

WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY
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Note to Readers: Pages 1-11 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 12.

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Item 1. UN E-Waste Forum and Basel Convention's Conference of Parties

Electronic devices account for 20-50 million metric tons of waste per year around the world that introduce lead, cadmium, mercury and other hazardous wastes into the land and water supplies. To counter the acceleration of this problem, over 500 experts from more than 150 countries met at the UN offices in Nairobi, Kenya, November 27–December 1 for the Conference of the Parties (COP8) to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The conference theme was “Creating innovative solutions through the Basel Convention for the environmentally sound management of electronic waste.” An e-waste declaration and more than 30 decisions were adopted, including synergies and cooperation among the Basel, Rotterdam and Stockholm Conventions (UNEP/CHW.8/CRP.8), safer ship dismantling procedures, amendments to the guidelines for the environmentally sound management (ESM) of persistent organic pollutant wastes, the 2007-2008 program, and implementation of the Strategic Plan for the Implementation of the Basel Convention to 2010.

The E-waste Declaration called for wider transfer of information on technologies and e-waste management from developed to developing countries, prevention and fighting e-waste trafficking, introduction of broader and stronger national legislation to control e-waste management, promotion of eco-friendly technologies and phasing-out toxic components, and raising awareness of e-waste issues and integrated systems to reduce and limit damage due to e-waste. The meeting also discussed environmentally sound management of ship dismantling and agreed to a draft ship recycling convention, as well as the need for greater guidance in managing abandoned ships. The next COP will take place in fall 2008, in Indonesia. [See also *Toxic Waste Disposal of Global Growing Concern* in September 2006, *Basel Convention on Hazardous Wastes to be Made More Effective* in July 2005, and other related items in previous environmental security reports.]

[Note: By 2010, an estimated 100 million phones and 300 million personal computers might become waste. In the U.S., it is estimated that 14–20 million personal computers are thrown out each year; developing nations are expected to triple their output of all electronic waste by 2010.]

Military Implications:

Relevant military personnel should review the 30 decisions to identify opportunities for international cooperation, furtherance of the Army's Strategy on the Environment, and to better anticipate potential new directives, such as e-waste management additions to the Basel Convention and a ship recycling procedure.

Sources:

Basel Convention COP8 website <http://cop8.basel.int/>

Basel Convention website <http://www.basel.int/>

Summary of the Eighth Conference of the Parties to the Basel Convention
<http://www.iisd.ca/basel/cop8/>

Dealing with toxic computer waste

<http://news.bbc.co.uk/2/hi/business/6110018.stm>

Item 2. Europe's Chemical Regulations (REACH) to Enter into Force on June 1, 2007

The REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals) was approved by the European Parliament and the European Commission and will enter into force on June 1, 2007. REACH is regulating the manufacturing, marketing, import, and use of some 30,000 chemicals and is replacing 40 existing pieces of legislation, thus creating a single system for all chemicals in the European Union. The chemicals have to be registered over the next 11 years with the new European Chemicals Agency (ECHA) in Helsinki, which will be responsible for management of the new requirements. [See also *International Controversies over REACH* in June 2006, *Integration of Chemical Regulations (REACH) Approved by European Council* in December 2005, and other related items in previous environmental security reports.]

Military Implications:

The military should assess the REACH system's impacts on military operations in Europe in relation to existing SOFAs and other agreements, and intensify efforts to find safer alternatives to banned chemicals or those deemed to be of high concern for human health.

Sources:

REACH: Commission welcomes European Parliament vote on new EU chemicals legislation

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1799&format=HTML&aged=0&language=EN&guiLanguage=en>

Environment: Commission welcomes Council action on REACH, climate change and marine protection

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1826&type=HTML&aged=0&language=EN&guiLanguage=en>

Japan Chemical Industry Concerned over New EU Rules

<http://www.planetark.com/dailynewsstory.cfm/newsid/39501/story.htm>

EU law has Del. companies watching

<http://www.delawareonline.com/apps/pbcs.dll/article?AID=/20061226/NEWS/612260355/-1/NEWS01>

Item 3. Canadian Chemical Plan May Go beyond REACH as Environmentalists Get New Political Support

