ornl reporter

LOCKHEED MARTIN

Number 11 January 2000

OAK RIDGE NATIONAL LABORATORY • U.S. DEPARTMENT OF ENERGY

Groundbreaking marks 'sweet moment' for SNS

Vice President Al Gore came to Oak Ridge on December 15 to help break ground for the Spallation Neutron Source.

The Spallation Neutron Source's construction phase is officially under way. A host of officials and dignitaries, including Vice President Al Gore, Tennessee Gov. Don Sundquist and Energy Secretary Bill Richardson, along with several hundred invited staff members, trekked to the chilly wooded site atop Chestnut Ridge on December 15 to break ground for the project.

The $1.36 billion neutron science facility, "the world's most powerful neutron source," as SNS Executive Director David Moncton described it, is scheduled for completion in 2005. Between now and then the Oak Ridge Reservation tract will the the site of a mammoth construction project, the first U.S. science facility of its scale to be constructed in decades.

Also attending and speaking were Sen. Bill Frist, Rep. Zach Wamp and Rep. Bart Gordon of the state's Congressional delegation, and Oak Ridge Chamber of Commerce Chairman Warren Gooch. Other guests were Dr. Martha Krebs, who made her final visit to ORNL as director of the Office of Science; Rep. Jimmy Duncan; and Associate Director Bill Appleton, who steered the project in its initial stages. Directors or their representatives from the five participating national labs—ORNL, Argonne, Berkeley, Brookhaven and Los Alamos—were also on hand and recognized by host and ORNL Director Al Trivelpiece.

A special guest was Clifford Shull, who won the Nobel prize for his pioneering work in neutron analysis with Ernest Wollan. Those initial discoveries at ORNL's Graphite Reactor paved the way for neutron science's revelations of the secrets of molecular structure. Several of the speakers noted Shull and Wollan's contribution. The Vice President noted that few knew in those days what neutron science could offer the world, and few will probably be able to forecast what the SNS will make possible in the coming century.

"The true beauty of the SNS is that no one can really know what this tool will be capable of discovering; discoveries nobody can

(See SNS, back page)

Six billion is just a start

How can the world sustain its growing population? One key is energy technology

Last October 12 marked the day that the world's population hit the six billion mark. Actually, no one knows when the six billionth person arrived on the scene—that date was simply designated as such by the United Nations. One thing is for certain: Six billion will not be the high-water mark for the number of people on this planet.

ORNL's John Sheffield cites estimates that the population could be double that—12 billion—in 100 years. Moreover, in the developing world growth rates are high and, even assuming a steady slowdown in the growth rate, the developing world's population is projected to increase from 4.7 to about 10 billion people by 2100.

"Developing" nations are sometimes also referred to as the Third World, or "emerging" nations located primarily in Asia and Africa. The "developed" world refers to the industrialized nations.

"In the developed world the population is more or less stable at 1.3 billion," Sheffield says. "Some of the more affluent countries, such as Italy and Spain, and some countries undergoing traumatic transitions, such as Russia, have an average birth rate less than the replacement rate—about two children per woman.

United Nations statistics show that the population growth rate in the developing world is decreasing while per capita energy use is increasing—which indicates an increasing standard of living. That raises an obvious question: With the most commonly used energy resources, which are key to economic wealth, in finite supply, how will these increased billions of people be able to raise their standard of living, which means they will also increase their energy consumption?

"Clearly, in a sustainable future, there cannot be a permanent growth both in population and in the use of nonrenewable energies and other resources," says Sheffield, who directs the Joint Institute for Energy and the Environment at the University of Tennessee.

In a sustainable future, there cannot be permanent growth both in population and in the use of nonrenewable energies and other resources.

"An excellent book by Joel Cohen, *How Many People Can the Earth Support*, points out that with increasing standard of living, from the lowest levels, come more extensive education, increasing literacy, more rapid availability of information, greater availability and use of contraception, more opportunities for women, and a greater life expectancy," Sheffield says. "Per capita energy use is a good indicator because energy use enables improvements in the standard of living."

The upshot of that, Sheffield says, is that population growth tends to

(See POPULATION, page 4)

Last LMC ethics survey: Getting better

ORNL Ethics Officer Steve Stow has had time to crunch the numbers on the latest and probably last Lockheed Martin ethics survey conducted at ORNL. With about 25 percent of staff members responding (that's down from 34 percent last time but still a respectable response), respondents indicate that improvements have occurred over the last two years in many areas, ranging from management communication to better morale.

But there are still of areas of concern, such as incidents of observing misconduct. And many of those who said they did also said they were reluctant to report it.

"Almost half of the staff members who say they saw misconduct did not report it because of fear of management retaliation," says Stow. "We have several places where we need to work; one of them is for management to reinforce that there will be no retaliation for reporting concerns and another is to increase staff's faith that reprisals will not occur."

Improvements from two years ago were numerous, however. Compared with the 1997 survey, management communication has improved, although compared with the corporation ORNL still has room to get lots better at it. Also, people are generally more satisfied with the company in terms of job satisfaction and recognition.

