rights. Energy acquisition legal staff should assess the EU regulations for potential to generate unusual impacts on military energy procurement and production.

Sources:

The European Union Greenhouse Gas Emission Trading Scheme (EU ETS)
http://europa.eu.int/comm/environment/climat/emission.htm

EU Launches Pioneering Emissions Trading Scheme. By Stuart Pearson, Reuters News Service, January 4, 2005 http://www.planetark.com/dailynewsstory.cfm/newsid/28777/story.htm

FACTBOX - EU Launches CO2 Emissions Trading on Jan 1. Reuters News Service, Jan 4, 2005
http://www.planetark.com/dailynewsstory.cfm/newsid/28776/story.htm

Kyoto Protocol Came into Force on February 16, 2005

Military Implications:

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 treaty. 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:

UN's Kyoto treaty against global warming comes into force
http://www.un.org/apps/news/story.asp?NewsID=13359&Cr=global&Cr1=warm

The Kyoto Protocol Enters Into Force. UNEP article
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=426&ArticleID=4719&l=en

Climate change talks heat up as clean technology emerges
http://www.timesonline.co.uk/article/0,,2-1486338,00.html (article might be available for a limited time on the website without subscription)

Previous Items Related to Kyoto Protocol

Kyoto Protocol Will Enter Into Force on February 16, 2005

With the Russian Federation's ratification on November 18, the Kyoto Protocol will enter into force on February 16, 2005. UN Secretary-General Kofi Annan characterizes the Treaty's entry into force as "a historic step forward in the world's efforts to combat a truly global threat." The Treaty commits participating industrial countries to reduce their combined emissions of six greenhouse gases by 5.2 percent below 1990 levels by 2012.

Sources:

UN Secretary-General receives Russia's Kyoto Protocol ratification
http://unfccc.int/press/interviews_and_statements/items/3290.php

Kyoto ratification: pressure rises on US, China, India
http://www.terradaily.com/2004/041118143923.nbe17rdb.html

Russian Vote Will Bring Kyoto Protocol Into Force

The Kyoto Protocol will come into force 90 days after Russia deposits the formal instrument of ratification with the Secretary-General of the UN. Being ratified by the Russian State Duma on October 22, 2004 and by the Federation Council on October 27, it needs just Putin's stamp of approval. The Treaty commits participating industrial countries to reduce emissions of greenhouse gases by 5.2 percent below 1990 levels by 2012. The six greenhouse gases covered are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).

Sources:

Russian Duma ratifies Kyoto protocol
http://www.esa.int/export/esaEO/SEM0IN0A90E_index_0.html

Russia forced to ratify Kyoto Protocol to become WTO member
http://english.pravda.ru/main/18/88/354/14495_kyoto.html

China hails Russian State Duma's approval of Kyoto Protocol
http://news.xinhuanet.com/english/2004-10/28/content_2151090.htm

Oil Spills Fines Increase—effective March 2005

Military Implications:

Military vessels (mostly fuel supply) could be affected by the new regulations and hence the military should continually improve ships' design, navigation, and maintenance. It is also reasonable to expect that the IMO will extend the compensation policy for oil spills to any kind of toxic or dangerous material spills, as the EU already does for European waters. The military should ensure that its vessels comply with all the requirements and make recommendations to their representatives at the IMO.

Sources:

New fund heralds better deal for oil pollution victims
Supplementary Fund for Compensation for Oil Pollution Damage to enter into force
http://www.imo.org/Newsroom/mainframe.asp?topic_id=848&doc_id=4531

EU Agrees Deal on Punishing Ship Pollution

Reuters News Service, December 10, 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/28516/story.htm

Plant Genetic Resources for Food and Agriculture—FAO International Treaty—Entered into Force in June 2004
Military Implications:
The military should use this new FAO treaty to increase awareness of sustainable agriculture as part of conflict prevention and humanitarian assistance in these areas.
Sources:
Biodiversity for food security http://www.fao.org/newsroom/en/news/2004/42621/index.html

International plant genetic treaty becomes law
http://www.fao.org/newsroom/en/news/2004/47027/index.html

The EU Ended its Ban on Genetically Modified Foods
Military Implications:
This first step might eventually ease the present restrictions of introducing GM food in the EU region. However, the rigorous labeling legislation [see item *8.3.1 European Parliament Enacts Genetically Modified Food Labeling Rules*, July 2004 AC/UNU Millennium Project environmental scanning report] applies. Also, as more than 70 percent of the European consumers oppose GM foods, it is not likely that lifting the ban on other GM food products will follow soon.
Sources:
EU approves GMO canned maize, lifting 5-year ban
http://www.planetark.com/dailynewsstory.cfm/newsid/25176/story.htm

FACTBOX - Chronology of EU's ban on gene crops and foods
Belgium: May 20, 2004 http://www.planetark.com/dailynewsstory.cfm/newsid/25177/story.

Preventing Terrorist Access to Weapons of Mass Destruction—UN resolution
Military Implications:
Militaries will be called upon to contribute to their countries' reports to the United Nations. This is an opportunity to increase international cooperation in preventing terrorist acquisition of WMD. For example, militaries could help in the design of, and training in the use of, control systems that could prevent trans-border shipments of material that could be used for WMDs, and in bringing about improved law enforcement. As the UN resolution is based on a continuous collaborative update, the military should share information and expertise with the new committee to help deal with any gaps concerning this new international framework. Environmental monitoring technologies developed by the military for civilian and battlefield uses could be helpful.
Sources:
Security Council To Tackle Draft Resolution On Spread Of WMDs, President Says
New York, Apr 2 2004 5:00PM press release

Security Council Unanimously Votes To Keep WMDs Out Of Terrorist Hands
New York, Apr 28 2004 6:00PM press release

Threats From Non-State Users Of WMDs Discussed In UN Security Council
New York, Apr 22 2004 8:00PM press release)

Single-hull Oil Tanker Phase-out Entered into Force
Military Implications:
The military and its petroleum product shipping contractors should now comply with the new regulations.
Source:
Single-hull oil tanker phase-out - implementation of MARPOL Annex I regulations 13G and 13H http://www.imo.org/Newsroom/mainframe.asp?topic_id=1052

Stockholm Convention on POPs Came Into Force in May 2004
Military implications
Military personnel eliminating POPs might share their "best environmental practices" and "best available techniques" for the first Conference of Parties to the Convention (COP 1) next year. Other implications are the same as identified in previous reports: Although liability and redress provisions are not yet stipulated, it is likely that they will be addressed in the upcoming COPs. The military and their civilian contractors should follow the new developments and the addition of new POPs to the convention. Research for POP substitutes for use by both military and their civilian contractors should be pursued.
Sources:
UN-Backed Treaty Banning Most Dangerous Pollutants Comes Into Force Monday
UN Newsletter, New York, May 14 2004 12:00PM

UN Chemical Blacklist from May 17 Said Too Short
Planetark, By Alister Doyle, 17/5/2004
http://www.planetark.com/dailynewsstory.cfm/newsid/25124/story.htm

Governments Meet to Launch Global Campaign to Eliminate 12 Most Hazardous Chemicals
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=431&ArticleID=4784&l=en

Proposed Treaties and/or Changes to Existing Ones

UN Convention against Nuclear Terrorism
Military Implications:
The military should study the Convention to see what new opportunities have been make possible as a result of this international agreement for improving security; and, then recommend policy, training, and institutional or physical changes needed to achieve these opportunities.

Sources:
General Assembly Adopts Convention On Nuclear Terrorism; Will Open For Signature At Headquarters 14 September
Also Adopts 16 Budget Committee Texts; Peacekeeping Finance, Reform of UN Justice System among Issues Addressed
http://www.un.org/News/Press/docs/2005/ga10340.doc.htm

New Convention Against Nuclear Terrorism Bolsters Global Framework
http://www.iaea.org/NewsCenter/News/2005/conv_nuclterror.html

Treaty on Access to Clean Water
(Item's original title in the monthly report: **Gorbachev Calls for a Treaty to Declare Clean Water Access as a Human Right**)
Military Implications:
Although such a water treaty may not be adopted at the forthcoming UN Summit this September, the increasing number of people thinking in this direction plus all the activities that will be created for the "Decade for Water" may well make water access a human right inevitable. The military is likely to be increasingly involved in mitigating water-related conflicts, and improving water conditions in conflict and post-conflict regions. Relevant military personnel should collaborate in the design of an eventual water treaty and its implementation and enforcement mechanisms to help prevent water-related conflicts as a way to reduce demands on military resources. Since the public management infrastructure in much of the developing world is the military, then implications for military-to-military assistance to implement such a treaty should be considered.
Sources:
Commission on Sustainable Development, 13th meeting
Mikhail Gorbachev statement under Topic: Turning Political Commitments into Action: Interactive Discussions with UN organizations, Thursday, 21 April 2005
http://www.un.org/esa/sustdev/csd/csd13/csd13.htm

Gorbachev Urges Water Treaty; Criticizes U.S. Nuclear Policy
http://english.chosun.com/w21data/html/news/200504/200504220004.html (article stored for a limited time on the website)

Sustainable Development Commission Fails to Sustain Enthusiasm
http://www.ens-newswire.com/ens/apr2005/2005-04-26-03.asp (by subscription only)

Clean Air for Europe Initiative to Limit Air Pollution
Military Implications:
Military personnel stationed in EU Member States have to make sure that their equipment complies with the Clean Air Directive requirements and follow the outcomes of the CAFE plan and the possibility of new binding regulations.
Source:
Questions and Answers on new EU limits for air pollution

http://europa.eu.int/rapid/pressReleasesAction.do?reference=MEMO/05/15&format=HTML&aged=0&language=EN&guiLanguage=en

REACH Program Closer to Entry Into Force
Military Implications
It is possible that no REACH-controlled chemicals will be of military interest at the relatively high quantity threshold; however there should be an initial review, then periodic checks after REACH enters into force to ensure no accidental noncompliance will occur. Energetics comprise a set of materials that might be deployed or transferred in large quantities through military sales, for instance.
Source:
Prepare now for REACH compliance
By Beth Sirull, Chemical Engineering Progress, March 2005 (by subscription only)
www.cepmagazine.org

Leading Cancer Specialists call for REACH Strengthening
Military Implications:
Assessment of the REACH system's latest proposed changes and their impacts on the US Army Europe (USAREUR) and the European Command (EUCOM) 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:
Reaching for Control of Carcinogenic Chemicals
ENS, May 5, 2004
http://www.ens-newswire.com/ens/may2004/2004-05-05-02.asp (by subscription only)

REACH: An Unprecedented European Initiative For Regulating Industrial Chemicals report by Dr. Epstein, Chairman of the Cancer Prevention Coalition
http://www.preventcancer.com/publications/pdf/REACH_Tab_050304.pdf

EU Ratified the Stockholm Convention and Proposes new POPs to be banned
Military implications
The EU ratification does not change the way these substances are dealt with in the EU, as its legislation has already been aligned with the Convention, going even further with a regulation that bans the intentional production, marketing and use in the EU of the substances listed under the Convention so far. However, the military and their civilian contractors should follow the new developments and the possible addition of new POPs that the EU wants to recommend. Research for POP substitutes for use by both military and their civilian contractors should be pursued.

Some of these chemicals are used for insulation and flame-retardants. They may very likely be found in military equipment and other materiel formulations for other purposes; hence, an assessment should be conducted to determine their prevalence in the military inventories and the impact of these compounds being banned.

