ORD's Office of Science Policy Update

October 2005

A Letter from the Director, Office of Science Policy

Greetings OSP Staff:

As we move into a new fiscal year, a lot of changes are in the making. George Gray has been confirmed as the Assistant Administrator for ORD. Many thanks to Steve Watkins who took the lead in sending several of Dr. Gray's scientific papers to staff with an opportunity for discussion at an upcoming OSP Journal Club meeting. In addition, the Staff Chiefs are busy working with their staffs to identify budget needs for FY 2006. Finally, our reorganization package was approved by the Agency and the Unions! The employee data are being entered into the human resource system so that our permanent staff groups can be established in the People Plus system. You will be notified when this takes place.

Wishing all of you a Happy New Fiscal Year!

2004 EPA Patents

Ten patents, an exclusive grant or property right given by the government to the inventor, were issued to EPA inventors in 2004. A patent prevents others from making, using, or selling the invention for a period of 20 years without a license to do so unless the inventor or owner of the patent grants rights of the invention to others.

Although government-funded technology patent rights are generally assigned to the government, under the Federal Technology Transfer Act (FTTA), the government provides a portion of the royalties of a licensed patent to the EPA inventor. Provided it is new, useful, and unobvious, almost anything man-made, as well as the process for making it or improvements to an existing patent, can be patented. If patents are licensed, the inventors are entitled to 35% of any royalties, up to an annual cap of $150,000, with the remaining 65% going to the sponsoring laboratory.

The ten patents issued in 2004 were:

Fuel Tank Ventilation System (Patent No. 6,681,789)—"Evaporative emissions" from vehicle fuel tanks are one source of air pollution that occurs each day for all vehicles with fuel in the tank, even when stationary. **Charles Moulis** and **Leon Jones** of EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) in Ann Arbor developed a fuel tank ventilation system comprised of a fuel tank and a bladder within the fuel tank that vents to the

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EPA Seeks Public Comment on Peer Review Plans

To comply with mandates outlined in the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 2004), OSP is coordinating the submission of public comments on EPA's peer review process for highly influential scientific assessments (HISA) and influential scientific information (ISI). The bulletin, which sets expectations for conducting peer reviews of HISAs and ISAs, tasks federal agencies with posting information about their peer review processes on their Web sites for public comment and defines the terms as follows:

- **Influential Scientific Information** is a product that currently has, or is expected to have, a clear and substantial impact on important public policies, or on private sector decisions (e.g., factual inputs, data, models, analyses, technical information, or scientific assessments).
- **Scientific Assessment** is an evaluation of a body of scientific or technical knowledge. Such an assessment is defined as a highly influential scientific assessment (HISA) when it is novel, controversial, precedent-setting, or has significant interagency interest. In addition, a scientific assessment is considered highly influential if it has a potential economic impact of more than $500M a year. The HISA Peer Review Plans can be viewed on EPA's Science Inventory Web Site under the Peer Review Agenda sub-page at www.epa.gov/si. The ISI plans are due to be posted by December 16, 2005. The Science

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What's Inside

Regional Corner

Regional Visits by OSP Management are Underway!

Plans are underway for OSP management visits to each of the regions. Our goal is to have face-to-face meetings with key regional staff, including Deputy Regional Administrators (DRAs) and Division Directors from the program offices with an emphasis on delivery of ORD products to the regions, science informing regional decisions, and strong communication between the regional and headquarters (HQ) staffs. The Regional Science Liaisons (RSLs) and Hazardous Substance Technical Liaisons (HSTLs) are coordinating closely with OSP management in creating each agenda to address the individual regional topics of interest.

Region 3, ORD lead region, hosted the first of these meetings at the Philadelphia office on August 16. Kevin Teichman, Mimi Dannel, Ken Sala, and Sarah Bauer were the HQ attendees for this premiere event. The agenda was kicked off with an overview discussion with DRA Tom Voltaggio.

Regional scientists presented examples of science in action as the result of the Regional Science Program, including the Regional Applied Research Effort (RARE) on MIRA and the Philadelphia Air Toxics Study, Regional Methods (RM) Program on the Relative Bed Stability Index, Regional Research Partnership Program (RRPP) on stormwater management, and the Concentrated Animal Feeding Operations (CAFO) Regional Science Workshop, to name a few. Additionally, technical assistance work on hazardous and waste clean-up sites was discussed.