One related item of concern, however, is that fewer than half the respondents say they get ongoing feedback on their performance. On the other hand, almost 60 percent of respondents think their supervisor is doing a good or very good job. More than three fourths say that their direct supervisor exhibits a commitment to ethical business conduct. But perceptions dim as you go up the management ladder.

"For whatever reason, people perceive less trust as you go up the management chain, and that's true for the entire corporation," says Stow.

In the chart shown here, questions and reponses are grouped into seven areas: morale; open environment; job satisfaction; involvement in decisions; performance recognition; satisfaction with the company; and management communication.

Ethics Resource Corporation of Washington, D.C., conducted the survey. Survey results will be on the Ethics homepage on ORNL's internal Web, www-internal.ornl.gov/ethics/survey.html.—*B.C.*

Chart: The chart shows how ORNL's answers in the 1999 survey compare with the '97 survey. Dark green indicates improvement, shaded means little or no change, and gray denotes lost ground. The numbers in parentheses represent the percentage of staff who answered in a more positive or negative fashion than in '97. (—) or (1) means no change. Where there is no number, a percentage is not applicable. Barred questions were not asked in '97 and thus can't be compared.

Ethics Survey Comparison ORNL in 1999 and 1997

Favorable
Neutral
Unfavorable

Morale	1 Frequency of values (+3 to+7)	5 Observed Violations (—)
	2 Individual commitment	12 LM commitment to ethics (-5)
	3 Pressure to compromise (+2)	~~15 Ethics training~~
	4 Cause of pressure	
Open Environment	6 Type of misconduct	~~14 Fear of reprisal~~
	7 Report of observations (+6)	27 Survey-related changes (+3)
	8 Whom to report to	30 Work group values diverse perspectives (+3)
	11 Why not report	32 Growth & learning encouraged (+3)
Job Satisfaction	25 Good use of skills (+2)	31 Pay satisfaction (+1)
	26 job satisfaction (+1)	
Involvement	~~24 Link to company's objectives~~	37 Involvement in decisions (—)
	~~33 Personal accomplishment~~	38 Authority to make decisions (—)
Recognition	28 Recognition satisfaction (+3)	29 Feel values (-1)
Company Satisfaction	9 Company response	23 Compare LM to other companies (+9)
	10 Satisfaction with response (+3)	~~34 Better job availability~~
	13 Factors leading to commitment change (+1 to +25)	~~35 Benefits information~~
	~~16 Characteristics of LM~~	~~36 Satisfaction with benefits~~
	17 Overall satisfaction with LM (+4)	
Management	18 Satisfactory info from mgmt. (+5)	20 Supervisor communicates goals (+2)
	19 Clear picture from sr. mgmt. (+3)	~~21 Feedback for improvement~~
	~~22 Job done by supervisor~~	

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is published for the employees and retirees of Lockheed Martin Energy Research Corporation, which manages and operates Oak Ridge National Laboratory for the U.S. Department of Energy.
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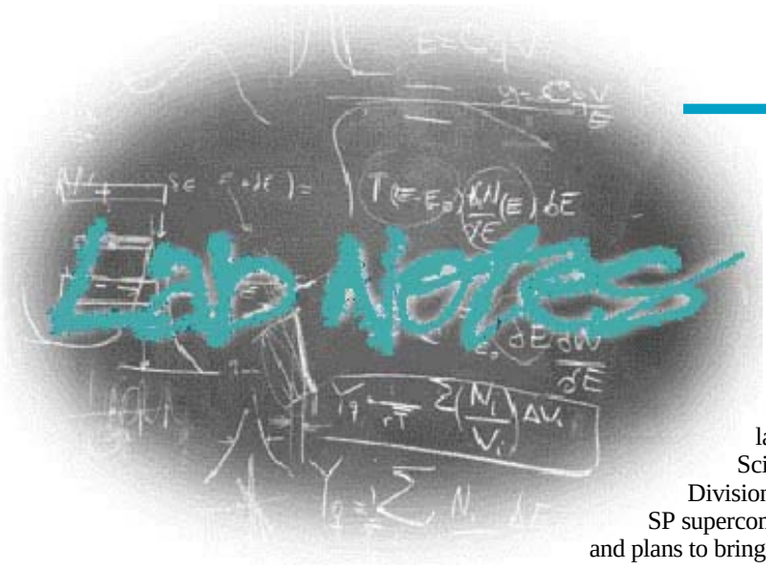
ORNL Associate Director for Advanced Materials, Physical and Neutron Sciences Jim Roberto had an impromptu meeting with neutron science pioneer and Nobel laureate Clifford Shull at last month's SNS groundbreaking.

ORNL and Energy Systems Helpline (ethics; fraud, waste and abuse; quality; ES&H): **576-9000**
DOE Inspector General Hotline: **1-800-541-1625**



Breaking ground behind the scenes

Events on the scale of last month's groundbreaking for the Spallation Neutron Source don't just happen at the spur of the moment, although this one came close. Vice President Al Gore's plans to attend weren't confirmed until a few days before the event.

