NIEHS
National Institute of Environmental Health Sciences

Sustainability Report

Published December 2011

NIH...Turning Discovery Into Health

NIEHS

Sustainability Report

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A Message from the Director

The National Institutes of Health turn discovery into health – expanding scientific knowledge to help people stay healthy and live longer. At the National Institute of Environmental Health Sciences and the National Toxicology Program, our work is directly tied to sustainable living through a unique focus on disease prevention.

We perform research and fund scientific investigations by others to examine a wide variety of relationships between the environment and human health. During the past year, we assumed a lead role in responding to the oil spill in the Gulf of Mexico – providing science-based training to protect the health of emergency responders and cleanup workers, and establishing long-term health studies for people exposed during and after the spill.

As we carry out all of our scientific missions, we seek to create a good balance between human health and the environment. By doing so, we support the well-being of our staff, our community and the natural world. I am very proud to note that in 2010, the Department of Health and Human Services honored our Institute as its "Green Champion" sustainable organization.

As we pledged in our first Sustainability Report, we have gathered more data to help us calculate metrics and share our results. We continue to improve the way we collect and present our data so that we gain more clarity about how well our daily operations align with our Institute's mission. In this second Sustainability Report, we have also expanded our focus on social considerations such as organizational climate.

I am proud of our accomplishments and confident that we will continue to improve in the future. As you read this report and note our successes and our continued challenges, I hope that you will gain insights that help you in your own pursuit of a more sustainable future. I look forward to hearing from you.

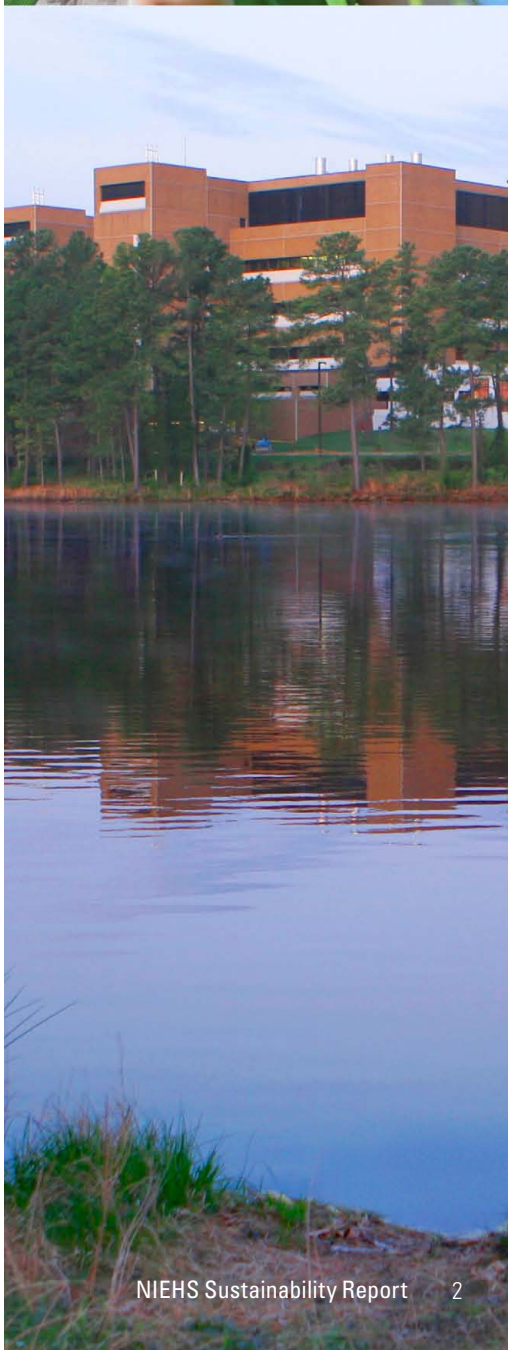
Linda Birnbaum

Linda S. Birnbaum, Director

National Institute of Environmental Health Sciences

and National Toxicology Program

Executive Summary



Preserving and protecting the environment and human health are integral to our scientific mission. This report details our continued progress in pursuing more sustainable practices in energy and water conservation, reduced air emissions, waste reduction and recycling, transportation and more. As we carry out our scientific missions, we stay focused on enhancing our Institute's performance in environmental, human health and social wellbeing.

The National Institute of Environmental Health Sciences (NIEHS) has a number of established "Green Teams" at Research Triangle Park (RTP), North Carolina. For example, the NIEHS Environmental Management System (EMS) is guided by our EMS Workgroup which ensured awareness training for 100% of our staff this year. The Energy and Water Conservation working group (E-Con) identifies opportunities, facilitates operational savings and encourages individual conservation by our employees. Finally, the Environmental Awareness Advisory Committee provides a forum for grassroots employee involvement in environmental stewardship.

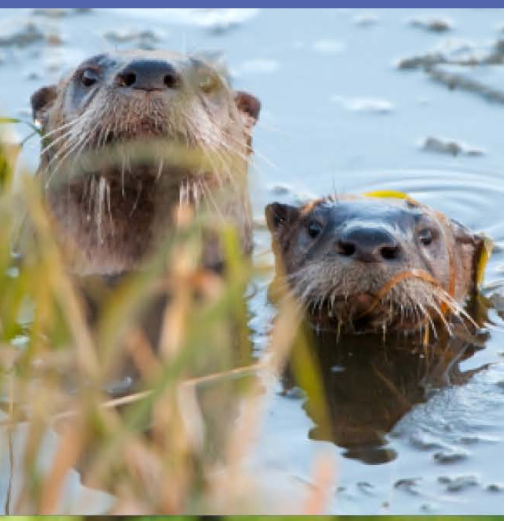
These groups are instrumental in promoting sustainability. Together, they provide broad representation across a variety of programs in NIEHS and with our partners in the Office of Research Facilities and at the U.S. Environmental Protection Agency, which shares the federal campus with us. Our NIEHS Sustainability Coordinator works with each of these groups to promote information sharing and to facilitate public reporting and accountability.

During 2010, we were able to begin new goals and maintain progress in completing our goals from our previous sustainability report.

Water – Our area of North Carolina continues to be alert to fluctuations in local drought conditions. The severity has decreased lately but water consumption remains a top priority at our Institute. While EO 13514 requires a reduction in water consumption of 26% by 2020 over the 2007 baseline, through 2010 NIEHS already achieved a reduction of 37% from its 2007 baseline. In 2010, NIEHS built on significant savings already achieved in 2009 to reduce consumption by another 24%.

Energy – Our solar panels helped reduce our draw from the grid by 0.1%. We also reduced total electrical use by 5% during 2010 due to previous facility and process upgrades and employee education. Natural gas consumption in 2010 was reduced by 5% over 2009.

Emissions – Wastewater discharge was reduced by 8% in 2010, following the 33% reduction in 2009. A reverse osmosis system is being installed which will reduce this number even further since the system is designed to reuse about 75% of our cooling tower water.



Transportation – We increased the number of participants in our alternative transportation program by nearly 16%. NIEHS continues to play a leadership role in addressing regional commuting concerns through a formal travel reduction plan aimed at reducing traffic congestion and associated environmental effects. We also increased motor pool data collection to include miles traveled, vehicle type, usage and miles per gallon. This data will help us better manage our fleet and keep employees informed about the environmental impacts of vehicle use.

Land Management – As a Wildlife and Industry Together (WAIT) certified Institute, we are constantly challenged to enhance the natural areas on our campus. During 2010, under a pilot program we were able to increase our natural areas by reducing mowing by nearly 15%. We also replaced annuals with native shrubbery and perennials and provided water only from the campus lake rather than potable water system.

Composting – Our previous efforts for composting included only pre consumer waste from our cafeteria. This year we were able to compost post consumer waste including the dishes in our cafeteria. In doing so, we managed to divert 15,790 lbs (7.9tons) from the landfill and reduce our GHG emissions. We have been composting our animal bedding for years, and in 2010 we composted 282,000 pounds.

Community Involvement – The NIEHS is a member of the North Carolina Environmental Stewardship Initiative (ESI), a voluntary program for North Carolina organizations that commit to improving their environmental performance beyond traditional levels of compliance. The program is well aligned with federal and NIH EMS requirements and offers NIEHS an opportunity to take a leadership role in the North Carolina community and in 2010 NIEHS hosted the annual ESI conference as we have for several prior years. NIEHS also continued to take an active role in the RTP corporate community as a member of "environment@rtp" and "smartcommute@rtp," working directly with community partners to reduce regional environmental impacts and promote alternative transportation.