The Canadian government has launched a plan to regulate the use of chemicals harmful to human health and the environment. Although the initial plan targets only 200 chemicals for regulation over the next four years, more could be added to eventually go beyond initiatives in Europe and the U.S. The Canadian efforts to strengthen such environmental policies will be improved by election of Stéphane Dion (former Environmental Minister) this month as the Liberal Opposition Leader. Sources report a rising environmental tide among the public. Previous negotiations for regulations mostly related to climate change, but pollutants are also expected to be revived as the Conservatives' efforts in the environment arena are strongly criticized by the other parties, citizens, and the international community. [Note: This month, the Secretariat of the Commission for Environmental Cooperation (CEC, NAFTA's "environmental arm") issued a determination requesting a response from Canada to a submission asserting that Canada is failing to effectively enforce the federal Species at Risk Act.]

Military Implications:

Considering the strong collaboration between Canada and the U.S., as well as the CEC rules on cross-border pollution, the military should follow the development of the new Canadian environmental policies and be prepared—along with its contractors—to comply with new regulations that might affect its operations.

Sources:

Harper's slow action on chemicals is toxic, says Dion

https://www.liberal.ca/news_e.aspx?type=news&id=12111

Rising tide

<http://www.ekos.com/admin/articles/TheStar09Dec2006c.pdf>

Conservatives cracking down on toxic chemicals

<http://www.cbc.ca/canada/newfoundland-labrador/story/2006/12/08/toxic-chemicals.html>

Species at Risk. Submission ID: SEM-06-005

<http://www.cec.org/citizen/submissions/details/index.cfm?varlan=english&ID=114>

Determination http://www.cec.org/files/pdf/sem/06-5-DET14_1_2_en.pdf

Item 4. Ecuador Gets an Environmentalist Foreign Minister

President Rafael Correa of Ecuador (to take office in January) has named a US-trained environmentalist, Maria Espinosa, as his foreign minister. The new cabinet member is head of the World Conservation Union in South America and an expert on nature reserves. The nomination comes at a time of growing tensions with neighboring Colombia over spraying of drug crops near the border, which damages Ecuadorian legal crops and the health of people living in the area.

Military Implications:

Military personnel in Quito involved in possible military-to-military contacts with the Ecuadorian forces might be able to use this appointment to aid in approaching them about discussions on the military's role in environmental security. For example, if the U.S. military is involved in the spraying of drug crops, new efforts could reduce the environmental impacts on the border area. And, the U.S. military could be a mediating agent between Colombia and Ecuador.

Source:

Environmentalist Named Ecuador Foreign Minister

<http://www.planetark.com/dailynewsstory.cfm/newsid/39473/story.htm>

Item 5. Technological Breakthroughs with Environmental Security Implications**5.1 Nanotech-based Explosives Detector**

Prof. Li Guang-tao of the Key Laboratory of Organic Optoelectronics & Molecular Engineering of the Ministry of Education at Tsinghua University, Beijing, and his group have developed nanocomposite silica films doped with porphyrins (nitrogen-containing macrocyclic molecules) which produce a very fast fluorescence response to trace vapors of explosives such as TNT, DNT and NB (nitrobenzene). These films can be used as the basis for small, cheap, and fast environmental detectors.

Military Implications:

The military should explore this technology for explosives detection, post-conflict clean up and other environmental monitoring usage. This information could also be forwarded to the Transportation Safety Agency, in case they are, as yet, unaware of the development.

Source:

Portable, cheap and fast explosives detector built with nanotechnology
<http://www.nanowerk.com/spotlight/spotid=1138.php>

5.2 Detector Materials for Cyanogen Halides from Chemical Weapons

Researchers at the Dept. of Chemistry at MIT, led by Samuel W. Thomas III, have developed new phosphorescent detecting compounds for cyanogen halides, used in chemical weapons. The new materials have greatly improved sensitivity to trace amounts of the toxins in the environment.

Military Implications:

The military should investigate the possible applications of these materials for explosives detection and in environmental monitoring systems.