A crucial part of the day was the interaction with the Region 3 Division Directors. Emerging issues, planning and budget opportunities, and the Integrated Risk Information System (IRIS) were some of the key topics discussed. Becoming involved early in the planning process was a top priority, along with more interaction with the ORD scientists.

Randy Pomponio and Charles App led the discussion on the regional "Sustainability Through Science" pilot project, or more commonly referred to as the "Seeds to Fruit" effort. This project, originally presented at this year's Science Forum, focuses on ORD and regional collaboration ensuring that ORD science is effectively transferred to regions and leads to successful environmental outcomes. The project, already underway in Region 3, will continue with Regions 1 and 9 as pilot regions.

A joint memo from Randy Pomponio and Kevin Teichman to the DRAs, stated that the goals for these pilot visits are to: (1) work together to document successful science to outcomes examples to be used by all regions in developing their examples; and (2) begin identifying the various organizational/functional models for partnerships between regions and ORD that most effectively deliver ORD science and expertise to the regions, leading to successful environmental outcomes.

Following visits to the pilot regions, the pilot results will be shared with all regions. Using these experiences, a decision will be made on how to best extend the project to the remaining regions. In addition, the memo proposed including examples of outcomes in presentations at the 2006 Science Forum. The Forum provides an opportunity to gauge reactions of a broad audience, get input on the clarity of the messages, and suggest how the examples can be improved.

Our thanks to Ron Landy and Norm Kulujian for their efforts in organizing the logistics for the day. The next visit is scheduled for January 11, 2006, in Boston. OSP and Region 3 currently are working with Region 9 to schedule the San Francisco visit.

For further information, please contact Mimi Dannel at 202-564-9944 or dannel.mimi@epa.gov.

Regional Session at the 2005 EPA Science Forum

The Regional Session of the May 16-18, 2005 EPA Science Forum, held in Washington, DC, was coordinated by Dr. Ronald Landy, the RSL for Region 3. The session highlighted collaborations between ORD and the regional offices that have supported regional policy and regulatory activities leading to environmental improvements or outcomes. RSLs from each of the regions coordinated and chaired the five different sessions that focused on high priority regional issues: Marine and Estuarine Monitoring, Fate and Transport of Mercury and other Significant Metals, Vulnerability and Landscape Assessment, Air Toxics, and Pathogens. The rooms were packed to capacity and spirited discussion followed each of the presentations.

The regional sessions also supported a meeting on the first day of the Forum between ORD senior management and a group of DRAs to explore ways to foster the development of additional collaborations under the theme of collaborative science to deliver environmental outcomes. This meeting initiated the Region 3/ORD outcomes project, which will further the development of this type of collaboration.

For further information, please contact Ronald Landy at 410-305-2757 or landy.ronald@epa.gov.

Peer Review

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Inventory is a searchable, web-based database that provides information on current or recently completed EPA science activities and scientific and technical work products being conducted in its research laboratories and program and regional offices through grants and other assistance agreements to universities and other institutions. The database currently contains well over 5,500 records.

For further information, please contact John Miller at 202-564-1564 or miller.johne@epa.gov.

Licensed Patent Exhibit Booth

An exhibit booth highlighting six patented and successfully licensed EPA technologies was prominently displayed at this year's EPA Science Forum. The booth was developed by OSP's Federal Technology Transfer Act (FTTA) staff to showcase EPA technologies that are generating royalty income for both the EPA inventors and their laboratories.

EPA researchers may apply for patents on technologies invented at EPA laboratories and under the authority of the FTTA, the Agency can license these patented technologies to external parties for further development and commercialization. With a license in place, the Agency receives a portion of the net sales as a royalty payment, which is split between the EPA inventor(s) and the laboratory where the technology was invented.

The technologies that were highlighted at the Science Forum exhibit include:

- **Saturation Air Samplers**—Jointly developed by EPA Region 10 and the Lane Regional Air Pollution Authority, these portable, flexible, and inexpensive air

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atmosphere and inflates and deflates with a variable volume of air. The exchange of air between the atmosphere and the bladder substantially maintains the vapor space within the fuel tank at atmospheric pressure, and because the air within the bladder is isolated from the fuel vapor, only air from the bladder is vented from the fuel tank. The system substantially prevents evaporative emissions from vehicle fuel tanks.