Green Champions – The commitment and efforts of our employees and the publication of our first Sustainability Report along with efforts from our facilities group to implement energy saving performance contracts (ESPCs) brought in two green champion awards in 2009 under the categories of Organization and Energy/Water. In 2010, we received another award in the Environmental Stewardship category for our cafeteria composting program.

Our People – This year, we conducted a "Pulse" survey aimed at better understanding the experience and perceptions of our employees. Results will be incorporated into action plans for improving the quality of the work experience for our staff.

Green Dream Team Award – At the GreenGov Symposium 2010, The Interagency Working Group on Climate Change and Health were awarded the Green Dream Team award for their report, "*A Human Health Perspective on Climate Change*." This paper provides a baseline assessment of the current state of knowledge of the health impacts of climate change and informs projections of future impacts.

Managing for Sustainability

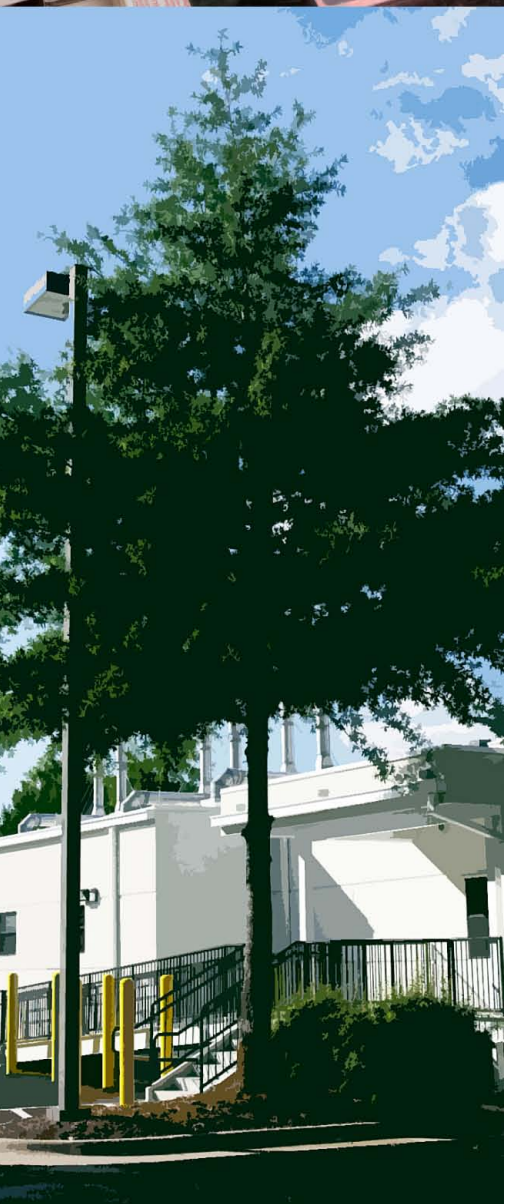
Our environmental management system (EMS) is a continual improvement system for reducing environmental impacts associated with our activities. It also creates a structure to help ensure compliance with environmental rules, regulations, and requirements.

Executive Order (EO) 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," was signed by President Obama on 5 October 2009. This EO does build on the requirements of EO 13514 by expanding energy reduction and environmental performance requirements and makes reduction of greenhouse gas emissions (GHG) a priority for Federal agencies.

A key EMS element is the public statement of an organization's environmental policy. Through implementation of our policy, NIEHS ensures that environmental accountability is integrated into day-to-day decision-making and long term planning. Our EMS provides the framework for assessing our environmental performance and establishing goals and targets to enhance existing programs to further reduce environmental impacts associated with our activities.

The NIEHS EMS follows the ISO 14001 Standard for Environmental Management Systems and provides the basis for self-determination and self-declaration of conformance with that standard. Since June 2008, NIEHS has implemented an EMS in accordance with Executive Order 13514. Our self-declaration is based on reviews by audit teams from NIH as well as the North Carolina Department of Environment and Natural Resources.

Our EMS focuses on the aspects of our activities that have the greatest potential impact on the environment – such as air emissions, waste (chemical, medical and radioactive), and wastewater discharges. In addition, the NIEHS also works to improve its management of storm water runoff, public and private transportation, pesticides and fertilizers, carbon dioxide emissions, electronic waste, "green purchasing," solid waste recycling, water conservation, retention of contiguous wildlife habitat and more. These efforts are conveyed to the public at: http://www.niehs.nih.gov/about/stewardship/initiatives.cfm.



Research

Advancing Environmental Health in Our Own Laboratories

Our laboratories and clinical research unit investigate the impacts of environmental exposure on human health and the progression of disease. By publishing 443 scientific articles in peer-reviewed journals in 2009 and 401 in 2010 our more than 500 scientists and 181 trainees provide a strong commitment within a diverse field of study. Funded by Congressional appropriations, our research influences public policy related to the NIEHS/NTP mission and the state of the science of environmental health.

In order to remain competitive in our industry and help us maintain the high standards of scientific excellence an external peer review committee known as the board of scientific counselors periodically reviews all scientists for leadership and research performance as well as tenure consideration for new investigators. Indicators include research quality, scientific accomplishments and direction, demonstrating support of the mission, collaboration and mentoring among other things. More information about this process can be found at http://www.niehs.nih.gov/about/orgstructure/boards/bsc/index.cfm

Several core facilities offer support for research projects and investigations. In house cores provide enhanced collaborations among programs, as well as reduced costs and increased efficiencies. We also have an outstanding animal care and use program accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care, International (AAALAC). AAALAC International is a private, nonprofit organization that promotes animal well-being and the humane treatment of animals in science through voluntary accreditation and assessment of programs (www.aaalac.org). NIEHS has been accredited since 1972, and was the first of the NIH institutes to acquire such status. We are proud of our strong commitment to humane animal care and use, animal welfare, and animal health. The NIEHS animal care and use program will be undergoing assessment for continued accreditation in 2011.

We have an established clinical research unit that has begun health studies and clinical trials to help determine how exposure to chemicals or other environmental agents may influence a variety of diseases. They enhance NIEHS-led research by translating basic laboratory findings to humans, studying the interactions between genes and environmental factors involved in the development of diseases and by identifying populations at risk to create strategies that prevent and combat human diseases. In 2011, we will be working towards accreditation from the Joint Commission on Accreditation of Healthcare Organizations, or JCAHO, which will demonstrate the strength and quality of our services.

Supporting Environmental Health Research Worldwide

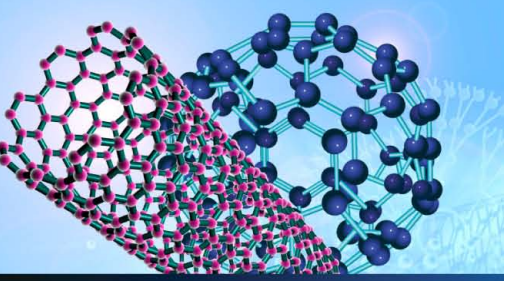
Our extramural research and training group manages the Institute's grant program for environmental health research. With an emphasis on training and translational research we support the training and development of future environmental health scientists. Along with the previously highlighted programs: WETP and SRP, we want to feature climate change projects focusing on issues including direct and indirect effects on human health and climate adaptation.

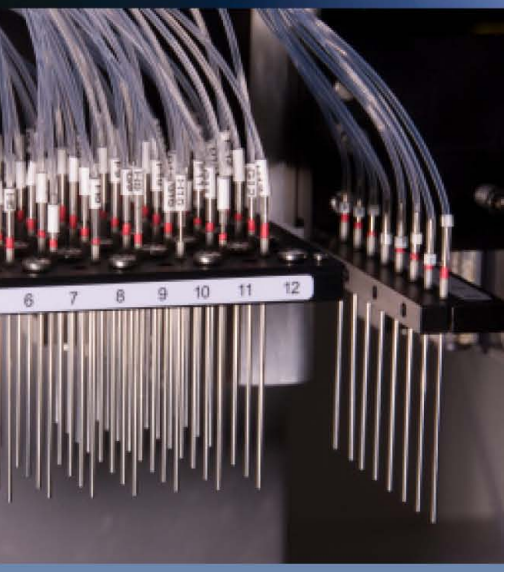
From their newly created Human Health Impacts of Climate Change program our extramural group is able to tackle the complicated relationships between climate change, the environment, and human health. The potential human health impacts of climate change have not traditionally represented high priorities for scientific research in the United States. Acknowledging this gap in understanding, the NIEHS extramural program will fund scientific research to discover the mechanisms by which climate change both causes and exacerbates human morbidity and mortality, as well as in helping to inform, design, and evaluate effective mitigation and adaptation strategies using a multidisciplinary and integrated approach.

