

**WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY**  
Subcontract No: 1048, LMI Task No: MAN0B.04, for the U.S. Army Environmental Policy Institute

**OCTOBER 2010 REPORT**

Note to Readers: Pages 1-15 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 16.

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## **Item 1. UN Human Rights Council Affirms Right to Water as Legally-Binding**

Water tables are falling on all continents; more than 40% of humanity gets its water from watersheds controlled by two or more countries. About 900 million people lack clean water and 2.6 billion lack adequate sanitation. The UN Human Rights Council adopted a resolution affirming that rights to safe drinking water and sanitation are basic human rights contained in existing human rights treaties, and therefore legally binding. The International Covenant on Economic, Social and Cultural Rights (ICESCR), the UN Convention on the Rights of the Child (CRC), the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), and the Convention on the Rights of Persons with Disabilities (CRPD) give rise to obligations for States parties in relation to access to safe drinking water and sanitation. This action addresses previous objections by those nations who abstained from supporting this right in the UN General Assembly in July this year. The UN Human Rights Council calls upon all States to create the legal and procedural frameworks for assuring the implementation, monitoring and enforcement mechanisms “to achieve progressively the full realization of human rights obligations related to access to safe drinking water and sanitation, including in currently unserved and underserved areas.” [Related item: *UN Resolution Acknowledges Access to Clean Water and Sanitation a Human Right* in August 2010 environmental security report.]

### **Military and Related Security Implications:**

Senior military personnel should explore military roles in implementing this resolution to reduce water-related conflicts in the future. Military-to-military personnel concerned with water-related causes of conflict should be made aware of this resolution to add justification to their continued or expanded operations. Since the UN Human Rights Council resolution is binding, it gives a new rationale to all organizations, including peacekeeping and other military entities, to increase their efforts towards improving the water situation in the regions where they are stationed or are operating. The resolution increases the likelihood that actions by public and private security actors will be scrutinized more often and more thoroughly for their impact on water, up to and possibly including provoking charges of “aggression”.

### **Sources:**

UN united to make the right to water and sanitation legally binding

<http://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=10403&LangID=E15/...> Human rights and access to safe drinking water and sanitation. Human Rights Council Resolution A/HRC/15/L.14 (Sept. 24, 2010)

<http://daccess-dds-ny.un.org/doc/UNDOC/LTD/G10/163/09/PDF/G1016309.pdf?OpenElement>

UN landmark decision: right to water and sanitation is legally binding

<http://internationallawobserver.eu/2010/10/14/un-landmark-decision-right-to-water-and-sanitation-is-legally-binding>

## **Item 2. International Biosecurity Initiative**

U.S. Rep. Brad Sherman (D-Calif.), chair of the House Foreign Affairs Subcommittee on Terrorism, Nonproliferation, and Trade introduced the International Biosecurity Act of 2010 (HR 6297) to pursue efforts to establish international cooperation to counter both natural and man-made biological risks and assess the establishment of a global legal regime for biosecurity. The bill might be included in the proposed WMD Prevention and Preparedness Act of 2010 (HR

5498), which is awaiting a House floor vote. [Related items: *BWC Meeting Improves International Resilience Systems to Address Infectious Disease and BioWeapons* in August 2009, *New Technologies Need New Regulations Systems* in March 2009, and other items in previous environmental security reports.]

**Military and Related Security Implications:**

Military and security personnel with biosecurity-related responsibilities should review this legislation, follow its legislative progress, and explore its implications with their international counterparts for reducing the full range of international biosecurity threats and improving the use of nanosensor and other networks (some of which have been referenced in these monthly reports).

**Sources:**

Bill: To improve the international strategy of the United States for monitoring, reducing, and responding to biological risks, and for other purposes.

<http://www.govtrack.us/congress/bill.xpd?bill=h111-6297>

Bill Would Establish Global Biosecurity Body

[http://gsn.nti.org/gsn/nw\\_20101005\\_4535.php](http://gsn.nti.org/gsn/nw_20101005_4535.php)

H.R. 5498: WMD Prevention and Preparedness Act of 2010

<http://www.govtrack.us/congress/bill.xpd?bill=h111-5498>

**Item 3. Synthetic Biology Guidelines to Reduce Bioweapon Threats**

Synthetic biological voluntary guidelines released October 13, 2010 by the U.S. Dept. of Health and Human Services call for sellers of synthetic double-stranded DNA products to know their buyers and their intended use. These guidelines will be reviewed and updated on a regular basis. Since synthetic biology could one day be misused to create bioweapons and potentially even weapons of mass destruction, international agreements to regulate this new technology seem both likely and warranted. The scale and scope of the expected future biological revolutions may one day require an international regulatory agency similar to the International Atomic Energy Agency. [Related item:

**Military and Related Security Implications:**

International military liaisons with security, health, and environmental responsibilities should be aware of these guidelines and share them with their counterparts to speed the day when international agreements are written to monitor and control synthetic biology.

**Source:**

Screening Framework Guidance for Providers of Synthetic Double-Stranded DNA

<http://www.phe.gov/Preparedness/legal/guidance/syndna/Documents/syndna-guidance.pdf>

**Item 4. Arctic and South China Sea Resource Issues Causing U.S. to Review Law of the Sea**

A Joint Statement of the 2<sup>nd</sup> US-ASEAN Leaders Meeting reaffirmed regional peace in accordance with principles of international law including the UN Convention on the Law of the Sea, which is a main legal tool for protection against China's claims in the South China Sea. "Disagreements over territorial claims and the appropriate use of the maritime domain appear to be a growing challenge to regional stability and prosperity," stated Secretary of Defense Robert

Gates at a multilateral event in Hanoi, Vietnam, with reference specifically to the South China Sea. Secretary of State Hillary Clinton also underlined that the U.S. will “prioritize the Law of the Seas next year. It is critical to how we’re going to manage the Arctic. It is critical to our credibility in working with nations in Southeast Asia over questions regarding activities in the South China Sea.” The Convention has 161 parties (including the European Union), and out of the 35 nonparties, 17 are land-locked states. [Related item: *Resources Trigger Overlapping Claims for Maritime Areas* in May 2009 environmental security reports.]

**Military and Related Security Implications:**

It is likely that the debates concerning rights to resources in the South China Sea, polar regions, and other maritime areas will increase rapidly. This opens the potential for new military roles in those regions to ensure the safety of individuals and ecosystems. While the U.S. is “prioritizing” the Law of the Seas ratification, relevant military and security personnel should increase cooperation with international counterparts to develop policies to reduce and/or manage tensions in these potential resources-conflict areas.

