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Environmental Management System

Sandia National Laboratories

Genetics & Society

Dr. Richard Hayes to speak at Sandia's EMS Awards & Lecture Series on July 25th

Hardly a day passes anymore without news of another development in the exploding field of genetic science and technology. Genetically modified plants and animals are a staple of laboratory research and commercial use. Fertility clinics offer an increasing array of procedures to manipulate human embryos. Noted scientists announce, with barely disguised anticipation, that we are about to enter the genetically-engineered post-human future, like it or not.

Dr. Richard Hayes' Photo

The noted writer Bill McKibben once said, correctly, that the greatest macroscale environmental challenge is global warming and the greatest microscale environmental challenge is genetic engineering. Technologies that enable humanity to manipulate individual atoms, molecules, genes, and cells are being used to radically transform the fundamental processes of the natural world, including many of those that define what it means to be human.

Like most technologies, genetic technology is dual use: it can be used for applications widely regarded as benign and beneficent, as well as for applications widely regarded as pernicious. And many applications – perhaps most - fall into gray zones between these two poles.

Where do we draw the lines? How do we decide which applications of genetic technology to support enthusiastically, which to support only if tightly controlled and monitored, and which to oppose completely? How will we enforce such decisions? And who makes them in the first place?

Hayes will present five scenarios for the development of genetic and related technologies, including nanotechnology and synthetic biology, over the coming twenty years. The scenarios are: 1) Cold Fusion Redux; 2) Libertarian Transhumanism Triumphs; 3) One Family, One Future; 4) A Techno-Eugenic Arms Race; and 5) For The Common Good. He'll discuss developments that make each of these more or less likely, and the actions that societies will need to take if they wish to avoid or encourage one or the other. Please join us for this exciting event!

Richard Hayes has written and spoken widely concerning the democratic governance of science and technology and the need for social oversight of the new human genetic technologies. Since 2001 he has been Executive Director of the Center for Genetics and Society, based in Oakland, California. From 1983 through 1992 he was Associate Political Director and then National Director of Volunteer Development for the Sierra Club. In the mid-1990's he served as Chair of the Sierra Club's Global Warming Campaign Committee. Dr. Hayes holds a PhD in Energy and Resources from the University of California at Berkeley. www.genetics-and-society.org

Come to the EMS Awards Ceremony/Lecture Series on July 25th, 2007
at the Steve Schiff Auditorium. Information booths open at 10 am and Dr. Richard Hayes will speak at 10:30.
There will be booths with interesting information and giveaways!

Dr. Paul MacCready Talks About the Future of Transporation and Sandians Visit the House of the Future

by Will Keener & Morgan Gerard
photo by Bill Doty

Paul MacCready, who has brought a string of new ideas to the world's attention in the realms of aircraft, automobile, and human-powered transportation, has a message for Sandians. "You do have the brains to make the world a better place, if you will look at the big picture and not get buried in the details," he said. Speaking to a Steve Schiff Auditorium crowd of about 300 for the Labs' 2007 Earth Day celebration in Albuquerque, MacCready warned that if America's resource consumption habits don't change, ". . .we're going to be in a lot of trouble." MacCready, who holds a master's degree in physics and a doctorate in aeronautics, chose the analogy of a party balloon to explain the growing world population and resource demands and the need for sustainability. "You can keep blowing into the balloon and it gets bigger and firmer," he said. "But you know sometime it's going to pop." MacCready's talk was a wide-ranging retrospective on his career and how he came to make the contributions he did.

Dr. Paul MacCready at Sandia's Earth Day Celebration

After Dr. Paul MacCready's presentation, Sandia's Earth Day Celebration continued the festivities with its "Virtual House of the Future." With display boards as walls in the Steve Schiff Auditorium lobby, people could walk inside the house to learn about sustainable products and methods for indoors. There were tank-less water heaters, dual flush toilets, environmentally preferable products, city recycling, tax incentive information, and efficient lights and lamps to name a few. On the exterior of the walls, people learned about how to have a sustainable yard using Permaculture methods, the benefits of straw-bale houses, low-e windows and solar screens.

Outside, near the Rolling BBQ, a constant gathering of onlookers viewed a house-sized photovoltaic (PV) panel unit and learned how PV could be used at their homes to heat water; their house, pump water, and even make some scrumptious chocolate chip cookies.