Variable Compression Ratio Engine (Patent No. 6,752,105)—Current automotive powertrain designs employ an internal combustion engine (ICE) and although the demands of normal driving call for a wide range of power demands and speeds, the best energy conversion efficiency of an ICE is experienced over only a relatively narrow range of loads and speeds. **Charles Gray** of NVFEL developed an improved system for generating a variable compression ratio within an ICE. As a result of the engine being able to operate at more than one distinct compression ratio, selectable during engine operation, an engine using this technology operates near its most efficient operating range during the majority of driving, while providing intermittent high power capability in a way that does not lead to undesirable side effects.

Treating Liquids Containing Organic Compounds (Patent No. 6,755,975)—Liquids containing organic compounds and water occur throughout industry, making the water unfit for reuse or discharge. **Leland Vane** and **Frank Alvarez** of EPA's National Risk Management Research Laboratory (NRMRL) in Cincinnati, along with several scientists from Membrane Technology and Research, Inc., developed a process for separating a liquid containing an organic compound and water, using a combination of pervaporation and reflux condensation that can treat streams containing one or more dissolved organic compounds to produce a product stream containing as much as 90 wt % or more organic compound. This can be achieved even when the organic compound is

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BOSC Update

The Board of Scientific Counselors (BOSC) Executive Committee held their second meeting of the year at the Washington Wyndham Hotel in Washington, DC, on June 2-3, 2005. The meeting highlights included presentations of the draft final reports from the Human Health, Particulate Matter/Ozone, Computational Toxicology, and Mercury Subcommittees.

Since then, the BOSC members and staff have been busy wrapping up the efforts of subcommittees that have completed their objectives and starting new ones; five reviews have been completed (Ecology, Human Health, Particulate Matter/Ozone, Computational Toxicology, and Mercury); and another three have been initiated (Land, Water Quality, and STAR Fellowships). In addition, two subcommittees currently are working on their program reviews (Drinking Water and Global Change).

Update on active subcommittees:

- The **Drinking Water Subcommittee** reviewed ORD's Drinking Water Research Program during three conference calls and a face-to-face meeting on June 21-23, 2005, in Cincinnati, OH. The Executive Committee reviewed the draft report at its September 12-13, 2005, meeting in Cincinnati.

- The **Global Change Subcommittee** is reviewing ORD's Global Change Research Program and held its face-to-face meeting on September 26-28, 2005, in Alexandria, VA. The Executive Committee will review the draft report at its January 2006 meeting.

- The **Computational Toxicology Subcommittee** is intended to be a standing subcommittee of the BOSC to provide advice and counsel to ORD's newly formed National Center for Computational Toxicology.

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present at relatively low concentrations in the feed. The process also can be used to dehydrate organic liquids in which water is dissolved, to yield an organic product containing as little as 1 wt % water or less, and a relatively clean water stream.

Selective Oxidation of Organic Chemicals (Patent No. 6,777,374)—The chemical manufacturing industry generates more than 1.5 billion tons of hazardous waste and 9 billion tons of non-hazardous waste annually. By adopting "green synthetic" methods, cleaner products methods can be achieved. **Endalkachew Sahle-Demessie**, **Michael Gonzalez,** and **Subhas Sikdar** of NRMRL, along with scientists from the University of Cincinnati, developed a process for partial oxidation of organic compounds in the gas phase to produce valuable compounds resulting in a clean production technology that minimizes waste by selectively producing partial oxygenates and less by-products and pollutants than conventional oxidation reactions.

Method of Treating Fuel Exhaust (Patent No. 6,779,339)—Starting in model year 2007, new emission reduction standards for lean-burn, heavy-duty diesel engines are to be implemented, which will require catalysts and systems that can suppress the emission of oxides of nitrogen (NOx) from these engines into the atmosphere. **Christopher Laroo**, **Charles Schenk**, **Joseph McDonald**, **Byron Bunker**, **Brian Olson**, **Robert Moss**, **Daniel Stokes**, and **Paul Way** of NVFEL developed a method and apparatus for desulfating NOx adsorber catalysts in a multi-exhaust path flow system utilizing in-exhaust fuel injection and exhaust flow bypass. This method minimizes temperature extremes on the surface of the NOx adsorber, while achieving the precise temperatures required for desulfation. Thus, overall thermal degradation of the adsorber catalyst due to high temperatures is kept to a minimum or ultimately eliminated.