**Sources:** [see an expanded list in the [Appendix](#)]

Joint Statement of the 2ND U.S.- ASEAN Leaders Meeting

<http://www.whitehouse.gov/the-press-office/2010/09/24/joint-statement-2nd-us-asean-leaders-meeting>

Remarks by Secretary Gates at ASEAN Defense Ministers Meeting Plus

<http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4700>

Secretary Clinton: Remarks on Innovation and American Leadership to the Commonwealth Club

<http://www.state.gov/secretary/rm/2010/10/149542.htm>

**Item 5. Islamic Conference of Environmental Ministers Approves Detailed Program**

Participants to the 4<sup>th</sup> Islamic Conference of Environment Ministers (ISESCO) adopted a comprehensive Islamic Environmental Programme and endorsed the broader implementation of the program by all Islamic countries. Programs were also adopted for development and implementation of renewable energy, environmental protection, water resources, and sustainable development, as well as for reinforcing member states’ capacities to develop national strategies and emergency plans to cope with natural disasters.

**Military and Related Security Implications:**

The Islamic environmental program should be reviewed by military and related security personnel with environmental security responsibilities in Islamic nations. Opportunities should be explored to cooperate with programs to increase Islamic nations’ participation in the fields of environmental science, sustainable environmental technologies, and environmental security strategies.

**Sources:**

4<sup>th</sup> Islamic Conference of Environment Ministers Starts in Tunis

<http://www.thepeninsulaqatar.com/latest-news/128323-4th-islamic-conference-of-environment-ministers-starts-in-tunis-.html>

4<sup>th</sup> Islamic Conference of Environment Ministers and Conference documents

<http://www.sesric.org/event-detail.php?id=432>

## Item 6. Hungary Industrial Plant Spill Might Trigger Tougher Environmental Regulations

Approximately 700,000 cubic meters (184 million gallons) of heavy-metal-contaminated sludge has impacted at least 40 km<sup>2</sup> (15.4 mi<sup>2</sup>) of territory, including what appears to be pollution of the Danube, due to a sludge spill from a bauxite refinery in Ajka, Hungary, a town 160 kilometers (100 miles) from Budapest. Experts warn that the chemically polluted sludge could flow from Hungary to countries downstream, polluting the water and agricultural land. The Danube basin is historically linked to the mining and industrial farming industries. Chemicals such as copper, manganese, and cadmium already contaminate its tributaries, while pollutants have accumulated in soils, sediments, and groundwaters of the region. Research conducted after the Ajka spill suggests there may be hundreds, possibly thousands, of unreported chemical facilities without jurisdictional clarity “orphaned” by the fall of communism and with failing containment infrastructures in the basin, posing a chemical “time bomb” threat. International liability and redress issues are likely.

### **Military and Related Security Implications:**

The Ajka spill will probably raise questions regarding proper implementation and enforcement of Europe’s Seveso II Directive that includes legislation on the storage of dangerous substances and chemical safety management systems. EUCOM and NATO personnel should consider supplementing the EU’s inspection capability of industrial facilities in Europe both for assessing this instance’s pollution rate, as well as to be prepared for likely tougher enforcement.

### **Sources:**

The Danube’s menacing industrial legacy

<http://www.theglobeandmail.com/news/world/europe/the-danubes-menacing-industrial-legacy/article1759897/>

Danube Largely Safe Despite Toxicity of Hungarian Spill

<http://www.spiegel.de/international/europe/0,1518,722100,00.html>

UN sends experts to Hungary to help assess health impact of sludge spill

<http://www.un.org/apps/news/story.asp?NewsID=36414&Cr=health&Cr1=>

## Item 7. Technological Advances with Environmental Security Implications

### 7.1 New Detection and Cleanup Techniques

#### 7.1.1 U.S.-China Ozone Microbubbles Provide Widely Applicable Cleanup Technique

Prof. Andy Hong of the University of Utah has developed a technology, “heightened ozonation treatment (HOT)” that is claimed to have the potential to aid a wide range of environmental cleanup efforts, such as removing oil and gas byproducts from water, and organics and heavy metals from industrial sites, and removing harmful algae from lakes. The University, in cooperation with the Chinese company Honde LLC and the Chinese government, is testing the technique to remediate a lakeshore industrial site.

### **Military and Related Security Implications:**

If the trials of this technology are successful, it should prove useful in pollution situations where the water contaminants and occurrence are appropriate..

**Source:**

Utah Microbubbles Clean Dirty Soil in China

<http://www.unews.utah.edu/p/?r=101110-1>

**7.1.2 Laser Detector Offers Fast Gas Analysis**

Scientists at the JILA laboratory operated by the National Institute of Standards and Technology (NIST) and the University of Colorado at Boulder report having extended into the mid-infrared (IR) range the coverage of a laser-based spectroscopic system capable of fast molecular analysis of complex gas mixtures, with parts-per billion (ppb) precision, using an “optical frequency comb.” The researchers plan to extend this coverage to an important longer wavelength portion of the IR spectrum.

**Military and Related Security Implications:**

This technology should be reviewed for its ability to improve environmental assessments and other security applications.

**Source:**

JILA unveils improved 'molecular fingerprinting' for trace gas detection

<http://www.physorg.com/news/2010-10-jila-unveils-molecular-fingerprinting-gas.html>

**7.1.3 New Colorimetric Sensor Uniquely Detects Vapor from TATP Explosive**

Prof. Kenneth Suslick and Hengwei Lin of the University of Illinois at Urbana-Champaign claim development of a fast, inexpensive colorimetric sensor array device that can quantitatively detect levels of vapor from the explosive triacetone triperoxide (TATP) down to 2 ppb. TATP is a high-powered explosive that has been used in several bombing attempts. The sensor uses an inert plastic film with 16 tiny colored dots – each a different pigment – where a solid acid catalyst breaks down TATP into detectable components that cause the pigments to change color in an indicative pattern. It is being commercialized by iSense, a sensor manufacturer based in Palo Alto CA.

**Military and Related Security Implications:**

This device should be evaluated as a potentially valuable addition to the current set of environmental surveillance tools.

**Sources:**

Sniffing out shoe bombs: A new and simple sensor for explosive chemicals

<http://www.nanowerk.com/news/newsid=18571.php>

A Colorimetric Sensor Array for Detection of Triacetone Triperoxide Vapor

<http://pubs.acs.org/doi/abs/10.1021/ja107419t>

**7.2 Increasing Energy Efficiency Technologies****7.2.1 Carbon Nanotube Cathodes, Silicon Anodes Improve Battery Performance**

Contour Energy Systems, Inc. of Azusa CA has announced its licensing from MIT of a carbon nanotube technology that it says can dramatically improve the power capability of lithium-ion batteries. Prof. Shao-Hom of MIT stated, “These carbon nanotubes contain numerous functional groups on their surfaces that can store a large number of lithium ions per unit mass ... [Thus] for the first time, carbon nanotubes can serve as the cathode in lithium-ion batteries,

instead of the traditional role that carbon materials have played as the anode in such systems,” producing faster reactions and delivering high power, approaching 10 times current total power delivery capability. Corvus Energy of Vancouver reports achieving 22% better power storage by using lithium nickel manganese cobalt instead of lithium iron phosphate.