Sandia's Earth Day Planning Team estimates that about 800 people perused the displays during the late morning and early afternoon. Many of them also ended up with recycled content grocery bags, compact fluorescent light bulbs, drinking mugs made from corn, and the infamous "More Pedal, Less Gas" baseball hats - all promoting a reduction in carbon dioxide emissions and a more sustainable lifestyle.

Excerpts of this story were taken from Will Keener's Earth Day story in the April 27th edition of the Lab News. Go to Sandia's Newscenter to read the entire story. To hear MacCready's entire speech from Sandia's Internal site, visit: http://as54snlnt.srn.sandia.gov/Mediasite/Viewer/?peid=025e6895-c916-4e9f-996c-c0e144ed330d

MacCready: Think creatively to solve 21st-century transportation challenges

Although the subject of Paul MacCready's talk on Earth Day was land transportation, he cast a wide net of observations and ideas for consideration by the Sandia researchers present. Among them:

- Aircraft competition is so stiff that efficiency is the byword for any plane or helicopter carrying more than eight passengers. Given two equally performing planes, the one that teases the most miles out of a gallon of aviation fuel will survive. Yet cars are marketed "like toys," based on appearance, not efficiency.
- Hybrid cars can be 10 times as efficient as they are now. Engineers should start with the ideal capabilities and reduce them as necessary. If 100 percent regenerative braking is impossible and 65 percent is reachable, use 65. A concerted effort to build a more efficient car using this approach is needed.
- The process of refining and burning each gallon of gasoline puts 19 pounds of carbon dioxide into the atmosphere for up to 100 years. Each gallon of gas we buy also provides 40 cents to countries that tend to hate the US.
- Los Angeles could do a great deal to cure its traffic problems by better using aircraft — up to 100,000 of them to move people across the large metro area. Just as passenger pigeons once darkened our metro skies, airplanes could be used by mapping safe, efficient routes. We focus on the car at the expense of considering other transportation modes.

Earth Day Survey: Environmental Awareness at Work

by Greg Zeter

At the Earth Day EMS booth, the EMS staff distributed a survey to gauge Sandian's level of involvement in environmental-related initiatives. These initiatives included energy conservation, water conservation, transportation, and recycling/reuse. More than 500 people visited the EMS booth, with 290 completing a survey.

EMS Booth at Earth Day

Several questions were asked in the general area of conservation. For example, when asked "Do you turn off the lights and computer in your office when they are not in use?", more than 78% responded with "all the time" or "most of the time". Respondents were also asked "Do you try to save water at work when practicable?". Again, the results were very favorable, with more than 80% saving water "all the time" or "most of the time". Specific suggestions for saving water included "Put leftover water on office plants" and "Wet hands – turn off water – wash – rinse".

Recycling and reuse are key environmental awareness concepts. At Sandia, more than 83% of survey respondents regularly recycle at work. When asked specifically what the items they regularly recycle, the most popular item is paper, followed closely by aluminum. Cardboard and plastic are also recycled at work, but at rates significantly less than that of paper and aluminum. Additionally, as a paper saving measure, nearly half of respondents regularly print double-sided.

In the area of reuse, it is apparent that Sandians know the role of the Reapplication Center, as over half have sent items to Reapp. Other more personal examples of reuse include relatively high levels of using reusable items such as ceramic coffee mugs, plastic utensils, and reusable lunch bags.

Getting from home to work and back again can be both time consuming and, given the high price of gasoline, quite expensive. Although the vast majority of Sandians travel to work by themselves in their personal automobile, 25% reported that they use alternative forms of transportation at least some of the time. The most popular form of alternative transportation is bicycle, followed by carpool/vanpool, city bus, and hybrid car.

The survey also gave the participant an opportunity to provide an example of the most creative way they have seen/tried at work to preserve the environment or reduce pollution. Among the most notable ideas are:

- Install light switch sensors for all lights
- Pick up trash when walking around
- Reuse paper as scrap paper before recycling
- Bring old phone book from home and recycle the old phone book at work
- Don't print on paper, print to PDF
- Reuse solvents for cleaning (where allowable)
- Run errands together at lunch

The results of the survey provide valuable insight into the environmental awareness of Sandians. The data received from this survey will help the EMS group pinpoint future initiatives, such as how to enhance the recycling program, development of energy saving concepts, and how to increase our general level of awareness of our impact on the environment.