Source:

Out of the dark. Highly sensitive chemosensors for cyanogen halides. 14 December 2006
<http://www.nature.com/materials/news/news/061214/portal/m061214-1.html> (by subscription only; abstract in the [Appendix](#))

5.3 Clean Green Hydrogen-Making Process

Lanny Schmidt, Brandon Dreyer and colleagues at the University of Minnesota's Department of Chemical Engineering and Material Science have developed a new process called "flash volatilization" that can turn waste biomass into hydrogen. It uses rhodium and cerium as chemical catalysts, is supposed to be 100 times faster than existing techniques, and is scalable. It generates a hydrogen and carbon monoxide gas mixture called synthesis gas, or "syngas" which can be used to make fuels, or its hydrogen can be separated in order to power fuel cells.

Military Implications:

The new technology should be explored and eventually encouraged for future applicability in green (hydrogen) power, as well as for biomass recycling aspects.

Source:

Clean green hydrogen-making machine created. NewScientist.com, 03 November 2006
http://www.newscientisttech.com/article.ns?id=dn10441&feedId=energy-fuels_rss20

Item 6. Updates on Previously Identified Issues**6.1 Eleventh Chemical Weapons Convention**

The 11th Conference of States Parties to the Chemical Weapons Convention (CWC) was held in The Hague, December 5-8. One of the controversial issues discussed concerned "incapacitating agents," which Peter Herby, head of the Mines-Arms Unit at the International Committee of the Red Cross, considered toxic chemicals. Some experts also argued that using "nonlethal" materials on the battlefield would violate the CWC. There was also a call to clarify which chemicals—other than riot control agents—are allowed under the treaty's exception for law enforcement, and that all

these chemicals be publicly declared. The Conference approved the requests from Russia, the U.S. and several other nations for additional time to eliminate their stockpiles of toxic agents. There are now 181 nations party to the CWC, representing about 98% of the world's population and there are calls that all nations become Party to the Convention before its 10th anniversary, next year. [See also *Five Countries Organize CWC National Authorities* in May 2006, *Micro-reactors Challenge Chemical Weapons Convention Effectiveness* in August 2005, and *Chemical Weapons Convention Annual Conference* in December 2004 environmental security reports.]

Military Implications:

The state of current and potential future non-lethal weapons should be reviewed in light of possible violations of the CWC. [Similar to previous on the same issue] 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 Incapacitants Must Be Kept From War, Experts Say

http://www.nti.org/d_newswire/issues/2006_12_7.html#C1839F43

Weapons of Terror

http://www.wmdcommission.org/files/Weapons_of_Terror.pdf

Annan calls on governments to destroy 'cruel and inhumane' chemical weapons

<http://www.un.org/apps/news/story.asp?NewsID=20854&Cr=chemical&Cr1=weapon>

U.S., Partners to Offer New Program of CWC Support

http://www.nti.org/d_newswire/issues/2006_12_7.html#95296BAD

Nations Get CW Treaty Extensions

http://www.nti.org/d_newswire/issues/2006_12_11.html#263C85C9

6.2 Sixth Review Conference of the Biological Weapons Convention

The three-week review Conference of the Biological Weapons Convention made some positive steps forward that included giving more power to the present temporary secretariat to oversee the treaty and monitor compliance, and holding, by 2011, four intersessional meetings on the treaty topics—enhancing national implementation, measures to improve biosecurity, scientific codes of conduct, peaceful scientific cooperation, and assistance to any country that does fall victim to biological weapons. One representative criticized the conference for not addressing future issues such as new nonlethal agents and nanotech-related methods for delivering biological agents. [See also *PrepCom to Set Agenda for the BWC Review Conference* in April 2006, *Recommendation for a Biosecurity Watchdog* in February 2006, and *Time to Strengthen the 1972 Biological Weapons Convention* in December 2004 environmental security reports.]

Military Implications:

[Similar to previous on the same issue] Without better international controls, terrorist access to biological weapons seems inevitable. Great progress has been made on bioweapons sensors over the past several years, some of which have been referenced in these monthly reports for AEPI. Relevant military personnel should consider making recommendations at the upcoming intersessional meetings.

