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## Access to DOE Labs Tightened

In response to the May 25 release of the Cox report outlining China's alleged theft of U.S. nuclear and military technology, various bills and legislation to prohibit foreign visitors to United States national laboratories were introduced. The affected facilities include Los Alamos National Laboratory in New Mexico, Lawrence Livermore National Laboratory in California, and Sandia National Laboratory also located in New Mexico. The effect of the bills, while intended to address the issue of tighter national security, could inhibit the free exchange of scientific information and was criticized by Secretary of Energy, Bill Richardson.

In the immediate wake of the report's release the House Science Committee adopted an amendment to the Department of Energy (DOE) authorization bill (H.R. 1655) placing a moratorium on DOE's Foreign Visitors Program. The amendment, introduced by Rep. George Nethercutt (R-WA), would restrict access to any classified DOE lab facility by citizens of countries on the DOE's List of Sensitive Countries. Qualifying nations currently on the 25 country list include the People's Republic of China, India, Israel, North Korea, and Russia.

However, the Nethercutt amendment does provide the DOE Secretary with the authority to waive the restriction, if justification for the waiver is submitted in writing to Congress.

In another energy-related bill, H.R. 1656, the House Science Committee passed a similar amendment to the Nethercutt provision. In addition, an amendment introduced by Rep. Jerry Costello (D-IL) was passed that would apply civil penalties of up to \$100,000 for each security violation by a DOE employee or contractor. The moratorium would be lifted once certain counterintelligence measures, safeguards, and guidelines on export controls are implemented.

More than two weeks before the release of the Cox report, the Senate Intelligence Committee, which authorizes appropriations for various intelligence organizations, also passed language that would place stricter controls over foreign visitors. The authorization bill, S. 1009, introduced by Committee Chairman Sen. Richard Shelby (R-AL), would also impose a moratorium on the Foreign

DOE LAB SECURITY, *continued page 4*

## Science Authorizations Draw Rapid Ire

The authorization process for Fiscal Year (FY) 2000 reflects the desire to stay within the spending caps, but the reality is that there is not enough money available to fund all programs at the FY 1999 levels. Furthermore, priorities differ between the two legislative chambers, and between the Administration and Congress. Authorization bills for the National Aeronautics and Space Administration (NASA), S. 342 and H.R. 1654, and the Department of Energy (DOE), H.R. 1655, highlight these difficulties.

During the House Science Committee mark-up of H.R. 1654 on May 13, controversy arose over funding for the Triana satellite project. Eliminated through an amendment offered by Rep. Dave Weldon (R-FL) and Rep. George Nethercutt (R-WA), Triana, named after Rodrigo de Triana, Columbus' lookout man who first spotted the new world, was proposed by Vice-President Gore. The concept behind Triana is to provide a full view of the Earth

and provide more data on the environment. The amendment would transfer Triana funding to NASA's life and microgravity sciences program.

The Triana debate was fought along partisan lines, with Democrats implying that cutting Triana was a Republican ploy to embarrass the Vice-

AUTHORIZATIONS, *continued page 5*

### Also In This Issue Page

|  |   |
|--|---|
| <i>OMB A-110 Response</i> .....          | 2 |
| <i>FY 2000 302(b) Allocations</i> .....  | 3 |
| <i>Status of Major Legislation</i> ..... | 6 |
| <i>Reports and Publications</i> .....    | 7 |
| <i>Heard Off the Hill</i> .....          | 8 |



# Strong Response for Proposed Circular Change

The April 5 deadline for comment on the proposed changes to the Office of Management and Budget's (OMB) Circular A-110, a federal regulation governing access to federally funded research data, came and went. A last minute deluge of letters from conservative groups supporting greater access to research data and new legislation opposing any changes have not swayed the OMB from its current thorough and cautious approach towards a solution.

In last year's Omnibus appropriations bill, Sen. Richard Shelby (R-AL) inserted an amendment in the Treasury, General Government, and Civil Service section, requesting that the OMB amend Circular A-110 so all data produced through funding by a federal agency be made available through "procedures established under the Freedom of Information Act (FOIA)." Following procedure, OMB filed a provision in the Federal Register for public comment, but narrowed the scope of the provision to "research findings used by the Federal government in developing policy or rules." During this 60 day period, which ended on April 5, OMB received an astonishing 9,200 responses.