Sources:
EU ratifies global accord against dangerous pollutants
http://www.terradaily.com/2004/041118182847.skpqzazj.html

EU Wants to Expand 'Dirty Dozen' Chemicals List
Reuters, 12 Aug 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/26553/story.htm

Rotterdam Convention on PIC for Certain Hazardous Chemicals and Pesticides in International Trade to be Expanded

Military Implications:
Inventories of military use of listed chemicals and their international movements will have to be maintained by the military. In order to prevent short-notice crises, there will also have to be monitoring of other chemicals with strong future likelihoods of being recommended for control under the Convention. The military should also consider additional assessments to identify which chemicals will be problematic and to plan ahead for financial and technical support of research to find safer, permissible replacements. (The COP 1 website below contains links to the highly detailed references, but they are visible only by scrolling down.)
Sources:
COP 1. Documents of the Conference of the Parties at its First meeting (COP 1), Geneva, 20-24 September 2004 http://www.pic.int/en/ViewPage.asp?id=354

14 hazardous substances added to UN-backed treaty on pesticides
UN Press Release, September 24, 2004
http://www.un.org/apps/news/story.asp?NewsID=12028&Cr=pesticide&Cr1=

Mercury Pollution Global Assessment and Control

Military Implications:
The military should consider doing its part in curbing mercury pollution by promoting best available techniques for reducing mercury emissions, wastes and surplus stockpiles, and participating in partnerships with organizations and countries requesting assistance. (The Protocol on Heavy Metals—restricting the emission of cadmium, lead, and mercury—in the EU already entered into force in December 2003)

Sources:
Summary of the 23rd session of the UNEP Governing Council/Global Ministerial Environment Forum 21-25 February 2005 http://www.iisd.ca/vol16/enb1647e.html

Action on Heavy Metals Among Key GC Decisions
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=424&ArticleID=4735&l=en

EU Commission Proposes Ban on Mercury Exports
http://www.planetark.com/dailynewsstory.cfm/newsid/29298/story.htm

Countries reject global mercury treaty. By Roxanne Khamsi, News@Nature.com, 28 Feb. 2005
http://www.nature.com/news/2005/050228/full/050228-2.html (by subscription only)

Senators Urge U.S. Support for Global Mercury Treaty
Military Implications:
There is a growing grassroots movement in the U.S. and in other countries against mercury in all its forms. Since mercury is a known neurotoxin, it's likely that a global phase-out or at least strict regulation will occur. If the military has not done so already, it should document all mercury usage and create substitutes for equipment and processes (and their wastes) using mercury, and prepare safe disposal means at the end of the life cycle of mercury-using military equipment.
Source:
Dayton urges Bush to support global mercury treaty. BusinessNorth, 10/8/2004
http://www.businessnorth.com/pr.asp?RID=1113

EU to Ban the use of Cadmium in Batteries
Military implication:
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 use of any materiel that could release cadmium. [See item 7.3 Flexible solar cells could be sewn in clothing of this report, regarding a possible substitute for some applications.]
Source:
Council agrees minimal ban on cadmium in batteries. EurActive, December 21, 2004
http://www.euractiv.com/Article?tcmuri=tcm:29-133674-16&type=News

EU Environment Ministers Propose post-Kyoto Protocol Climate Policies
Military Implications:
If not already completed, the military should identify all its uses of fluorinated gases and seek substitutions. Since political regimes change, as do their environmental policies, it would be wise to anticipate future requirements, in addition to monitoring more near-term EU regulations on fluorinated gases.
Source:
EU Environment Ministers Limit Most Destructive Climate Gases
http://www.ens-newswire.com/ens/oct2004/2004-10-14-03.asp (by subscription only)

European Parliament Resolution to Protect Whales From Sonar
Military Implications
U.S. and European navies operating in European waters will have to comply with the new resolution. 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.) [For example in August 2003, the U.S. Navy was prevented by a federal judge in California from deploying a new high-intensity sonar system in peacetime because of the dangers it might pose to whales and dolphins.]

Source:
European Parliament Calls For Halt To High Intensity Naval Sonar Use
http://www.nrdc.org/media/pressreleases/041028a.asp

European Union *Polluter Pays* Law
Military Implications
Although the draft has a provision concerning military actions, the CoE and other civil-type activities seem not to be covered by the exception. The military should still remain alert to the necessity of avoiding environmental damage, in accordance with other agreements and requirements. Also, it is reasonable to speculate that environmentalist groups might demand that the exemption be withdrawn.
Sources:
Directive of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage
http://www2.europarl.eu.int/omk/sipade2?PUBREF=-//EP//NONSGML+JOINT-TEXT+C5-2004-0079+0+DOC+WORD+V0//EN&L=EN&LEVEL=2&NAV=S&LSTDOC=Y

E.U. Parliament approves law forcing polluting companies to pay for cleanups
Environmental News Network, April 1, 2004
http://www.enn.com/news/2004-04-01/s_22390.asp (article available for a limited time on the website)

Business slams EU pollution law http://news.bbc.co.uk/2/hi/business/3591335.stm

EU to Set Higher Targets for Cuts in Energy Consumption
Military Implications:
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.
Sources:
EU Lawmakers Want Higher Energy Use Cut in 2006-15
http://www.planetark.com/dailynewsstory.cfm/newsid/30512/story.htm

Presidency conclusions of the Brussels European Council
http://www.europa-eu-un.org/articles/en/article_4505_en.htm

EU New Law To Control Bird Flu Epidemics
Military Implications
[Same as under Bird Flu Outbreak Causes Urge for World Readiness] 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.

Source:
Europe Drafts New Law to Prevent Bird Flu Epidemics
http://www.ens-newswire.com/ens/apr2005/2005-04-28-04.asp (by subscription only)

Improved Compliance with Environmental Regulations

International Conference on Environmental Compliance and Enforcement
Military Implications:
Those developing military-to-military assistance in environmental security related issues should explore cooperation with INECE. Others with international environmental responsibilities within the military should consider appropriate participation in INECE projects and liaison with local INECE members to further the Army's Strategy for the Environment's goal to go beyond environmental compliance to sustainability.
See www.asaie.army.mil/Public/ESOH/doc/ArmyEnvStrategy.pdf. The military should consider participating in the INECE environmental compliance and enforcement indicators project to better measure and manage its own activities.
Sources:
INECE Conference Program with interactive feature of draft results available by clicking on the relevant section http://inece.org/conference/7/program.html and conference proceedings at: http://www.inece.org/conference/7/vol1/index.html

Marrakech Statement (Co-Chair and Executive Planning Committee Final Conference Statement) http://www.inece.org/conference/7/statement.html

UK Suggests Environmental Court similar to Australia and New Zealand
Military Implications:
Military personnel responsible for training and management of military attorneys should anticipate the establishment of such environmental courts by studying the environmental courts in Australia and New Zealand with special attention to relations with military operations in those countries.
Source:
Polluters targeted by court dedicated to environmental cases
http://news.independent.co.uk/uk/legal/story.jsp?story=555927

OECD Environment Ministers Call for more Ambitious Policies
Military Implications:
It is likely that new strategies and/or policies for strengthening environmental protection and environmental law enforcement will be set for OECD countries. Considering the U.S. military's widespread presence, the Army should monitor these new developments in order to be prepared to comply with the eventual new regulations.
Sources:
European ECO-Forum News Digest, April 27, 2004 (email newsletter)

Meeting of the OECD Environment Policy Committee at Ministerial Level (Paris, 20-21 April 2004) Implementation Of The OECD Environmental Strategy For The First Decade Of The 21st Century http://www.oecd.org/site/0,2865,en_21571361_27379763_1_1_1_1_1,00.html

Aarhus Clearing House Launched

Military Implications

The clearinghouse will help the Convention's implementation mechanism by providing access to information on national compliance and practices. 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.

Source:

Environmental democracy clearing house launched to highlight progress under the Aarhus Convention
http://www.unece.org/press/pr2004/04env_p12e.htm

Aarhus Convention clearinghouse http://aarhusclearinghouse.unece.org

Overview of Explosive Remnants of War Protocol

Military Implications

The military should study the implications this new Protocol has for future technology development, doctrine, and operations. The U.S. is party to the CCWC with some reservations [see http://disarmament2.un.org/TreatyStatus.nsf]. Likewise, attention needs to be given to the other topics under consideration.

Source:

Arms Control Today September 2004.Contending With Explosive Remnants of War Ambassador Chris C. Sanders
http://www.armscontrol.org/act/2004_09/Sanders.asp

EC Reports EU Environmental Law Enforcement by EU Members is Poor

Military Implications

It is expected that the survey's findings will persuade member states to improve their compliance with the EU's environmental laws. Given the US presence in the European countries and especially in the newly accepted and/or candidate states, the military should pay attention to its compliance with the EU's laws regardless of any given country's current level of compliance. Also, they should set an example in the countries still struggling with environmental law implementation. The parts of the report of most relevance to the military are Chapter 2 (current work of the European Union Network for the Community environmental law - IMPEL) and Chapter 3 (list and details of environmental Directives that Member States should have transposed during 2003).

Sources:
Implementation of EU environmental law: survey highlights serious shortcomings
Brussels, 19 August 2004, IP/04/1038
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/1038&format=HTML&aged=0&language=EN&guiLanguage=en

Fifth Annual Survey on the Implementation and Enforcement of Community Environmental Law 2003 http://europa.eu.int/comm/environment/law/as03.htm

European Law Enforcement Poor: Citizens Complaints Justified
http://www.ens-newswire.com/ens/aug2004/2004-08-23-01.asp (by subscription only)

Increasing Capacity of Space Technology to Assist Environmental Security
Military Implications:
The military should be part of this effort both as a contributor and beneficiary. Also, as presented in previous reports, these efforts can help enforcement of international treaties worldwide, calling for more attention to compliance with the international legal requirements even in the areas and/or regions that have been neglected. The military should make sure that in planning its strategies and actions it pays full attention to compliance with international environmental regulations.
Sources:
Director José Achache unveils new Observing the Earth website
http://www.esa.int/export/esaEO/SEMMDCM26WD_index_0.html

NASA launches Aura spacecraft to study atmosphereReuters, 16 July 2004
http://www.enn.com/news/2004-07-16/s_25913.asp (article available for a limited time on the website)

Nations Collaborate to Take Planet's 'Pulse'; Vast Network Will Monitor Environment
By Juliet Eilperin, Washington Post Staff Writer, Monday, July 26, 2004; Page A07
http://www.washingtonpost.com/wp-dyn/articles/A13737-2004Jul25.html (article stored for a limited time on the Washington Post website)

Global Earth Observing System of Systems

International Agreement on Earth Environmental Observing System
Military Implications
[Same as previous item] The military should be part of this effort both as a contributor and beneficiary. Also, as presented in previous reports, these efforts can help enforcement of international treaties worldwide, calling for more attention to compliance with the international legal requirements even in the areas and/or regions that have been neglected. The military has to make sure that in planning its strategies and actions it pays full attention to compliance with international environmental regulations.

Sources
Earth Observation Summit endorses action plan. Vietnam News Agency, 04/26/2004
http://www.vnagency.com.vn/NewsA.asp?LANGUAGE_ID=2&CATEGORY_ID=34&NEWS_ID=96606

47 Countries, European Commission Agree To Take "Pulse Of The Planet"
Milestone Summit Launches Plan to Revolutionize Understanding of How Earth Works
NOAA release: http://www.noaanews.noaa.gov/stories2004/s2214.htm

Plan for global Earth monitoring agreed at Tokyo summit
ESA News http://www.esa.int/esaSA/SEMTR077ESD_earth_0.html

Global Earth Observing System of Systems Gets 10-Year Mandate
Military Implications:
[Similar to previous items] The military is most probably part of this effort both as a contributor and beneficiary. GEOSS could help enforcement of international treaties worldwide, calling for more attention to compliance with the international legal requirements even in the areas and/or regions that have been neglected.
Sources:
Earth and Space Week: Third Earth Observation Summit agrees ten-year GEOSS action plan
http://www.esa.int/export/esaEO/SEMSABYEM4E_index_0.html

GMES, European Contribution To GEOSS Initiative http://www.spacedaily.com/news/eo-05n.html

GMES Website http://www.gmes.info/

NASA's Eyes in the Sky to Help Global Conservation
Military Implications:
Although mostly biodiversity-oriented, the project could also help enforcement of international treaties worldwide, calling for more attention to compliance with the international legal requirements even in the areas and/or regions that have been neglected. The military should collaborate and be part of this effort both as a contributor and beneficiary.
Source:
NASA's Eyes in the Sky to Help Global Conservation

http://www.planetark.com/dailynewsstory.cfm/newsid/28202/story.htm (article available for a limited time on the website)

Open Skies Treaty may also Serve Environmental Agreements
Military Implications:
Extending the Treaty's spectrum to environmental purposes opens the possibility of its providing an input to early warning systems for environmentally related conflicts, as well as international environmental treaty monitoring.
Sources:
Organization for Security and Co-operation in Europe

Forum for Security Co-operation, Press release, 15 October 2004
http://www.osce.org/item/8665.html

Open Skies Treaty—comprehensive overview. Federation of American Scientists
http://www.fas.org/nuke/control/os/

European Geosciences Union General Assembly
Military Implications:
The military should take part in these efforts, both as a contributor and beneficiary. Also, as presented above, these efforts can help enforcement of international treaties worldwide by calling for more attention to compliance with the international legal requirements even in the areas and/or regions that have been neglected. Anticipation of actual impacts will aid planning of military humanitarian support actions.
Sources:
ESA Press Release: http://www.esa.int/esaEO/SEMCEANQS7E_planet_0.html

EGU 2005 http://www.copernicus.org/EGU/ga/egu05/index.htm

Planetary Science Archive http://www.rssd.esa.int/index.php?project=PSA

SAFETY ISSUES

Nuclear Safety

UN Agency to Intensify Tracking of Illicit Nuclear Trafficking
Military Implications:
The IAEA Illicit Trafficking Database of incidents and its analysis provides a source of information for prioritizing military assistance with other countries in preventing, detecting and responding to illicit nuclear trafficking threats.
Source:
IAEA Database Tracks Illicit Trafficking of Nuclear Material Worldwide
http://www.iaea.org/NewsCenter/News/2004/iaea_database.html