Categories include:

- Research on health impacts of climate change and weather variability
- Research on health impacts of climate change mitigation and adaptation strategies
- Research to assess and characterize population vulnerability to climate change
- Research methods and model development
- Research on risk communication and education

Research in these areas will be in collaboration with the NIEHS, the NIH and other federal government agencies as well as the Partnerships for Environmental Public Health.
For further information and related documents please visit:
http://www.niehs.nih.gov/research/supported/programs/climate/index.cfm





National Toxicology Program and Environmental Health Perspectives

National Toxicology Program

The National Toxicology Program conducts animal studies to characterize and determine the toxicological potential of chemicals, with selection of which chemicals to test historically based on the extent of human exposure, level of production, and/or chemical structure. Two recently instituted programs highlighted here are the High Throughput Screening and the Host Susceptibility Programs.

High Throughput Screening (HTS) Program: As part of the 2004 NTP Vision and Roadmap for the 21st Century, this new strategy for screening chemicals encourages transition from disease-specific models to broad target-specific, mechanism-based biological observations using *in vitro* biochemical- and cell-based assays that not only increase the rate of research, but reduce costs and, ultimately, are expected to provide a more accurate prediction of adverse human health effects. In support of this program, the NTP entered into a formal partnership, known informally as the Tox21 Collaboration, with the NIH Chemical Genomics Center (NCGC), the Environmental Protection Agency's National Center for Computational Toxicology and, more recently, the Food and Drug Administration. The purpose of this partnership is to integrate the different capabilities and expertise of each organization in human disease, toxicology, high throughput/high content screening approaches, and computational methods in order to better prioritize substances for further in-depth toxicological evaluation, to identify mechanisms of action for further investigation (e.g., disease-associated pathways), and to develop predictive models for *in vivo* biological response. This effort is expected to provide a greatly increased ability to evaluate the large numbers of chemicals currently with no or limited toxicological information, while reducing or replacing the use of animals in regulatory testing. Phase I of this effort, which included the screening of ~2800 compounds in more than 50 HTS assays, has been completed and the resulting data are being made publicly available in different databases (NTP CEBS, NLM PubChem, EPA ACToR). In Phase II, more than 10,000 compounds will be screened for activity in HTS assays covering a range of important toxicity pathways.

Host Susceptibility Program: This program conducts studies using genetically defined or engineered mouse inbred strains to evaluate the genetic basis for differences in susceptibility that may lead to a better understanding of how chemicals in our environment may be hazardous to some individuals and not to others. Asthma, obesity, cardiovascular disease, ataxia, and cancer are examples of complex diseases connected with multiple interacting genes in rodents and humans with variable penetrance induced or influenced by environmental exposures. Ultimately, the NTP expects to learn more about the key genes, their genetic variants, and pathways involved in the toxic response and the etiology of disease mediated by chemicals in our environment. An understanding of genes-and-environment interactions will lead to more specific testing strategies to use for predicting the potential toxicity of substances in our environment to humans.

Environmental Health Perspectives

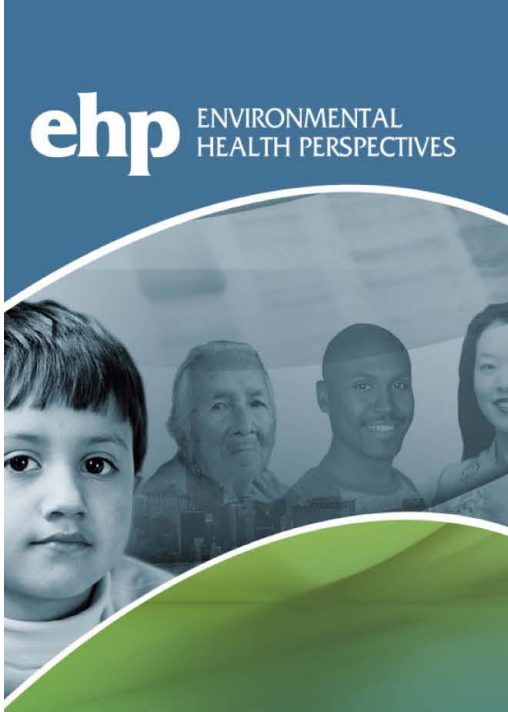
EHP publishes articles from a wide range of scientific disciplines encompassing basic research; epidemiologic studies; risk assessment; relevant ethical, legal, social, environmental justice, and policy topics; longitudinal human studies; *in vitro* and *in vivo* animal research with a clear relationship to human health; and environmental medicine case reports. Because children are uniquely sensitive to their environments, EHP devotes a research section specifically to issues surrounding children's environmental health.

With an impact factor of 6.19, EHP is the top monthly journal in public, environmental, and occupational health and the second-ranked monthly journal in environmental sciences. This journal supports sustainable publishing practices with versions online in several languages and in print using soy based inks and forest stewardship certified (FSC) paper.

EHP's acceptance rate is 18% for the more than 1,400 research manuscripts it receives each year.

Topics from the headlines include:

- Qualifying 'Offset' GHG emissions
- Proper storage of coal combustion ash
- Tap water chemistry and lead liberation
- Data interpretation and public policy
- MRSA and E. Coli
- Climate Change



The Source
for Current, Credible, Environmental Health Science News and Peer-Reviewed Research

Energy

Consumption

According to EO 13514, goals include reducing energy consumption while increasing use of renewable energy. Our facility reduced consumption of electricity by 5% in 2009 and 4% in 2010 while natural gas consumption decreased 5% for 2009 and 7% for 2010. These statistics are within target range for meeting executive order goals.

In January 2009 we installed a solar panel array which produces 44 MWh of power for each year and reduced our demand from the grid by 0.1%. This reduction in demand, upgrades to LED lighting, changes in the way we operate our campus chilled water system, combined with conservation efforts on all fronts have established a successful method of change in our Institute and in our way of thinking about power.

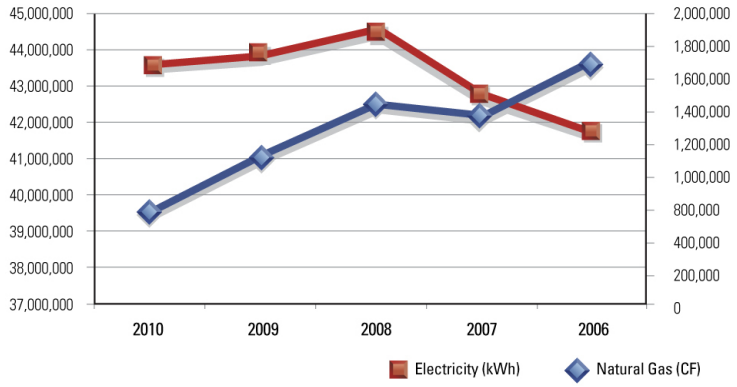
Indirect energy consumption based upon the electricity we purchase remains the same and is calculated using EPA standards available from their website: http://epa.gov/cleanenergy/energy-and-you/how-clean.html for zip code: 27709. With nearly 60% of our power coming from burning fossil fuels we are aware of the impact from emissions and from harvesting fossil fuels for energy consumption. We support the use of renewable energy and encourage our provider to find more renewable sources.

Our energy provider gives us discounted pricing for natural gas in exchange for the option to interrupt our service during peak demand. During this time we burn fuel oil. Although this saves us money the GHG emissions and particulate matter emitted have us reconsidering this practice. Our fuel oil consumption for 2010 was 264,350 gallons.

Future Projects

One project underway includes a change in the piping for our chillers that will allow our chillers to run more efficiently and function as a consolidated chilled water plant. Since the total load on the chiller plant drops during the winter months, these changes in the piping will allow us to operate fewer chillers at closer to their design capacity where they are more efficient instead of operating more chillers at reduced load and efficiency. We expect reduced electricity consumption and costs in the winter due to this upgrade.

Energy Trend



Goals

Calculating our GHG emissions is a complex project currently underway. As a requirement of EO 13514 we will be reporting GHG emissions (including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) via direct and indirect sources also described as scopes 1, 2, and 3 to the NIH. This data will help predict the impact on our climate as we create a strategy to mitigate and reduce our carbon footprint. Since GHG are directly related to the creation and consumption of energy it is important to note trends here as well.