Source:

BWC Review Conference Hailed as Success

http://www.nti.org/d_newswire/issues/2006_12_11.html#60E54D1D

Draft Declaration

[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/1CEE7A27069559C5C125723E00647BFF/\\$file/BWC+CONF.VI+CRP.4-altered+as+ammended.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/1CEE7A27069559C5C125723E00647BFF/$file/BWC+CONF.VI+CRP.4-altered+as+ammended.pdf)

Biological and Toxin Weapons Convention (BTWC) website <http://www.opbw.org/>

6.3 Europe to Begin Penalizing Jet Pollution in 2011

The European Commission is moving forward with its proposal for a directive to bring civil aviation into the EU Emissions Trading Scheme (EU ETS) by imposing extra charges on highly polluting carriers. The legally binding rules will apply to all flights within the EU starting in 2011, and from 2012 to foreign carriers landing and taking off from European airports. [See also *Europe to Propose Emissions Targets for All Flights To/From or Within Europe* in November 2006 and *EC Proposed Strategy to Curb Greenhouse Gas Emissions from Air Travel* in September 2005 environmental security reports.]

Military Implications:

Although the proposed EU regulation now refers just to civil aviation, the military should explore impacts on its European operations and be prepared for an eventually more inclusive regulation.

Sources:

Climate change: Commission proposes bringing air transport into EU Emissions Trading Scheme

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1862&format=HTML&aged=0&language=EN>

Europe Acts to Penalize Jet Pollution

http://www.nytimes.com/2006/12/21/business/worldbusiness/21air.html?_r=1&oref=slogin (free subscription required)

6.4 Political Agreement Reached on the European Marine Strategy Directive

The European Environment Council reached political agreement on the framework directive for EU action on marine environment policy. The Marine Strategy Directive aims to ensure that all EU marine waters are environmentally healthy by 2021 and it is the main component of the Thematic Strategy on the Protection and Conservation of the Marine Environment, which was adopted in October 2005. The Strategy is based on regional assessment of the marine situation, exchange of information, and design of policies to improve ecosystem conservation or rehabilitation, as well as pollution reduction and clean-up. [See also *New EU Environmental Strategies* in September 2005, *Europe to Harmonize Marine Pollution Legislation* in July 2005, *The European Union Environmental Initiatives* in January 2005, and *International Maritime Organization (IMO) wants global rather than many different local or regional rules* of January 2003 environmental security monthly reports.]

Military Implications:

Relevant military personnel should be alert to new requirements imposed by the Marine Strategy Directive. Although the Directive's power is limited to EU waters, increased international cooperation could generate new regulations and marine environmental pollution monitoring systems elsewhere.

Sources:

Environment: Commission welcomes Council action on REACH, climate change and marine protection
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1826&type=HTML&aged=0&language=EN&guiLanguage=en>

Strategy for the marine environment

<http://europa.eu/scadplus/leg/en/lvb/l28164.htm>

A Marine Strategy to save Europe's seas and oceans

<http://ec.europa.eu/environment/water/marine.htm>

Regionalization of the EU waters

<http://www.eurocean.org/contents.php?id=392>

6.5 Climate Change

6.5.1 Extreme Weather Conditions Increasing

Preliminary findings by the World Meteorological Organization (WMO) show that 2006 might be the sixth warmest year on record, with the average temperature estimated to be 0.42°C above the 1961-1990 annual average. It notes heat waves and prolonged drought in some regions, heavy rainfall, storms, and flooding in others, and the continuously decreasing Arctic sea ice. Along the same lines, analysts note that in Europe, this fall, continental temperatures were 1.8°C higher than the long-term average, and the past ten autumns have been the warmest on record. Also in Australia, this year the weather has been exceptionally warm and rainfall in many regions has been at near record lows. Drying has increased significantly in Africa in the past three years, reveals Gravity Recovery and Climate Experiment satellite data. New findings show that glaciers are melting fast around the world from Africa's Kilimanjaro—projected to completely disappear sometime in the next 20—50 years, to South America's Andes Mountains, Europe's Alps, and Asia's Himalayas. Tibet's glaciers may disappear within 100 years, threatening hundreds of millions of farmers in China's western regions. The Chinese Ministry of Science and Technology warns that global climate change will increase "extreme weather events", threatening China's food production. (A comprehensive government assessment is likely to be released in the first half of 2007.) Central India's extreme rainstorms rose in number and strength over the past fifty years, most probably due to global warming.