The scientific community briskly expressed concern over the Shelby amendment and fear that sensitive research data could be compromised and hinder their research progress. A letter from the Association of American Universities, the National Association of State Universities and Land-Grant Colleges, and the American Council on Education questioned whether FOIA was the correct mechanism with which to release data. "Does interpretation of FOIA . . . concerning, 'clearly unwarranted invasion of personal privacy,' offer sufficient protection to honor assurances that have been given and will necessarily continue to be given to private persons, concerning the confidentiality and anonymity that are needed for certain types of studies?"

The American Mathematical Society (AMS) argued that the proposed changes will "lead to unintended and deleterious consequences to U.S. researchers and research accomplishments." Such consequences include the misinterpretation or delay of research; discouragement of research subjects; the imposition of significant administrative and financial burdens; and the hindrance of public-private cooperative research because of industry fears of losing valuable data to competitors. Instead, AMS proposed that the National Academy of Sciences study alternative mechanisms in order to determine a policy for sharing data instead of using FOIA.

Even with strong opposition from scientists, the final tally of letters was 55 percent for the provision

and 45 percent against or with serious concerns. The winning margin was perhaps due to a last minute deluge of letters from leading conservative groups. The National Rifle Association, the Gun Owners of America, the United States Chamber of Commerce, and the Eagle Forum all prepared responses for their members. These groups argued for a broad, wide-ranging provision that allowed for the greatest degree of access to all types of research data. The U.S. Chamber of Commerce proclaimed that "there may never be a more important issue!" In addition, the Gun Owners of America argued, "we can expose all the phony science used to justify many restrictions on firearms ownership."

Senators Shelby, Trent Lott (R-MI), and Ben Nighthorse Campbell (R-CO) co-signed a letter criticizing the narrow approach of OMB but supporting the Shelby amendment. "The underlying rationale for the provision rests on a fairly simple premise—that the public should be able to obtain and review research data funded by taxpayers," stated the senators, "Moreover, experience has shown that transparency in government is a principle that has improved decisionmaking and increased the public's trust in government."

Rita Colwell, Director of the National Science Foundation (NSF), while understanding the need for the dissemination of research data, opposed the provision. She also cited that the ambiguity of the

OMB A-110, *continued next page*

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# FY 2000 302(b) Allocations



**B**efore Congress recessed for the Memorial Day break, both the House and Senate Appropriations Committees approved discretionary spending limits, called 302(b) allocations, for the thirteen FY 2000 appropriations bills. The 302(b) allocations are based on the FY 2000 congressional budget resolution, and though both chambers provide \$538 billion in budget authority they differ in how the total is to be distributed among the thirteen subcommittees. The total is nearly \$20 billion below both the FY 1999 funding level and the President's FY 2000 request.

For the moment, Congress and the President are committed to keeping FY 2000 spending within the cap rather than raising the cap or repealing it, because any spending above the caps would reduce projected budget surpluses. However, there is widespread supposition that the cap will be raised, repealed, or circumvented before the FY 2000 appropriations process is complete, especially if budget projections improve over the summer.

The current allocations require the House and Senate Appropriations Committees to begin the appropriations process under restrictive targets. Unfortunately, the major subcommittees responsible for research and development (R&D) programs gen-

erally received the most restrictive spending allocations, meaning that steep cuts to R&D programs are likely in the House and Senate appropriations bills. Below is a short summary of selected R&D-related appropriations bills.

**Agriculture.** The full House was scheduled to approve the Agriculture bill before Memorial Day, but the bill stalled during floor debate over its total funding level. Several fiscal conservatives believe the total is too high. The Senate's allocation for the bill is much lower. The House bill would provide \$1.7 billion for USDA R&D, a slight increase of \$20 million above FY 1999 levels.