According to *Nanowerk News*, Prof. Sibani Lisa Biswal, of Rice University and colleagues there and at Lockheed Martin have developed a new anode material for lithium-ion batteries consisting of silicon densely filled with pores 1 micron wide and 10-50 microns long in which lithium can be absorbed and released – as much as 10 times as much as with equivalent carbon material. This structure overcomes the previous deficiency of a silicon base: cracking after a limited number of recharge cycles.

### **Military and Related Security Implications:**

The evolution of these technologies should be tracked by those responsible for reducing the military environmental footprint, meeting new energy standards, and improving power supply performance.

### **Sources:**

Contour Energy Systems Signs Exclusive Technology Licensing Agreement with MIT

<http://www.contourenergy.com/newsmodule/view/id/13/src/@random4c7d17e3c79cc/>

Monster power. Lithium-ion batteries start to take on the big stuff

<http://www.economist.com/node/17352944?fsrc=nwl>

Silicon strategy shows promise for batteries

<http://www.nanowerk.com/news/newsid=18492.php>

### 7.2.2 NSF Makes 14 Grants in Renewable Energy and Sustainability

The National Science Foundation Office of Emerging Frontiers in Research and Innovation announced 14 grants for fiscal year 2010, awarded to 62 investigators at 24 institutions, working over the next four years on storing energy from renewable sources; and engineering sustainable buildings. According to the announcement, the groups “will pursue creative new approaches to making large-scale energy storage efficient and economical. They aim to construct capacitors and regenerative fuel cells with unprecedented capabilities to harness the sun’s thermal energy, to produce chemical fuel on demand, and to trap off-shore wind as compressed air” and “will investigate the critical flows and fluxes of buildings--power, heat, light, water, air and occupants --to create new paradigms for the design, construction, and operation of our homes and workplaces.”

### **Military and Related Security Implications:**

Organizations in the environmental security community should establish contact with the awardees to exploit their accomplishments as quickly as practicable.

### **Source:**

Exploring Sustainability for Energy and Buildings

[http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=117731&WT.mc\\_id=USNSF\\_51&WT.mc\\_ev=click](http://www.nsf.gov/news/news_summ.jsp?cntn_id=117731&WT.mc_id=USNSF_51&WT.mc_ev=click)

## **Item 8. Updates on Previously Identified Issues**

### **8.1 Kenya to Implement E-Waste Management Program**

The 40 million metric tons of e-waste generated annually around the world is expected to increase, adding toxins throughout the environment. Kenya is set to become the first East African

nation to develop regulations on the management of electronic waste, following a national conference held at the United Nations Environment Programme (UNEP) in Nairobi. Delegates from Kenya's Environment Ministry and National Environment Management Authority, Microsoft, UNEP, and the telecommunications industry attended to chart a common way forward in dealing with e-waste management in line with the Basel Convention and other international frameworks.

**Military and Related Security Implications:**

AFRICOM should liaise with e-waste experts and this Kenyan initiative. It is reasonable to assume that Kenya's example will stimulate other African countries to create their own e-waste regulations; hence, military and security organizations along with their contractors should plan to have compatible e-waste procedures.

**Source:**

UNEP backs action on e-waste in East Africa

[http://www.unep.org/Documents.Multilingual/Default.Print.asp?DocumentID=647&ArticleID=6744&l=en&WT.rss\\_f=pr&WT.rss\\_a=647-6744](http://www.unep.org/Documents.Multilingual/Default.Print.asp?DocumentID=647&ArticleID=6744&l=en&WT.rss_f=pr&WT.rss_a=647-6744)

**8.2 Biosafety Regulations Reviewed in Context of Worrying Forecasts**

The Meeting of the Parties to the Cartagena Protocol on Biosafety (COP/MOP 5) held October 11-15, 2010, in Nagoya, Japan, was preceded by the fourth meeting of the Group of Friends of the Co-Chairs on Liability and Redress in the context of the Biosafety Protocol, and followed by the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP10). The meetings considered a series of strategic, content, and administrative issues, including new strategic plans and cooperation with other conventions, organizations and initiatives for improving capacity building, compliance and monitoring. The Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (the Supplementary Protocol) is expected to further strengthen and increase its efficiency.

Meanwhile, the *Living Planet Report 2010* produced by the World Wildlife Federation (WWF) in collaboration with Global Footprint Network and the Zoological Society of London, and released prior to the Nagoya meetings, details alarming biodiversity declines along with the warning that humanity's ecological footprint reached 1.5 times Earth's capacity to produce renewable resources and is producing CO<sub>2</sub> at a rate 50% faster than the Earth can sustain. *The Economics of Ecosystems and Biodiversity* (TEEB) report, launched at the CBD COP10, documents the multi-trillion dollar importance to the global economy of the natural world, and suggests policy-shifts and market mechanisms that could help curb biodiversity loss. According to the report, halving current deforestation rates alone by 2030 is worth \$3.7 trillion in global climate change adaptation savings. [Related item: *Strategic Plan for Biodiversity to Connect UN Conventions and UN Bodies* in September 2010 environmental security report.]

**Military and Related Security Implications:**

Increased coherence among biodiversity agreements, UN-related bodies, and capacity building should lead to greater attention being paid to biodiversity impacts of military training and other operations. Military liaisons should explore opportunities for cooperation and applications of the *Army Strategy for the Environment* as this integration evolves with monitoring and enforcement organizations. Also, military and other security personnel should anticipate increased adherence to the concept of calculating the environmental footprint internationally and an increased number

of protected regions. Brazil and India have already stated they will integrate valuations of nature's services into their national economic frameworks, and the EU is prepared to support other developing nations who would like to do the same.

**Sources:** [see an expanded list in the [Appendix](#)]

Fifth meeting of the Cartagena Protocol on Biosafety. 11-15 October, 2010

<http://www.iisd.ca/vol09/enb09528e.html>

Nagoya 2010: Report puts economic value of nature on the global political radar

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=649&ArticleID=6791&l=en>

Living Planet Report 2010

<http://www.footprintnetwork.org/press/LPR2010.pdf>

### **8.3 Stockholm Convention on Persistent Organic Pollutants (POPs) Updated**

The sixth meeting of the Persistent Organic Pollutants Review Committee (POPRC-6) of the Stockholm Convention on Persistent Organic Pollutants (POPs) took place October 11-15, 2010 in Geneva, Switzerland. It formed a working group to prepare a draft risk management evaluation for hexabromocyclododecane (HBCD), risk management evaluation for endosulfan and recommended its listing in Annex A, with exemptions, risks of combined exposures, and other related conditions. The Committee considered a revised draft risk profile and further evaluation of short-chained chlorinated paraffins (SCCPs), and it provided for increased harmonization of relations with the Basel Convention. [Related item: *Stockholm Convention Updated with Nine New Chemicals* in May 2009 and other items on this issue in previous environmental security reports.]