Long-Range Development Plan Holds Future of Sandia Labs

by Teresa Goering

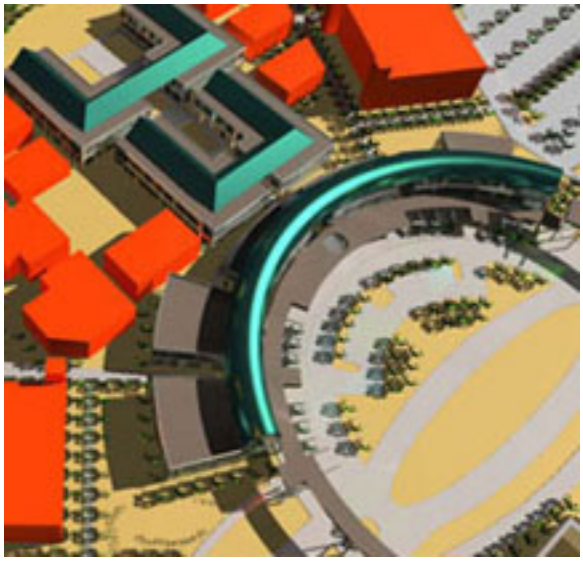
Imagine a work environment with eye-catching landscapes, artistic buildings and public spaces—all of which are environmentally friendly. The Long Range Development Plan (LRDP) prepared and implemented by the Facilities Management and Operations Center (FMOC) offers guidelines on how to achieve those things. Through a proactive approach to planning and managing SNL, the LRDP can achieve long-term cost savings and improve the quality of life in Sandia's work environment.

Long Range Development Plan Logo

The LRDP recognizes the site development issues at both SNL/NM and SNL/CA in Livermore. In October 2006, Sandia published the LRDP to assist in resolving the issues faced by SNL. Compared to other planning documents, the LRDP focuses on future demands while others focus on current demands. These future demands include the flexibility to adjust to change.

"There is no guiding document at Sandia," said project leader Ralph Cipriani. "The Ten-Year Site Plan (TYSP) required by DOE has become a programmatic document, but it's not a visionary document."

The LRDP offers multiple objectives for change at Sandia. These include a campus center which will become the "heart and soul" of the labs as a main entrance to the campus. This will promote personal interactions among employees. Another is the overall renovation of Sandia's gateways (i.e. Wyoming or Eubank) using landscapes and art to describe the importance of the site.



Sandia Campus Center Model

"Enhanced gateways also let you know when you've arrived," Cipriani said. "When you get on the base, if you're not familiar with Sandia, you don't know when you are here."

Among the other proposals, the LRDP promotes environmental awareness and sustainability through site-wide environmental stewardship. The plan offers land use goals that encourage reusing and enhancing developed land and preventing sprawl at Sandia. Some other environmental benefits the LRDP suggests includes the preservation of land, the use of sustainable design and green products, xeriscaping and refining pedestrian corridors to create more habitats for protected species at Sandia.

In order to remain environmentally aware, the LRDP uses the National Environmental Policy Act (NEPA) process for guidance in site development. In addition, the plan's project and land use decisions incorporate the EMS process.

"The LRDP is a tool to achieve the goals and requirements through EMS," Cipriani said.

When it comes down to it, the LRDP focuses on maintaining Sandia's standard of excellence while preparing for the future of the labs.

"The LRDP is reserving and creating opportunities for the future," Cipriani said.

Environmental Accomplishment

HERMES III Accelerator Program Waste Minimization Efforts Wins DOE Pollution Prevention Star Award

by Morgan Gerard

The High-Energy Radiation Megavolt Electron Source (HERMES III) Accelerator has been in operation for 18 years. Personnel at the HERMES III Accelerator have continually made strides to minimize waste throughout the years, but Gary Tilley, Organization 1342, has taken waste minimization to the next level. Within the last year, Gary developed and implemented procedures to minimize the use of hazardous chemicals, extend the life of the de-ionized (DI) resin beds, reuse and modify test hardware, and reduce the need for Sulfur Hexafluoride process gas. These comprehensive waste minimization techniques also have saved tens-of-thousands of dollars.

Gary Tilley accepting EMS Environmental Excellence Award

The efforts taken by Gary Tilley at the HERMES III Accelerator are exemplary. Gary has used waste minimization as a key to optimizing a process. Instead of purchasing new equipment in an effort to enhance the process, he worked with what he had and increased the overall efficiency of the process by doing so. This is an excellent example of what many process owner's disregard – the ability to dissect every process step to continually enhance a process. These efforts have increased efficiency, reduced waste, and have driven costs down significantly. Gary Tilley's accomplishments have earned him an EMS Quarterly Environmental Excellence Award, the National Nuclear Security Administration (NNSA) Best in Class Award for Waste Minimization, and most recently, the prestigious U.S. Department of Energy Pollution Prevention (DOE/P2) Star Award for his waste minimization practices.