Multilateral Approach Needed To Keep Nuclear Arms from Terrorists
Military Implication
Although not news, these facts reaffirm the need for better cooperation in and between military-to-military and military with international organizations to tackle nuclear material-safeguarding issues. Also, military forces stationed in vulnerable regions should consider contacting and offering assistance to the local and international organizations in place.
Sources:
UN panel says multilateral approach needed to keep nuclear arms from terrorists
http://www.un.org/apps/news/story.asp?NewsID=13424&Cr=nuclear&Cr1=proliferation

ElBaradei Warns Terrorists May Have Obtained Nuclear Weapon or Related Materials
http://www.nti.org/d_newswire/issues/2005_2_1.html#FD747EBA

Annan Seeks Overhaul of Security Measures
http://abcnews.go.com/International/print?id=496508 (article stored for a limited time on the website)

ElBaradei Proposes Measures to Strengthen NPT
http://www.nti.org/d_newswire/issues/2005_2_2.html#C612551A

Two suspected Indian drug peddlers carried weapons-grade uranium: report
http://www.spacewar.com/2005/050205055854.kge9z4b6.html

Russian Man Says Toxic Uranium for Weight Lifting
http://www.planetark.com/dailynewsstory.cfm/newsid/29273/story.htm

Increasing Calls for Improved Management of Nuclear Materials and Nonproliferation
Military Implications:
[Similar to previous items] Although not news, these facts reaffirm the need for better cooperation in and between military-to-military and military with international organizations to tackle nuclear material-safeguarding issues. Also, military forces stationed in the Balkans should consider contacting and offering assistance to the local and international organizations in place.
Sources:
UN atomic watchdog warns anew on nuclear weapons falling into terrorist hands
http://www.un.org/apps/news/story.asp?NewsID=13161&Cr=non-prolifiration&Cr1=

Dirty Bomb Attack More Likely to Occur Than Nuclear Terrorism Incident, Experts Say
http://www.nti.org/d_newswire/issues/2005/1/3/bde6bb3d-20dc-4213-9cd2-5429d3497099.html

Senate Bill Would Boost Nonproliferation Measures
http://actnow.saferworld.org/ctt.asp?u=3632810&l=76092

Conference On Disarmament Opens First Part of 2005 Session
http://www.un.org/News/Press/docs/2005/dcf446.doc.htm

Chechnya's Ticking Radiation Bomb. By Amina Bisaeva in Grozny (CRS No. 271, 26-Jan-05)
http://www.iwpr.net/index.pl?archive/cau/cau_200501_271_4_eng.txt

Armenian Atomic Dilemma. By Kerob Sarkisian in Yerevan, Sophie Bukia in Tbilisi and Idrak Abbasov in Baku. http://www.iwpr.net/index.pl?archive/cau/cau_200501_271_3_eng.txt

Black Blood of the Cold War. Optimist, Green Cross Russia
http://www.optimistmag.org/gb/0014/one.php?id=329 (by subscription only)

Massive landslides to sweep away spent nuclear fuel depositories in Kyrgyzstan
http://english.pravda.ru/printed.html?news_id=15293

Heightened security concerns about an old trade route
http://www.dailystar.com/dailystar/news/68634.php

Call for Comprehensive Nuclear-Test-Ban Treaty Entry into Force
Military Implications:
Although the US is not Party to the CTBT, the military should follow the new developments for future military operations planning, and eventually offer advice based on its experience, as the U.S. adhered to a unilateral testing ban. It is reasonable to speculate that the restructuring of the CTBT Organization decided in February, and the new international developments and pressure from the international community will help the Treaty's entry into force and eventually its enforcement.
Sources:
Comprehensive Nuclear-Test-Ban Treaty
Press conference
http://www.un.org/News/briefings/docs/2004/CTBT_040923.doc.htm

Entry into force of nuclear-test-ban treaty would strengthen security of states, peoples everywhere, Secretary-General says at launch of ministerial statement
http://www.un.org/News/Press/docs/2004/sgsm9499.doc.htm

Comprehensive Test Ban Treaty Organization to be Restructured
Military Implications:
[Similar to the previous item] Although the US is not Party to the CTBT, the military should follow the restructuring activity for future military operations planning, and eventually offer advice based on its experience, as the US adhered to a unilateral testing ban. The restructuring and forward progress of the CTBT Organization is expected to help the Treaty's entry into force and eventually its enforcement.
Sources:
Report Of The Twenty-Second Session Of The Preparatory Commission For The Comprehensive Nuclear-Test-Ban Treaty Organization
http://www.ctbto.org/bin/DeliverDoc?cmd=DisplayPDFFile&docid=1029

Twenty-Second Session of the Preparatory Commission concludes
Press Release, Vienna, Austria, 30 June 2004 http://www.ctbto.org

Changes Anticipated At Test Ban Treaty Organization
U.N. Wire, Thursday, July 22, 2004, By David Ruppe
http://www.unwire.org/News/328_426_26084.asp

U.S. and Allies Should Change Priorities Says New Book On Terrorism
Military Implications:
Military personnel responsible for nuclear terrorism issues and radioactive cleanup should study the recommendations.
Source:
The Four Faces of Nuclear Terrorism by Charles D. Ferguson and William C. Potter
ISBN 1-885350-09-0 Available from the Monterey Institute in California publicaffairs@miis.edu
Phone: (831) 647-3545 or Fax: (831) 647-3585

A Single set of International Standards is proposed for Nuclear Power Plants from Design to Decommissioning

Military Implications:

Relevant military personnel should review these recommendations as they are being developed to see if there are implications for their own nuclear materials management, as well as for opportunities to share lessons learned from military operations with the IAEA group in their deliberations to create a single set of international standards.

Source:

Safety Experts Endorse Single Set of International Standards for Nuclear Power Plants
Recommendations from the Conference on Topical Issues in Nuclear Safety, Beijing, China
Staff Report, 4 November 2004 http://www.iaea.org/NewsCenter/News/2004/topical_issues.html

Reducing Proliferation Risks by Converting 60 High- to Low-Enriched Uranium Research Reactors Could Take 10 Years

Military Implications:

If not already done, the military should contact the RERTR Program managed by the Argonne National Laboratory of the U.S. Department of Energy and see at what stage and how it could help with knowledge and expertise, and coordinate efforts on safety and security issues.

Source:

Curbing Potential Spread of Weapons-Grade Uranium Could Take 10 Years – IAEA
UN Press Release, New York, Nov 16 2004 11:00AM (email newsletter)

Progress Reported in Big Job to Convert Research Reactors from HEU Fuel
http://www.iaea.org/NewsCenter/News/2004/retr2004.html

Revival of Nuclear Power in Asia Poses Security Concerns

Military Implications

International military, intelligence, and police cooperation and scale of effort should be commensurate with this expansion of sources and volume of nuclear materials, especially considering the growing linkage of networks that support terrorists and transnational organized crime.

Source

Dyer: China syndrome: Asia leads in the revival of nuclear power
http://www.sltrib.com/opinion/ci_2432170

The Military Balance 2004-2005. International Institute of Strategic Studies, October 2004
Report buying information: http://www.iiss.org/conferencepage.php?confID=61

Editor's Foreword http://www.iiss.org/showdocument.php?docID=455

Think-tank warns of increased nuclear threat
By Peter Spiegel in London, Financial Times, October 19 2004 20:21
http://news.ft.com/cms/s/853207f0-2203-11d9-8c55-00000e2511c8.html (by subscription only)

China to Control NBC and Missile Exports, Possibly Join MTCR

Military Implications

The US military should build on this announcement by strengthening counterpart relationships for cooperative enforcement of international treaty provisions on NBC and missile technology proliferation, and other environmental areas. The announcement might also be a harbinger of China's increased support for worldwide environmental protection measures in general.

Sources:

China enacts laws to control missile exports
Daily Times (site edition), July 22, 2004
http://www.dailytimes.com.pk/default.asp?page=story_22-7-2004_pg4_5 (item available for a limited time on the web site)

International Cooperation to Address Radioactive Waste Emergent Disaster in Central Asia

Military Implications:

Military personnel in the region should continue, or perhaps expand, collaboration with the organizations in charge of the design and implementation of the action plan and share knowledge and expertise in finding clean-up solutions. High profile and serious collaboration should also help reduce tensions in the region, and prevent flash points as the extent of cancer and other impacts becomes better known.

Source:

First international conference on radioactive waste in Tajikistan opens in Dushanbe
http://www.osce.org/item/8720.html

UN Investigators Warn of Illegal Uranium Mining in DRC

Military implications

In addition to urging the DRC government to control mining operations within its territory, military and other government agencies, and international organizations should further develop a network to detect uranium and other potentially hazardous materials that illegally go into underground networks of organized crime and terrorists.

Source:

DRC mining 'a terror threat'
http://www.news24.com/News24/Africa/News/0,,2-11-1447_1560484,00.html (article stored for a limited time on the web site)

Israeli Dimona Nuclear Reactor

Military Implications:

Israel has not allowed IAEA inspectors to assess the safety of the Dimona reactor and has not signed the Nuclear Non-Proliferation Treaty (NPT). With the terrorist threat as well as the seismological activity of the region, European Command and Central Command may want to consider including a catastrophic release of radiation from the facility in their contingency planning for the region.

Source:
Israeli Scientific Research: Negev and Arava Aquifer Radiation Caused by "Dimona" Waste
Al-Jazeerah, 15 July 2004
http://www.aljazeerah.info/News%20archives/2004%20News%20archives/July/15%20n/Israeli%20Scientific%20Research%20Negev%20and%20Arava%20Aquifer%20Radiation%20Caused%20by%20Dimona%20Waste.htm (article available for a limited time on the website)

Russian Submarines Dismantlement an International Concern
Military Implications:
The environmental, economic, and military implications of the physical deterioration of the former Soviet nuclear powered fleet (and the potential release of contaminants into the environment) are well documented. Exacerbating this problem is the security component of the problem. Theft of radioactive materials (including fissile matter), as well as of chemical/biological agents, is considered the most significant security concern in Russia today. Potential assistance in the security of the fleet may be one option that the US military will wish to continue supporting, as funding for dismantlement issues are worked out.
Source:
Russia wants faster aid for "rotting" nuclear subs
Mark Trevelyan, La Sentinelle, 17 May 2004
http://www.lexpress.mu/display_article.php?news_id=18536 (article stored for a limited time on the web site)

FDA Approves Dirty Bomb Antidotes
Military Implications:
Dirty bombs and nuclear accidents have become an increasing concern. Although used on an experimental basis for several years, the drugs were not available to the public. As the military is the first resource to be deployed in any nuclear-related emergency situation, it should keep a major, permanent stock of the drugs beyond direct military needs, in order to render "first-aid' to the general population. Until emergency dispensations can be authorized, the general public will lack prescriptions required to obtain these drugs.
Source:
FDA Approves Dirty Bomb Antidotes
The Associated Press, ABCNEWS, Aug. 11, 2004
http://abcnews.go.com/wire/Living/ap20040811_1043.html (article available for a limited time on the website)

Small Disposable Nuclear Power Plants Raise Environmental Concerns
Military Implications
SSTAR could be an important energy source for developing countries and also could help meet rising military energy needs in different parts of the world. However, some organizations already question SSTAR safety and whether the developing world will be ready to accept and manage the reactors. Relevant military bodies should follow the course of this project and offer expertise

to the researchers and deployment organizations, to ensure safety at all phases: from planning to deployment and use. Also, the military should be aware of the locations of SSTARs, to avoid damage or to help mitigate environmental effects if protective casings were to be breached; for example, as the result of devices' presence in combat areas.
Sources
US plans portable nuclear power plants
New Scientist, September 03, 2004
http://www.newscientist.com/news/news.jsp?id=ns99996344

Nuclear Energy to Go; A Self-Contained, Portable Reactor
Lawrence Livermore, Los Alamos
http://www.llnl.gov/str/JulAug04/Smith.html

New reports from the National Academy of Sciences on Nuclear Safety
Military Implications:
Relevant military personnel should consider the reports' recommendations for improving preparedness, nuclear safety enhancement, strategy design, and policy recommendations. Military organizations stationed in Central Asia should collaborate with local and international non-proliferation organizations to help set strategies for better surveillance and safety of the nuclear facilities, and to tackle the nuclear smuggling threat.
Sources:
Monitoring Nuclear Weapons and Nuclear-Explosive Materials: An Assessment of Methods and Capabilities
http://books.nap.edu/catalog/11265.html

Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report
http://www.nap.edu/catalog/11263.html?onpi_newsdoc04062005

Nonproliferation, nuclear industry experts to discuss fuel cycle issues at conference near D.C. April 4-6
http://www.sandia.gov/news-center/news-releases/2005/all/isc05.html

Massive landslides to sweep away spent nuclear fuel depositories in Kyrgyzstan
http://english.pravda.ru/printed.html?news_id=15293

Heightened security concerns about an old trade route
http://www.dailystar.com/dailystar/news/68634.php