#### **Military and Related Security Implications:**

The decisions from POPRC-6 should be studied by military and security personnel with responsibilities that include persistent organic pollutants in order to improvement their own procedures. [Similar to previous on this issue] Although the U.S. is not Party to the Stockholm Conventions, it should be prepared to comply with the requirements when acting in countries Party. Thus, such personnel should consider the implications of the new listing of these substances, and—if the cases require—find replacements.

#### **Source:**

Sixth Meeting of the Persistent Organic Pollutants Review Committee (POPRC6) to the Stockholm Convention on Persistent Organic Pollutants (POPs)

<http://www.iisd.ca/vol15/enb15176e.html>

### **8.4 International Civil Aviation Pact Cuts Climate Emissions from Aircraft**

The Assembly of the International Civil Aviation Organization (ICAO) adopted a global agreement and roadmap for reducing greenhouse gas emissions from aircraft through 2050. Some key elements: improving aviation fuel efficiency 2% per year up to 2050; a framework for development and deployment of alternative fuels; and CO<sub>2</sub> emission standards for aircraft by 2013. The *ICAO Environmental Report 2010* launched at the Assembly brings together scientific, technological, economic, political and regulatory aspects of aviation environmental protection. [Related item: *Provisional Agreement for Including Aviation in the Emission Trading Scheme from 2012* in June 2008 environmental security report.]

**Military and Related Security Implications:**

Although the regulation concerns only civil aviation, military and security organizations should explore these conclusions as potentially leading to future impacts on their own operations.

**Sources:**

ICAO Member States Agree to Historic Agreement on Aviation and Climate Change

<http://www2.icao.int/en/Assembly37newsroom-public/Documents/ICAO%20Member%20States%20Agree%20To%20Historic%20Agreement%20On%20Aviation%20And%20Climate%20Change.pdf>

Civil Aviation Pact Cuts Climate Emissions from Aircraft

<http://www.ens-newswire.com/ens/oct2010/2010-10-13-02.html>

ICAO Environmental Report 2010

[www.icao.int/icao/en/env2010/pubs/environmentreport\\_2010.pdf](http://www.icao.int/icao/en/env2010/pubs/environmentreport_2010.pdf)

**8.5 IMO MEPC Revises MARPOL, Addresses Emissions from Ships**

The 61<sup>st</sup> session of the International Maritime Organization's (IMO) Marine Environment Protection Committee (MEPC), which took place 27 September-1 October 2010, in London, addressed technical, operational, and market-based measures. For the mitigation of emissions from maritime transport, it requested proposed amendments to Annex VI, the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP), with an intersessional meeting of the Working Group to be held in March 2011. It adopted the revised MARPOL Annex III for the Prevention of Pollution from Ships expected to enter into force on 1 January 2014. It was also approved, in view of adoption at its next session, an updated Annex V of the Convention on Regulations for the prevention of pollution by garbage from ships. [Related item: *Concerns over Maritime Air Pollution Increase* in February 2008 environmental security report.]

**Military and Related Security Implications:**

[Same as previous on this issue] Although emissions from military ships make up only a tiny fraction of this polluting source, the Navy should be prepared for new international anti-pollution regulations that may not exempt military craft.

**Sources:**

IMO Environment meeting discusses GHG measures for new ships

[http://www5.imo.org/SharePoint/mainframe.asp?topic\\_id=1859&doc\\_id=13710](http://www5.imo.org/SharePoint/mainframe.asp?topic_id=1859&doc_id=13710)

Revised MARPOL Annex III adopted at IMO environment meeting

[http://www5.imo.org/SharePoint/mainframe.asp?topic\\_id=1859&doc\\_id=13711](http://www5.imo.org/SharePoint/mainframe.asp?topic_id=1859&doc_id=13711)

**8.6 Chile Establishes 150,000 KM<sup>2</sup> Protected Marine Reserve in Pacific**

Chile has established the 150,000 km<sup>2</sup> no-take Sala y Gómez Marine Park surrounding Sala y Gómez Island in the east Pacific, to protect what a National Geographic Ocean Fellow calls “one of the last undisturbed and relatively pristine places left in the ocean ... [with] deep seamounts with unique marine life.”

**Military and Related Security Implications:**

Activities in and around the new reserve need to take pains to avoid infringing upon the sovereign waters and disturbing any of the local ecology.

**Source:**

Chile Creates Large Marine Reserve at Sala y Gómez Island

<http://blogs.nationalgeographic.com/blogs/news/chiefeditor/2010/10/chile-creates-large-marine-res.html>

**8.7 NASA's SERVIR Environmental Imaging-Decision Support System Extended from Mesoamerica and Africa to Asia**

According to an announcement, NASA and the Agency for International Development have unveiled SERVIR-Himalaya, a Web-based environmental imaging and management system based in Kathmandu, Nepal. NASA's SERVIR system, already in use in Mesoamerica and Africa, combines satellite imagery, data management tools, and interactive visualization capabilities to help scientists and decision-makers address climate change, biodiversity, and environmental threats, such as flooding, forest fires, and storms. [Related item: *Increased Use of Space Technology for Monitoring Environmental Events* in September 2008 environmental security report.]

**Military and Related Security Implications:**

Military and security personnel with environmental responsibilities in Central and South Asia should become familiar with this new environmental planning and management tool. If not already accomplished, AFRICOM should explore the use of SERVIR by African countries in their environmental security planning and training.

**Source:**

SERVIR: Program brings satellite imagery, decision support tools to Himalayan region

<http://www.physorg.com/news205578190.html>

**8.8 New Earth-Approaching Asteroid Discovered**

The Hawaii-stationed Panoramic Survey Telescope & Rapid Response System (Pan-STARRS) detected its first potentially hazardous object (PHO) September 16<sup>th</sup> and predicted the 150-ft diameter asteroid would pass within four million miles of Earth by mid-October 2010. This is 16 times the distance between the Earth and the Moon. In March 2009 a different asteroid came 80% closer to the Earth than the Moon. No one knew it was coming. Although the more recent asteroid was not a threat, it will be catalogued and monitored with other known objects that may pose a danger within the next fifty years. Although scientists believe many of the largest PHOs have been discovered, there is concern that many with diameters less than one mile (5,280 ft.) are still unknown. Pan-STARRS is considered the world's most sophisticated system for PHO detection. [Related item: *Steps for an International Regime for Space Debris and Space Traffic Control System* in May 2009 environmental security report.]

**Military and Related Security Implications:**

Space objects of approximately 150 ft. in diameter colliding with Earth can eliminate life within an 800-mile radius of impact. Continued vigilance and international cooperation regarding space security should remain a high priority for military and related security personnel.