Plant and Equipment Division workers made sure the site was ready in time, including keeping the gravel road up to the site passable for the equipment and vehicles, including the buses that carried several hundred attendees to the event. They did a great job, especially considering the soaking rain that finally stopped just a day before the event. P&E also provided the electricity, built the stage and press stand, put down temporary carpet and applied appropriate coats of paint.

Posters and materials created by the Lab's graphics and publishing groups, who ramped up during those crucial days-before-the-holidays, went up inside the tents or were made available to attendees and visiting media.

Finally, Protocol Officer Nancy Gray did her usual excellent "nightmare-wedding" job of making sure things went well, with some critical assistance from the Conference Office's Norma Cardwell in coordinating the preparations.

It all came together, pretty close to perfect. The sun even came out. ORNL's support folks might think about adopting a motto: "VIP visits R us."

P&E Division carpenters "set the stage" in brisk conditions for the December 15 SNS ceremony.

Keeping a strong computing hand

Since the once-supreme Intel Paragon supercomputer was unplugged and dismantled last April, supercomputing at ORNL has anything but languished. The Computer Science and Mathematics Division is working with the IBM SP supercomputer it acquired this year and plans to bring in a new computer this spring.

"We just upgraded the IBM SP from 100 billion operations per second to 400 billion operations per second," says CSMD's Buddy Bland. "This compares with the 150 billion operation per second Intel Paragon that we shut down in April, 1999. The IBM SP at ORNL is now one of the most powerful computers available to researchers in the DOE Office of Science."

Bland adds that ORNL will also bring in another 256-processor supercomputer, probably in March. "Having the IBM SP and the second supercomputer, with the same number of processors and similar power, side by side at ORNL will offer us a great opportunity to understand the strengths and weaknesses of each architecture and to improve on both of them," says Bland.

Meanwhile, what happens to old supercomputers once they've outlived their incredibly short-lived usefulness? In the Paragon's case, after four years at ORNL it's still being useful. Parts of it are now at Ames Laboratory—still working for researchers.

Transition: A little head start

Although early speculation that the contract changeover to UT-Battelle would be moved up hasn't panned out, the transition is getting a little head start. LMER and UT-Battelle have agreed to move the official beginning of transition activities up from the original February 1 to January 18.

The actual day of the contract change is still the same, however: April 1, 2000.

Meanwhile, Bill Madia, who will direct ORNL come April 1, has made several appearances at the Lab to speak to various groups. Among subjects he has addressed most recently is a desire for "a new campus" for the Lab, which means new facilities to replace ORNL's aging buildings.

"Customers walk into an old lab and think 'old science and technology.' It's hard to convince someone that you're on the cutting edge," he told a group of managers last month.

With little prospect of that much capital coming purely from government coffers, funding such a building drive would require assuming some risks and working closely with DOE, he concedes, adding that UT-Battelle is prepared to make long-term financial commitments for such a drive.

Madia says his top three priorities are, first, getting the SNS on a stable footing, then looking over the rest of the Lab's portfolio and strengthening areas such as materials science and computational biology. Third, he says, is the new facilities plan.

P&E, OEP beautify the creek banks

ORNL has worked hard on improving the quality of the water in its streams over the years, and it's paid off. Many of the creeks, such as White Oak Creek, teem with little fish and other wildlife. Now the streams are getting a better look as well.

Curtis Boles

P&E's Tim Russell tends to the banks along White Oak Creek.

Trees and a variety of other plants growing along the stream banks are being maintained in a project between the Office of Environmental Protection and the Plant and Equipment Division to establish natural buffer zones along the creeks. OEP's Glenn Anderson and Elizabeth Wright say the zones improve stream quality by filtering runoff water and reducing the sediment load. The zones also allow for a variety of plants that shade the creek, controlling the temperature during the summer heat.

In addition to looking better, the buffers help ORNL maintain a natural stream environment as required by state and federal regulations. In fact, the zones, says Anderson, provide a habitat for wildlife that live in and around the creek.

Reported by Bill Cabage

Population

Continued from page 1

decrease, not increase, when the standard of living rises.

The affluent nations, the United States being the most notable example, are also the most prodigious consumers of energy. The developed countries' 1.3 billion use about 5 tonnes of oil equivalent of energy per year (toe/a) per person. The developing world's 4.7 billion use only 0.6 toe/a.

Studies Sheffield cites show that, with efficient energy use and in a warm climate, hitting the 1 toe/a mark per person seems to be an important, if minimal, milestone toward prosperity. However, as developing nations become more prosperous and use more energy, logic dictates that they will compete with the developed nations for ever dwindling energy resources. Or else entire regions will be condemned to poverty, which could very well breed instability and conflict.

Sheffield says it doesn't necessarily have to be that way. The Earth can sustain a growing population that could be as high as double that of today's. The obvious keys, he suggests, are improvements in energy efficiency and a broader energy supply base.