The present rates of consumption of fossil fuel energy are not sustainable on a national or global basis. Natural gas, fuel oil and coal are non-renewable fossil fuels and their extraction, transport, and combustion have negative environmental impacts (e.g. air pollution, acid precipitation, climate change).

Fossil fuels contain carbon and their combustion in the presence of oxygen results in the emission of carbon dioxide. There is strong scientific consensus that increased atmospheric CO2 concentrations have climate change impacts. Compared with coal and fuel oil, natural gas combustion emits less CO2 per BTU generated and usually produces less CO, SOx, or particulate emissions. The ultimate goal is to transition to alternative renewable energy sources as they become available.

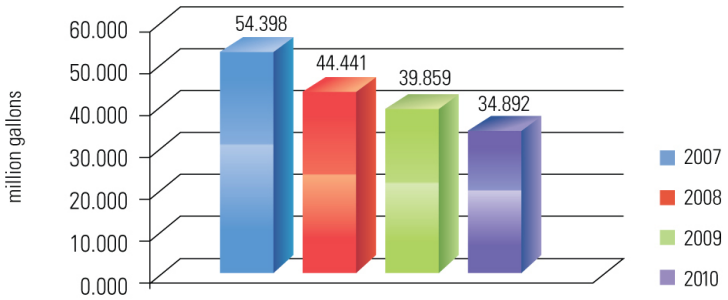
Although the United States possesses abundant surface and ground water, our access to safe drinking water is far from unlimited. Sustainable water use requires the application of conservation measures to prevent wasteful uses. The protection of surface and ground water from contamination is also necessary to safeguard the quality of our drinking water sources.

Water

Consumption

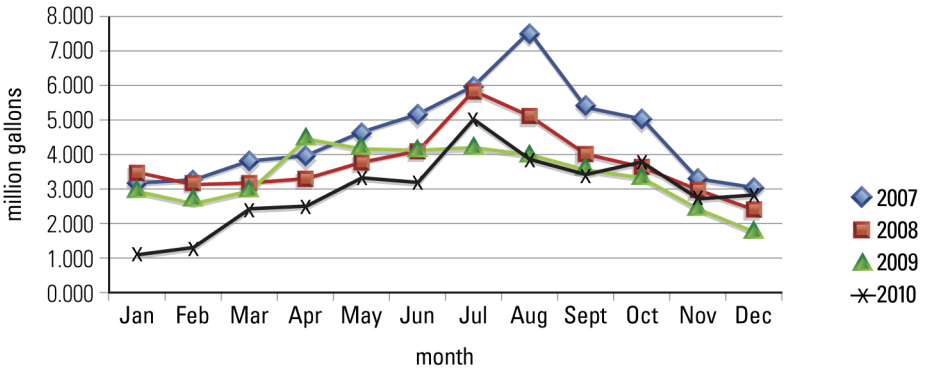
In 2009 we reduced our water consumption by 10% and in 2010 another 13% bringing our total reduction since 2007 to 37%. Upgrades and conservation efforts account for our biggest gains so far. Based on the trend, our continued efforts to reduce during the hottest months of the year showed the most improvement.

Annual Water Consumption Trend



Even our monthly water trends show a shift to a more consistent usage pattern month to month despite the weather.

Monthly Water Consumption Trend



Future Projects –

With the introduction of a Reverse Osmosis System in the near future we expect to reduce even more in coming years by reusing water (minimizing wastewater) for our cooling towers that was previously sent to the county treatment plant.

Goals –

Having met our goal already for EO13514 we will continue to support water conservation and upgrading efforts. We are proud of our achievements and they motivate us to continue with the same fervor on other projects that require more attention.

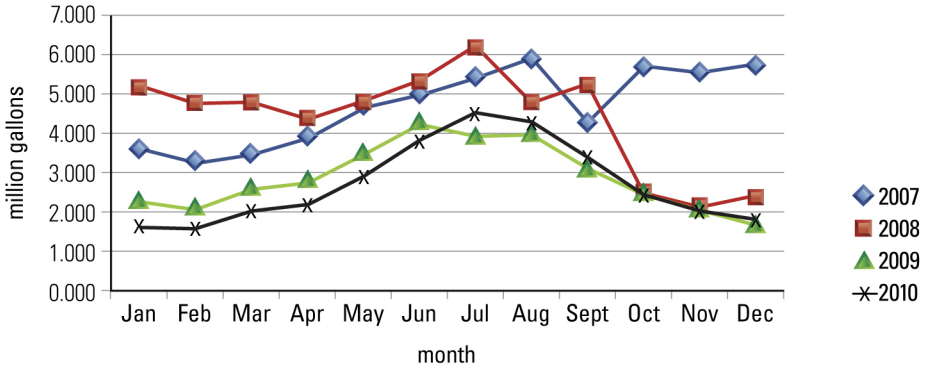
Emissions

Wastewater

Every community collects waste from home, businesses and industries and delivers it to a treatment facility that treats then discharges the water into a receiving stream or lake. Innovation in treatment technologies as well as strict standards for wastewater disposal allow for communities to enjoy safe, clean water.

In 2009, a total 35,183,954 gallons of wastewater was discharged to the Durham County Triangle Wastewater Treatment Plant. This number represents a reduction of 17,438,404 gallons, or 33%, from the previous year. The peak in summer months is related to blowdown for the cooling towers. The trend does demonstrate how energy savings performance contract upgrades to bathroom facilities have contributed significantly to our reduction in wastewater production and emissions. Beginning in October 2008 the trend has remained below levels of previous years. (Jan., Feb., July and Sept. show biggest drops – 42-55%).

Wastewater Emissions Trend



Wastewater emissions were reduced during the peak summer months this year showing a more stable pattern unaffected by weather. We predict our Reverse Osmosis system should have an impact year round when it is in commission creating a more flat emission pattern and bringing our overall emissions down as we begin reusing water from the cooling towers.

Other wastewater saving efforts include:

- Suspend washing fleet vehicles during drought conditions
- Suspend building maintenance activities that use water during drought conditions
- Routinely survey campus utility systems to identify leaks and schedule repairs
- Providing educational information to all employees through electronic newsletters and campus wide e-mails

Analysis is performed monthly for mercury, every 6 months for ammonia, chloride, total nitrogen, VOC (EPA Method 8260), and fluoride. Annually we test for total phosphorus, oil and grease, and silver. The Durham County also samples our wastewater to assure compliance with our wastewater discharge permit.

Air pollutants can have adverse effects on habitats and human and animal health. If uncontrolled, air emissions can contribute to the deterioration of air quality, acidification, forest degradation, as well as public health concerns. Pollutants of concern include NOx, SOx, particulate matter and other significant air emissions, direct emissions of greenhouse gases (from sources such as generation of electricity, heat, or steam; combustion processes and transportation of materials); and atmospheric ozone depleting substances.

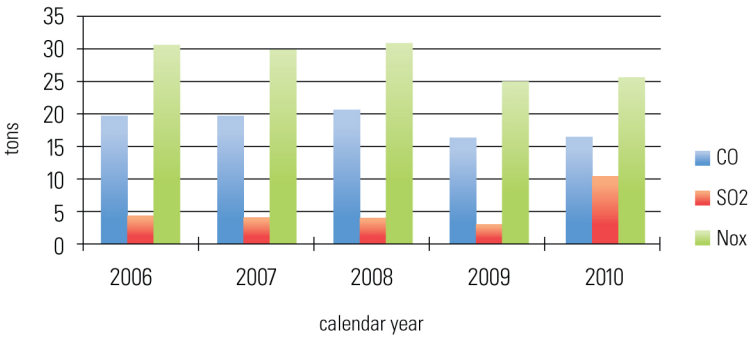
Analysis is performed monthly for mercury, every 6 months for ammonia, chloride, total nitrogen, VOC (EPA Method 8260), and fluoride. Annually we test for total phosphorus, oil and grease, and silver. The Durham County also samples our wastewater to assure compliance with our wastewater discharge permit.