**Sources:**

Pan-STARRS discovers its first potentially hazardous asteroid

<http://www.physorg.com/news204826766.html>

Pan-STARRS

<http://pan-starrs.ifa.hawaii.edu/public/>

## 8.9 Artificial Grass May Pose Threat of Lead Poisoning to Children

The Agency for Toxic Substances and Disease Registry in Atlanta GA has reported that some artificial grass can begin to release lead dust after a few years of wear and tear. It found lead levels above US legal safety limits for 12 out of 29 synthetic surfaces tested, as well as in two out of four new artificial turf products. The turf manufacturers' association claims that other US studies have concluded children are not at risk. [Relevant item: *Call for Global Ban on Lead-based Paints* in October 2007 environmental security report.]

### Military and Related Security Implications:

Military installations with artificial turf should be notified to evaluate this problem and to institute remedial measures, if necessary.

### Sources:

Warning of threat to children posed by artificial grass

<http://www.heraldscotland.com/news/health/warning-of-threat-to-children-posed-by-artificial-grass-1.1062033>

Evaluating and Regulating Lead in Synthetic Turf

<http://ehp03.niehs.nih.gov/article/fetchArticle.action;jsessionid=603B9732578818DD76D9060DCB31669A?articleURI=info%3Adoi%2F10.1289%2Fehp.1002239>

## 8.10 Climate Change

### 8.10.1 Scientific Evidence and Natural Disasters

2010 will be the warmest for Nuuk, the capital of Greenland, in 138 years. Four glaciers lost more than 10 square miles (25.90 sq km) each. Since glacier ice losses seem to be accelerating, sea level rise projections might also need to be revised.

### 8.10.2 Food and Water Security

The WFP and the FAO released the 2010 edition of *The State of Food Insecurity in the World: Addressing food insecurity in protracted crises*. According to the report, the number of undernourished people has declined but remains unacceptably high (925 million), with 22 countries being in protracted food crises.

According to the World Bank, up to 30 million hectares (74 million acres) of farmland are lost each year due to severe degradation, conversion to industrial use, and urbanization. Additionally, more than a third of large-scale land acquisitions—which in 2009 reached some 45 million hectares—are intended to produce agrofuels rather than food, increasing poverty. The problem is more severe in Africa, where 90% of land is not documented with land rights and ownership.

According to the Asian Development Bank, Asia could face a 40% gap between water supply and demand in 2030. In order to meet its goals of providing drinking water and sanitation, it would need around \$8 billion a year, most of it having to come from the private sector.

### 8.10.3 Adaptation

Over 700 participants met in Addis Ababa, Ethiopia, for the Seventh African Development Forum under the theme of “Acting on Climate Change for Sustainable Development in Africa”

from 12-15 October 2010. As one of the outcomes of the Forum, a partnership on Africa's options for a Green Economy, backed by the African Union, African Development Forum (AfDB), UN Economic Commission for Africa (UNECA) and UNEP, was established. One of the first activities of the partnership will be to organize an Africa-wide conference on a low-carbon, resource-efficient Green Economy, scheduled to take place in 2011.

#### 8.10.4 Computer Modeling and Scenarios

A new global study by climate scientist Aiguo Dai concludes that much of the world's land area is susceptible to extreme drought over the next 90 years. Using current GHG emission projections and the 22 computer models from the IPCC's 2007 report to gather information on temperature, precipitation, humidity, wind speed, and the planet's radiative balance, Dai calculated the Palmer Drought Severity Index (PDSI) through the end of the century. The report determines that drought risk will decrease across the upper reaches of the Northern Hemisphere and in some Southern Hemispheric locations, while increasing significantly in Africa, Australia, the United States, Southwest and Southeast Asia, Latin America, and the Mediterranean Sea region. There is concern that over the next 30 years regions are likely to experience drought of severity and duration that has not been experienced in at least the past several hundred years.

#### 8.10.5 Post-Copenhagen Negotiations

Over 2,300 delegates from governments, intergovernmental organizations, and the media attended the Tianjin, China climate change negotiations, held October 4-9, 2010. This was the last meeting before the climate summit to be held in Cancun, from November 29 to December 10, 2010. There was no significant progress, mainly due to the reluctance of the developing countries to meet the demands of the developed countries on measurement, reporting, and verification mechanisms. A revised Chair's proposal (FCCC/KP/AWG/2010/CRP.3) will be considered further in Cancun. As an alternative to the failure of reaching agreement for a second commitment period of Kyoto, the EU is considering creating a 'coalition of the willing' for continuing the fight to reduce GHG emissions. In the meantime, WWF warns that unless there are strong policies to fight GHG emissions, their worldwide level could overshoot by a third the threshold beyond which dangerous global warming looms.

#### **Military and Security Implications:**

[Same as previous on this issue] The military should identify all its resources and programs for reducing GHGs and responding to effects of climate change, update information continuously, forecast how it might be called upon for both mitigation and adaptation, and perform a gap analysis in anticipation of future requests. International discourse over climate change is increasing the development of international policies and strategies to mitigate and adapt to climate change.

**Sources:** (see an expanded list in the [Appendix](#))

Warmer Arctic Probably Permanent, Scientists Say

<http://planetark.org/wen/59961>

State of Food Insecurity in the World

<http://www.fao.org/publications/sofi/en/>

UNISDR urges mayors and citizens to decrease disaster losses

[http://www.unisdr.org/preventionweb/files/15810\\_2010no24.pdf](http://www.unisdr.org/preventionweb/files/15810_2010no24.pdf)

UN Secretary-General's Message on International Day for Disaster Reduction

<http://www.un.org/News/Press/docs/2010/sgsm13175.doc.htm>

Parliamentarians urged to take action on disaster reduction

<http://www.unisdr.org/news/v.php?id=15724>

Forum Website

<http://www.uneca.org/adfvii/>

NOAA's Palmer Drought Severity Index

<http://www.drought.noaa.gov/palmer.html>

The current state of affairs in the climate change negotiations leading up to COP16

<http://www.jiqweb.org/images/stories/JIQmagazine/2010Oct.pdf>

### 8.11 Nanotechnology Safety Issues

More detailed descriptions of the following nanotechnology issues are in the [Appendix](#)

- Sunscreens with ZnO, TiO<sub>2</sub> nanoparticles may pose health risk ([more](#))
- ASTM forms new subcommittee on nano-enabled consumer products ([more](#))
- Thailand to introduce new "NanoQ" certification mark ([more](#))
- Nanotechnology long-term impacts and research directions: 2000-2020 ([more](#))
- India soon to have a National Regulatory Framework for Nanotechnology ([more](#))
- Effort and care vital in communicating nanotech to the "public" ([more](#))
- New report analyzes European nanotech issues ([more](#))
- Paper Advocates New Approaches To Gauge Safety Of Nanotech-Based Pesticides ([more](#))
- Nanotechnology for a Sustainable World Conference to be Held in Thailand, 18-20 November ([more](#))
- Nano Occupational Health Research Conference set for France in April 2011 ([more](#))
- Nanotechnology conference to be held in Cairo, 28-30 November 2010 ([more](#))
- Lucerne Symposium on nanotechnology risks and opportunities ([more](#))

## Item 9 Reports and Information Suggested for Review

### 9.1 Current Legal Discourse on Potential Climate Change International Litigation

*International climate change litigation and the negotiation process* paper by lawyer Christoph Schwarte from the Foundation for International Environmental Law and Development (FIELD) argues that climate-vulnerable developing nations could create political pressure to further the negotiations for an international climate treaty by threatening to take industrialized nations to court under the existing international law system. The paper outlines the possible legal framework for such lawsuits.