**Commerce-Justice.** The House FY 2000 allocation is 13 percent below the FY 1999 spending level, and the Senate allocation is 8.2 percent below. This bill may be one of the last to be enacted because the allocation is so small and also because the methodology for the 2000 Census has not been finalized, a seriously contentious issue among both political parties.

**Defense.** The \$270 billion House allocation is \$12 billion above the FY 1999 funding level. Congress is likely to be generous with personnel, procurement, and operations accounts, but it is uncertain whether the R&D accounts will receive

302(b), *continued next page*

OMB A-110, *from page 2*

amendment could hamper the research process. "Unfortunately, I believe that it will be very difficult to craft limitations that can overcome the underlying flaw of using FOIA procedures," said Colwell, "No matter how narrowly drawn, such a rule will likely harm the process of research in all fields by creating a complex web of expensive and bureaucratic requirements for individual grantees and their institutions."

The OMB seems to be sympathetic to both sides of the issue. An OMB official indicated that before any changes were made, OMB would consult with both parties on the Hill since the original directive came from Congress. After such consultation, OMB is predicted to produce a preliminary draft of a provision using FOIA which will also be placed in the Federal Register and accompanied with another public comment period.

Several pieces of legislation have also been or will be introduced that will try to defer OMB's procedure. Rep. George Brown (D-CA) has introduced H.R. 88 that seeks to repeal Shelby's amendment, and Rep. David Price (D-NC) and Rep. James Walsh (R-NY) are predicted to propose an amendment to

the FY 2000 Treasury, Postal and General Government Appropriations Bill so "none of the funds appropriated in this act may be used to implement, administer, or enforce" the amendment from last year's appropriations act. The appropriations bill may go before the full Appropriations Committee in the next few weeks and little action has been taken on Brown's proposal. Furthermore, Sen. Richard Durbin (D-IL) is seeking co-sponsors for legislation with similar aims.

No doubt, this will continue to foster greater debate before the 106<sup>th</sup> Congress adjourns. Already more players are lining up on either side, pharmaceutical companies such as Merck oppose the measure while the National Association of Manufacturers has given it full support. The eventual outcome, it seems, will depend more on Congress than OMB and legislators will once again try to answer the question of where to draw the line between the "right-to-know" and the right to the protection of privacy. ■



Visitors Program while allowing the Secretary of Energy to waive the prohibition on a case-by-case basis. S. 1009 is similar to a stand alone bill, S. 887, that Sen. Shelby introduced in April and its House companion, H.R. 1348, introduced by Rep. James Ryun (R-KS). Sen. Shelby termed his moratorium an "emergency" measure noting that the Administration's institutional counterintelligence measures would require several years to implement. Sen. Shelby stated, "[T]his would be a prudent step to safeguard this nation's most sensitive secrets."

DOE's Foreign Visitors Program, initiated in the late 1970's, was designed to encourage foreign scientists to participate in unclassified research activities conducted at the national labs, and encourage the exchange of information. Although many of the visits involve U.S. allies such as member nations of NATO, in some cases countries and even subject matters deemed sensitive are included in the exchange. In these cases, the DOE must follow established guidelines and policies for controlling the visits or research projects within the lab facilities. Long before Rep. Christopher Cox (R-CA) even gathered his bipartisan committee to investigate China's alleged espionage activities, DOE's Foreign Visitors Program had drawn fire for insufficient security controls.

The General Accounting Office published a report in September 1997, *DOE Needs to Improve Controls Over Foreign Visitors to Weapons Laboratories*, where it concluded that DOE's "procedures for obtaining background checks and controlling dissemination of sensitive information are not fully effective." It noted that two of the three laboratories conducted background checks on only 5 percent of foreign visitors from sensitive countries. In addition, the report cites that security controls are vul-

nerable and, in some cases, have allowed for access to sensitive information, and that counterintelligence programs lacked effective mechanisms for assessing threats.