Air Emissions

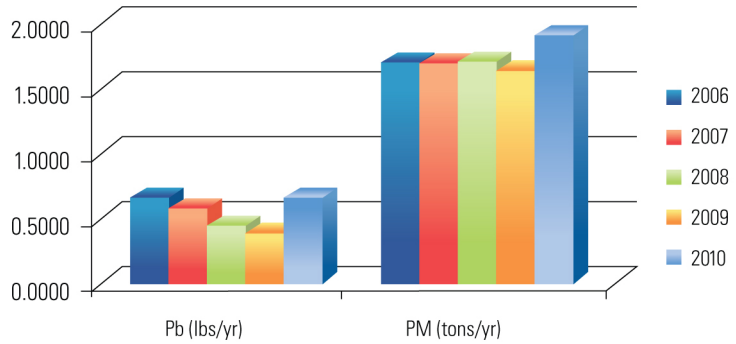
Federal guidelines for GHG emissions reporting and reduction under Executive Order 13514 have recently been released. We will follow these guidelines for our agency, the Department of Health and Human Services. They include reporting FY 2008 (baseline) and FY 2010 by 31Jan2011 as well as reduction targets for direct (scope 1), indirect from consumption of purchased electricity, heat or steam (scope 2) & and other indirect sources such as transportation not covered in scope 2, (scope 3) for the following greenhouse gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (NOx), hydroflourocarbons (HFCs), perflourocarbons (PFCs), and sulfur hexafluoride (SF6). The standard will be CO2 with a global warming potential of 1.0. (the impact of one metric ton over a 100yr timespan). Along with agency goals, we will also set individual goals to best represent the NIH as its environmental institute.

In addition, we conduct an annual inventory of CO2 emissions from our stationary combustion sources, which include boilers and incinerators, to determine whether we exceed the 25,000 metric ton reporting limit associated with the EPA's Mandatory Greenhouse Gas Reporting

NIEHS/EPA NOx, SO2, CO Emissions



NIEHS/EPA Pb, PM Emissions



Rule. The NIEHS emitted an estimated 22166 metric tons of CO2 from stationary combustion sources during 2010. Our SO2 emissions were increased for 2010 due to fuel oil consumption in the boilers during a period of curtailment. This has not occurred to this extent since 2004.

There are some upcoming rule changes that are expected to affect incinerator operations but it should be another year or two before we can gauge the impact.

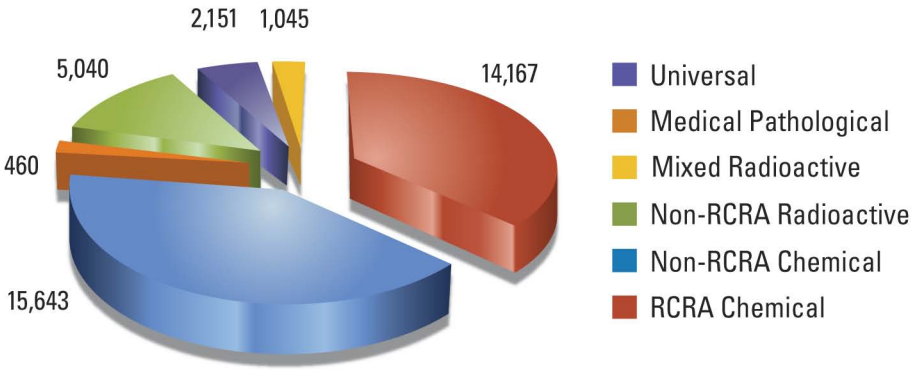
Waste

To promote pollution prevention and eliminate waste EO 13514 calls for diverting 50% of non-hazardous solid waste excluding Construction and Demolition debris by FY 2015. Construction and Demolition debris itself must also be diverted by 50% by FY 2015.

Trend analysis shows a reduction in waste generation for the 3rd year in a row (data not shown). With a recent adjustment to our waste stream we no longer burn waste in our incinerator unless it was classified medical or pathological waste. This meant an increase in waste would be sent to the landfill if it could not be recycled. In addition, in October 2009, changes in policy on plastics in the landfill came into effect. No longer would the landfill accept small neck plastic containers. Efforts were made to combine these policy changes into one change in mode of operation by enhancing recycling efforts for nonhazardous laboratory plastics and repackaging hazardous plastics for incineration. This has led to an unfortunate increase in waste going to the landfill but also an increase in the amount of recycled laboratory plastics.

Another change brought about by the reclassification of our incinerator was composting all pre- and post-consumer food waste. Previously, we had vermicomposted from the pre-consumer waste stream but now under a large-scale operation we compost all compostable waste (pre and post-consumer). This change also supports our water conservation and drought awareness plans. By switching to all compostable dishes, cups and napkins we have dramatically reduced the amount of waste going to the landfill and water used for washing dishes. In early 2010, we began composting cafeteria waste and were able to reduce cafeteria waste going to the landfill by about 60%

2010 Waste Generation by Type (lbs.)



NIEHS landfill waste is being sent to a local county municipal solid waste landfill that is permitted to accept only municipal solid waste including our nonhazardous waste. Our composting vendor, Brooks Composting from Goldston NC, a commercial food waste recycler supports our cafeteria composting to help divert waste from the landfill while reducing our GHG emissions for methane. A win-win that includes returning aged compost back to our facility for use in shrubbery beds and under newly planted trees.

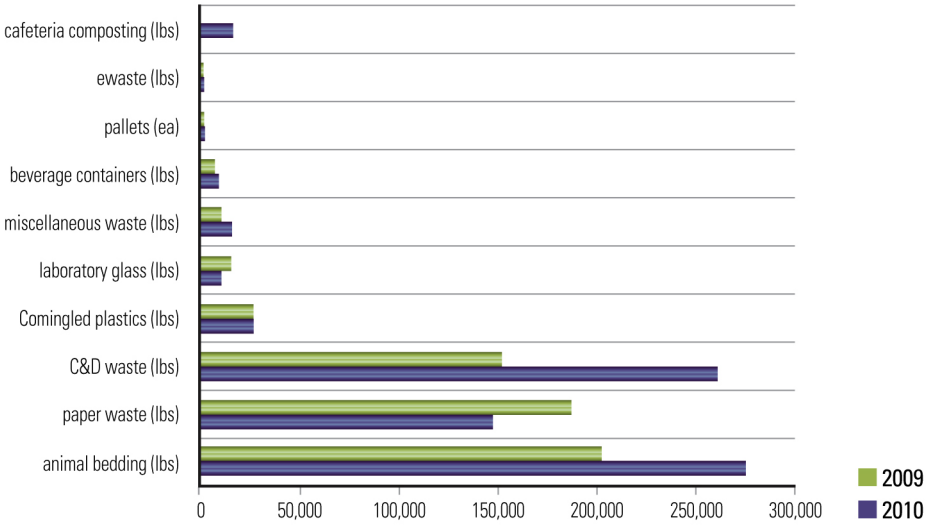
Wastes are the unwanted materials and byproducts of our activities. To use materials in a sustainable manner means that we conserve their use, we don't discard them in ways that damage the environment or our health, and we recycled our wastes. The lifecycle of products can be extended when they designed with reuse in mind and are carefully maintained and repaired.

Recycling

As stated, in October 2009 NC landfills no longer accept plastic bottles with necks smaller than the body. Some reagents used in the lab and drinks in the cafeteria have this design. Along with our composting program we were able to combine efforts to recycle these bottles in an appropriate manner.

Our total amount recycled by weight increased by 22% excluding cafeteria composting since that project was new to 2010. Comingling plastics helped to reduce the number of bins required while making it easier for employees to pitch in. We continue to search for and find new vendors and methods to recycle and reuse items while preventing items from reaching the landfill.

Recycling 2009-2010



We recycle a myriad of items from typical metals, plastics, glass and paper products to miscellaneous waste items such as laboratory aluminum, packing foam, cafeteria grease, x-ray film, toner cartridges and mixed metals. We were able to recycle 792 pallets in 2009 and 882 in 2010. We also have a healthy ice pack reuse program. In 2010 we were able to provide 436lbs. of ice packs for a local company to reuse.

In general our E-waste, or technotrash, totals are low numbers. The reason for this is because all electronic equipment must be sent to NIH warehouses in Bethesda, MD, for proper handling. All of NIH electronics are handled as a unit and recycled, reused, donated (or destroyed) in the appropriate manner. Our e-waste is transported to DC in exchange for needed supplies avoiding a truck travelling without a load.

Goals –

Future goals for consideration include the use of reusable cafeteria dishware and utensils to reduce the use of paper goods, the use of compostable food containers in stead of disposables and a reduction in plastic beverage containers by offering the same beverages in aluminum cans, paper cartons or fountain dispensaries. Efforts to attain these goals will include study and analysis as well as educational and awareness initiatives.

Recycling turns materials that would otherwise end up in the waste stream into valuable resources. The benefits include saving energy and natural resources, decreasing emissions that contribute to climate change, preventing pollution and reducing the demand for landfill disposal and incineration.