Chemical and Biological Safety Issues

Time to Strengthen the 1972 Biological Weapons Convention
Military Implications:
Without better international controls, terrorist access to biological weapons seems inevitable. Relevant military personnel should study the specific recommendations of the BWC experts

meeting and the Bioweapons Report, and make recommendations for the 2005 and 2006 meetings to strengthen the BWC.
Sources:
Swiss seek progress on biological weapons. swissinfo, Scott Capper, December 6, 2004
http://www.swissinfo.org/sen/swissinfo.html?siteSect=105&sid=5384973

Official Documents of the BWC experts meeting
http://disarmament2.un.org/wmd/bwc/annualmeetings/listofdocs-2004%20States%20Parties%20mtgs.html

Bioweapons Report 2004 report http://www.bwpp.org/documents/2004BWRFinal_000.pdf

Biological Weapons Convention Requires Updates to Match Technological Change, Group Says By David Ruppe, Global Security Newswire
http://www.nti.org/d_newswire/issues/2004_12_13.html#09F1B1D0

Australia to host bioterror workshop. News.com.au, December 22, 2004
http://www.news.com.au/common/printpage/0,6093,11760887,00.html (article available for a limited time on the website)

Chemical Weapons Convention Annual Conference
Military Implications:
The conversion of Libya's bioweapons plant for low-cost pharmaceuticals creates an interesting precedent for discussions with others such as North Korea. The military should consider making available to relevant international negotiators a prioritized list of countries and facilities that could be converted to low-cost pharmaceuticals, and a prioritized inventory of chemical weapons in post-conflict areas (such as those left by Japan in China). Those with responsibilities that might be affected by the results of the conference should visit the U.S. Chemical Weapons Convention website http://www.cwc.gov, noting national and international opportunities for assisting in compliance with the CWC regulations.
Sources:
Chemical Weapons Ban Conference papers (see events from Nov. 26, to Dec. 2, 2004)
http://www.opcw.org/html/global/ra_frameset.html

U.S. Chemical Weapons Convention website http://www.cwc.gov/

China urges Japan to destroy chemical weapons abandoned in China
http://news.xinhuanet.com/english/2004-11/29/content_2274747.htm

SIPRI 2004 Yearbook Warns about Genetic Weapons
Military Implications:
Although the threat of biological weapons is not new, this report reinforces the need to monitor biological research that has dual use potential. It also revisits several national security policy questions for military consideration, such as whether genetic data should be shared or classified, and whether the potential environmental benefits of genetics research may outweigh potential environmental threats.

Sources:
What's new at SIPRI
http://first.sipri.org/db/dbf/sipri_whats_new_disp

Peace Center Alerts Risk of New Biotech Weapons
Reuters, 9 June 2004

http://news.yahoo.com/news?tmpl=story&cid=570&u=/nm/20040609/sc_nm/arms_sipri_biotech_dc&printer=1 (article available for a limited time on the website)

Citation Statistics May Reveal Covert Weapons Work
Military Implications
The military should explore how this new technique could be used to detect violations, current or planned, of treaties governing work in prohibited areas such as WMD. The method also has obvious counter-intelligence implications.
Source
Bioweapons labs outed by own research
http://www.nature.com/nsu/040531/040531-1.html (by subscription only)

Chemical Munitions on San José Island, Panama
Military Implications:
The matter is still considered open by the Panamanian government. This lack of closure could affect future training and operations in the country. SOUTHCOM may want to consider facilitating disposal of the chemical munitions found to date, regardless of the resolution of the long-term liability issue in order to promote good relations within the region. This kind of situation might trigger international standards and regulations concerning the responsibilities of the parties and the limits of national sovereignty. The international community might assume the responsibility, obligation, and right to intervene with its best technologies to clean up and resolve the issue.
Sources:
Panama Pushes U.S. to Clean Up Chemical Weapons
Associated Press, 12 Aug 2004
http://www.nti.org/d_newswire/issues/2004_8_13.html#C073008D

Panama worried more U.S. chemical munitions left
Frances Robles, Miami Herald, 5 Aug 2004
http://www.kansas.com/mld/kansas/news/world/9325898.htm

Bioterrorism and Epidemics Threats

UNEP Report Warns of Increasing Changes in Infectious Disease Patterns due to Environmental Encroachments

Military Implications

Base commanders and other relevant military personnel should continue to seek cooperation with health and environmental scientists and the local public to review the impact of military land usage on infectious disease patterns, and develop plans to improve conditions.

Sources:

The Independent, Michael McCarthy, 22 Feb 2005
http://grist.org/cgi-bin/forward.pl?forward_id=4391

GEO Year Book 2004/5 http://www.unep.org/geo/yearbook/

UN Report Recommends New Powers to Combat Bioterrorism and Epidemics

Military Implications:

If the issues of sovereignty could be overcome, the new recommendations might find their way into a new set of regulations that would bind countries to open their borders to UN health officials as part of the response to epidemics and bioterrorism. The military should review and develop, as necessary, procedures (including cooperation with WHO, CDC, and other institutions), equipment, and training for such potential intervention requests.

Sources:

Biowar: U.N. to expand bioterror powers?
By Dee Ann Divis, The Washington Times, January 27, 2005
http://washingtontimes.com/upi-breaking/20050127-014400-9949r.htm

A more secure world: Our shared responsibility
(relevant to this item: V.B.4. Better public health defences, 142– 144 pp. 44; and recommendation 37, pp. 82) http://www.un.org/secureworld/

Interpol Warns World Unprepared for an Eventual Bio-terrorist Attack

Military Implications:

The military could help realize a better coordination between international organizations dealing with international threats. There should be a unique framework with sets of regulations and intervention strategies in case of the outbreak of an epidemic and/or a bioterrorism attack. Similarly to the previous item, it is likely that new regulations would bind countries to open their borders to health and investigation officials as part of the response to epidemics or bioterrorism.

Source:

Interpol sounds bio-terror alarm
http://news.bbc.co.uk/1/hi/world/europe/4289485.stm (article available for a limited time on the website)

Bioterrorism, Preparedness, Attack and Response 4
Military implications:
Military health provision systems are likely to be affected by policies arising from this book, as may doctrine for combating bioterrorism. The book is available via the Web link below.
Source:
Bioterrorism, Preparedness, Attack and Response
ISBN: 0-7623-1105-3, 392 pages, publication date: 2004 Imprint: ELSEVIER Price: $95
http://www.elsevier.com/wps/find/bookdescription.cws_home/702791/description

***The Threat of Pandemic Influenza: Are We Ready?* Workshop Summary (2005)**
Military Implications:
Military personnel in all sectors should be up-to-date with the results of pandemic-related research and strategies and eventually contact military representatives who participated in this and related workshops for exchange of expertise and improved planning, in case of an eventual outbreak and/or best preventive actions at its worldwide units and in the homeland. Also, military stationed in different parts of the world should disseminate the knowledge and best practices and strategies to improve those nations' preparedness. A key tool for maintaining this preparedness and obtaining current health threat information is Health Information Operations (HIO) Update, which is issued weekly by the US Army Center for Health Promotion and Preventive Medicine.
Sources:
The Threat of Pandemic Influenza: Are We Ready? Workshop Summary (2005)
http://www.nap.edu/catalog/11150.html

Vietnam Family of Five Confirmed With Bird Flu
http://www.planetark.com/dailynewsstory.cfm/newsid/30138/story.htm

South Korea Suspects North's Bird Flu Outbreak Extensive
http://www.planetark.com/dailynewsstory.cfm/newsid/30137/story.htm

[HIO-UPDATE] Health Information Operations Update, (Dated Weekly)
http://chppm-www.apgea.army.mil/Hioupdate/

Bird flu Will be a Much Bigger Killer than SARS, According to WHO
Military Implications:
It seems better to overreact to these projections about bird flu's impacts than underreact. Pig infection rates should be monitored as a lead indicator for human infections, and liaison should be established with the two U.S. companies and the Japanese firm that are working on a vaccine against H5N1, to fund early mass production, so that some vaccines could justifiably be available for force protection.
Source:
Birdflu Far More Deadly than SARS, WHO Says
http://www.planetark.com/dailynewsstory.cfm/newsid/28343/story.htm

Bird Flu Outbreak Urge World Readiness

Military Implications:

[Same as item above] It seems wiser to overreact to these projections about birdflu's impacts than to under-react. Pig infection rates should be monitored as a lead indicator for human infections, and liaison should be established with the two U.S. companies and the Japanese firm that are working on a vaccine against H5N1, to fund early mass production, so that some vaccines could be available for force protection.

Sources:

Chinese Premier Wen Jiabao called on Friday for "all possible measures" to fight the emergence and spread of deadly bird flu that has appeared in Southeast Asia, Xinhua news agency reported.
http://www.planetark.com/dailynewsstory.cfm/newsid/29266/story.htm

Asia Acts But Helpless if Deadly Bird Flu Occurs
http://www.planetark.com/dailynewsstory.cfm/newsid/29239/story.htm

Asia Bird Flu Outbreak Spurs EU To Check Readiness
http://www.planetark.com/dailynewsstory.cfm/newsid/29186/story.htm

First Person-to-Person Avian Flu Transmission Confirmed
http://www.ens-newswire.com/ens/jan2005/2005-01-31-08.asp (by subscription only)

Human Transmission of Avian Virus Documented
http://www.nationalacademies.org/headlines/

Flu pandemic warning
http://www.biomedcentral.com/news/20050223/01 (by subscription only)

Leading veterinary experts of 28 countries call for more vigorous bird flu control
http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html

Japan Says Found Bird Flu in Flies From 2004 Outbreak
http://www.planetark.com/dailynewsstory.cfm/newsid/29667/story.htm

Avian Flu World's No. 1 Threat, CDC Head Says
http://www.planetark.com/dailynewsstory.cfm/newsid/29651/story.htm

Bird flu: North Korea appeals for assistance
http://www.fao.org/newsroom/en/news/2005/101678/index.html

Bird flu outbreak in North Korea contained
http://www.fao.org/newsroom/en/news/2005/102016/index.html

Europe Drafts New Law to Prevent Bird Flu Epidemics
http://www.ens-newswire.com/ens/apr2005/2005-04-28-04.asp (by subscription only)

In Vietnam, A Dark Side To Good News On Bird Flu
By Alan Sipress, Washington Post Foreign Service, Saturday, April 23, 2005; Page A01
http://www.washingtonpost.com/wp-dyn/articles/A10548-2005Apr22.html?referrer=email
(article stored for a limited time on the website)

Avian Influenza: Outbreak in Northern Vietnam Baffles Experts
Dennis Normile, Science, Vol 308, Issue 5721, 477, 22 April 2005
http://www.sciencemag.org/cgi/content/full/308/5721/477a?ijkey=7uqp2RtTZsqj6&keytype=ref&siteid=sci (by subscription only)

Bioterrorism Via Smuggled Ebola-contaminated Bushmeat from Africa
Military Implications:
Military liaisons with WHO should explore the idea of a new protocol: In areas where Ebola or related diseases that could be used for bioterrorism have broken out, not only would the areas be quarantined (usually in Africa by military forces as a more organized force than the police), but additionally, the military, NGOs (like MSF), and/or other authorities would ask the people in the affected areas to immediately report any strangers coming into these areas. These strangers should then be questioned, to see if they are part of any network that might lead to international smuggling and terrorist groups. Military liaisons should also explore the possibilities of other protocols with the Food and Agricultural Organization (FAO), which provides some transborder oversight of food shipments.
Sources:
Stop the Carnage http://www.smithsonianmag.si.edu/smithsonian/issues05/jan05/carnage.html

CONGO: MSF intervention for Ebola outbreak extended
http://www.irinnews.org/report.asp?ReportID=24121

United Nations Upgrades Early Warning System for Health and Terror Alerts
Military Implications:
Military personnel with health, bioterrorism, and other related responsibilities should know of the capabilities of the Global Public Health Intelligence Network II, and, where relevant, monitor and feed the network. It should also be considered as a source of information to identify trends and patterns to better anticipate possible threats.
Sources:
Will We Be Able to Identify and Prevent the Next Pandemic Before It is Too Late?
http://releases.usnewswire.com/GetRelease.asp?id=39820

Canada behind new health threat alert system
http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/1100648689967_96057889/?hub=TopStories

New Tool Launched in Fight Against Infectious Disease Outbreaks; Expanded Global System Will Help Detect Potential Public Health Threats
http://www.nti.org/c_press/release_gphin_111704.pdf

New NAS Website on Biosecurity
Military Implications:
Relevant military personnel with biosecurity information responsibilities should monitor this NAS website.
Source:
Biosecurity @ the National Academies
http://www7.nationalacademies.org/biosecurity/index.html