#### **Military and Related Security Implications:**

The paper is a good source of information on the current legal discourse and for potential aspects of international law that could be used to create a credible case for inter-state litigation on climate change issues.

**Source:**

Climate litigation

<http://www.field.org.uk/news/climate-litigation>**9.2 New Release Calls Attention to Vital Importance of Soil Conservation**

A new release from the Earth Policy Institute calls attention to the rapid and worldwide loss of soil from the Earth's land areas. Deforestation and other forms of "development", as well as overgrazing, are rendering vast areas uncultivable, with dire environmental consequences, including desertification, as in Nigeria, which is losing 351,000 hectares of range and crop land per year – land needed to support a growing population.

**Military and Related Security Implications:**

All organizations involved in development or construction in soil-bearing areas should exercise great care to ensure that this resource, vital to the well-being of hundreds of millions, is maximally conserved.

**Source:**

Civilization's Foundation Eroding

[www.earth-policy.org/index.php?/book\\_bytes/2010/pb4ch02\\_ss2](http://www.earth-policy.org/index.php?/book_bytes/2010/pb4ch02_ss2)**9.3 Climate Change Impact on Wars in Africa**

The "Climate not to blame for African civil wars" study published in the *Proceedings of the National Academy of Sciences of the United States of America* is challenging recent analyses that the adverse effects of climate change may increase the likelihood of civil conflicts in Sub-Saharan Africa. The article by Halvard Buhaug (a Senior Researcher at the Centre for the Study of Civil War, PRIO), found that "major civil war years", those with 1000 battle deaths or more, are more frequent in years following unusually wet periods. This conclusion contradicts a plethora of previous literature, which argued that climate change's drying effect on the African continent would lead to greater instances of civil conflict.

**Military and Related Security Implications:**

The study offers a new perspective on potential climate effects that could trigger conflicts in Africa. It is, therefore, a good reference to be considered in developing peacebuilding or conflict-avoiding strategies.

**Sources:**

"Climate not to blame for African civil wars" by Buhaug, Halvard, *Proceedings of the National Academy of Sciences* 107, 38 (Sept. 21, 2010): 16477-16482

<http://www.pnas.org/content/107/38/16477.full>**9.4 Water Security and River Biodiversity**

A recent article published in the journal *Nature* analyzed global threats to fresh water in a novel approach, considering human water security and biodiversity perspectives simultaneously and within a spatial accounting framework. The article by C.J. Vorosmarty, et al., entitled "Global threats to human water security and river biodiversity", focused on rivers due to the fact that they are a main source of renewable fresh water for human and fresh water ecosystems. The authors found that nearly 80% of the world's population (according to population statistics from 2000)

lives in areas where, "...either incident human water security or biodiversity threat exceeds the 75<sup>th</sup> percentile." Based on the results of their study, the authors argue that unless serious policy and financial commitments are made, fresh water systems are likely to remain under threat for the foreseeable future. However, they also claim that simple efforts to use water infrastructure, like dams and reservoirs, differently can help to prevent the damage that has occurred in areas already suffering from man-made water insecurity. The most at-risk river systems were found in the United States, much of Europe, the Ganga basin in India, and China's Yangtze River.

**Military and Related Security Implications:**

The study is a comprehensive analysis of potential impacts of water security and biodiversity loss on human security, and therefore a good reference to be considered in developing peacebuilding or conflict-avoiding strategies.

**Sources:**

Dirty & dying, world's rivers in crisis

<http://www.circleofblue.org/waternews/2010/world/world%E2%80%99s-rivers-are-in-crisis-global-report-says/>

Balancing water supply and wildlife

<http://www.nature.com/news/2010/100929/full/news.2010.505.html>

"Global threats to human water security and river biodiversity." Vorosmarty, C.J., et al., *Nature* Vol. 467 (30 September 2010): 555-561.

<http://www.nature.com/nature/journal/v467/n7315/full/nature09440.html>

## APPENDIX

### Reference Details

This Appendix contains expanded background information on some items.

#### Item 4. Arctic and South China Sea Resource Issues Causing U.S. to Review Law of the Sea

**Sources:** [an expanded list]

Joint Statement of the 2ND U.S.- ASEAN Leaders Meeting

<http://www.whitehouse.gov/the-press-office/2010/09/24/joint-statement-2nd-us-asean-leaders-meeting>

Remarks by Secretary Gates at ASEAN Defense Ministers Meeting Plus

<http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4700>

Remarks on Innovation and American Leadership to the Commonwealth Club. Remarks by Secretary Clinton: October 2010

<http://www.state.gov/secretary/rm/2010/10/149542.htm>

U.S. Alarmed by Harsh Tone of China's Military

<http://www.nytimes.com/2010/10/12/world/asia/12beijing.html?ref=world>

U.S. and China Soften Tone Over Disputed Seas

<http://www.nytimes.com/2010/10/13/world/asia/13gates.html>

United Nations Convention on the Law of the Sea. Agreement relating to the implementation of Part XI of the Convention. Status

[http://www.un.org/Depts/los/convention\\_agreements/convention\\_agreements.htm](http://www.un.org/Depts/los/convention_agreements/convention_agreements.htm)

#### Item 7. Updates on Previously Identified Issues

##### 8.2 Biosafety Regulations Reviewed in Context of Worrying Forecasts

**Sources:** [an expanded list]

Fifth meeting of the Cartagena Protocol on Biosafety. 11-15 October, 2010

<http://www.iisd.ca/vol09/enb09528e.html>

Tenth meeting of the Conference of The Parties to the Convention on Biological Diversity. 18-29 October 2010

<http://www.cbd.int/cop10/>

Nagoya 2010: Report puts economic value of nature on the global political radar

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=649&ArticleID=6791&l=en>

Living Planet Report 2010

<http://www.footprintnetwork.org/press/LPR2010.pdf>

How Big is the Human Footprint on Earth?