"Developing a means to use energy efficiently is an essential part of finding a solution to the world's energy needs," he says. "Today, a relatively low percentage of raw energy ends up doing useful work, such as moving a vehicle, heating a building or making a product.

"For a passenger car, for example, typically only 10 percent of the oil's energy actually moves the car. Of that, only about two percent actually moves the passenger!"

With more efficient technologies, the developed countries could halve their per capita energy use while sustaining or even raising standards of living. In parallel, the developing countries could more readily improve their standard of living, with similar efficiency improvements and access to current low-cost energy sources

Otherwise, he warns, the world could proceed dangerously toward a more pronounced trend of haves versus have-nots.

Sheffield notes that, on all fronts, energy efficiency gains could provide a more stable and sustainable standard of living and population for the future—buildings with better insulation and more efficient appliances, more efficient agriculture and forestry, fuel cell and advanced diesel powered cars and trucks, more advanced energy recovery processes in industry and more efficient power stations. He points out that ORNL contributes to all of these areas, and to the development of improved energy sources.

Broadening the base of energy sources is important because the world is currently overdependent on fossil fuels—coal, gas and oil.

"The problem is not that the world lacks fossil fuel resources—there is more fossil energy in the United States than there is in oil in the Middle East," he says. "The two problems are pollution from the use of these fuels and their uneven distribution, which can lead to conflict between the haves and the have-nots.

"For this reason, when the world's annual energy use doubles or triples over the next century, it will be important to have other energy resources available to complement fossil fuels and reduce the percentage of energy they supply from the present level of around 80 percent. Renewable and nuclear energy are the additional resources that need to be expanded." He cites some examples.

- *Biomass* energy accounts for more than 10 percent of renewable energy use today, and it could quadruple if aggressively pursued. Half could come from agricultural wastes and forestry residues, farm animal wastes and landfills, and half from dedicated energy crops.
- "*Geothermal* energy has important niche possibilities in certain countries," Sheffield says, "especially as an energy source for heat pumps."
- *Hydropower* delivers about two percent of world energy and that could be doubled. Despite concerns about submerging land, effects on species and eventual silting, water-generated electricity is an important resource for the developing world.
- Numerous options exist for capturing *solar* energy. "It is difficult to set a level for the potential of solar power since, in principle, it could provide all of our energy needs if developments lower the cost sufficiently," he says. Energy from the sun is an especially promising option in arid or warm climates, where many of the developing nations reside. Solar electricity for lighting, water pumping and refrigeration is already cost competitive in remote areas with no electricity grid. Costs are decreasing rapidly. Solar water heating is widely used in some countries.
- "The *wind* power potential is huge," Sheffield says, "even allowing for restrictions on land use." Total capacity today is about 10 gigawatts and it has been increasing at about 20 percent per year. It is cost competitive under favorable wind conditions. As with solar electricity, its viability depends on the weather and must either be coupled to a storage system or contribute less than about 20 percent of grid power. Denmark plans to raise its wind electricity production from the current five percent to as much as 50 percent in the future, he says.
- *Nuclear* energy is an important contributor to world electricity production, providing more than six percent of world energy use. Although public concerns are limiting its growth, that could change as fossil use is limited by environmental concerns and technology renders it more acceptable. "It will be important to resolve these public acceptance issues before fission energy can be used at a more massive level," Sheffield says.
- "The development of *fusion* power requires a lot more R&D," says Sheffield. "It is unlikely that it could be deployed, at the present development rate, before the middle of this century, but it has advantages over fission in safety, waste disposal and proliferation." Although still technically in the future, "the most likely initiators of the fusion era," Sheffield says, "are countries that are using substantial fission power, plan more, have inadequate energy supplies of their own and have the technical capability—like Japan."

Without more energy-efficient technologies, the world could proceed dangerously toward a more pronounced trend of haves versus have-nots.

Some of these new technologies lie out in the future. Sheffield believes, however, that the time to develop them is now. Populations are large and growing fast in the regions of the world that will have the hardest time obtaining the energy resources to raise their standard of living, and stabilize their populations. Those trouble areas are mainly in Africa, East Asia and South Asia.

"If the dependence on energy use per capita is a fair measure of standard of living, these regions need to raise their energy use rapidly enough to stabilize the populations before their energy needs become out of reach," he says.

"Fossil fuels are carrying us toward that sustainable goal, but sooner or later other energy resources are going to have to play a bigger role, and new, energy efficient technologies will be hugely important in supporting the transition. So will the underpinning role of the science and technology that are undertaken at laboratories such as ORNL."

In the last of the Showcase lecture series at ORNL—"the major sustainable energy lab in the country"—Sheffield asked the audience: "What if you could double the efficiency of energy use by the year 2100? Is that possible?

"Absolutely possible."—*B.C.* ornl

‘R&D Values’ addresses challenges federal scientists face

What special challenges or issues confront a researcher at a national laboratory? What should ORNL as an R&D institution stand for?

The ORNL Corporate Fellows and the Ethics Office have tackled these weighty questions in a document titled *The Oak Ridge National Laboratory’s Values in the Conduct of Research and Development.* Presented as an “articulation of our values and commitments,” the tract’s subjects range from subjects fairly standard to the R&D community as a whole to issues quite specific to ORNL or, at least, specific to researchers working in government laboratories.