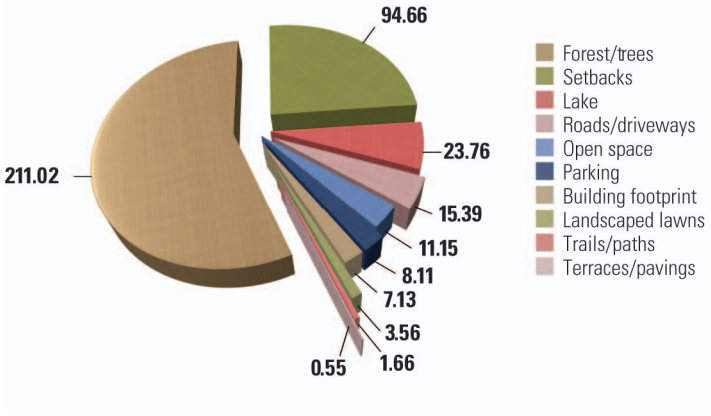
Sustainable practices can be reflected in the ways we use and manage the lands entrusted to our care. By supporting and protecting the life that is native in our region ensures that unique natural ecosystems remain healthy. By allowing natural processes to function the negative impacts and costs of land maintenance are reduced. Important elements of a sustainable landscape include conserving green space, protecting natural areas, giving preference to native vegetation, minimizing impervious surfaces; and to the extent possible maintaining grounds without the use of pesticides. This indicator measures contracted services such as mowing and grounds maintenance as well as ecological measures we take to protect our lands and waterways.

Land Management

Maintenance

Zoning ordinances for Durham County include a maximum of 15% of each lot for building coverage with no limitation for parking and drives. We have 33 acres or nearly 9% impervious surface coverage including our parking pads, roadways and driveways. With another 1.6 acres of paved trails and paths our employees enjoy the benefit of the more than 320 acres of undeveloped areas and our 23-acre lake. With over 375 acres of land in total we have strived to maintain and actually increase our natural areas. As part of the Wildlife and Industry Together (WAIT) program it is important to us to protect natural habitats, reduce invasive plants and increase biodiversity of our landscape while providing environmental education opportunities for our employees and the community.

Landscape Footprint (acres)



Memorial Garden Expansion

A new design has been developed to expand the memorial garden. The plan, when implemented will create an inviting new area for remembrance and meditation as well as increasing access for everyone between and among sections of the garden. The enhanced architecture of the garden will improve an area that was susceptible to flood and used mainly for maintenance access.

Transportation

Fleet Management

This year we were able to collect more data regarding our fleet and increase our ability to recognize changes in need and demand to better support our institute. More than 75% of our fleet uses alternative fuels. Our total CO2 emissions were calculated as 8.78kg/gal x 13381gal or 117.5MT CO2.

For EO 13514 the goal is to reduce motor fleet vehicle consumption of petroleum products. With the established baseline of FY2005 and the goal to reduce 2% annually until FY2020 our expanded data will help us find our weaknesses and establish ways to meet these goals.

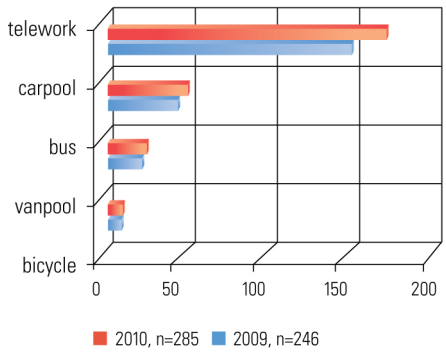
Delineating vehicles by fuel type helps create trends, find outliers and vehicles perhaps not operating at optimal performance level. We lease our vehicles but maintain them ourselves. Currently, that is the best fit for our organization.

	Average mpg	Total vehicles	Total miles
Shuttle (biodiesel)	5.5	1	13,795
All other diesel vehicles	9.2	3	11,185
Gasoline vehicles	8.6	7	19,135
E85 vehicles	11.9	27	88,221

When separating by vehicle type for usage and how their mileage compares we began with 7 sedans, 8 pickups, 8 vans, 9 4x4s, (6 other = 5 box trucks +shuttle). Consideration for whether those vehicles are best suited for their purpose it is helpful to use mpg and true intent for use. We also noted that less than 50% of the fuel purchased for flex fuel vehicles was E85 as stipulated by EO13243. This requirement needs attention and perseverance on the part of users as well as fleet management team members.

Alternative Transportation:

We had an increase of participants in carpooling, bicycling and teleworking and a decrease in bus and vanpool ridership.



Goals

We are in pursuit, with more of a priority, a resolution to the issues with utilizing the NIEHS on-site ethanol pump. Once the NIEHS on-site E85 pump is back in service, individuals will be required to use the E85 fuel. This requirement will allow NIEHS to meet the EO 13514 mandate. Individuals utilizing vehicles during travel in an area where E85 may not be available or only in rare circumstances will individuals be authorized to utilize fuel other than E85.

Also, we recently initiated discussions with GSA regarding the opportunity to replace eligible GSA vehicles with hybrids where possible. Any replacement vehicles will be ordered and made available to NIEHS in the summer, 2012.

Progress toward a sustainable transport system should be based on developing and promoting alternatives to single-occupancy vehicles, as well as increasing the use of transportation modes that do not rely on fossil fuels. (2009 was our first full year of running our biodiesel shuttle between the two main campuses. Average daily ridership = 32)

This indicator measures mileage and performance of fleet vehicles. It also reports alternative methods used for transportation by our employees. By tracking patterns of use and mileage we can interpret the best method for improvement.

Purchasing

To achieve the requirements set forth in Executive Order 13514, the acquisition staff adheres to the policy at both the agency level and organizational level. The OM acquisition staff continues to follow the guidelines outlined in Affirmative Procurement Plan, Purchasing Environmentally Preferable Products and Services at the U.S. Department of Health and Human Services (APP). HHS' policy was updated in October 2010 to address the goals of Executive Order 13514 and the required agency Strategic Sustainability Performance Plan called for in the order.

On April 30, 2010, an Office of Acquisitions (OA) Policy memo was issued to the acquisition staff outlining the requirements of Executive Order 13514. Specifically for NIEHS purchasing, Executive Order 13514 requires sustainable acquisition practices to ensure that 95% of new contracts for products and services, including task and delivery order be:

- Energy Efficient,
- Water Efficient,
- Biobased,
- Environmentally Preferable,
- Non-Ozone depleting,
- Contain Recycled Content, and
- Non-toxic/less-toxic alternatives.

To ensure that 95% of new contracts were "green," during FY10, the acquisition staff were required to include in every RFP, and RFQ, if applicable the following clauses:

• Printed or Copied Double-Sided on Paper with Recycled Content	52.204-4
• Energy Efficiency in Energy-Consuming Products	52.223-15
• Hazardous Material Identification and Material Safety Data	52.223-3
• Notification of Radioactive Materials	52.223-7
• Waste Reduction Program	52.223-10
• Ozone-Depleting Substances	52.223-11
• Refrigeration Equipment and Air Conditioners	52.223-12
• Toxic Chemical Release Reporting	52.223-14
• Recovered Material Certification	52.223-4

In addition to requiring the applicable clauses, per HHS policy, all contracting officers, contracting specialists, purchase card holders, card approving officials, project officers, acquisition staff in a certain job series are required to take Green Purchasing training every two years.

During FY10, NIEHS acquisition staff continued to utilize systems to incorporate its green purchasing requirements in solicitations when drafting contract actions. They also have the capacity to track purchases of green products and services using an online system to ease the process.

Additionally, the OA recently issued a Request for Information (RFI) and is planning to award one of its largest contact actions, the NIEHS Enterprise IT Services Support. In the RFI, under the heading "Green IT", the following language was included:

Executive Order 13514 – "Federal Leadership in Environmental, Energy, and Economic Performance" requires federal agencies to improve their energy efficiency and environmental performance. The HHS Strategic Sustainability Performance Plan contains specific goals and requirements for reducing the energy, waste and material life cycle impacts of computing.

As the environmental health institute within NIH, NIEHS has taken a leadership role in promoting sustainability. With the prevalence of IT throughout scientific and administrative operations, and even facilities management, computing is a focal point for sustainability. Offerors will need to demonstrate their ability to partner actively with NIEHS to lead changes that will further establish the Institute as a leader in Green IT.