[http://www.footprintnetwork.org/en/index.php/GFN/page/2010\\_living\\_planet\\_report/](http://www.footprintnetwork.org/en/index.php/GFN/page/2010_living_planet_report/)

World Bank Launches New Global Partnership to "Green" National Accounts

<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:22746592~menuPK:34463~pagePK:34370~piPK:34424~theSitePK:4607,00.html>

## 8.10 Climate Change

**Sources:** (an expanded list)

### 8.10.1 Scientific Evidence and Natural Disasters

Warmer Arctic Probably Permanent, Scientists Say

<http://planetark.org/wen/59961>

### 8.10.2 Food and Water Security

State of Food Insecurity in the World

<http://www.fao.org/publications/sofi/en/>

Long-term crises keep 22 nations in hunger trap – FAO

[http://www.alertnet.org/db/an\\_art/57964/2010/09/7-120439-1.htm](http://www.alertnet.org/db/an_art/57964/2010/09/7-120439-1.htm)

Farmers Hurt As Pressure On Arable Land Grows: U.N.

<http://planetark.org/wen/59953>

ADB: Asia Needs \$8 Billion Annual Investment In Water

<http://planetark.org/wen/59839>

### 8.10.3 Adaptation

UNISDR urges mayors and citizens to decrease disaster losses

[http://www.unisdr.org/preventionweb/files/15810\\_2010no24.pdf](http://www.unisdr.org/preventionweb/files/15810_2010no24.pdf)

UN Secretary-General's Message on International Day for Disaster Reduction

<http://www.un.org/News/Press/docs/2010/sgsm13175.doc.htm>

Parliamentarians urged to take action on disaster reduction

<http://www.unisdr.org/news/v.php?id=15724>

UNECA Press Release on the Opening Plenary

[http://uneca.org/eca\\_resources/Press\\_Releases/2010\\_pressreleases/pressrelease7010.html](http://uneca.org/eca_resources/Press_Releases/2010_pressreleases/pressrelease7010.html)

UNEP Press Release

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=649&ArticleID=6781&l=en&t=long>

UN Press Release

<http://www.un.org/apps/news/story.asp?NewsID=36467&Cr=climate+change&Cr1=>

Forum Website

<http://www.uneca.org/adfvii/>

### 8.10.4 Computer Modeling and Scenarios

Drought may threaten much of globe within decades

<http://www2.ucar.edu/news/climate-change-drought-may-threaten-much-globe-within-decades>

NOAA's Palmer Drought Severity Index

<http://www.drought.noaa.gov/palmer.html>

### 8.10.5 Post-Copenhagen Negotiations

The current state of affairs in the climate change negotiations leading up to COP16

<http://www.jiqweb.org/images/stories/JIQmagazine/2010Oct.pdf>

International Climate Policy after Copenhagen: Towards a 'Building Blocks' Approach

<http://onlinelibrary.wiley.com/doi/10.1111/j.1758-5899.2010.00045.x/full>

World Gobbling Up Greenhouse Gas Budget: WWF

<http://planetark.org/wen/59777>

## 8.11 Nanotechnology Safety Issues

More detailed descriptions of the nanotechnology issues

### 8.11.1 Sunscreens with ZnO, TiO<sub>2</sub> Nanoparticles May Pose Health Risk

Petra Kocbek of the Faculty of Pharmacy, University of Ljubljana, Slovenia, and colleagues have published a paper indicating that long-term exposure to zinc oxide and titanium dioxide nanoparticles, such as are found in sunscreen, has adverse effects on human skin cells in vitro, and that such materials are therefore a potential health risk.

#### **Military and Related Security Implications:**

These tentative findings should be taken into account in risk assessments of such products being considered for procurement.

#### **Sources:**

Toxicological Aspects of Long-Term Treatment of Keratinocytes with ZnO and TiO<sub>2</sub> Nanoparticles

<http://www.merid.org/nanodev/more.php?articleID=2889>

Toxicological Aspects of Long-Term Treatment of Keratinocytes with ZnO and TiO<sub>2</sub> Nanoparticles

<http://onlinelibrary.wiley.com/doi/10.1002/sml.201000032/abstract> (abstract)

### 8.11.2 ASTM Forms New Subcommittee on Nano-Enabled Consumer Products

The ASTM International (formerly the American Society for Testing and Materials) Committee E56 on Nanotechnology has announced formation of a subcommittee to develop standards for nanotech-using consumer products. It will develop standard terms, toxicity test methods, workplace handling guidance and other voluntary standards for organizations that work with nano-materials, concentrating initially on nano-silver. The group is soliciting responses from experts to work with the new subcommittee, including in the area of environmental chemistry.

#### **Military and Related Security Implications:**

Appropriate environmental health and safety (ES) personnel should consider joining this subcommittee to lend their expertise to the effort and to keep abreast of developments in this standards area.

#### **Source:**

ASTM Nanotechnology Committee Creates Subcommittee on Nano-Enabled Consumer Products

<http://www.astmnewsroom.org/default.aspx?pageid=2270>

### 8.11.3 Thailand to Introduce New "NanoQ" Certification Mark

According to Meridian *Nanotechnology and Development News*, the Nanotechnology Association of Thailand will launch a certification mark, NanoQ, in 2011, to encourage domestic development of nanoproducts and to promote consumers' acceptance of such products.

Companies wishing to obtain the NanoQ mark will be required to have their products tested by the National Nanotechnology Center, and undergo a yearly auditing process.

**Military and Related Security Implications:**

This move by Thailand may presage a wave of such efforts around the world to allay the fears of consumers regarding nanotech safety. (See related item *Effort and Care Vital in Communicating Nanotech to the "Public"*, in this issue.) That raises the specter of future proliferation of different national standards/certifications, resulting in an impetus for an internationally coordinated system. (A foreshadowing of this kind of situation may be the current study by a Wisconsin Legislature committee of the possibility of state regulation of nanotech use.) ES personnel should also be considering the effect of such developments on the public's (including service members') attitudes toward nanotechnology in applications other than consumer products. Further, this field could become fertile ground for unscrupulous vendors who claim but fail to properly follow even the voluntary standards. Military organizations using nanotech products could become liable for suppliers' ethical and technical failures, unless safeguards are established.

**Source:**

Thailand's first NanoQ

<http://www.asia-anf.org/NewsDetails.php?NewsId=218>

8.11.4 Nanotechnology Long-term Impacts and Research Directions: 2000-2020

The National Science Foundation sponsored a study, conducted by the World Technology Evaluation Center, with 200 experts from 35 countries, on the long-term view for nanotechnology. Workshop presentations and the draft report, in particular its 46-page Chapter 4, *Nanotechnology Environmental, Health, and Safety Issues*, are now available.

**Military and Related Security Implications:**

This material offers a comprehensive, forward-looking view of the entire field.