Ethics Officer Steve Stow presented the idea for such a treatise to the corporate fellows after noting that, while these sorts of guidelines were commonly understood, there wasn’t anything actually down on paper.

“I noticed that prestigious research universities had guidelines of this nature and felt that it would be appropriate for the Lab,” says Stow. “My office gets questions on authorship and peer review issues. We have procedures for dealing with allegations of scientific misconduct, but no guidance on proper research practices.”

Corporate Fellow Tom Wilbanks of the Energy Division led the group’s effort in authoring the *R&D Values* work. He acknowledges that a large section of it is very much like similar statements at other institutions. There are, however, “special challenges” to working at a government funded laboratory, and they are addressed in the document.

“When you are working for a sponsor or agency with a particular mission, sometimes issues or situations can arise that may amount to a choice between satisfying the customer and keeping your funding or maintaining your scientific integrity,” Wilbanks says. “Of course, a researcher’s integrity, and that of the institution’s, must always take precedence.

“It is a responsibility we bear particularly because we are a publicly funded institution, and therefore must be stewards of the public trust.”

Shared standards of R&D conduct—those similar to other institutions—discussed in the document are proper data management, publication of R&D results, equitable credit to authorship, peer review, avoiding conflict of interest and proper treatment of colleagues.

Special challenges for government-funded agencies include maintaining independence and integrity under various pressures, either political or monetary; coping with change, which includes maintaining relevance of R&D to the nation’s needs and promoting an atmosphere of scientific competition; and, again, avoidance of conflict of interest that might arise from partnership endeavors or an overemphasis on royalties.

Values in the Conduct of R&D also outlines the expectations of responsible conduct by research staff members, managers and sponsors alike.

The guidelines have been fully endorsed by the ORNL Executive Committee. “As far as we know, ORNL is the only DOE national lab to have issued such guidelines,” says Stow.

The Oak Ridge National Laboratory’s Values in the Conduct of Research and Development is currently in the process of being published in pamphlet form and will be distributed to all staff members.—*B.C.*

9/80 work schedule starts next month

Following a successful pilot program, ORNL will begin the 9/80 work schedule in early February. The 9/80 schedule allows employees who work a nine-hour day Monday through Thursday to take every other Friday off. An initial sign-up and approval round ended on December 22.

Human Resources Director Mike Willard says other salaried employees who wish to change to the new shift may do so later; this first round will help business systems evaluate how they can accommodate the new shift and the employees who have been initially approved.

Participation in the 9/80 shift is subject to the approval of an employee’s supervisor. Willard says that although all salaried employees can consider the shift, it’s mainly designed to give nonexempt weekly employees more job flexibility.

Exempt monthly employees already have much of that sort of flexibility under current shift business rules, he says.

Under the plan, a worker works four nine-hour days during the first four days of the first week; then that week ends at noon after four hours of work on Friday morning. The new week then starts at noon Friday, for four hours, and continues four more nine-hour days. That adds up to 40 hours each week. The subsequent Friday is then a day off.

Again, as with most of the flexible shift work arrangements, supervisors have discretion over approval, with consideration given to an organization’s staffing and scheduling concerns.

More information about the 9/80 shift is available on the internal Web, www-internal.ornl.gov/980 or by calling Bob Martin, 574-4402, Systems Operations, 241-2979, or your HR generalist.

Benefit Plans, OTT, Ethics moving

Benefit Plans is moving its offices from 701 Scarboro to 104 Union Valley Road, more commonly known as the FEDC Building, this month. The move makes way for new office space at 701 Scarboro for the growing Spallation Neutron Source project staff.

Benefit Plans Manager Jill Freeman says the move will commence on January 14 and should be completed by January 31.

The OneCall call center, 574-1500, will be first to move. OneCall service could be interrupted briefly, but “the call center should be up and working by January 17. If service is interrupted during those few days, messages will be taken and followed up,” Freeman says.

Those offices moving to FEDC also include the retirees services office.

The Office of Technology Transfer has already moved its offices from 701 Scarboro to Union Valley Road. OTT’s new mailing address is 111UNV, MS-6499, which is across the street from FEDC. Their phone and fax numbers remain the same.

The ORNL Ethics Office will move to 111A Union Valley Road around the middle of January, says Ethics Officer Steve Stow.

Lockheed Martin gives $55K to holiday charities

Lockheed Martin made the holidays brighter as Lockheed Martin Energy Research Corporation, the ORNL contractor, and Lockheed Martin Energy Systems, the Y-12 contractor, contributed $55,000 to local holiday charities. Presenting the checks at a reception for recipients were Bob Van Hook, president of Energy Systems; and ORNL Associate Director Jim Roberto.