6.5.2 Rising Sea Levels Claim First Inhabited Island and Threaten Coastal Populations Worldwide

Scientists emphasize that extreme scenarios—as effects of climate change—have to be integrated into the decision-making process. Latest estimates by climatologist Stefan Rahmstorf of the Potsdam Institute for Climate Impact Research show that the world's oceans may rise up to 140 cm (4 ft 7 in) by 2100 due to global warming, considerably higher than the 9-88 cm projected by IPCC. His study is based on air temperatures and past sea level changes rather than computer models. The scientist underlines that the different results obtained “with reasonable methods” show the serious uncertainty concerning sea level forecasts; however, there is compelling evidence that shore communities are particularly at risk.

Rising sea levels have submerged two islands in India's part of the Sundarbans—where the Ganges and the Brahmaputra rivers empty into the Bay of Bengal—and a dozen more islands in the area are at risk, threatening nearly 100,000 people who will have to be evacuated in the next decade. Lohachara, which had a population of 10,000 people, is the first inhabited island to disappear due to rising seas caused by global warming. The people of the Carteret Islands off Papua New Guinea also live under the continuous fear of stronger and more frequent rising tides threatening their entire

livelihood and eroding their land. The islands are expected to disappear in about eight years. Similarly, whole island nations, from the Maldives to the Marshall Islands, vast areas of countries from Bangladesh to Egypt, and many coastal cities are at risk as sea levels continue to rise. In Alaska, 184 out of 213 native villages are at some point affected by erosion and flooding due to global warming, threatening the culture and the very survival of the inhabitants. [See also *Rising Sea Level Triggers Rising Refugee Move* in April 2006, *Rising Concerns over Rising Seas* in February 2006, and other previous environmental security reports.]

Military Implications:

Extreme weather conditions, threats to food supply, and loss of livelihood (mostly in highly populated regions such as India and China) might increase unrest and threaten global stability. The U.S. Army Corps of Engineers—having the logistics and know-how—should consider worldwide collaboration with counterparts and international organizations (e.g. the UNU Institute for Environment and Human Security in Bonn) to determine priorities on which communities need what kind of help from a network of state and international agencies. Also, the issue of environmental refugees should be tackled swiftly to avoid conflicts that this rising segment of world population might cause.

Sources:

WMO Statement on the Status of the global Climate in 2006

http://www.wmo.ch/web/Press/PR_768_English.doc

Europe's warmest autumn in 500 years

<http://www.bioedonline.org/news/news.cfm?art=2978>

Australia ponders climate future

<http://news.bbc.co.uk/2/hi/science/nature/6204141.stm>

Tibet: Disappearing Glaciers Threaten China, UN Says

<http://www.unpo.org/article.php?id=5838>

The last tide could come at any time. Then these islands at the end of the Earth will simply vanish

<http://www.timesonline.co.uk/article/0,,3-2513189,00.html>

In many villages, Alaskans face physical and cultural erosion

<http://www.signonsandiego.com/news/nation/20061225-0916-alaskaerosion.html>

Oceans May Rise up to 140 cms by 2100 Due to Warming

<http://www.planetark.com/dailynewsstory.cfm/newsid/39504/story.htm>

See a more extensive list of sources in the [Appendix](#)

6.6 EU to Move Forward on the Post-Kyoto Negotiations

The European Environment Council agreed to significantly accelerate global negotiations for a post-Kyoto framework to reduce greenhouse gas emissions. It is ready to assume leadership for completing global negotiations by the end of 2009. [See also *UN Climate Change Conference with 5,900 Explores Post-Kyoto Regulations* in November 2006, *Montreal Conference on Climate Change Reached New Agreements* in December 2005, *UN Meeting Fails to Agree on Post-Kyoto Strategy* in May 2005, and other previous environmental security reports.]

Military Implications:

[Same as previous on the same issue] The military should continue to accelerate efforts to reduce their own greenhouse gas emissions. These remarks are offered with the realization that the U.S. military may already be among the institutions most compliant with greenhouse gas emission

standards, but that good performance might not be good enough in coming years. New international environmental security-related policies and cooperation to avoid potentially large-scale disasters and conflicts seem inevitable. Hence, the military should follow the evolution of these discussions to better anticipate future requirements.