High Pressure Fuel System for Common Rail Application (Patent No. 6,786,205)—The automotive industry currently does not have a reliable high pressure fuel system that is compatible with alcohol fuels. In conventional hydraulically intensified fuel injectors, low pressure fuel enters the injector and is intensified in pressure by a hydraulic piston. The injector and intensifier are contained in a single unit, which requires separate hydraulic and fuel supplies. **Mark Stuhldreher** and **Andrew Moskalik** of NVFEL developed a system that separates the intensifier from the injector and provides a structure having fewer parts to wear and fewer hydraulic lines to potentially leak. The system has at least two intensifier units that alternately supply high pressure fuel to the common rail and refill with low pressure fuel, and use hydraulic fluid to pressurize fuel supplied to a common rail.

Cylinder Coolant Control System (Patent No. 6,810,838)—Conventional systems for cooling engine cylinder heads provide coolant patterns that go from one end of the cylinder head and block to the other. This approach is successful in that engines generally do not overheat, but temperatures may vary between cylinders in a way that some cylinders are cooled just barely enough, while other cylinders are overcooled. This can affect the distribution of fuel and air into the cylinders and the initiation of combustion, such that not all of the cylinders attain optimum performance due to cylinder-to-cylinder cooling differences. **Karl Hellman** of NVFEL developed a cooling system for an engine including a

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Progress Report on EPA GEO

The creation of the EPA GEOSS (Global Earth Observation System of Systems) Coordinating Committee—also known as "EPA GEO" was approved by the EPA Science Policy Council on April 25th. The first EPA GEO meeting was convened by Co-Chairs Ed Washburn (OSP) and Steve Young (OEI) on May 12th. The EPA GEO principals approved a 2-page "Charter" to set some initial boundaries, agree on a few "rules of the road," and clarify the expectations of the committee. After a few meetings spent getting oriented and considering the activities described in the Charter, EPA GEO quickly focused on planning ORD's Advanced Monitoring Initiative (AMI) in the President's FY 2006 Budget.

A guidance template (Screening Parameters, Process Timeline, and Ranking Factors) for FY 2006 AMI pilot projects was approved in June, and ORD started the collaborative ball rolling by providing more than 40 tentative ideas for AMI pilot projects in early July. By the July 22nd deadline for submission of 2-page ideas for FY 2006 AMI pilot projects, a total of 76 proposals were received. Most were from ORD, with quite a few from program and regional offices, but the notion of collaboration between ORD and others within EPA and outside of EPA was very strongly encouraged. On August 11th, the EPA GEO principals agreed on 27 (out of the 76) proposals to move forward into phase 2, in which expanded 10-page write-ups of the proposal ideas would be externally peer reviewed in November.

At this point, the intention is for EPA GEO to take the results of the external peer review, the final FY 2006 funding level for AMI, and propose to senior EPA management through the Science Policy Council,

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May thru September '05

Welcome to Our New Folks!

Peter Fargo permanently joined OSP's Cross Program Staff on June 26. Peter has a B.A. in Political Economy with a Minor in Environmental Studies from Georgetown University. You may recall that Peter worked with us through the Student Temporary Employment Program during last summer and over school breaks.

Christine Stewart joined OSP as a new SEE hire on October 3. Her many years of experience working as a senior secretary managing a large front office will be a welcome addition.

Details/Training Assignments/Students/ Internships

David Klauder of OSP's Cross Program Staff Regional Team is serving on a detail assignment in RTP, providing support to Regional Science Program activities from July 5 through January 7.

Monica Rodia of OSP's Research Coordination Staff is serving on a detail assignment with the Office of Resources Management and Administration's Resources Planning and Execution Staff from July 10 through January 10.

Staci Gatica of OSP's Program Support Staff Land Team is serving on a detail assignment with the Office of Solid Waste and Emergency Response (OSWER) from July 10 through January 10.

David Bartenfelder of OSWER's Office of Solid Waste is serving on a detail assignment with OSP's Program Support Staff Land Team from September 4 through March 2.