Receiving contributions were

- Knoxville *News-Sentinel* Charities, $10,000;
- The Holiday Bureau of Anderson County, $10,000;
- The Empty Pantry Fund, managed by the *Daily Times*, Blount County, $7,000;
- Knox Area Rescue Ministries, $7,000;
- REACH (Roane Enriches Another Child’s Holiday) of Roane County, $7,000;
- Toys for Tots, managed by the Loudon County Sheriff’s Office, $7,000; and
- Holiday Hope for Morgan Countians, $7,000.

Bad habits

Researcher says antismoking policies, though admirable, shouldn't be based on hazy science

Chemical and Analytical Sciences Division researcher Roger Jenkins is a "lifetime never smoker" who does research on environmental tobacco smoke with data gathered from studies on people who are exposed to it and the places where they are exposed.

Environmental tobacco smoke, or ETS, is more commonly referred to as second-hand smoke. During the last decade or so, smokers have been banished to the porches by smoke-free policies often founded on the premise that ETS poses a health hazard to those who are exposed to it.

Jenkins, a lover of the outdoors who disdains the smoking habit, nevertheless says his research findings are "not congruent" with risk assessments that concluded that 3,000 excess deaths from lung cancer each year are attributable to ETS exposure.

Jenkins has just updated the book he wrote with Mike Guerin and Bruce Tomkins, *Chemistry of Environmental Tobacco Smoke*, first published in 1992, with "major updates" to the data and findings based on the ongoing research.

"A well known toxicological principle is that the poison is in the dose," says Jenkins, who also is the ORNL program manager for the Environmental Protection Agency's Environmental Technology Verification Program. "It's pretty clear that the ETS dose is pretty low for most people."

More importantly, Jenkins says, policies barring smokers from workplaces have been based on "scientific findings" that don't hold up under scrutiny. At least they aren't in agreement with the analytical and exposure work he's been involved in for several years, including a 16-city study of ETS in residential and occupational settings as well as studies that included smoggy bars and hazy restaurants.

"People who have wanted to regulate smoking in public places—or ban it outright—have relied on old estimates of ETS concentration and have proved what they wanted to prove. But if you plug in the hard, scientific, peer-reviewed data from the 16-cities study, you do not come to the same conclusions."

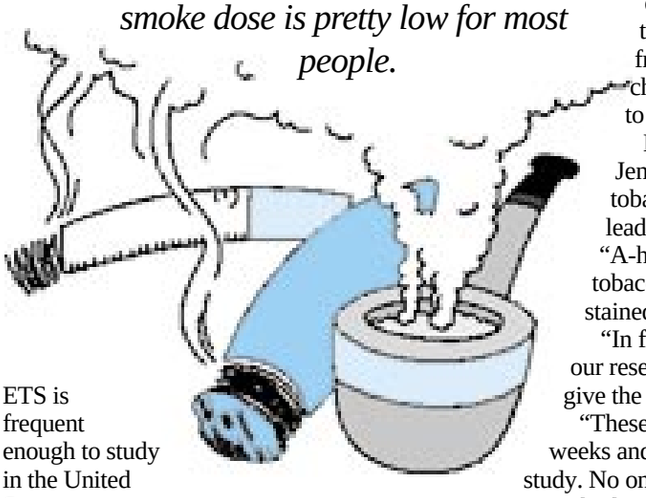
In fact, Jenkins points out that a judge has since vacated a government report on ETS and lung cancer, indicating that conclusions were reached before the evidence was objectively reviewed.

In the 16-cities study and more recent studies, individuals have been interviewed on smoke habits and physically tested. Jenkins relies on a substance called cotinine, a compound found in saliva that is a metabolite of nicotine. Its presence in the saliva tells researchers pretty much whether a person is telling the truth or not when they say they are nonsmokers.

People tend to fudge about their smoking habits, he says. Cotinine analysis also provides a ballpark estimate of the magnitude of an individual's ETS exposure.

Recently Jenkins and his colleagues have focused on the hospitality industry—restaurants and bars, for instance—because so many work places are now smoke free. Waiters, bartenders and croupiers in casinos are some of the few occupations left where exposure to ETS is frequent enough to study in the United States.

It's pretty clear that the second-hand smoke dose is pretty low for most people.



"We've found something that has some pretty profound implications when it comes to making policy about smoke in the workplace. For bartenders who live with smokers, the away-from-work exposure is at least as important as the at-work exposure. And people who are highly exposed at home tend to be more highly exposed at work, probably because they don't avoid it as much.

"Smoking is highly regulated in the U.S. workplace. But in a free society we can't control household exposure; it's just not possible."

Jenkins says that by making smoking socially unacceptable, anti-smoking activists hope to curtail youth smoking through the second-hand smoke issue.

"Decreasing or stopping smoking, especially in young people, is an admirable goal," Jenkins says. "But at some point, if you pervert the scientific process to achieve a political goal or if you cloak opinions as scientific findings, you stop becoming a scientist.

"The overwhelming medical and scientific consensus is pretty irrefutable about cigarette smoking itself: It ups your risk of cancer signficantly, even if you once smoked and then stopped.

"But from an ETS standpoint, the data showing health risks from it are—at least to an analytical chemist—much less clear."