Future Computer-Human Interface Means Cyber Viruses Could Infect Humans
Military Implications:
Security enforcement organizations, including the military, should begin to sponsor research on how to block such cyber-biology virus transfers. In a cyber-human society the civilians as well as military will be much more vulnerable to targeted cyber terrorism and crime.
Source:
Could future computer viruses infect humans? One ex-cyborg thinks they could...
Silicon.com, November 12 2004, by Jo Best
http://networks.silicon.com/webwatch/0,39024667,39125887,00.htm

Russia No Longer Funding Bioterrorism Countermeasures Research
Military Implications:
Although Russia has other bioterrorism countermeasure programs in place, this kind of switch, and uncertainties of collaboration and programs, could increase international concerns on bioterrorism countermeasures and lead to stricter international measures, coordination, and control. The military should fully collaborate with the international organizations in designing and implementing such international strategies and framework.
Sources:
Russia No Longer Funding Bioterrorism Countermeasures Research, Scientist Says
http://www.nti.org/d_newswire/issues/2005/2/2/0D1BAAD6-9B29-4295-BFAD-420A27EE7925.html

Russian General Describes Plan for Military, Civilian Bioterrorism Countermeasures
http://nti.org/d_newswire/issues/2004/11/18/41726158-5672-46b4-a697-51750e27c2d0.html

Technology and Biological Weapons: Future Threats
Military Implications:
Although the report just reinforces with scientific evidence the view that biotechnology misuse might be the biggest threat to humanity, it is an interesting overview of the situation and opportunities as a whole. It is also important because it is the work of the group that is a leading advocate for strengthening the 1975 Biological and Toxin Weapons Convention to stop the spread of biological and chemical weapons.
Sources:
Science and Technology Report No. 2. Technology and Biological Weapons: Future Threats
By Kathryn Nixdorff, Neil Davison, Piers Millett, and Simon Whitby, Bradford University, UK
http://www.brad.ac.uk/acad/sbtwc/ST_Reports/ST_Report_No_2.pdf

Scientists warn of growing bioweapons threat
USA Today, October 28, 2004, http://www.usatoday.com/tech/news/biotech/2004-10-28-biothreat_x.htm (article stored for a limited time on the web site)

POTENTIAL NEGATIVE IMPLICATIONS OF SOME NEW TECHNOLOGIES

Nanotechnology

China Creates World's First National Standards for Nanotechnology
Military Implications:
The Chinese standards are likely to be considered as a draft for other national and potentially international standard systems for nanotechnology. Relevant military personnel should study the standards and be prepared to give input to the U.S. and international organizations on future nanotech standards systems.
Source:
World's first national standard for nanotech to be effective in China
People's Daily Online, March 2, 2005
http://english.people.com.cn/200503/02/eng20050302_175299.html

International Council on Nanotechnology (ICON) Created
Military Implications:
Military agencies directly interested in addressing nanotechnology benefits and risks should be part of ICON and participate in their efforts.
Sources:
About ICON http://cohesion.rice.edu//centersandinst/icon/about.cfm

CBEN launches partnership for sustainable nanotechnology
Broad coalition will work together to ensure tiny tech benefits human health and the environment
http://www.eurekalert.org/pub_releases/2004-10/ru-clp102804.php

Nanotechnology Health Concerns Highlight Need for International Technology Convention
Military Implications:
The increasing development and use of nanotechnology for military purposes leads to the question of nanotechnology's unintended impacts on human and ecosystem health. Following such studies as they emerge about nanoparticles' toxicity would be advantageous to the military in order to prevent unintended long-range health impacts on the future force and to minimize political threats to militarily necessary technologies. Application of lessons learned should be extended to system developers, to environmental and occupational health personnel, and to allied nations through existing environmental information-sharing mechanisms.
Sources:
Health Concerns in Nanotechnology
Barnaby Feder, NY Times, 29 March 2004
http://www.nytimes.com/2004/03/29/technology/29nano.html?pagewanted=print&position= (by subscription only)

Nano's Troubled Waters: Latest toxic warning shows nanoparticles cause brain damage in aquatic species and highlights need for a moratorium on the release of new nanomaterials
http://etcgroup.org/article.asp?newsid=445 (article available for a limited time on the website)

Wise-Nano Project of the Center for Responsible Nanotechnology
Military Implications:
Military researchers in nanotechnology should contribute to the Wise-Nano collaborative effort in addressing advanced nanotechnology issues and actively participate in the eventual policy design.
Source:
Wise-Nano project http://wise-nano.org/w/Main_Page

Nanotechnology Assessment Reports
Military Implications:
These reports can provide useful input to research priorities and expand understanding of trends in forthcoming nanotechnology regulations at the international level.
Sources:
European Science Foundation Publishes Forward Look Report on Nanomedicine
ESF news release - issued 28/02/2005 -
http://www.esf.org/esf_pressarea_page.php?section=6&language=0&newsrelease=83

Response To The Royal Society And Royal Academy Of Engineering Report: 'Nanoscience and nanotechnologies: opportunities and uncertainties'
www.ost.gov.uk/policy/issues/nanotech_final.pdf

Potential Environmental Pollution and Health Hazards Resulting from Possible Military Uses of Nanotechnology with Implications for Research Priorities Helpful to Prevent and/or Reduce Such Pollution and Hazards is available on request from the Millennium Project via email to jglenn@igc.org

ETC Report on Nanotechnology Impact on Food and Agriculture
Military Implications:
The nanotechnology and synthetic biology debate may become more complex than the GMO debate. It is likely that international agreements and regulations for the production, use, and commercialization of nano-scale-based products will emerge. Military nanotechnology R&D agencies and labs should intensify their efforts in health, environmental and socio-economic implications of the new technology and be prepared to eventually defend or modify some of the products they already use.
Source:

Down on the Farm: The Impact of Nano-scale Technologies on Food and Agriculture (Summary) http://www.etcgroup.org/article.asp?newsid=485 (article available for a limited time on the website)

Down on the Farm: The Impact of Nano-scale Technologies on Food and Agriculture (Full report) http://www.etcgroup.org/documents/ETC_DOTFarm2004.pdf

Nanotechnology Forecasting and Assessment Programs

Military Implications:

Relevant military personnel should monitor the websites of these projects, study their reports, and contact them for potential synergies with their own nanotechnology risk management strategies. Military nanotechnology R&D agencies and labs should follow the outcomes of these studies and take necessary actions and adjust their research accordingly. Also, based on outcomes of these and other similar nanotech risk assessment studies, they should inform their respective contractors and appropriately modify products they already use or might eventually use.

Sources:

Wilson Center Launches New Project on Emerging Nanotechnologies
http://wwics.si.edu/index.cfm?fuseaction=news.item&news_id=120312

European Nanotechnology Trade Association Established
http://www.nano.org.uk/enta/press_release_300305.htm

EPA Backs Nanomaterial Safety Research. Activists Say $4 Million Is Far Too Little for Studies By Rick Weiss, Washington Post Staff Writer, Friday, November 12, 2004; Page A23
http://www.washingtonpost.com/wp-dyn/articles/A43763-2004Nov11.html (free subscription required, but article available for a limited time on the website)

2003 Exploratory Research to Anticipate Future Environmental Issues: Impacts of Manufactured Nanomaterials on Human Health and the Environment. STAR Recipients
http://cfpub1.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.display/rfa_id/352

Studies on Potential Environmental and Health Impacts of Nanotechnology

Nanoscience and Nanotechnologies: Opportunities and Uncertainties

Military Implications:

Military environmental, occupational safety, and health policy research personnel should review this study and establish relations with the proposed research center. A related organization to watch to see how the research recommendations are carried out and what research results is Frontiers, the new EU nanotech network initiated and funded by the European Commission (EC) that brings into collaboration 12 institutes for life sciences-related nanotechnology and that plans to integrate 192 researchers and staff in the next 4 years.

Source:

Nanoscience and Nanotechnologies: Opportunities and Uncertainties report text
http://www.nanotec.org.uk/finalReport.htm
pdf of the main report (3,511 KB) or a hard copy of either the main or summary reports can be ordered via email nano@royalsoc.ac.uk or phone at +44 (0)20 74512585.

Nanotechnology and worker safety and health

Military Implications

It is clear that the use of nanomaterials will very shortly be a major factor in a wide variety of military materiel. Following closely on this development will undoubtedly come the introduction of nanotech considerations into various international agreements on protection of the environment, post-conflict cleanup, worker protection, weapons restrictions, and other areas. It

is vital for the military to carry on three parallel efforts to prepare for this. First, it must closely follow the ongoing efforts to determine the nature and magnitude of the risks involved with nanotech. Second, as each application of nanotech appears, it must use that body of risk assessment to evaluate that application for its possible coverage under existing agreements. Third, as the body of environmental and other regulation evolves, it must vigilantly monitor that process for proposed provisions that have nanotech implications, and be prepared to participate in the negotiation of new and revised agreements. Based on health and compliance issues that have arisen for other technological developments, denial of potential issues will not be a viable option.

Sources:

NIOSH: www.cdc.gov/niosh

OSHA: www.osha.gov

National Nanotechnology Initiative: www.nano.gov

Risks from military uses of nanotech www.ep3.ruhr-uni-bochum.de/bvp/RiskMilNT_Lecce.pdf

Soot Particulates may Cause Genetic Mutations in Mice

Military Implications:

This gives one more reason to move toward alternatives to the internal combustion engine (particularly diesel engines), and suggests a new area for conducting risk modeling. Military equipment developers should assess the potential for adding HEPA filtration where possible for force protection.

Sources:

Air Pollution Linked to Genetic Mutations
Lauran Neergaard, Associated Press, 14 May 04
http://story.news.yahoo.com/news?tmpl=story&u=/ap/20040514/ap_on_sc/pollution_mutations
(story stored for a limited time on the web site)

Sooty air, genetic mutation link
The Courier Mail, 14 May 04
http://www.couriermail.news.com.au/common/story_page/0,5936,9558191%255E10369,00.html

Air Pollution Causes Genetic Mutations
Genome News Network, May 13, 2004
http://www.genomenewsnetwork.org/articles/2004/05/13/airpollution.php

Implications of Nanotechnology for Environmental Health Research

Military Implications:

This is one more source of information for the military to study as it conducts research to prevent health hazards and environmental pollution from the future use of nanotechnologies.

Sources:

Implications of Nanotechnology for Environmental Health Research
Roundtable on Environmental Health Sciences, Research and Medicine.
http://www.nap.edu/books/0309095778/html/

Agenda. Technology and Environmental Health: Implication on Nanotechnology
http://www.iom.edu/subpage.asp?id=19612

Other Technologies' Potential Negative Implications

Microwave Frequencies used for Environment-sensing are in Jeopardy

Military Implications

It is likely that the issue will be brought up with the World Meteorological Organization and at some point result in regulations banning the use of specific parts of the microwave spectrum, in order to protect meteorological observations. Future international and regional agreements related to environmental threats and climate change should be based on the best possible scientific research, aided by remotely sensed data. Short-term weather forecasting for tactical planning also needs this reliable data. As a result the military should lend its support to the international effort to preserve these endangered segments of the microwave spectrum, working with the National Telecommunications and Information Agency's Office of Spectrum Management and keeping military frequency allocations separate from these sensitive bands.

Source:

Forecasters face losing key tools
By Alex Kirby, BBC News, December 17, 2004
http://news.bbc.co.uk/2/hi/science/nature/4104355.stm

Research Confirms Military and Industry Sonar Harms Whales

Military Implications

It is reasonable to speculate that the new IWC report and a comprehensive global assessment might trigger new international regulations to limit the use of low– and mid–frequency sonars. The frequency and nature of legal actions against military practices imply an increased liability of the military even for operations not explicitly polluting the environment (such as the use of sonar, radar and microwave.)

Sources:

Whale Sonar Deaths Bring Threat of Navy Lawsuit
http://www.planetark.com/dailynewsstory.cfm/newsid/26066/story.htm

Accord Is Sweet Music for Sonar-Afflicted Marine Life
http://www.hsus.org/ace/19848?pg=1

Military, industry sonar harms whales - IWC report
Story by Robin Pomeroy, 23/7/2004, Reuters News Service
http://www.planetark.org/dailynewsstory.cfm/newsid/26196/story.htm

Personal Computer Dust Health Implications

Military Implications:

The use of brominated flame-retardants in military equipment is widespread. If such compounds were found to have significant health effects, the replacement cost for affected systems would be enormous. Development of alternative flame-retardants that meet military performance requirements would be a prudent investment.