Source:

Environment: Commission welcomes Council action on REACH, climate change and marine protection
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1826&type=HTML&aged=0&language=EN&guiLanguage=en>

6.7 Conference on Desertification Calls for Policies to Address Environmental Refugees

The UN International Year for Deserts and Desertification concluded with a Conference held in Algiers, Algeria, December 17-19, convened by the Canadian-based UNU International Network on Water, Environment and Health (UNU-INWEH), with ten other international agencies and hosted by the Algerian government. About 200 experts from 25 countries discussed policies to address desertification and its consequences, including health, economic, and environmental refugee-related issues. UN experts estimate that desertification threatens 2 billion people and could create more than 135 million refugees. In Africa, if current trends of soil degradation continue, the continent might be able to feed just 25% of its population by 2025, according to Karl Harmsen, Director of UNU's Ghana-based Institute for Natural Resources in Africa. The international community should swiftly adopt adequate policies both to counter the desertification trend and to address desertification-induced migration. "Environmental refugees," although not recognized yet in world conventions, are estimated to outnumber political refugees. [See also *International Year of Deserts and Desertification—2006* in January 2006, and *Desertification Synthesis (MA report 3)* in June 2005 environmental security monthly reports.]

Military Implications:

[Similar to previous on the same issue] Those developing military programs to prevent environmentally induced conflicts should follow the outcomes of such meetings and cooperate with other militaries, international agencies, and NGOs to create new policies and strategies to counter desertification and help cope with its consequences.

Sources:

Joint International Conference—Desertification and the International Policy Imperative
<http://www.inweh.unu.edu/inweh/drylands/IYDD.htm>

Experts Advise World Policies to Cope with Causes, Rising Consequences of Creeping Desertification
http://www.inweh.unu.edu/inweh/drylands/Algiers_news_release-Final.pdf

Forced migration key issue at desert meeting
<http://allafrica.com/stories/200612150974.html>

Looming desertification could spawn millions of environmental refugees
<http://news.mongabay.com/2006/1214-unu.html>

Droughts to set off exodus
<http://www.thestar.com/article/151381>

6.8 Nanotechnology-related Issues

6.8.1 ASTM Issues Standard Terminology for Nanotechnology

The American Society for Testing Materials (ASTM) International Committee E56 on Nanotechnology has approved its first standard, E 2456, Terminology for Nanotechnology, under the jurisdiction of Subcommittee E56.01 on Terminology and Nomenclature.

Military Implications

Military organizations preparing nanotech-related documents should consult this work to ensure that industry-standard terminology is being used.

Sources:

Terminology for Nanotechnology Standard Now Available from ASTM International
<http://69.7.224.88/viewnews.aspx?newsID=996&s=E56>

6.8.2 Carbon Nanotubes May Spread in Water More Widely Than Thought

A study by Jaehong Kim and colleagues at Georgia Institute of Technology has shown that carbon nanotubes, which are hydrophobic and clump together in water, may nevertheless interact with natural organic matter found in lakes and rivers, in ways that lead to their wider dispersion.

Military Implications:

The military should investigate these results to see whether previous assessments of risk for carbon nanotubes in aqueous environments need to be modified, and should take them into account in future studies and use of nanotubes.

Source:

Carbon nanomaterials may disperse more widely in waterways
<http://www.physorg.com/news84458690.html>

6.8.3 Upcoming Conferences on Nanotechnology with Environmental Security Implications

The U.S. National Nanotechnology Coordination Office (NNCO) will hold a public meeting on January 4, 2007, to address the needs and priorities of environmental, health, and safety (EHS) research on engineered nanoscale materials. According to the announcement, the purpose of the meeting is to lay-out "strategic and interim goals for filling the EHS information needs gaps for nanomaterials." It will be structured around the following research areas: instrumentation, metrology, and analytical methods; nanomaterials and human health; nanomaterials and the environment; health and environmental surveillance; and risk management methods.

A conference, *Nanotechnology - Products and Processes for Environmental Benefit*, is to be held in London on 16-17 May 2007 under the auspices of the Royal Society. More information will be available shortly.

Military Implications:

Appropriate military personnel should consider attending or obtaining the proceedings of these meetings for possible input to their own work.