**Sources:**

Nanotechnology Long-term Impacts and Research Directions: 2000-2020

<http://www.wtec.org/nano2/>

8.11.5 India Soon to Have a National Regulatory Framework for Nanotechnology

According to the Times of India, the country will soon have a national regulatory framework for nanotechnology, according to the Union minister for science and technology and earth sciences. The minister said that there are close to 1,000 researchers working in the nanotechnology field, and, "The framework will be drafted to sort out issues of ethics and copyrights [sic; presumably patents]"

**Military and Related Security Implications:**

The progress of this effort should be carefully monitored, since organizations working in India or cooperating with national enterprises will have to live with its results.

**Source:**

Soon, a national regulatory framework for nanotechnology

<http://timesofindia.indiatimes.com/city/pune/Soon-a-national-regulatory-framework-for-nanotechnology/articleshow/6750692.cms>

### 8.11.6 Effort and Care Vital in Communicating Nanotech to the "Public"

Several recent articles have emphasized the care that must be taken in communicating to the "public" the benefits and risks of nanotech-based products. The first, in *Nature Nanotechnology*, by Fern Wickson of the GenØk - Centre for Biosafety in Tromsø, Norway, and colleagues, emphasizes that communications must be tailored to the specific character and background of the recipients – who should not just be lumped into categories of laypersons, consumers, or stakeholders. The second is a report from the UK consultancy College Hill, discussed by Meridian *Nanotechnology and Development News*, that warns that "more than 90 percent of the UK population is confused or concerned about purchasing food containing manufactured nanoparticles, with 38 percent saying they would be unlikely to buy such foods", and urges the food and beverage industry, "...to consider how they can best educate, prepare and inform the public."

#### **Military and Related Security Implications:**

These studies should convey a warning to all ES personnel concerned with communicating the realities of technological benefits and risks to the outside world to redouble their efforts to make those explanations effective and circulate them widely in tailored form to the proper audiences.

#### **Sources:**

Who or What Is 'the Public'?

News story: <http://www.merid.org/nanodev/more.php?articleID=2893>

Confusion could torpedo food & drink nanotech opportunity

<http://www.foodanddrinkeurope.com/Products-Marketing/Confusion-could-torpedo-food-drink-nanotech-opportunity>

### 8.11.7 New Report Analyzes European Nanotech Issues

According to Meridian *Nanotechnology and Development News*, the NanoCode Project, a UK-based group comprising the Royal Society, Insight Investment, the Nanotechnology Industries Assoc., and the Nanotechnology Knowledge Transfer Network, has published a Synthesis Report, "with the goal of exploring the societal and economic impact of the technical, social and commercial uncertainties related to nanotechnologies ... [and providing] a broad overview of current codes of conduct, voluntary measures and practices", also comparing them with the EC's proposed Code of Conduct. *Nanowerk News* has prepared a brief review of the 49-page report.

#### **Military and Related Security Implications:**

This report provides a useful summary and analysis of a number of important nanotech issues from the European point of view.

#### **Source:**

NanoCode project published synthesis report on responsible development of nanotechnology

<http://www.nanowerk.com/news/newsid=18235.php>

### 8.11.8 Paper Advocates New Approaches To Gauge Safety Of Nanotech-Based Pesticides (NBP)

According to an announcement, a new report outlines six regulatory and educational issues that should be considered whenever nanoparticles are going to be used in pesticides. Several issues specific to exposure to NBPs are discussed, including: (1) disclosures of nanoparticle characteristics in product formulations; (2) additional uncertainty factors for NBPs with

inadequate data; (3) route-specific approaches for assessing exposure; (4) testing with the commercial form of NBPs; (5) initiation of a health surveillance program; and (6) development of educational programs.

**Military and Related Security Implications:**

These issues should be covered in planning risk assessments of nano-based pesticides.

**Source:**

Exposure Assessment: Recommendations for Nanotechnology-Based Pesticides

<http://www.ijoh.com/index.php/ijoh/article/view/1482>

New Approaches Needed to Gauge Safety of Nanotech-based Pesticides

<http://oregonstate.edu/ua/ncs/archives/2010/oct/new-approaches-needed-gauge-safety-nanotech-based-pesticides>

8.11.9 "Nanotechnology for a Sustainable World" Conference to be Held in Thailand

The Nanotechnology for a Sustainable World conference will be held 18-20 November in Pathumthani, Thailand. Papers will be presented on Energy and the Environment, and there will be a 1½-hour session on nanosafety.

**Military and Related Security Implications:**

ES personnel in the area should consider attending this meeting, if further details on its content become available.

**Source:**

NanoThailand 2010

<http://www.nano-thailand.com/index.php?status=home>

8.11.10 Nano Occupational Health Research Conference Set for France in April 2011

The Institut National de Recherche et de Sécurité (INRS), in association with the Partnership for European Research in Occupational Safety and Health, is organizing a conference, "INRS Occupational Health Research Conference 2011: Risks associated to Nanoparticles and Nanomaterials", to be held in Nancy, France, 5-7 April 2011. The meeting will cover health effect assessment, characterization of nanomaterials, exposure measurement and assessment, emission control and protective equipments, and risk assessment and risk management.

**Military and Related Security Implications:**

According to the announcement, the conference's goal is to bring together researchers, experts and practitioners from different backgrounds with the aim of sharing the latest knowledge and discussing research needs; it should provide useful insights into current work in Europe.

**Source:**

INRS Occupational Health Research Conference 2011: Nanotechnology risks

<http://www.nanowerk.com/news/newsid=18333.php>

8.11.11 Nanotechnology Conference to Be Held in Cairo, 28-30 November 2010

An International Conference, Workshop and Exhibition in Nanotechnology will be held from 28 to 30 November 2010 in Cairo, Egypt, organized by the Scientific Integrated Solutions Academy in cooperation with Nakaa Nanotechnology Network. Nanotoxicology is one of the listed topics.

**Military and Related Security Implications:**

As more information about the Conference becomes available, ES personnel in the area should consider attending.

**Source:**

The International Conference, Workshop and Exhibition in Nanotechnology, 28-30 November 2010, Al Azhar Conference Center, Cairo, Egypt

[http://ways.org/en/topics/nanotechnology\\_wesam\\_ahmed\\_tawfik\\_nakaa](http://ways.org/en/topics/nanotechnology_wesam_ahmed_tawfik_nakaa)

8.11.12 Lucerne Symposium on Nanotechnology Risks and Opportunities

In early October, the Chemistry Section of the International Social Security Association (ISSA) held a two-day symposium in Lucerne, Switzerland, on Nanotechnology Risks and Opportunities, with more than 20 presentations "seeking to highlight the opportunities that nanotechnology offers for industry and medicine as well as the risks it poses ... [and to provide] information on future legal regulations on a national and international level."

**Military and Related Security Implications:**

The proceedings, available on the Conference Web site should provide useful insights into current thinking on a variety of nanotech topics.

**Sources:**

European and U.S. specialists discuss nanotechnology risks and opportunities

<http://www.nanowerk.com/news/newsid=18412.php>

Conference site

<http://www.issa.int/News-Events/Events/Nanotechnology-risks-and-opportunities>