What is DOE's stake in the ETS question? The department has an ongoing indoor air quality research program that also includes research on heating, ventilation and air-conditioning systems. At any rate, many of the methods and technologies used in the studies have paid off in other areas. Analytical methodologies from the tobacco smoke program have been applied to synthetic fuels research. More recently, researchers at Hanford, faced with the task of figuring out how to characterize potentially flammable organic vapors in the tank farms there, used sorbent technologies from the cigarette smoke characterization project at ORNL to solve the problem.

Much of the funding for Jenkins' work has come from the tobacco industry, a fact that might lead some to point fingers and cry "A-ha." Jenkins is adamant that the tobacco industry funding has never stained his research.

"In fact, one reason that they support our research is that they know we'll give the data a fair shake," he says.

"These data come from hours, days, weeks and months of peer reviewed study. No one has ever seriously questioned our methods or conclusions."

What troubles Jenkins most is the lack of objectivity he's seen in those who want to regulate smoking out of existence.

"Scientists must never tinker with their science just because they don't like the outcome of their data. Just because you find cigarette smoking annoying doesn't mean you should cherry-pick your data so that you can prove a health risk.

"I believe the medical community when they say that smoking is fraught with health risks. People, in fact, engage in many risky behaviors such as driving too fast, eating fatty foods—even childbirth is risky. But with regard to ETS, if you plug in the Lab's 16-cities data into the risk assessment, you cannot come to the same conclusions that the regulatory bodies have come to.

"I suspect that because ETS is so annoying to so many people, it has been 'too easy' for them to accept the health risk mantra without objectively considering the data."

The annoyance factor is one reason Jenkins doesn't look to see smokers returning to the buildings. The culture change against it has been too profound to reverse, especially in the United States.

Or as someone remarked after Jenkins presented earlier ETS findings to a Lab audience, "It still stinks."—*B.C.*

Service Anniversaries

As promised last issue, here are the service anniversaries for December and January. Thanks to Carolyn Ladd in Personnel Records for digging out the data.

December 1999
40 years: Dorothy Gaddis, Business Operations
35 years: Ronnie Bradley, Metals & Ceramics
30 years: Masanori Murikami, Engineering Technology
25 years: Robert Rosenbaum, Chemical Technology; James Mathys, Wallace Leffew, John Cornett, Michael Fraker, Victoria Harmon and Larry Parks, Plant & Equipment; Cyrus Smith, Instrumentation & Controls; Robert Oliver, Capital Assets Mgmt.; Doug Selby, Executive Offices; Frank Tauxe, Laboratory Protection; Gary Denton, Laboratory Logistical Services; Kenneth Childs, Computational Physics & Engineering; Paul Wright, SNS; John Wendelken, Solid State; James Bentley, Arthur Rowcliffe and Terry Tiegs, Metals and Ceramics; Robert Ross, Life Sciences
20 years: Deborah Barnes, Communications & Public Affairs; Cleatus Boling and Ralph Shooster Jr., Plant & Equipment; David Greenwood, Fusion Energy; Mary Grove, Computing, Information & Networking; Ronald Sy and Greg Groover, Chemical Technology; Mark Elmore, Computer Science & Mathematics; William Kahl, engineering Technology; Jeffrey Gardner, Quality Services; Joseph Horton Jr., Metals & Ceramics; Vince Mei, Energy; Kathy Davis, Finance & Accounting; Donald Palmer, Chemical & Analytical Sciences

January 2000
45 years: Jack Young, Chemical and Analytical Sciences
44 years: Howard McLain, Energy
35 years: Richard Haire, Chemical & Analytical Sciences
30 years: Jim Lawson, Fusion Energy; Kent Williams, Business Operations; Ellis Jackson, Procurement; Margaret Bentley, SNS
25 years: Dan Naus, Engineering Technology; Wayne Huckaby and Teddie Welch Jr., Plant & Equipment; Boyd Beets and Wayne Kohlrieser, Instrumentation & Controls; John Slaten and Mitchell Conner, Radiation Protection; Bill Alexander, Environmental Protection; Carol Moorhead, Executive Offices; Julia Bishop, Metals & Ceramics
20 years: Clara Tackett, Energy; Robert Liveley, Instrumentation & Controls; Casper Brummet, Hugo Hughes Jr. and Brenda Baber, Plant & Equipment; Patricia Garnet, Laboratory Logistical Services; Michael Howell, Charles Baldwin, Clifford Davisson and Gwendolyn Sims, Metals & Ceramics; Jane McConnell, Finance & Accounting; Deborah Moore, Life Sciences; Burl Rhyne, Computational Physics & Engineering; Twana Taylor, Quality Services; Gregory Young, Chemical Technology; Betty Shelton, Waste Services; Chester Coomer and Frederick Griffin, Engineering Technology; Ralph Sharpe, Computing, Information & Networking; Frank Damiano, Contracts; Delena Akers, Fusion Energy

Retirements

To arrange for a portrait, call Deborah Barnes, 576-0470


Zeigler


Webster


Bruce


Beck


Abner


McConathy


Setaro


Lee


Robertson

Gene Zeigler, a maintenance planner in the Plant and Equipment Division, retired with 38 years of service. He lives in Kingston.