Source:
Dust on gadgets is toxic
Benjamin Pimentel, San Francisco Chronicle, 4 June 2004
http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/06/04/DUST.TMP

Chemicals could be the Cause of 'Gulf Syndrome'
Military Implications:
As the authors point out, "understanding illnesses from the war will be critical in planning future military deployments and measures to improve domestic security."
Sources:
Gulf War and Health: Updated Literature Review of Sarin (2004)
National Academy of Sciences, ISBN: 0-309-09294-9, 132 pages, 6 x 9, paperback (2004)
http://www.nap.edu/catalog/11064.html

Chemicals Sickened '91 Gulf War Veterans, Latest Study Finds
By Scott Shane, October 15, 2004
http://www.nytimes.com/2004/10/15/politics/15gulf.html?oref=login&th (article stored for a limited time on the website)

POLLUTION ISSUES

Pollutants Travel Globally
Military Implications
Previous studies have traced the movement of pollutants from China to California and from Africa to Florida. However, this will be the largest study to date focusing on ozone formation and distribution. The contributions of military operations to the pollutant load being transported across the Atlantic and Pacific are not being separated out, but it is conceivable that future studies may do just that. In such a scenario, the analysis of specific sources may drive policy reactions, to include the possible development of treaties limiting the causal activities.

The major new implication of this item is to bring out the point that large volume upper air pollution transport over long distances makes air quality a truly global problem that will have to be addressed in all areas and by all means. The weight of worldwide opinion will be brought to bear on offending countries and operations (including the military), undoubtedly in the form of new and more vigorously enforced environmental treaties. The military should continue to monitor its activities in all theaters for their air quality effects.
Sources:
Scientists Investigate If Pollution Is Traveling Across Oceans
UN Wire, 14 July 2004
http://www.unwire.org/UNWire/20040714/449_25844.asp

Asian grit aloft in New England; Pollutants found to travel globally
By Stephanie Ebbert, Globe Staff August 9, 2004

http://www.boston.com/news/local/articles/2004/08/09/asian_grit_aloft_in_new_england/
(article stored for a limited time on the web site)

Health Impacts of Fuels

Military Implications:

The evidence about the health impacts of diesel exhaust continues to accumulate, and increases pressure for some form of increased regulation of diesel exhaust around the world. Since large numbers of military vehicles and other equipment around the world use diesel technology, the magnitude of the potential impact of further regulation is significant. Accelerated development of alternative propulsion technologies for the military appears to be a reasonable outgrowth of this trend. Likewise, the negative health impacts of fuel vapors continue to be reported, suggesting the potential need for policy interventions such as zoning controls, which may have ramifications for the location of military fuel points and housing areas, both domestically and abroad.

Sources:

Diesel Exhaust Exposure Raises Ovarian Cancer Risk
Reuters, 17 Aug 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/26619/story.htm

Fuel stations may pose child cancer risk, says study
Reuters, 19 Aug 2004
http://www.enn.com/news/2004-08-19/s_26608.asp (article stored for a limited time on the website)

Vehicle Emissions in Europe

Military Implications:

The sooner the military develops reliable zero (or near-zero) emission vehicles the better. Although there are technological solutions, such as filters, which can address some of the public health issues associated with such vehicles, it appears that the issue may in the long run have an impact on military vehicles, even if only from the perspective of force health protection. While filters for military diesel engines have already been developed, there is no pressure currently on the US military to retrofit legacy equipment with such devices. However, the development of this trend in Europe may accelerate the demand for such technology, and materiel developers should consider this with respect to the time horizons for the fielding of equipment for the future force.

Source:

All-Terrain Pollution
Julio Godoy, Interpress News Service Agency, 16 July 2004
http://www.ipsnews.net/interna.asp?idnews=24664

Europe Embarks on Environment and Health Action Plan

Military Implications:

Since the new EU system will be providing information to government officials on the links between environmental conditions and health, some policies are likely to be reviewed and

adjusted to reduce pollution-induced health risks. The military should monitor development and implementation of the plan for regulatory changes and other implications to operations in Europe. Some of the findings could also contribute information for improving soldier health and operational effectiveness.
Source:
Europe Embarks on Environment and Health Action Plan
http://www.ens-newswire.com/ens/jun2004/2004-06-10-02.asp (by subscription only)

Australia Cuts Sulfur Content in Transport Fuels
Military Implications:
The military should note the sulfur cuts schedule and be prepared to adapt its vehicles in the area to comply with any applicable new requirements. This could also contribute to other military initiatives to improve air quality through the development of next generation vehicles.
Source:
Australia Cuts Sulfur Content in Transport Fuels
Environment News Service (ENS), July 26, 2004
http://www.ens-newswire.com/ens/jul2004/2004-07-26-04.asp (by subscription only)

WASTE MANAGEMENT

Basel Convention on the Transboundary Movements of Hazardous Wastes
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. Regarding electronic waste, as noted in previous monthly reports, new international regulations might be introduced for recycling outdated electronic equipment. The military should follow developments in future forums and develop principles on recycling or disposing of electronic waste. Also, under the partnership principle, the military and its contractors should initiate partnerships and programs for environmentally sound waste management.
Sources:
Conference of the Basel Convention on the Transboundary movements of hazardous wastes COP7 (25 – 29 October 2004)
http://www.basel.int/meetings/cop/cop7/index.html

Meeting the global waste challenge: Basel Convention conference to focus on priorities, partnerships and resources http://www.basel.int/press/pr10-04COP7.doc

EU Pollution Prevention Strategy to Focus on Recycling of Waste
Military Implications:
The next step in this process is for the EU ministers to adopt formal conclusions on the proposed strategy at their next meeting on 28-29 June 2004. The May 2004 endorsement of the pollution prevention principles does not have any immediate impact on military forces in Europe, but the

June 2004 meeting may generate specific targets. One potential implication for the military may be in the area of munitions destruction, specifically with respect to energetic materials disposal. There are no exemptions for military wastes in any of the documents generated on this subject so far. If munitions are not excluded, there may evolve a requirement to recycle rather than destroy obsolete or dysfunctional munitions within the European Union.
Source:
Prevention and recycling of waste: EU ministers confirm life-cycle approach
EurActiv, 18 May 04
http://www.euractiv.com/cgi-bin/cgint.exe?204&OIDN=1507718&-home=home (article stored for a limited time on the website)

NEW MEASURES TO PROTECT BIODIVERSITY

Intensified Efforts Needed to Save Biodiversity

Military Implications:
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:
International Conference "Biodiversity: Science And Governance"
http://www.recherche.gouv.fr/biodiv2005paris/en/

Toepfer Calls for Strong Science and Effective Governance at Paris Conference
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=421&ArticleID=4709&l=en

World's Largest Environmental Forum to Set Priorities

Military Implications:
In addition to the potential policy recommendations of interest to environmental programs that flow from a gathering like this, the 2004 IUCN Red List of Threatened Species is scheduled to be released just prior to the Congress. This list is generally considered the world's most authoritative source of information on species extinction risk. There are a number of domestic and overseas implications to this list, including the potential listing by various nations of new species on their nations' threatened and endangered species lists. Since new listings can affect military operations around the world, the US needs to carefully evaluate the list when it is released. US "state" participation/representation is through membership of the US Department of State, Bureau of Oceans and International and Scientific Affairs.
Source:
Environmental Forum to Assemble in Thailand in Nov. Scoop Media, 13 May 04
http://www.scoop.co.nz/mason/stories/WO0405/S00123.htm

The Little Green Data Book, 2005
Military Implications:
The Little Green Data Book can be a quick information tool for improving environmental management. It can also be used to compare trends and anticipate eventual environmental-related threats to security in different parts of the world.
Source:
The Little Green Data Book, 2005
http://lnweb18.worldbank.org/ESSD/envext.nsf/44ByDocName/EnvironmentalIndicatorsCurrentInitiativesTheLittleGreenDataBook2005

Invasive Species of Genetically Modified Animals for Reconnaissance and/or Cleanup
Military Implications
It would be wise to meet with groups concerned with genetic modifications early on to explore issues and potential resolutions before conflicts occur and to generate useful treaty text.
Source
Biotech Creations to Test US Government Oversight, Group Says
Planet Ark, Story by Randy Fabi, April 2, 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/24570/story.htm

Issues in the Regulation of Genetically Engineered Plants and Animals
http://pewagbiotech.org/research/regulation/

Maritime Issues

Could large-scale ocean zoning prevent conflicts?
Military Implications:
The trends in US coastal states, Canada, New Zealand, Australia and elsewhere point to the eventual possibility of large-scale ocean-wide zoning one day in the future. In consultation with such organizations as the U.S. Commission on Ocean Policy, military planners should participate in designing alternative ocean zoning scenarios and plans in anticipation of a steady increase of international treaties building one on the other toward large-scale ocean zoning. Both readiness training resource availability and conflict reduction potential could be served thereby.

Source:
Zoning Rules to Protect Marine Resources
by Daniel Hendrick
http://www.emagazine.com/view/?2300 (by subscription only)

Improved Cooperation Among International Organizations to Fight Marine Pollution
Military Implications:
Relevant military personnel should take part in the increased cooperation in training, monitoring, and design of environmentally sound hazardous waste management policies and technologies. Increased international cooperation could generate new regulations and marine environmental pollution monitoring systems. Keeping involved in these systems will improve anticipation of

new requirements that might be placed on the military, including the Army with its large number of vessels

Sources:
Basel Convention on Hazardous Wastes and UNEP Regional Seas Programme to fight coastal pollution together
http://www.basel.int/press/presrel010305.doc

Secretary-General Mitropoulos and EC Commissioner Dimas focus on marine pollution issues at a productive meeting
http://www.imo.org/Newsroom/mainframe.asp?topic_id=1018&doc_id=4775

IMO Establishes First "Mandatory Area to be Avoided" in New Zealand
Military Implications:
While the Poor Knights area is of minor military significance at best, the new MAA classification of this area should be noted nonetheless. Furthermore, this designation sets a new precedent that could close off other environmentally sensitive ocean routes in the future.
Sources:
Poor Knights Islands Shipping Ban
Clare Trevett, New Zealand Herald, 19 May 2004
http://www.nzherald.co.nz/storydisplay.cfm?storyID=3567263&thesection=news&thesubsection=general

The U.S. Might Ratify the Law of the Sea
Military Implications:
If the U.S. ratifies the Law of the Sea, the military has to continue to be actively involved in the negotiations for further amendments and developments of the Law, and also it should be prepared to comply with the law's requirements.
Sources:
Oceans and Law of the Sea website http://www.un.org/Depts/los/index.htm
The U.S. and the Law of the Sea

Jonathan Power, International Herald Tribune, Wednesday, November 3, 2004
http://www.iht.com/articles/2004/11/02/news/edpower.html (article stored for a limited time on the website)

U.S. Commission on Ocean Policy Emphasizes Ecosystem-Based Management
Military Implications:
Since some military bases and training are located on coasts, the military should have representation in the development of the Commission's suggestions. Also, as Joint Service and NATO guidance includes operations (Military Operations Other Than War, plus wartime) in coastal areas, Army military engineers can be tasked to carry on major operational activities in coastal areas. Hence, the Army needs to be a knowledgeable "voter" in the writing of such guidance to ensure compliance with peacetime and wartime international requirements, as well

as having information for making collateral damage acceptability judgments. Beyond that, the Corps of Engineers (CoE) will be affected by information and requirements that might come out of the debate and future policy.
Sources:
National Council for Science and the Environment
U.S. Commission on Ocean Policy Emphasizes Ecosystem-Based Management
http://www.ncseonline.org/updates/page.cfm?fID=3651

Preliminary Report of the U.S. Commission on Ocean Policy -Governors' Draft
http://oceancommission.gov/documents/prelimreport/welcome.html

South-west Pacific Islands Might "Localize" Environment-protection Legislation
Military Implications
So far this novel approach to environmental regulation is limited to preliminary consideration for littoral fisheries protection in a small area (Melanesia - Papua New Guinea, Fiji, Vanuatu, etc.) of Less Developed Countries (LDCs). Nevertheless, in view of the growing discontent in environmental circles with the slow pace and cumbersome mechanisms of centralized and international approaches, there may very well be a worldwide groundswell of activity looking to more decentralized/localized regulatory arrangements. As the military and the Corps of Engineers are much involved in many maritime countries' coastal and ocean projects, they should follow the new developments and eventually be prepared to comply with much more complex environmental regulations.
Source
Local taboos could save the seas
New Scientist, April 04
http://www.newscientist.com/news/news.jsp?id=ns99994883 (article accessible for a limited time for non-subscribers)

Maritime Worker Security
Military Implications
Although the U.S. has not ratified the Convention, it is important for those segments of the military concerned with maritime capabilities – shipping and port facilities (e.g. the Military Sealift Command) – to investigate the effects of this agreement on its operations and those of its suppliers. Likewise, military entities with shore and port police functions will need to keep abreast of developments and be capable of processing maritime workers who do rely on the identification system.
Source:
UN-backed maritime identification to go into force to fight terrorism
http://www.un.org/apps/news/story.asp?NewsID=11668&Cr=terrorism&Cr1=#

Climate Change

Kofi Annan, Foreign Affairs *article*
"In Larger Freedom": Decision Time at the UN
By Kofi A. Annan. Foreign Affairs, Monday 25 April 2005
http://www.un.org/News/ossg/sg/stories/sg-25apr2005.htm

Human Footprint on Earth Ecosystem at Critical Stage and *Millennium Ecosystem Assessment Synthesis Report*

Military Implications:

These new, even more pessimistic, climatic forecasts are likely to increase the international pressure for stricter controls on pollutant emissions, including stringent national and regional measures, which could affect military operations in various areas. The military should enhance its efforts to greatly reduce atmospheric pollution from all sources under their control.