In response to the various congressional efforts to impose a moratorium, Secretary Richardson attacked the proposals last month before an audience at the National Academy of Sciences. He remarked that "instead of strengthening our nation's security, this proposal would make it weaker." He also noted that under his tenure, the DOE has made it a priority of implementing improved safeguards for protecting national secrets including background checks on all foreign visitors from sensitive countries. He emphasized that "scientific genius is not a monopoly held by any one country" and that it is important both to collaborate in research and to safeguard secrets. He also expressed concern that a moratorium would inhibit partnerships between the United States and other countries. For example, the United States has access to labs in China, Russia, and India and participates in nuclear safety and nonproliferation exercises.

Curbing the Foreign Visitors Program may lead to denial of access to other nation's laboratories. Secretary Richardson stated, "If we isolate our scientists from the leaders in their fields, they will be unable to keep current with cutting-edge research in the disciplines essential to maintaining the nation's nuclear deterrent." He noted that many leading researchers that have promoted scientific advancement in the United States, including Albert Einstein, Niels Bohr, and Enrico Fermi, were foreign nationals themselves and all contributed in the effort to win World War II. ■

302(b), from page 3

any increases. The Senate Appropriations Committee marked up its bill before the recess. Within the \$263.7 billion allocation, the Senate would keep total DOD R&D funding close to FY 1999 levels.

**Energy-Water.** The \$19.4 billion FY 2000 House allocation is 10 percent below the FY 1999 levels. The Senate, however, would be more generous with a \$21.2 billion allocation, 1.9 percent below FY 1999.

**Labor-HHS.** Traditionally this bill is the most difficult to pass because of clashing Democratic and Republican priorities over its portfolio of social, educational, and health programs. The \$78.1 billion House allocation is \$6.6 billion or 7.7 percent below the FY 1999 funding level, which may make this

bill politically impossible to pass. The Senate allocation is 5.0 percent below FY 1999. Meeting these targets is likely to require steep cuts to most programs in this bill.

**VA-HUD-IA.** The \$66.2 billion House allocation is more than 8 percent below the FY 1999 level, and the Senate allocation of \$62.4 billion is nearly \$10 billion, or 13.8 percent below. These allocations for a politically sensitive bill covering veterans' programs, housing programs, and R&D programs in the National Science Foundation, National Aeronautics and Space Administration, and Environmental Protection Agency, may make this bill difficult to pass. ■



President. Rep. Bart Gordon (D-TN) stated that he did not want “to sink the program...just because it is Vice-President Gore’s program and election time is around the corner.” Republicans alleged that Triana never went through NASA’s customary peer review process, is a wasteful spending project, and redundant given that Earth pictures already exist on the Internet. According to Rep. Weldon, “NASA found money for Gore’s initiative after laying off 600 employees in late 1997.” The amendment was approved by the committee straight along party lines, 21-18. The NASA bill was passed by the full House on May 19.

On the Senate side, it is unclear what the response will be to the elimination of Triana. The mark-up of S.342 did not cut Triana funding and the bill has yet to be debated on the floor. Meanwhile, NASA Administrator Dan Goldin has urged the President to veto the authorization bill if it eliminates the program.

The Senate bill also differs over the funding levels for the International Space Station (ISS), approving less for the ISS than the House, and caps assembly funds at \$21.9 billion through 2004, with some flexibility allowed for raising the limits. The bill’s language provides for strict cost limitations for the space station and requires NASA to review Russia’s participation, revoking any payment to Russia for any unkept promises to deliver materials. The House bill does not specifically address Russia’s participation in the ISS and funds the full Administration request for FY 2000, mirroring the Senate’s funding level in subsequent years.

As part of the House Science Committee mark-up, members considered an amendment to H.R. 1654, offered by Rep. Mark Sanford (R-SC), to eliminate funding for the ISS. Rep. Sanford noted the problems with the program, namely the delays caused by Russian failure to meet deadlines. Rep. Lynn Woolsey (D-CA) said that “it is important that NASA push the envelope of technology, but the project casts too long a shadow over NASA’s budget...this is outrageous... we could fund NIH for 16 years, ... pay for our debt to the UN.” Countering these remarks, Chairman Rep. F. James Sensenbrenner Jr., (R-WI) said that despite Russia’s broken promises and increasing U.S. costs, the federal government has already invested a great deal of money and “we are less dependent on Russia now than in the past.” Rep. Sanford withdrew his amendment from the mark-up and was defeated again when introduced during the House floor debate.