Carolyn Hammer joined OSP's Program Support Staff Land Team on September 4. She was selected from EPA's Intern Program, a 2-year program of rotational assignments and training. Carolyn has a Master's degree in Environmental Management from the Nicholas School of the Environment and Earth Sciences, Duke University.

Nicole Pavlos was selected to be the Executive Secretary for the ORD Science Council. This position is a 1-year rotational assignment.

Intra-OSP Staff Moves

Kathleen Graham of OSP's Cross Program Staff has been selected to serve as the senior coordinator and technical expert for EPA's Federal Technology Transfer Act (FTTA) program effective July 24. Congratulations Kathleen!

We'll Miss You!

Brenda Washington of OSP's Cross Program Staff has moved permanently to the National Center for Environmental Assessment after serving on a detail assignment with them from May 22 through September 18.

Laurel Schultz has transferred to RTP to provide technical assistance to the RTP based National Program Directors. Best wishes Laurel!

Congratulations to Award Recipients!

Congratulations to **James Avery** who received a Bronze Medal for his contribution to the Organizing Committee of the Scientific Program for the Endocrine Disruptors Research Program Review.

Congratulations to **Kevin Teichman**, **David Klauder**, and **Richard Garnas** who received Bronze Medals for their contributions to the Workgroup on the Use of Science in Regional Decision Making. Congratulations also go to RSLs Robert Hilger (Region 1) and David Macarus (Region 5) who also received Bronze Medals for their contributions to the workgroup.

Congratulations to **Jeffery Morris**, **Paul Zielinski**, **Sarah Bauer**, **Ken Sala**, and **John Miller** who received Bronze Medals for their contributions to the Science Inventory Workgroup. Congratulations also go to RSLs Thomas Baugh (Region 4), Patti Tyler (Region 8), and Brenda Groskinsky (Region 7) for their contributions to the workgroup.

Congratulations to **Lorelei Kowalski**, **Ruth Partridge**, **Donna Witherspoon**, **Tia Rush**, **Heather Drumm**, **Tanya Tharps**, **Susan Peterson**, and **Anthony Grimm** who received Bronze Medals for their contributions to the ORD BOSC Support Team.

Congratulations to **Jacqueline McQueen** and **Kathleen Meier** who received Bronze Medals for their contributions to the Asbestos Action Plan.

Congratulations to **Sarah Bauer**, **Timothy Benner**, **Heather Drumm**, **Kathleen Graham**, **Megan Grogard**, and **Susan Peterson** who received the ORD Science Communications Award for their contributions to the OSP Communications Team.

Congratulations to **Donna Witherspoon** and **Jace Cuje** who received OSP Customer Service Peer Recognition Awards at the June 22 All Hands social.

Length of Service Awards

Congratulations to the following for their years of federal service: Brenda Washington (40 years), Jackie McQueen (30 years), and David Klauder (30 years).

Congratulations on the Marriage!

Congratulations and best wishes to **Nicole Pavlos** and her husband Jonathan Shao on their marriage on September 3, 2005.

Congratulations and best wishes to **Jason Edwards** and his wife Becky on their marriage on October 1, 2005. ■

Exhibit Booth

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samplers are used throughout the world for such purposes as sampling air toxics, monitoring air emissions compliance, and performing surveillance on airborne hazards to military personnel.

- **Biological Water Treatment Using a Biomass Concentrator Reactor (BCR)—** The BCR is effective in treating methyl tertiary-butyl ether (MTBE) contaminated groundwater, or any environment where high biomass retention is desired or required for highly efficient biodegradation to occur.

- **Identification and Quantification of Molds—**This patented technology uses the best available DNA sequences for more than 130 of the major indoor air fungi. This technology quickly identifies the types of molds present, and is particularly useful for testing molds in buildings, water, and foods.

- **MI Agar Testing Medium–Method 1604—**This process, which can be used to monitor source, drinking, and ambient water, uses a membrane filter method in conjunction with MI agar or MI broth to simultaneously detect total coliforms and *Escherichia coli* (*E. coli*) in water samples in 24 hours or less.

- **Clean Diesel Combustion—**This technology, which has been installed in a Ford mini-van demonstration vehicle, achieves the lowest engine-out NOx for a diesel engine, while maintaining engine efficiency. Installation of this engine results in a low-cost and high fuel economy vehicle (30-40% improved fuel economy over gasoline equivalents).