Sources:

No stopping rising sea levels, study says http://msnbc.msn.com/id/7225653/

Global Warming Threat Central To Policy – Britain
http://www.planetark.com/dailynewsstory.cfm/newsid/29948/story.htm

In larger freedom: towards development, security and human rights for all. Report of the Secretary-General http://www.un.org/largerfreedom/contents.htm

Millennium Ecosystem Synthesis reports
http://www.millenniumassessment.org//en/Products.Synthesis.aspx

Millennium Ecosystem Assessment Synthesis Report
http://www.millenniumassessment.org//proxy/document.aspx?source=database&TableName=Documents&IdField=DocumentID&Id=356&ContentField=Document&ContentTypeField=ContentType&TitleField=Title&FileName=MA+General+Synthesis+-+Final+Draft.pdf&Log=True

UN Framework Convention on Climate Change Conference

Military Implications

The Buenos Aires Programme should be reviewed to see what military implications should be considered for inclusion in the May seminar in Bonn.

Sources:

COP 10 Conference site: http://unfccc.int/meetings/cop_10/items/2944.php

U.S. Waters Down Global Commitment to Curb Greenhouse Gases
New York Times, by Larry Rohter, December 19, 2004
http://www.nytimes.com/2004/12/19/international/19climate.html (article available for a limited time)

EU Wants More Mandatory Emissions Cuts, US Opposed
http://www.planetark.com/dailynewsstory.cfm/newsid/28619/story.htm

UN to look beyond Kyoto in climate change conference
http://www.spacedaily.com/2004/041205083938.yektmfdt.html

New Evidences of Climate Change

Military Implications:

New scientific evidence and grassroots groups will increase pressure to tackle climate change issues. It is likely that national and regional anti-pollution measures will become more drastic. Also, the new outcomes may move the US, and very likely the EU, to take even tougher measures to reduce greenhouse gas sources, and to bring pressure on other parts of the world to do likewise. The military should enhance its efforts to reduce climate-affecting pollution from all sources and all stages of production and use to comply with potentially tougher regulations and also to set an example.

Sources:

Warming of the Eurasian Landmass Is Making the Arabian Sea More Productive
Joaquim I. Goes, Prasad G. Thoppil, Helga do R Gomes, John T. Fasullo
Science, Vol 308, Issue 5721, 545-547, 22 April 2005
http://www.sciencemag.org/cgi/content/full/308/5721/545?ijkey=qjxryXn.ioKxY&keytype=ref&siteid=sci (by subscription only)

Why the Sun seems to be 'dimming'. BBC News, by David Sington, 13 January, 2005
http://news.bbc.co.uk/2/hi/science/nature/4171591.stm

Global warning "10 years from no return". BizWorld, Monday, January 24 10:03:58
http://www.businessworld.ie/livenews.htm?a=1091735;s=rollingnews.htm

Bleak first results from the world's largest climate change experiment
http://climateprediction.net/science/pubs/climateprediction_press_release.pdf

Internet project forecasts global warming. News@nature.com, by Michael Hopkin, 26 Jan 2005
http://www.nature.com/news/2005/050124/full/050124-10.html (by subscription only)

City pollution affecting weather and its forecast. Times News Network, January 17, 2005
http://timesofindia.indiatimes.com/articleshow/993395.cms

Impacts of Europe's changing climate EEA Report
http://reports.eea.eu.int/climate_report_2_2004/en

A Hot, Hot, Hot Europe. By Jim Motavalli http://www.emagazine.com/view/?2004

Europe 'must adapt on climate'. By Alex Kirby, BBC News Online environment correspondent
http://news.bbc.co.uk/2/hi/science/nature/3570602.stm

Heat Waves to Worsen Across America, Europe –Study. Story by Maggie Fox, Health and Science Correspondent, August 16, 2004
http://www.planetark.com/dailynewsstory.cfm/newsid/26588/newsDate/16-Aug-2004/story.htm

Study: European winters may vanish by 2080.
http://www.cnn.com/2004/TECH/science/08/18/environment.europe.warming.reut/ (article stored for a limited time on the website)

More Heat Waves Expected. by Dan Whipple; Boulder CO (UPI) Aug 23, 2004
http://www.spacedaily.com/news/climate-04zzo.html

Global Warming Could Cloud Cities With More Smog. By J.R. Pegg, Washington, DC, August 5, 2004 (ENS)
http://www.ens-newswire.com/ens/aug2004/2004-08-05-10.asp (by subscription only)

White House report says people cause global warming. NewScientist.com news service
http://www.newscientist.com/news/news.jsp?id=ns99996334

U.S. Report Turns Focus to Greenhouse Gases. By Andrew C. Revkin, NY Times, Aug 26, 2004
http://www.nytimes.com/2004/08/26/science/26climate.html?pagewanted=print&position=

EuroScience Open Forum-the first pan-European Scientific Meeting ever!
http://www.esof2004.org/for_the_press/press_briefings_friday_27_august_publish.asp

Global Climate Technologies Here, Political Will Lacking. By J.R. Pegg, August 17, 2004 (ENS) http://www.ens-newswire.com/ens/aug2004/2004-08-17-10.asp (by subscription only)

Military Implication (climate change and genetic mutations)
The US military keeps records and track of the possible viruses in the areas of potential deployment. However, as the Amazon and other regions subject to rapid environmental change and rich biodiversity become components of military systems, results of research like that at UTMB should be seriously taken into consideration. This is particularly germane since there are no vaccines yet developed to protect against new and emerging viruses.
Source:
Environmental Change + Genetic Mutation = New Viruses
http://www.ens-newswire.com/ens/aug2004/2004-08-04-03.asp (by subscription only)

Desertification Threatens 20% of the World's Population – UN Secretary-General Says That Climate Change Is a Factor
Military Implications
In most developing countries where desertification is a problem, the military is likely to be the implementation institution for large-scale counter-desertification actions. Hence, military–to-military training in this area should be considered. Accelerating desertification is one more indicator (as above) that zero greenhouse gas emission transportation and other innovations may one day be mandated by the political process, as well as accounting for military actions that contribute to global warming. Exhortations like the UN Secretary General's increase the likelihood that the Kyoto Protocol or subsequent more severe international agreements will one day come into force. Key indicators of progress in this area will be seen in outcomes of the Tenth Session of the Conference of the Parties to the [Climate Change] Convention (COP 10) to be held in Buenos Aires 6 – 17 December 2004.
Sources:
Ten years on: UN marks World Day to Combat Desertification
http://www.unccd.int/publicinfo/menu.php

Kyoto Financial Rewards: Who Will Benefit? By Greg Walters, St. Petersburg Time
http://www.sptimes.ru/archive/times/977/news/b_12716.htm

World's land turning to desert at an alarming speed, warns United Nations
By Chris Hawley, Associated Press, Wednesday, June 16, 2004

http://www.enn.com/news/2004-06-16/s_24932.asp (article stored for a limited time on the website)

The CCB Standards http://www.climate-standards.org./standards/index.html

Arctic Warming Much Faster Than Expected

Military Implications

The study's results add more force to actions for reducing greenhouse gas emissions, including already severe international pressure on the U.S. to join the rest of the world in combating global warming causes. Military deployed in countries fighting global warming should be prepared to comply with more rigorous emission standards. Also, in view of this report's findings, planning and conduct of operations in the Arctic should take these changes into account, including the fact that large new areas of open water will be coming into at least seasonal existence.

Sources:

Impacts of a Warming Arctic: Arctic Climate Impact Assessment Report
http://www.acia.uaf.edu/ (Select "ACIA Overview Report")

Climate change is here, now, say scientists. North.cbc.ca, Nov 3 2004
http://north.cbc.ca/regional/servlet/View?filename=climate-change-11032004

Rapid Arctic Warming Brings Sea Level Rise, Extinctions
http://www.ens-newswire.com/ens/nov2004/2004-11-08-02.asp (by subscription only)

Arctic People Seek Tropical Team on Global Warming. November 26, 2004 — By Alister Doyle, Reuters http://www.enn.com/today.html?id=468

Arctic Nations Cool On How To Fight Global Warming
http://www.ens-newswire.com/ens/nov2004/2004-11-30-11.asp (by subscription only)

Antarctica Glaciers Could Melt Faster than Expected

Military Implications

This is an enhanced warning sign of climate change and can be expected to trigger even more drastic environmental regulations worldwide. The consequences of sea levels rising faster than expected will induce more environmental migration in areas already suffering from poverty (Small Island States), hence raising conflict probability. This also indicates increased future pressure for military transportation systems with reduced greenhouse gas emissions.

Source:

Thin Glaciers Get Thinner in Antarctica - Report
Story by Maggie Fox, Health and Science Correspondent; 27/9/2004
http://www.planetark.com/dailynewsstory.cfm/newsid/27347/story.htm

Antarctic Glaciers Melting Faster This Year
http://www.ens-newswire.com/ens/sep2004/2004-09-23-09.asp (by subscription only)

NASA Reports Show Antarctic Response to Global Warming - 23 September 2004
http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2004&m=September&x=20040923121122lcnirellep8.706301e-02&t=xarchives/xarchitem.html

Antarctic Peninsula glaciers in widespread retreat
British Antarctic Survey (BAS) Press release No: 7/2005, 21 Apr 2005
http://www.antarctica.ac.uk/News_and_Information/Press_Releases/story.php?id=163

Large Ice Deposits Melting as Consequence of Global Warming
Military Implications
The forecasts of catastrophic consequences in this study (which is widely publicized), and undoubtedly in future ones to come, will be bringing greatly increased pressure on all parties to ratify the Kyoto Protocol and take positive action against atmospheric pollution. The military should prepare itself for increased environmental activism in all of its operating areas around the world, including demands for reduced emissions and for cutbacks in vehicle and other pollution-producing activities.
Sources:
Catastrophe alert over melting ice from Greenland
By Nigel Hawkes, Times Online, April 8, 2004
http://www.timesonline.co.uk/article/0,,8122-1067480,00.html

Greenland ice cap 'doomed to meltdown'
NewScientist.com news service, April 04, 2004
http://www.newscientist.com/news/news.jsp?id=ns99994864

A Sample of Counter Global Warming Activists around the World
Military Implications:
Similar to the previous comments, it is likely that the pressure on the industrialized countries, especially the U.S., which are not considered to be doing their part against global warming, will mount. The military, with its presence around the world, is in a position to lead the way in introducing energy-efficient and low greenhouse gas emission equipments, both to comply with eventual local regulations, and also to set an example.
Sources:
Parts of Australia could become uninhabitable, environment conference told
http://www.terradaily.com/2004/041115064829.h743x5yh.html

Australia court rules that greenhouse gas emissions can't be ignored
http://www.panda.org/news_facts/newsroom/other_news/news.cfm?uNewsID=16211

Melting Glaciers Said to Be Threatening Everest http://www.enn.com/ch_clim.html?id=25

EU-China energy and environment program launched. (Xinhua) Updated: 2004-11-04 00:32
http://www.chinadaily.com.cn/english/doc/2004-11/04/content_388294.htm (article stored for a limited time on the website)

Global warming: Britain and Germany chart the way forward
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=412&ArticleID=4658&l=en

Ambitious Post-Kyoto EU Emissions Goals

Military Implications:

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:

EU Ministers Want Tough Post-Kyoto Emissions Target
http://www.planetark.com/dailynewsstory.cfm/newsid/29895/story.htm

EU Leaders Drop 2050 Emissions Reduction Target
http://www.planetark.com/dailynewsstory.cfm/newsid/30074/story.htm

In larger freedom: towards development, security and human rights for all
Report of the Secretary-General
http://www.un.org/largerfreedom/contents.htm

Small Island States Adopt Position on Addressing Climate Change

Military Implications:

Military experience in planning for coastal sea level changes should be shared for inclusion in any early warning systems that might evolve from the Mauritius Declaration. Relevant military personnel should monitor any follow-up activities for new international regulations concerning the transport of polluting and/or dangerous materials in the SIDS waters.