The recent Department of Energy authorization bill (H.R. 1655) has also been plagued by dissension over funding for the Spallation Neutron Source (SNS), a program to create neutron pulses for studying the atomic structure and physics of materials. Notable supporters of the Tennessee-based project include Vice-President Gore and Senators Bill Frist (R-TN) and Fred Thompson (R-TN). However, the program has been wrought with high operating costs, persistent infrastructure problems, and mismanagement.

Although a strong supporter of the science behind the project, Rep. Sensenbrenner has been critical of the SNS problems. After an oversight trip, he concluded that the management of the project was in disarray, costs and schedule estimates were not fully developed, and more pre-construction preparation was needed. He recommended that no construction funds be appropriated for FY 2000 and criticized the state of Tennessee’s SNS “use” tax. Rep. Jerry Costello (D-IL), ranking minority member on the Subcommittee on Energy and the Environment, originally introduced an amendment to address Rep. Sensenbrenner’s concerns but it was defeated along party lines. Rep. Sensenbrenner expressed concern that the amendment did not fully address the problems of project management and protecting the taxpayer.

In order to avoid a referral to the Ways and Means Committee, and to send the right signal to the Appropriations Committee, Rep. Gordon introduced an amendment which imposes tougher management requirements on the program. Rep. Gordon’s amendment offsets the SNS construction funding through cuts in the travel budget, administrative expenses, and across the board cuts to other programs. The amendment also makes this funding conditional requiring the DOE Secretary to provide a cost baseline and project milestone for each construction activity, and to appoint a single project head. Included is language proffered by the Governor of Tennessee so that taxpayers would not experience a rise in taxes.

The Committee unanimously adopted the amendment offered by Rep. Gordon. H.R. 1655 was favorably reported out of the full committee to the House floor on May 25<sup>th</sup>. ■



# Status of Major Legislation

## TECHNOLOGY

### **ELECTRONIC RIGHTS FOR THE 21ST CENTURY ACT**

#### **S. 854**

Introduced by Sen. Patrick Leahy (D-VT). A bill to protect the privacy and constitutional rights of Americans, to establish standards and procedures regarding law enforcement access to location information, decryption assistance for encrypted communications and stored electronic information, and other private information, to affirm the rights of Americans to use and sell encryption products for protecting their on-line privacy. 4/21/99 Referred to the Committee on Judiciary.

### **TECHNOLOGY TRANSFER ACT OF 1999**

#### **S. 999**

Introduced by Sen. Orrin Hatch (R-UT). A bill to amend chapter 18 of title 35, United States Code, to improve the ability of Federal agencies to patent and license federally owned inventions. 5/11/99 Referred to the Committee on Judiciary.

### **MILLENNIUM DIGITAL COMMERCE ACT**

#### **H.R. 1320**

Introduced by Rep. Anna Eshoo (D-CA). A bill to regulate interstate commerce by electronic means by permitting and encouraging the continued expansion of electronic commerce through the operation of free market forces. This bill would promote the development of a consistent national legal infrastructure. 3/25/99 Referred to the Committee on Commerce and to the Committee on Government Reform. 4/13/99 Referred to the Subcommittee on Government Management, Information, and Technology.

## HEALTH

### **SENSIBLE ERGONOMICS NEEDS SCIENTIFIC EVIDENCE ACT**

#### **S. 1070**

Introduced by Sen. Christopher Bond (R-MO). A bill to require the Secretary of Labor to wait for completion of a National Academy of Sciences study before promulgating a standard, regulation, or guideline on ergonomics. The study would examine medical and scientific evidence linking on-the-job activities and repetitive stress injuries. 5/18/99 Referred to the Committee on Health, Education, Labor, and Pensions.

## TAX CREDITS

#### **S. 1010**

Introduced by Sen. James Jeffords (R-VT). A bill to amend the Internal Revenue Code of 1986 to provide a medical innovation tax credit for clinical testing research expenses of academic medical centers and other qualified hospital research organizations. 5/11/99 Referred to the Committee on Finance.