Sources:

Public Meeting on Research Needs and Priorities Related to the Environmental, Health, and Safety Aspects of Engineered Nanoscale Materials

https://nnco.nano.gov/public_ehs/ (see announcement in the [Appendix](#))

Nanotechnology - Products and Processes for Environmental Benefit

<http://www.nano.org.uk> (Further details will be announced soon)

Item 7. Reports Suggested for Review**7.1 Nanotechnologies - Safety for Success Conference Publishes Final Report**

The 'Nanotechnologies - Safety for Success' conference, held 14-15 September in Espoo, Finland, has published its final report. The conference was attended by 180 specialists from 20 countries. According to the announcement, speakers introduced the audience to the opportunities, unknowns, and potential risks of evolving nanotechnologies, facilitated dynamic stakeholder discussion and identification of coordinated and concerted actions, and identified the key actions for efficient and well coordinated policies on nanotechnologies in Member States, in the European Union and internationally.

Military Implications:

As before, military personnel concerned with nanotech safety should review this report for insights on nanotech environmental risk assessment.

Source:

Success and Outcomes from the Finnish Presidency Conference on “Nanotechnologies – Safety for Success”

http://www.fmnt.fi/ntss/FIN_Presidency_Nanotechnologies_report.pdf

7.2 Asia-Pacific Should Intensify Green Growth Efforts

The *State of the Environment in Asia and the Pacific 2005* report, published by the United Nations Economic and Social Commission for Asia and the Pacific, notes that the region needs to shift towards ecologically efficient, ‘green growth’ patterns, if it wants to continue its growth.

Acknowledging some efforts on new regulations, it documents that many areas are still in great need of improvement. High population density, low freshwater availability and biologically productive area per capita of all global regions, and the growth of highly energy-intensive and polluting industries, along with increasing waste, are some of the most important concerns. The report offers a comprehensive picture of the region’s trends both as problems, and as shortfalls that still have to be regulated.

Military Implications:

Military personnel with environmental security responsibilities in the Asian region should review the document for potential new regulations, areas for cooperation, and opportunities for military-to-military training and assistance.

Sources:

State of the Environment in Asia and the Pacific 2005

<http://www.unescap.org/esd/environment/soe/2005>

UNESCAP Report: Asia-Pacific Environment at Boiling Point

<http://www.unescap.org/unis/press/2006/dec/g61.asp>

APPENDIX

Reference Details

This Appendix contains expanded background information on some items.

Item 5. Technological Breakthroughs with Environmental Security Implications

5.2 Detector Materials for Cyanogen Halides from Chemical Weapons

Out of the dark

Highly sensitive chemosensors for cyanogen halides
Jane Morris

Abstract:

Cyanogen halides (XCN) are highly toxic compounds that have an effect on the human body similar to that of hydrogen cyanide — indeed, ClCN is used as a military chemical weapon. The ability to detect trace amounts is therefore of the utmost importance. Researchers in the USA have now synthesized previously unreported bis-cyclometalated Pt(II) complexes for use as highly sensitive sensors for XCN. These Pt(II) complexes are strongly orange–red phosphorescent at room temperature in solution, and react with XCN to form Pt(IV) products giving blue-shifted emission. Thin polymer films of these complexes also react in a similar way with XCN vapours. The strong blue-shifted emission gives a signal with almost no background (dark field), which allows for maximum sensitivity to trace quantities. This is an improvement on the more usual chemosensors that are based on energy-transfer schemes, which have a limited signal-to-noise ratio.

References

1. Thomas III S. W., Venkatesan K., Müller P. & Swager T. M. Dark-field oxidative addition-based chemosensing: New bis-cyclometalated Pt(II) complexes and phosphorescent detection of cyanogen halides. *J. Am. Chem. Soc.* doi:10.1021/ja065645z (2006)

Source:

Out of the dark. Highly sensitive chemosensors for cyanogen halides. 14 December 2006
<http://www.nature.com/materials/news/news/061214/portal/m061214-1.html> (by subscription only)

Item 6. Updates on Previously Identified Issues

6.5 Climate Change

A more extensive list of sources:

Global Warming May Explain India's Extreme Storm Rise -- (AFP -- November 30, 2006)
http://www.terraily.com/reports/Global_Warming_May_Explains_India_Extreme_Storm_Rise_999.html