Rhonda Webster, who worked in the Biology Division and most recently in the Environmental Sciences Division as a laboratory technologist, has retired with 32 years of service. She lives in Kingston.

Ron McConathy has retired from the Office of Nuclear Safety with 28 years of service. He also worked in ESD. He lives in Kingston.

Bobby J. Bruce of the P&E Division's Transportation and Rigging Services has retired with 25 years. He lives in Lenoir City.

Scott Beck, a pipefitter in the P&E Division, has retired with 23 years of service. He lives in Oak Ridge.

Charles Abner, who worked in P&E Division's Research Services, mainly for the Environmental Sciences Division, has retired with 39 years of services. He resides in Clinton.

Joe Setaro, who has most recently served as technical assistant to the associate director for Operations, Environment, Safety and Health, has retired with 35 years of service. He lives in Farragut.

Joy Lee has retired from ORNL's Conference Office with 27 years of service. She started out in the Lab's teletype office and also worked in Travel and Laboratory Protection. She lives in Kingston.

Everette Robertson has retired from P&E Division's Transportation and Rigging Services after 25 years of service. He resides in Knoxville.

Retiree happenings

by Virginia Donahoe, Retirees' Association president, 576-1786

Tax help

VITA—the Internal Revenue Service's free Volunteer Income Tax Assistance program—starts Monday, Jan. 31, 2000, at the Oak Ridge Mall. IRS-trained volunteers will be available to provide free tax assistance from 3 to 8 p.m. every Monday through Friday and on Saturdays from 10 a.m. to 12:30 p.m.

Free electronic filing is available. No appointment is necessary. Bring your tax package, W-2 forms, 1099 statements and other tax records, including last year's return, with you. John Murray and Mike Lundin are the Oak Ridge coordinators.

AARP's Tax-Aide program also provides help for senior citizens in filing their tax returns. Volunteers, who'll receive IRS training, can call Ward Foster, 483-3423.

Travel meeting

The annual Oak Ridge meeting of U.S. Travel is set for 7 p.m., January 14, at the Oak Ridge Civic Center. Attendees can learn about upcoming trips and make suggestions. If you know someone of any age group who likes to travel, invite them along.

SNS photos by Curtis Boles, Jim Richmond and Lynn Freeny

Vice President Al Gore and outgoing Office of Science Director Dr. Martha Krebs posed with directors of the five national labs participating in the SNS. From left: Charles Shank of Lawrence Berkeley; Krebs; John Browne of Los Alamos; Gore; Yoon Chang, Argonne's interim director; Dennis McWhan, who represented Brookhaven's John Marburger; and ORNL's Al Trivelpiece.

SNS

Continued from page 1

predict," Gore said. He noted that he had come to ORNL previously to announce administration support for the project.

"Nearly two years ago I was proud to stand here and announce a proposal for a first-year payment to build the most advanced spallation neutron source in the world; to open the floodgates of brand new research and innovation. Today we're breaking ground on that pledge. We're putting America on the path of reclaiming our leadership in the neutron scattering technology that we invented here in the United States of America."

Several of the speakers noted that neutron science, in which the United States has lost its lead because of the lack of facilities, often leads to new products that mean jobs and economic wealth. And Moncton noted that it has been at least 30 years since the United States has built a science facility of this scope, "a desperately long time" in terms of scientific endeavor.

"Today's groundbreaking for the Spallation Neutron Source marks the end of this difficult era and the beginning of a renaissance in neutron science," Moncton said. "It's a very sweet moment for all the SNS project staff here and for the collaborating laboratories." —*B.C.*

ORNL people

Patricia Welesko Garland has been named one the Ten Outstanding Young Americans by the Junior Chambers of Commerce, or Jaycees. Garland, of the Energy Division, was cited for "significant contributions to her field on a national and international level."

Dave McGinty of the ORNL Office of Nuclear Safety and **Yvonne Horton** of the ORNL Office of Safety and Health Protection were presented certificates of achievement by DOE-OR Manager Leah Dever at DOE-ORO's monthly Senior Contractor Review Board meeting, held December 14, "in recognition of outstanding performance of duties and significant contributions to the activities of the DOE External Regulation Pilot Program." McGinty led ORNL's efforts in the DOE/NRC pilot and Horton in the DOE/OSHA pilot.

Pat Parr, ORNL's area manager for the ORR, has been elected to the board of the Tennessee Exotic Pest Plant Council. The council raises awareness about the economic and environmental damage exotic invasive plants can cause.

Deaths

David L. Haynes died in a traffic accident on December 15. The Oliver Springs resident and Physics Division employee worked in the Holifield Radioactive Ion Beam Facility.

Julian Ralph Einstein died on December 28. The Oak Ridge resident worked in the Life Sciences Division's Computational Biosciences section and was also an accomplished concert pianist.

ornl reporter

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