## SECURITY

### **INTELLIGENCE AUTHORIZATION ACT FOR FISCAL YEAR 2000**

#### **S. 1009**

Introduced by Sen. Richard Shelby (R-AL). A bill to authorize appropriations for fiscal year 2000 for intelligence and intelligence-related activities of the United States Government, the Community Management Account, and the Central Intelligence Agency Retirement and Disability System. 5/13/99 Referred to the Committee on Armed Services. 6/8/99 Ordered to be reported to Senate. Placed on Senate Calendar.

### **DEPARTMENT OF ENERGY FOREIGN VISITORS PROGRAM MORATORIUM ACT OF 1999**

#### **H.R. 1348**

Introduced by Rep. Jim Ryun (R-KS). A bill to establish a moratorium on the Foreign Visitors Program at the Department of Energy nuclear laboratories and to require the establishment of a counterintelligence program at those laboratories. 3/25/99 Referred to the Committee on Armed Services.

## ENVIRONMENT

### **CHILDREN'S ENVIRONMENTAL PROTECTION AND RIGHT TO KNOW ACT OF 1999**

#### **H.R. 1657**

Introduced by Rep. Henry Waxman (D-CA). A bill to disclose environmental risks to children's health and expand the public's right to know about toxic chemical use and release. 5/17/99 Referred to the House Commerce Subcommittee on Health and Environment.

## EDUCATION

### **PAUL E. TSONGAS FELLOWSHIP ACT**

#### **H.R. 1733**

Introduced by Rep. Martin Meehan (D-MA). A bill to establish doctoral fellowships designed to increase the pool of scientists and engineers trained to address the global energy and environmental challenges of the 21st century. 5/12/99 Referred to the House Science Subcommittee on Basic Research and to the Subcommittee on Energy and the Environment. ■

# Reports and Publications

## CONGRESSIONAL RESEARCH SERVICE

Copies of CRS reports for congressional use are available by calling 202/707-7132.

*World Conference on Science, June 26-July 1, 1999: Purpose and Issues* (RS20205). This report details the upcoming World Conference on Science (WCS). It outlines issues relevant to formulating U.S. science policy and programs for developing nations. The official goal of the WCS is to "analyze where the natural sciences stand today and where they are heading, what their social impact has been and what society expects from them...it will establish what efforts should be invested to make science advance in response to these expectations and to the challenges posed by human and social development...and a new social contract for science." Included in this report is the U.S. perspective on the WCS Declaration and Framework for Action.

*Critical Infrastructures: Background and Early Implementation of PPD-63* (RL30153). This report provides an overview of Presidential Decision Directive No. 63 and the concerns and efforts of the federal government to assure the reliable functioning of the nation's critical infrastructures. Of particular concern is the infrastructures' vulnerability to cyber attacks. The report also discusses administrative issues, issues arising from information sharing between government agencies and between the federal government and the private sector.

*The Airborne Laser Anti-Missile Program* (RL30185). This report describes technical and operational issues associated with the Air Force's attempt to build and install, within a modified Boeing 747, a multi-megawatt laser and a complex optical system for targeting. The laser would destroy short range ballistic missiles. The report details congressional concerns about the adequacy and timing tests for the airborne laser.

## GENERAL ACCOUNTING OFFICE

Copies of GAO Publications are available by calling 202/512-6000 or via the Internet at <http://www.gao.gov>.

*Federal Research: Information on International Science and Technology Agreements* (RCED-99-108). This report provides information on the U.S. government's 1997 international science and technology (S&T) collaborations in research and development. It categorizes agreements into four types: government-level bilateral, agency-level, non-governmental agency, and agency-level multilateral agreements. S&T international agreements that involve several federal agencies are reviewed.

*Nuclear Waste: DOE's Accelerated Cleanup Strategy Has Benefits but Faces Uncertainties* (RCED-99-129). This report provides information on the process used by the Department of Energy (DOE) in its issuance of

the 1998 *Accelerating Cleanup: Paths to Closure* report. The analysis evaluates DOE's new strategy in their report and summarizes the costs involved in cleaning up hazardous waste sites.