As part of the solicitation package, contractors will be evaluated on "green" response.

Sustainability is advanced when we consider the full life-cycle impacts of our material and equipment purchases. Purchasing decisions that take into account aspects such as energy efficiency, the capability for material reuse or recycling, and use of safer materials not only further our institution's sustainable performance, but also can exert a positive influence on the broader marketplace.

Sustainability represents a major challenge for Information Technology due to its inverse relationship with availability. Products and services of IT have benefited from advances that gave large increases in computational power and storage capacity with only modest increases in electrical power usage; however, the requirement for 99.99% up-time inevitably requires some measure of redundancy and thus additional power for parallel, duplicate, and back-up systems.

Technology in the marketplace has risen to this challenge in several areas and systems are available with more efficient power supplies and intelligent variable power usage. Centralized desktop and laptop computer purchases are made with sustainability consideration and recent large purchases were certifiably green. The NIEHS IT team will continue to adapt to increased needs for data storage capacity and computational power to enable their constituency of computational biology researchers to remain competitive. Challenges remain in managing risk, replacing inefficient infrastructure, and reducing overhead.

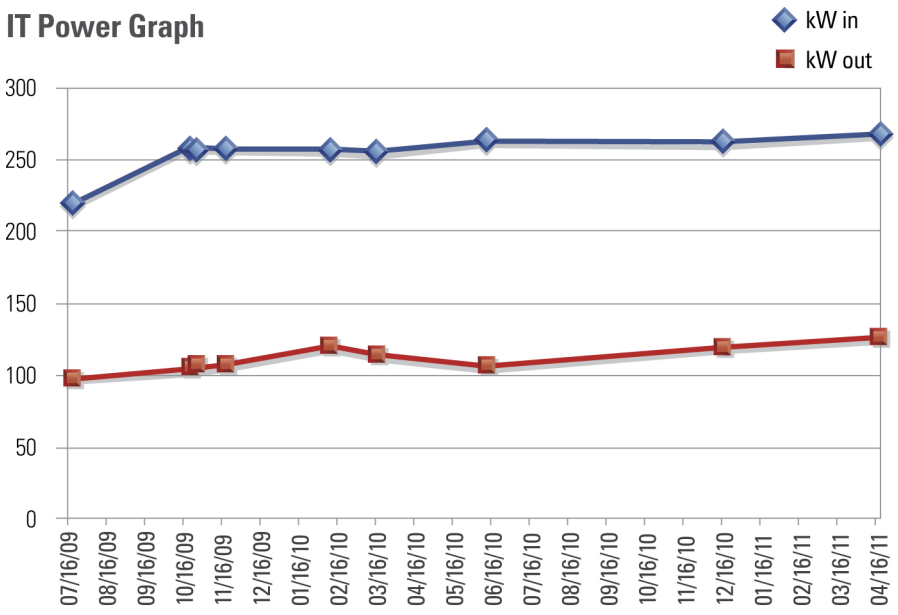
Information Technology

Life Cycle Management

The Lifecycle Management Program continued to mature and made a large centralized purchase of standardized laptops and desktops that were selected with energy efficiency features and also replaced aging systems that did not have specific power-saving features. An initiative was begun to encourage purchase and sharing of high-capacity departmental printers rather than purchasing individual personal printers. This practice is generally accepted by the industry to result in decreased usage of power and reduced maintenance and support costs.

- The NIEHS Data-Center is a significant user of power and accounts for roughly 6% of the Institute's electrical consumption. Over a decade, power usage by central IT systems has been increasing steadily. Since the construction and outfitting of the consolidated Data-Center on campus, electrical power usage has increased at the rate of roughly 15 KW per year.
- When retiring (non government) obsolescent computers from contractors these units are now recycled responsibly, and not stored or sold on the used-equipment market. This program assures us that inefficient equipment is removed from service permanently and that handling of toxins commonly found in older units are appropriately handled.

IT Power Graph



We have been recycling "e-waste," or techno-trash, for many years and have recently begun to investigate further opportunities to recycle things previously not recycled. Our disc drives are made of several components including aluminum and plastics all of which are recyclable. After destroying data by degaussing, the drives are disassembled and components are recycled according to common standards.

Goals –

In line with our previous goals we have moved Public Printers to default to duplex printing to reduce paper consumption. We have also begun to implement other programs to maximize support, review purchases, and coordinate setup.

We hope to increase mobile technology to encourage paperless working conditions.

- Training for creating E-forms with Digital Signature
- Switching over individual desktop printers to duplex
- Re-engineering the power systems in the Data-Center to increase efficiency
  - Lead-acid wet batteries are used as energy storage in the primary UPS but alternate technologies may be available for consideration as the existing batteries are nearing the end of their reliable lifespan. This would eliminate the usage of over a ton of lead in the Data-Center.
  - Using a flywheel, fuel cell, or ultra-capacitor for energy storage would increase overall efficiency of the system.

In one aspect or another, most of our daily activities and processes involve the application of information technology. The overhead thtat goes into managing the electronic flow of information represents a sizeable resource investment, not just in acquisition expense, but also in terms of energy consumption, equipment maintenance and eliminate disposal (e-waste).

Our people make the difference

While advancing science, promoting health, environmental stewardship and cost-effectiveness, we remain aware of the vital importance of our employees and our community. The Institute has placed a renewed emphasis on listening to and engaging all of our staff in making NIEHS a better place to work.

Organizational Climate

Based on earlier feedback, NIEHS recognized the need to measure "organizational climate" – the way people perceive their work environment. We formed a committee and engaged professional consultants to craft a "Pulse" survey that would measure a number of indicators ranging from equal employment opportunity to climate for innovation. An astonishing 80% of NIEHS employees responded to the Pulse survey, and 91% responded that they would recommend NIEHS to others as a good place to work. Regardless of this positive summary result, the Institute committed to addressing specific opportunities for improvement identified in the study. All employees and supervisors have been invited to participate in creating action plans, and follow-up is occurring at the work group level, division level and Institute-wide. After implementation of action plans, a follow up survey will be used to help gauge progress.

Work/Life Balance

For many years, NIEHS has been a leader in promoting a healthy balance between professional work activities and personal life. The Institute offers a variety of programs intended to help people stay healthy, care for their families, honor their commitment to preserve the environment and even save money. These include:

- on-site fitness center
- bicycles for on campus use
- campus walking trails with fitness stations along our on-site lake
- softball, volleyball and basketball facilities
- Memorial Garden
- Occupational Health Unit offering offers screenings, exams and medical monitoring
- annual Health and Fitness week
- lactation rooms for nursing mothers
- on-site cafeteria services
- cost-free Employee Assistance Program for a variety of counseling needs
- Ombudsman services
- Transhare services, offering support for carpooling, vanpooling and bus transit

Community Philanthropy

Each year, the Institute enthusiastically supports charitable endeavors through the Combined Federal Campaign (CFC). In the face of a poor national and regional economy, NIEHS employees contributed to the CFC at record levels. For the first time the Institute ever passed the $100,000 mark, with a total of $107,000 pledged – an 18% increase over 2009. Through direct contributions and payroll deduction, NIEHS employees designate their contributions to a wide range of non-profit organizations in the local community, the nation and the world.

Also in 2010, NIEHS held its first "Feds Feed Families" campaign – collecting more than 1,000 pounds of food for the North Carolina food bank and a local shelter.

Environmental Awareness

Chartered in 1991, the Environmental Awareness Advisory Committee (EAAC) is a grassroots volunteer organization of NIEHS employees that is actively involved as an advisory body in the management of our land, buildings and operations. Each year, the group organizes the Institute's week-long Earth Day and members participate directly in new initiatives, the EMS Work Group and the Energy and Water Conservation Task Force.

Science Education and Diversity

In 2010, in order to raise awareness about the careers and opportunities available for scientists and student scientists at NIEHS, we created the Office of Science Education & Diversity (OSED). The Office manages a national outreach program that focuses on increasing the number of underrepresented minority environmental health scientists at the Institute. This includes assisting students and professionals interested careers in environmental health sciences, ensuring the quality and accuracy of all NIEHS science education materials and serving as a liaison to schools, colleges and community organizations. The Office conducts community forums and works through Public Interest Partners, a coalition of grassroots advocacy organizations, to support and promote environmental health research.