WMO Statement on the Status of the global Climate in 2006

http://www.wmo.ch/web/Press/PR_768_English.doc

Europe's warmest autumn in 500 years

<http://www.bioedonline.org/news/news.cfm?art=2978>

Australia ponders climate future

<http://news.bbc.co.uk/2/hi/science/nature/6204141.stm>

Satellites weigh Africa's water

<http://news.bbc.co.uk/2/hi/science/nature/6174689.stm>

Climate Change Melts Kilimanjaro's Snows

<http://www.washingtonpost.com/wp-dyn/content/article/2006/12/16/AR2006121600431.html>

Tibet: Disappearing Glaciers Threaten China, UN Says

<http://www.unpo.org/article.php?id=5838>

Tibet's Disappearing Glaciers Threaten China -- (Bloomberg -- November 14, 2006)

http://www.bloomberg.com/apps/news?pid=20601086&sid=as.VsLN0AqhA&refer=latin_america

Ministry of Science and Technology's Web site www.most.gov.cn

Disappearing world: Global warming claims tropical island

<http://news.independent.co.uk/environment/article2099971.ece>

Rising sea levels engulfing Indian world heritage islands

<http://www.terradaily.com/2006/061221015453.078uvrt9.html>

The last tide could come at any time. Then these islands at the end of the Earth will simply vanish

<http://www.timesonline.co.uk/article/0,,3-2513189,00.html>

In many villages, Alaskans face physical and cultural erosion

<http://www.signonsandiego.com/news/nation/20061225-0916-alaskaerosion.html>

Oceans May Rise up to 140 cms by 2100 Due to Warming

<http://www.planetark.com/dailynewsstory.cfm/newsid/39504/story.htm>

London-on-Sea: the future of a city in decay. By Roger Highfield, Telegraph.co.uk, 27/12/2006

<http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2006/12/27/nlondon27.xml>

6.8 Nanotechnology-related Issues

6.8.3 Upcoming Conferences on Nanotechnology with Environmental Security Implications

Public Meeting on Research Needs and Priorities Related to the Environmental, Health, and Safety Aspects of Engineered Nanoscale Materials

https://nnco.nano.gov/public_ehs/

Date: Thursday, January 4, 2007

Time: 8:30 a.m. (schedule to be published before meeting date)

Place: FDIC Training Center, 3501 Fairfax Drive, Arlington, VA 22226.

Directions: The FDIC is located close to the Virginia Square-GMU Metro stop on the Orange Line.

For further directions click here < http://www.fdic.gov/about/guest_services/index.html >.

DESCRIPTION

The National Nanotechnology Coordination Office (NNCO), on behalf of the Nanoscale Science, Engineering and Technology (NSET) Subcommittee of the Committee on Technology, National Science and Technology Council (NSTC), will hold a public meeting on January 4, 2007, to receive input on research needs related to the environmental, health, and safety aspects of engineered nanoscale materials. Specifically, the NSET Subcommittee is seeking comment on the research needs and prioritization criteria for the research that were identified in the NSET Subcommittee document Environmental, Health, and Safety Research Needs for Engineered Nanoscale Materials, which was released on September 15, 2006.

To read full meeting announcement, click here

https://nnco.nano.gov/public_ehs/Fed_Reg_notice_EHS_Pub_Mtg_12_4_06.doc

Draft meeting agenda, click here

https://nnco.nano.gov/public_ehs/DRAFT_Agenda_12_26_06.doc

REGISTRATION

Due to space limitations, early registration on this web page is suggested. On-site registration will be available on a first-come basis, space permitting.

Attendees:

To register to attend the meeting, click here https://nnco.nano.gov/public_ehs/attendee.php

Presenters:

Those wishing to present comments at the meeting should register below no later than Wed., December 20, so that the schedule for the day can be planned.

To register to present comments at the meeting, click here.

Written or electronic comments:

Comments may be submitted here through January 31, 2007.

To submit comments, click here.

To read submitted comments, click here.

FOR FURTHER INFORMATION, CONTACT:

For information regarding this Notice, please contact Cate Alexander Brennan, National Nanotechnology Coordination Office. Telephone: (703) 292-4399. Email:

calexand@nnco.nano.gov.