- **Full-Series Hydraulic Hybrid—**This 4-wheel drive hydraulic hybrid with diesel engine demonstrates an 85% fuel economy improvement over gasoline equivalents, has better acceleration, and the savings in fuel costs outstrip the additional cost for the technology in about 2-3 years. This technology, recently installed in a UPS vehicle to test real-world performance, has shown a 60-70% mpg improvement in city driving thus far.

For additional information on the patenting, licensing, and the cooperative research and development process at EPA, please contact Kathleen Graham at graham.kathleen@epa.gov or 202-564-2678. You may visit the FTTA Web Site at http://www.epa.gov/osp/ftta.htm or the Intranet site at http://intranet.epa.gov/ospintra/ftta/ftta.htm.

EPA Licensed Patent Exhibit Booth

EPA GEO

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a portfolio of FY 2006 AMI pilot projects, with the actual work of the final approved pilot projects anticipated to start in January or February 2006. As the EPA GEO has become more recognized within the interagency U.S. Group on Earth Observations (US GEO), which is now a standing interagency group under the Committee on Environment and Natural Resources (CENR), its role in coordinating EPA's GEOSS activities also is being affirmed.

For further information on GEOSS and EPA GEO please go to www.epa.gov/geoss/ or contact Ed Washburn at 202-564-1134 or washburn.edward@epa.gov.

OSP Update Contributing Writers

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Patents

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cylinder block having multiple cylinders covered and closed by a cylinder head. The coolant system includes an inlet rail and an outlet rail located on opposing sides of the cylinder head and a pump for feeding coolant flow through a discharge line into the inlet rail. A control valve and an associated temperature sensor are provided within each of the coolant flow passages and a controller individually controls each of the control valves in accordance with the signal received from its associated temperature sensor.

Exhaust Aftertreatment System (Patent No. 6,820,417)—The control of NOx emissions from internal combustion engines and particulate matter (PM) emissions from compression (diesel) combustion engines is an environmental problem. Gasoline engine vehicles use three-way catalysts to control such emissions, because their exhaust gases lack oxygen. So-called "lean-burn" gas engines and diesel engines, however, have enough oxygen in their exhausts that conventional catalytic systems are not effective. **Charles Schenk** of NVFEL, along with co-inventors from Analytical Engineering Inc., developed a diesel engine exhaust aftertreatment system that reduces NOx and PM. The aftertreatment system may include one or more exhaust flow paths, or "legs," and each leg of the exhaust system may contain any combination of an injector, NOx adsorber element(s), with an upstream or downstream diesel oxidation catalyst, and optional upstream or downstream particulate trap or other substrate.

Biomass Concentrator Reactor (Patent No. 6,821,425)—Water quality is of increasing importance, as many of the impurities in water have been identified to have adverse effects on the environment and plant or animal life. Both water from streams, rivers, etc., and wastewater require treatment to reduce the pollutants in the water to acceptable levels. Wastewater can be purified by a variety of methods (i.e., mechanical purification by sedimentation or filtration—usually surface waters for drinking water treatment), and chemical purification (i.e., the addition of ozone or chlorine—not practical as a stand-alone for wastewater treatment). Biological wastewater treatment is by far the most widely used technology for treating municipal and industrial wastewater in the United States, and it is gaining popularity for the treatment of drinking water. **Albert Venosa** of NRMRL and Makram Suidan of the University of Cincinnati, developed a gravity-flow biomass concentrator reactor that can be used under either aerobic or anaerobic conditions and effectively retains and concentrates suspended solids from the water treated.