Community Involvement

The Institute is a member of the North Carolina Environmental Stewardship Initiative (ESI), a voluntary program for North Carolina organizations that commit to improving their environmental performance beyond traditional levels of compliance. The program is well aligned with federal and NIH EMS requirements and offers NIEHS an opportunity to take a leadership goal in the North Carolina community and in 2010 NIEHS hosted the annual ESI conference as we have for several prior years. NIEHS also continued to take an active role in the RTP corporate community as a member of "environment@rtp" and "smartcommute@rtp," working directly with community partners to reduce regional environmental impacts and promote alternative transportation.

Partnerships for Environmental Public Health

NIEHS offers a grant program to promote and integrate initiatives that involve communities and scientists working together on contemporary issues in Environmental Public Health research. PEPH program goals include developing effective ways to communicate environmental public health messages to a diversity of audiences, and creating materials to increase awareness and literacy about environmental health risks.

Our Waste Management Team also supports and participates in the education and outreach of our employees and the community. In March, the NIEHS hosted the 2008 NC Environmental Stewardship Initiative Participant's Meeting and participated as Environmental Partners in the program. In October 2008 the NIEHS and EPA hosted a group of NCSU Environmental Science students touring the Waste Handling Facility, and learning about hazardous waste management and operations.

The program seeks new ways to improve waste management practices in NIEHS laboratories and support areas by increasing communication, awareness, and training as part of a multi-faceted approach to improve overall waste management practices on our campus. Future goals include the enhancement of periodic laboratory inspections, the development of an on-line hazardous waste training module, improved coordination to minimize the disposal of expired and abandoned laboratory chemicals, and to conduct periodic waste reduction awareness campaigns.

Diversity

From awarding grants to hiring employees, we recognize that diversity brings a stronger core and greater depth of knowledge to tackle important scientific and cultural issues. Training grants promote diversity of underrepresented groups for recruitment and retention. Predoctoral Fellowships such as the Ruth L. Kirchstein National Research Service Award promote diversity in health-related research by supporting individuals with underrepresented racial, ethnic or disadvantaged backgrounds, as well as individuals with disabilities. The NIEHS provides grant supplements to improve the diversity of the research workforce by supporting and recruiting students, post-doctorates and eligible researchers from underrepresented groups. Summer internships and other programs are also used by NIEHS to bring individuals with disabilities into the workplace.

Our Summers of Discovery program is designed to enhance awareness and knowledge of biomedical research for students and educators. This program strongly encourages applications from female and minority candidates, as well as persons with disabilities.

These opportunities bring culturally different people to share the knowledge and expertise of life and science in a friendly, learning environment. As a voluntary, advisory body to our senior leadership, the NIEHS Diversity Council provides insight and helps enrich the Institute's work culture.

Labor/Management Relations

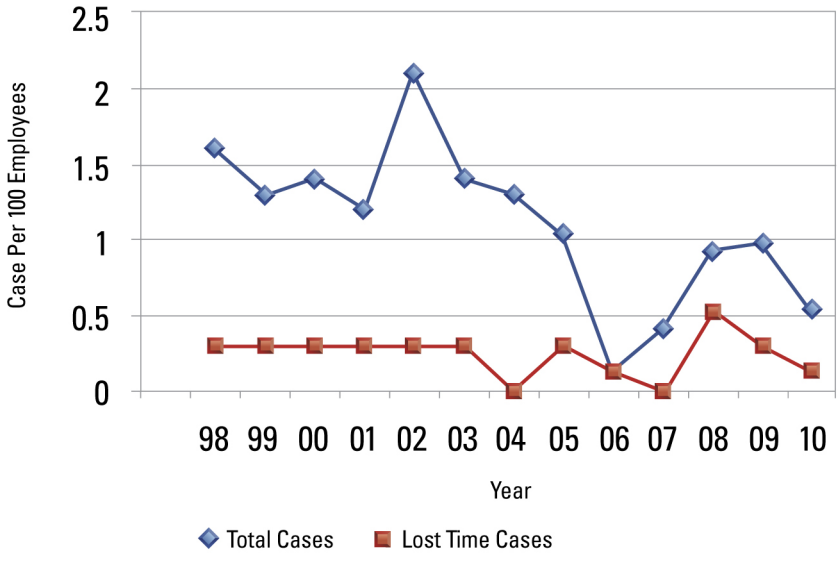
In 1978, Congress passed the Federal Service Labor-Management Relations Statute finding that labor organizations and collective bargaining in the civil service are in the public interest. Federal sector unions do not negotiate for pay or pensions and are forbidden from striking. However, they are able to negotiate regarding conditions of work for employees such as space, work schedules, overtime, and health and safety. Executive Order 13522, issued in late 2009, further emphasizes the importance of involving Unions before decisions are made regarding conditions of employment.

In 2010, AFGE Local 2923 and NIEHS began good faith negotiations to establish the first new Collective Bargaining Agreement (CBA) between the parties in 20 years. The existing agreement has been in place since 1990. It is anticipated that the new CBA will include policies that further enhance the workplace and environment by supporting telework, healthy indoor air, wellness programs, worker safety and limitations on pesticide use.

Occupational Health and Safety:

For the fifth consecutive year, the NIEHS incidence rate of recordable injuries and illnesses was below 1.0 per 100 full-time employees. During FY2010, the total injury and illness case rate was 0.54, a reduction from the FY2009 rate of 0.98. The rate includes all NIEHS and NIH employees working at the permanent and leased facilities in Research Triangle Park, North Carolina. There were 16 reported incidents during FY2010 and of these, 4 were OSHA recordable cases. There was 1 case involving Days Away From Work, accounting for 19 days. The lost time case rate for NIEHS was 0.13.

NIEHS Injury/Illness Incidence Rates



NIEHS injury and illness case rates have been below the rates experienced by other comparable sectors (e.g., Federal government, HHS, NIH, and NC state government).

Our emergency planning and preparedness procedures are effective, current and are coordinated with local and state offices for small- to large-scale operations. Along with the other NIH Institutes, the NIEHS has established a Crisis Response Team (CRT) to provide the overall structure in responding to emergency situations. By coordinating communications through the CRT, NIEHS is more prepared for potential threats, thus ensuring a safe environment for all who work at and visit the Institute. In addition, specific contingency and action plans have been developed for a variety of emergency situations to guide response actions. These plans include elements that address the safety and health aspects of the emergency.

Training and Education

The NIEHS provides occupational safety and health training in core subject areas for all new employees. The course "Introduction to Health and Safety at NIEHS" is designed to provide the baseline understanding of health and safety services and programs (e.g., hazard communication). Other courses in laboratory and radiation safety provide the basic knowledge to prevent exposure and injury. Every supervisor is responsible for providing training and instruction to their employees on the detailed procedures for specific work tasks. All NIEHS contractors are required to conduct training for their employees to comply with existing federal regulations (OSHA, EPA, etc.). Contract employees are allowed to attend NIEHS sponsored training courses. Certain training provided by the NIEHS is mandatory (OSHA HazWoper, Bloodborne Pathogens, Pandemic Preparedness, etc.).

Looking Forward

Our journey toward sustainability is ongoing, requiring our continued commitment and self-evaluation. We will continue our public commitment – to share what we are doing, publish our data and listen to the feedback that flows from our employees, stakeholders and the public.

In the near term, we expect to focus greater attention on the following areas:

Green and Healthy Meetings and Events

We are doing well, but not well enough. The Institute will continue to explore ways to reduce resource consumption by printing less, creating less food-related waste, substituting technology for travel, collecting and reusing supplies such as binders and name tags, and ensuring universal accessibility for people with disabilities.

Information Technology

Since IT is more and more central to all of our activity, we will continue to seek opportunities to reduce the quantity of IT equipment purchased, powered and maintained. For example, we plan to shift to a life cycle approach which more reliant on portable computers than on stationary desktop units – eliminating some cases where users today have two devices. Similarly, the shift to shared printers will continue where possible, eliminating the need for as many desktop printers as we have today. Power-saving features within our IT devices can be more fully utilized, and with better user communication we can encourage more powering-down of devices without loss of backups or interference with software updates.

NIH-Wide Sustainability Partnerships

Following our Institute's issuance of a Sustainability Report in 2009, the National Institutes of Health issued the first NIH Sustainability Report in 2010. This coincided with the expansion of work in many aspects of sustainability throughout all NIH Institutes and Centers. The collaborative network of "green teams" from different organizations has leveraged the sharing of best practices and sparked innovation in a number of areas. NIEHS will continue to be actively involved in this larger NIH-wide effort.

PO Box 12233 • 111 T.W. Alexander Drive

Research Triangle Park, NC 27709

www.niehs.nih.gov

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