Sources:

Small Island Nations Appeal for Help to Deal with Environmental and Economic Woes
http://www.enn.com/today.html?id=6900

UN Small Island Conference Adopts Mauritius Declaration, Strategy; Recommits To Sustainable Development Of Most Vulnerable Nations (ENV/DEV/SIDS/6 14 January 2005)
http://www.un.org/smallislands2005/coverage/pressreleases/envdevsids6-eng.pdf

Rising Seas Threaten Islands, Cities, Coasts. Reuters News Service, Story by Alister Doyle, January 10, 2005 http://www.planetark.com/dailynewsstory.cfm/newsid/28874/story.htm

UN Conference On Small Island States and Climate Change

Military Implications

If global warming trends continue and sea levels rise, small island states and coastal settlement evacuation plans will be required. A military observer might attend this January 2005 conference to identify the military implications of new proposals and other research presented. This conference is one more indicator that zero greenhouse gas emission transportation and other

innovations may one day be mandated by the political process, as well as an accounting system for military actions that contribute to global warming.
Sources:
Major UN Meeting On Small Island States Set For Mauritius In Early 2005
UN News, New York, Jun 10 2004 2:00PM

Supercomputer Finds Climate Likely to Heat Up Fast
http://www.ens-newswire.com/ens/jun2004/2004-06-24-09.asp#anchor7 (by subscription only)

Dust and Climate Change
Military Implications:
Military operations are often the source of fugitive dust. Although the magnitude of dust generated by military operations is relatively small compared to the amount suspended in natural dust storms, nobody has yet calculated the contributions of dust from military operations to the total amount of dust being transported transcontinentally and transoceanically to other countries. It is possible that such an analysis of specific environmental/regional sources may drive policy reactions, to include the possible development of treaties limiting causal activities, which could impact military training in such environments.
Sources:
Dust 'is hidden climate problem'. Alex Kirby, BBC, 19 Aug 2004
http://news.bbc.co.uk/1/hi/sci/tech/3579578.stm

4x4s replace the desert camel and whip up a worldwide dust storm. Paul Brown, environment correspondent, Friday August 20, 2004, The Guardian
http://www.guardian.co.uk/climatechange/story/0,12374,1287212,00.html

States to Sue the Energy Producers Over Global Warming
Military Implications
EPA concluded last year that it did not consider carbon dioxide a pollutant and there are no regulations governing carbon dioxide today. However, the future could be different. Given a growing consensus that greenhouse gases are causing the climate change, the military could be held responsible for its emissions in the future. The military should now be developing a strategy to reduce its emission without undermining its operational capacity.
Sources:
States to Sue Over Global Warming

http://www.latimes.com/news/local/la-me-warming21jul21,1,1699397.story (by subscription only) (article stored for a limited time on the website)

Spitzer and states to sue utilities over CO2, say sources
Deepa Babington and Timothy Gardner, Reuters, 21 July 2004

http://www.enn.com/news/2004-07-21/s_26042.asp (article stored for a limited time on the website)

To Curb Global Warming, Eight States and New York City Vow to Sue Nation's Largest Power Companies

Mark Johnson, Associated Press, 21 July 2004

http://www.newsday.com/news/local/wire/ny-bc-ct--emissionslawsuit0721jul21,0,792585,print.story?coll=ny-ap-regional-wire (article stored for a limited time on the website)

Other Environmental Protection Developments

Nine New Hotspots Added to World's Protected Areas

Military Implications:
This report and website might be useful in supporting 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:
Website with all the hotspots http://www.biodiversityhotspots.org/xp/Hotspots

Nine more crisis areas for biodiversity. By Jessica Ebert, News@nature.Com, 2 February 2005 http://www.nature.com/news/2005/050131/full/050131-10.html#B1 (article available free for a limited time)

Nineteen new Biosphere Reserves Added to UNESCO's MAB Network

Military Implications:
The military should keep up-to-date with the sites of the MAB Reserves and have its operations planned accordingly.
Sources:
The MAB Programme. New Biosphere Reserves
http://www.unesco.org/mab/news/newbr2004.htm

18th Session of the MAB International Co-ordinating Council
http://www.unesco.org/mab/mabicc/2004/eng/docs.htm

New UNESCO World Heritage Sites

Military Implications:
The combination of five new instruments adds considerable political and legal complexity to managing military affairs. The 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict and its two Protocols, and the four 1949 Geneva Conventions and their enforcement may be revised in the light of the new Declaration. Part of the text of the cultural heritage declaration says that States should "take all appropriate measures to prevent, avoid, stop and suppress acts of intentional destruction of cultural heritage, wherever such heritage is located." Recent events in Iraq underscore the need for military training and plans in cultural protection and to cooperate with the States where it operates to assure compliance and

help them in protecting the cultural heritage. Planners for international training, operations other than war, and hostilities need to become aware of these new developments.
Source:
Wonders Of Russia, South Africa Up For World Heritage List
The Committee will consider the inscription of 33 cultural and eight natural sites this Monday
http://www.ens-newswire.com/ens/jun2004/2004-06-29-04.asp (by subscription only)

Europe Declares Thousands of Protected Natural Sites
Military Implications:
The military stationed in the EU has to take note of the Natura 2000 protected sites and the applicable policies, and ensure that its activities comply with conservation requirements for the habitats and species living there. Species and landmark sites on the lists cover most of the EU's territory - France, Germany, Belgium, the Netherlands, Italy, UK, Sweden, Austria and Denmark. The next steps towards completion of the Natura 2000 network will be the adoption of two more lists of sites—the Boreal and Mediterranean bio-geographical regions—and the establishment of the Natura 2000 network in the 10 new member states.
Source:
Nature protection: Commission establishes largest ever list of protected areas in the EU
http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/1449&format=HTML&aged=0&language=EN&guiLanguage=en

New Ecological Network Has Environmental Implications
Military Implications:
The military environmental community should maintain contact with this project as it develops, in order to utilize its techniques and results for decision-making and to contribute information. Military participation can help ensure that militarily relevant ecological factors and indicators are taken into account in the drafting of future environmental conventions and treaties, and in planning for conformity with their requirements.
Source:
NEON Design Consortium and Project Office to Coordinate Design of Ecological Observatories
http://www.nsf.gov/news/news_summ.jsp?cntn_id=100445

Asia and Pacific Countries Adopt Declarations on the Environment
Military Implications:
It is likely that new regulations will be set in the region to support the green development initiative. Military personnel in the area should follow the development of the eventual new regulations; and, in the spirit of partnership put forward by the Implementation Plan, establish liaisons with regional organizations to work on matters of common concern that might affect the military operations in the area.
Sources:
Fifth Ministerial Conference on Environment and Development in Asia and the Pacific
http://www.mced2005seoul.org

Delegates at UN meeting pledge green-friendly approach to development in Asia and the Pacific
http://www.un.org/apps/news/story.asp?NewsID=13787&Cr=Asia&Cr1=development

PM and Pacific leaders to meet
http://www.scoop.co.nz/stories/PA0503/S00443.htm

Regionalism Yes - Federalism Going Too Far Says PM
http://www.scoop.co.nz/stories/HL0503/S00238.htm

Pacific Islands Forum www.forumsec.org.fj

UK Cooperation with India and Others on the Environment and Sustainable Development
Military Implications
The US military personnel with environmental responsibility should contact the UK and Indian ministries, and offer to assist and participate in these ongoing discussions, or at least follow them closely, since they are very likely to result in bilateral or regional environmental agreements that will affect military operations.
Sources:
India, UK to enhance cooperation on sustainable development. The Hindustan Times, February 4, 2005 http://www.hcilondon.net/cgi-bin/printnews.pl?NewsCode=1121

Britain and India to collaborate on climate research. By V. Padma, February 9, 2005, SciDev.Net
http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierReadItem&type=1&itemid=1916&language=1&dossier=4

India Drafting New National Environment Policy
Military Implications:
Preparation of the final document offers an opportunity for the US military environmental community to work with its opposite numbers in the Indian Armed Forces (both directly in New Delhi and through the US-India Defense Policy Group) and the Environment and Forests Ministry on matters of common concern in the environment of South Asia, and on the relationship between the military and environmental security.
Sources:
Current draft policy: http://envfor.nic.in/nep.htm

A policy of promise. By B.S. Padmanabhan, India's National Magazine, Vol. 21 - Issue 26
http://flonnet.com/fl2126/stories/20041231002310100.htm

New Zealand's Largest Environmental Management Forum
Military Implications
Military personnel involved in Southwest Pacific regional environmental issues should review the conference program and consider attending.
Sources:
EIANZ Conference 29 Mar - 1 Apr 2005, Christchurch, New Zealand
http://www.conferenceteam.co.nz/eianz/

New Zealand to Host Major Environment Forum
EIANZ Press Release http://www.scoop.co.nz/mason/stories/SC0412/S00042.htm

Chinese Automobile Industry's Potential Environmental Emphases
Military Implications
Given the new Army Environmental Strategy to collaborate with others to have a more positive effect on the environment, consideration should be given to exploring the feasibility of cooperating with China on the development of eco-friendly military transportation. The growing environmental awareness in China indicates that it might welcome such an initiative and other related collaborations to improve environmental security.
Source:
Automakers unveil efficient cars in China
http://www.chinadaily.com.cn/english/doc/2004-10/17/content_383067.htm

NEW ORGANIZATIONS WITH MANDATES WITH EVENTUAL ENVIRONMENTAL SECURITY IMPLICATIONS

Interpol Creates Global Information Center to Combat Bioterror Threat
Military Implications:
The military could help accomplish better coordination among international organizations dealing with international threats. There should be a unique framework with sets of regulations and intervention strategies in case of the outbreak of an epidemic and/or a bioterrorism attack. It is likely that new regulations would bind countries to open their borders to health and investigation officials as part of the response to epidemics or bioterrorism.
Source:
Interpol to Create Global Bioterror Information Hub
http://www.nti.org/d_newswire/issues/2005_3_3.html#EC2010EC

Carpathian Mountain office of the United Nations Environment Programme
Military Implications:
With the expeditionary basing concept for US forces in Europe depending upon the use of training lands in Central and Eastern Europe, the European Command should monitor the operations of this new office as it begins implementation activities. Among the provisions of the treaty is the establishment of a common environmental monitoring framework, which may have implications for the operation of US military forces in the region.
Source:
New Vienna office of UN environment agency to focus on Carpathian Mountains
UN News Center, 15 July 2004
http://www.un.org/apps/news/story.asp?NewsID=11357&Cr=environment&Cr1

Russia's Green Movement Plans to Become a Political Party
Military Implications
If the group is able to register as a political party, then Russia could eventually become more active in supporting new and revised international environmental agreements, and might even welcome military-to-military training in environmental security related areas. Since Alexander Nikitin is one of the leaders, Cold War legacy cleanup should be high on the Greens' list of priorities with spillover into intra-Russian politics.
Source:
Russia looks to green alternative as political screws tighten
http://www.terradaily.com/2004/041015154005.fsxt9d7v.html

China Climate Change Organization Formed
Military Implications
The U.S. military environmental community should seek collaboration with the new Chinese organization to work together on environmental issues and eventually share expertise in environmental security planning. Also, considering that environmental protection is identified as a security role of the Chinese military [see also in this sub-chapter item *Chinese Army Environmental Role Increases*] delineating the dual role of the Chinese military relative to the environment (i.e., in using the environment to provide domestic security in peacetime as well as in using it for military advantage as a challenge to enemies in wartime), monitoring of further developments on this subject is prudent in order to effectively engage in cooperative environmental projects with China.
Source:
China boosts research on impact of climate change
By Jia Hepeng, 3 September 2004
http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=1583&language=1

Liberia's First Environment Center Opened
Military Implications:
This is an opportunity to identify and share best practices in military post-conflict environmental cleanup procedures and technology in cooperation with the new environmental unit and other relevant players.
Source:
UNHCR opens Liberia's first environment centre
http://www.unhcr.ch/cgi-bin/texis/vtx/news/+fwwBmerGhdeqxwwwwnwwwwwwwhFqnN0bItFqnDni5zFqnN0bIAFqnN0bIDzmxwwwwwww1FqnN0bI/opendoc.htm (article stored for a limited time on the website)

NEW INITIATIVES AIMING TO INCREASE ECO-EFFICIENCY

Efforts for Increasing Corporate Eco-responsibility

Military Implications:

As GHG markets such as the Chicago Climate Exchange and the European Union Emissions Trading Scheme fully develop, companies will rely on accounting methodologies, and GHG emissions will be reflected on financial balance sheets along with other assets and liabilities. As mentioned in the previous reports, the militaries might consider adopting a policy of encouraging their civilian contractors to adopt the new eco-responsible models. 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:

Creating a Global Alliance of Investors
Press release, UNEP, London/Nairobi, 15 July 2004
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=402&ArticleID=4569&l=en

Corporations Take the Lead on Climate Change
World Resources Institute, 20 July 2004
http://pubs.wri.org/pubs_content_text.cfm?ContentID=2735

GHG Protocol Initiative http://www.ghgprotocol.org/

Online Database of Sustainable Consumption Initiatives in North America Launched

Military Implications:

Militaries might consider adopting a policy of consulting the database and encouraging their civilian contractors who are registered and comply with the sustainable production and consumption initiative. 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:

North American Sustainable Consumption Alliance http://nasca.icspac.net/

The database http://nasca.icspac.net/db/

Online database of sustainable consumption initiatives in North America launched
CEC Newsletter http://www.cec.org/news/details/index.cfm?varlan=english&ID=2606