Featured EMS Nomination

Twice a year, the EMS Team receives numerous nominations from individuals and teams who contribute to Sandia's vision of environmental excellence. Below is one of our featured environmental accomplishments.

The Joint Computational Engineering Laboratory (JCEL): Sandia's First Green Building

Sandia has taken steps to integrate a strong initiative known as sustainable design (SD) into the design and construction of the Joint Computational Engineering Laboratory (JCEL). This involved a collaborative effort with the Energy Manger, the Water Conservation Officer, the Pollution Prevention Program and Facilities engineers and architects.

JCEL

Sustainable features include spectrally selective glazing to permit daylight into the space while mitigating heat loss and gain, sun shades and light shelves further maximize the daylight that is incorporated in the building, thermally broken windows, high-performance insulated glazing units reduce heat loss through the windows, occupancy sensors, and indirect lighting fixtures in office suites.

The JCEL at Sandia was designed to produce a healthful, resource-efficient and productive working environment. This is a significant achievement for Sandia because JCEL received U.S. Green Building Council certification (Silver) Leadership in energy and Environmental Design (LEED) building at Sandia and one of only a few within the DOE community. Visit the EMS website for more details about EMS Award nominations.

Ecology
Featured Environmental Program at Sandia

By Teresa Goering
Photo by Raymond VanBuskirk

The Ecology Program at Sandia National Laboratories is viewed as having two components: long-term monitoring and ecological compliance. These two components are necessary to maintain compliance with applicable environmental laws and regulations and characterize the ecological community at Sandia. To achieve program objectives, biologists at Sandia conduct routine monitoring, and sampling projects.

Summer is a busy time for the Ecology Program. In addition to year-round tasks, the Ecology Program participates in summer-long surveillance activities to achieve its main purpose: to conserve flora and fauna at Sandia. These surveillance projects include bird banding, vegetation transects, reptile and amphibian surveys and biological assessments to name a few. The surveillance projects ensure that Sandia handles flora and fauna according to all the regulations.

Biologists in the Ecology program also support the Facilities Department by resolving wildlife issues such as birds trapped in Sandia buildings.

Bats & the Ecology Program
Due to increased complaints of bats inhabiting Sandia buildings, the Ecology Program will begin additional surveys of bat species late this summer. By producing audio recordings of bat calls or by capture and release of them, biologists will be able to determine the majority bat species on site and from there find the best mitigation plan for all concerned.

Sandia wildlife biologist Steve Cox surveys a Western Pipistrelle.

The Western Pipistrelle Bat (Pipistrellus hesperus) and the Silver-Haired Bat (Lasionycteris noctivagans) are two of the most common bat species on Kirtland Air Force Base. Bats are great for the environment because they maintain the balance of nature by spreading seeds and eating insects. The numbers of insects they consume are so large that bats act as free insect exterminators. In fact, bats typically consume 20% of their body weight per night. After a long night of catching dinner in the dark, bats often roost in buildings or sheds. Some of the buildings at Sandia are located where bats are plentiful. Bats may roost in these buildings at the dismay of the human occupants.

Please contact the Ecology Program if you have on-site wildlife issues. Visit http://environment.sandia.gov/ for more information about Sandia's environmental programs.

Announcements

Semi-Annual EMS Awards - Summer 2007

The deadline for submitting nominations for the summer semi-annual EMS Awards is June 29, 2007. Awards will be given in the following five categories:: 1. Water Conservation/Energy Reduction 2. Risk Mitigation/Environmental Protection 3. Environmentally Preferable Purchasing 4. Waste Minimization 5. Recycling. You can submit nominations now to Katrina Wagner (kmwagne@sandia.gov). Visit the EMS Excellence Award website http://www-irn.sandia.gov/esh/depts/envmgmt_intgtraining/ems/ for more information on submitting semi-annual EMS Excellence Award nominations.

For more information about Sandia's EMS,
please visit our website:
http://environment.sandia.gov/new/index.htm
For Sandia IRN:
http://www-irn.sandia.gov/esh/depts/envmgmt_intgtraining/ems/

Sandia National Laboratories

National Nuclear Security Administration

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