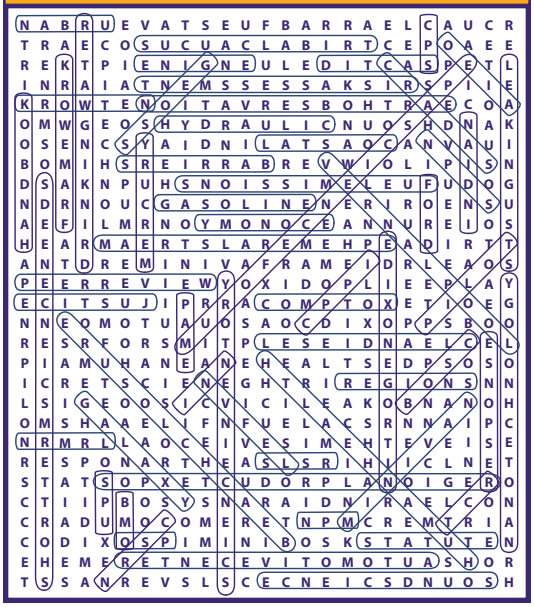
Electronic Caliper (Patent No. 6,829,839)—A standard test for immune sensitivity is considered positive if after a tiny amount of test material is injected into the ear of a mouse, the ear becomes edematous, or swollen. A similar test is done on rat foot-pads. The normal way to measure this edema has been to use a precision caliper with a dial face graduated in 100ths of a millimeter. This device, which works well for measuring hard materials such as metal, plastic, paper, etc., applies a significant force, squeezing whatever it measures, which is not ideal for soft biological tissues because the squeezing action reduces the thickness and diminishes the resulting measurement. **Paul Killough** of EPA's National Health and Environmental Effects Research Laboratory (NHEERL) in RTP invented a device that eliminates most of the internal mechanical parts of the commonly used gauge and substitutes an electronic distance measuring device, thereby avoiding most of the friction believed to cause the problems seen in that gauge.

For more information about patents and licensing of inventions, please visit the EPA technology transfer intranet site at http://intranet.epa.gov/ospintra/ftta/ftta.htm or our public site at http://www.epa.gov/osp/ftta.htm.

Word Puzzle

1. ELFU NKTA IVTANNEOTIL MYTESS	1. _____ _____ _____ _____
2. GYHHLI NULNEFLIIAT CCTINSFIEI SMANSTSESSE	2. _____ _____ _____ _____
3. PEA NICECES UMORF GONEILAR ISSONES	3. _____ _____ _____ _____ _____
4. DILSCEEN NATTPE TIXBHIE OBTOH	4. _____ _____ _____ _____
5. BEARLIVA PRINCMOSSEO OATRI NEEGNI	5. _____ _____ _____ _____
6. KNIGRIND TWREA STECMOBMUTIE	6. _____ _____ _____
7. BALLOG RHEAT RESTBOANVIO MESSYT FO STYESSM	7. _____ _____ _____ _____ __ _____
8. SAMSOIB OTRACTORCENN CARRTOE	8. _____ _____ _____
9. RATS SHELLWIPFO UBETTIMSCOME	9. _____ _____ _____
10. RADEEFL NOTCHGEOLY NEARTRFS CAT	10. _____ _____ _____ ___
11. LATINOAN LECHVIE DAN EFLU SMEINOSSI TARRYBOOLA	11. _____ _____ ___ _____ _____ _____
12. SARDAZOUH NUBSCASTE NITHACCLE SAILIONS	12. _____ _____ _____ _____
13. ENERGATTID SRKI OFINIAMNTRO TESSYM	13. _____ _____ _____ _____
14. SHUTEAX TERRAMATTEFENT STYMES	14. _____ _____ _____
15. BILLYNEVURTIA NAD LACEPANDS MESSETNASS	15. _____ ___ _____ _____
16. NAMIER DAN RUSEATNIE NORMNITIGO	16. _____ ___ _____ _____

Solution to June *OSP Update* Word Find



BOSC

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- The **Water Quality Subcommittee** will review ORD's Water Quality Research Program and a search is underway for potential subcommittee members. The Executive Committee will review the draft report at its January 2006 meeting.
- The **Land Subcommittee** will review ORD's Land Preservation and Restoration Research Program and has begun searching for potential subcommittee members. The Executive Committee will review the draft report at its January 2006 meeting.
- The **STAR Fellowship Subcommittee** will review NCER's STAR Fellowship program. Expertise needed for the review has been identified and a search for potential subcommittee members is underway.

To learn more about the BOSC and its subcommittees and to review reports and meeting summaries, please visit http://www.epa.gov/osp/bosc. If you are interested in serving as a Designated Federal Officer (DFO) for the BOSC, please contact Lori Kowalski at 202-564-3408 or kowalski.lorelei@epa.gov or Heather Drumm at 202-564-8239 or drumm.heather@epa.gov.