*Food Safety: The Agricultural Use of Antibiotics and its Implications for Human Health* (RCED-99-74). This report explores how antibiotics are used in agriculture and their implications for human health as well as federal responsibilities in regulating their use. It shows the debate between federal agencies over whether to further regulate or restrict the use of antibiotics in animals and plants.

*Antimicrobial Resistance: Data to Assess Public Health Threat from Resistant Bacteria Are Limited* (HEHS/NSIAD/RCED-99-132). This report summarizes what is currently known about the illness, deaths, and treatment costs due to antimicrobial resistance and those federal efforts to gather and provide information about resistance. It documents the use of antibacterials worldwide and the subsequent development and spread of resistant new bacteria. A number of agencies collect information on antibacterial resistance including the Centers for Disease Control and the World Health Organization.

## NATIONAL ACADEMY OF SCIENCES, NATIONAL ACADEMY OF ENGINEERING, INSTITUTE OF MEDICINE, NATIONAL RESEARCH COUNCIL

Government offices may obtain single complimentary copies by calling the Office of Congressional and Government Affairs at 202/334-1513. Others may order copies from the National Academy Press by calling 800/624-6242 or via the Internet at <http://www.nap.edu>.

*Disasters by Design: A Reassessment of Natural Hazards in the United States* (ISBN 0-309-06360-4). This report presents an alternative and sustainable way to view, study, and manage hazards in the United States which would result in disaster-resilient communities, higher environmental quality, inter- and intragenerational equity, economic sustainability, and improved quality of life. It provides an overview of what is known about natural hazards, disasters, recovery, and mitigation, and how research findings have been translated into policies and programs into a sustainable hazard mitigation research agenda.

*Marijuana and Medicine: Assessing the Science Base* (ISBN 0-309-07155-0). This publication summarizes what we know about marijuana, the harm it may do and the benefit it may bring to patients. It addresses the therapeutic effects of marijuana use for medical conditions such as glaucoma and multiple sclerosis and covers marijuana's mechanism of action, acute and chronic effects on health and behavior, potential adverse effects, efficacy of different delivery systems, and the prospects for developing cannabinoid drugs. ■



## HEARD OFF THE HILL



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Researchers from Britain's Cancer Research Campaign and AstraZeneca are using an enzyme in starfish eggs to develop potentially new anti-cancer drugs. The drugs would target cancer cells only, without damaging normal cells, and avoid unpleasant chemotherapy side effects. Starfish join sea moss and sea molluscs as part of a growing list of marine organisms that offer promise as cancer treatment. *CNN.com*, May 19, 1999.

In a surprising revelation, researchers at Scotland's PPL Therapeutics have discovered that three year old Dolly, the cloned sheep, has cells which are nine years old. Studies on Dolly's telomeres, genetic material found at the end of chromosomes, found that her telomeres are shorter than expected for an animal of her age. It is hypothesized that aging occurs when the telomeres are so short that chromosomes start to unravel. These results suggest that cloned animals inherit both the genes and the age of the animal they were made from. *The Washington Post*, May 27, 1999.

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Physicists at the University of New South Wales in Australia have determined the age of the universe using the newly determined Hubble constant or the rate of expansion of the universe. The constant was determined by the Key Project, a nine year study using the Hubble Space Telescope. Researchers now say that the universe is 13.4 billion years old or a billion years younger than previously thought. *Science*, May 28, 1999.

The new house of the future may include a "smart toilet" which can provide a morning check-up to its user. Scientists at the electronic giant Matsushita in Tokyo, Japan are developing a toilet, which through microchips and sensors, can measure the user's weight, fat content, urine sugar levels, and plot the data. Then, if desired, it can notify the user's doctor immediately. Other household gadgets being developed include a blood-sugar meter which can transfer data to the kitchen refrigerator that can recommend appropriate nutritional recipes. *New York Times*, May 18, 1999. ■



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