

LLW Forum

Meeting Report

Tuesday, Wednesday, Thursday, Friday
February 10–13, 1998
San Diego, California

The Low-Level Radioactive Waste Forum met in San Diego, California, on February 10–13, 1998. Twenty-four Forum Participants, Alternate Forum Participants, and meeting designees representing 19 compacts, host states, and unaffiliated states participated.

Additional information was provided by 19 resource people from, variously, the States of California, Colorado, and Utah; the National Governors' Association; the Department of the Army; EPA; DOE and DOE's National Low-Level Waste Management Program; NRC; the Electric Power Research Institute and the Nuclear Energy Institute; US Ecology, Chem-Nuclear Systems, Envirocare of Utah, and Waste Control Specialists (represented by Egan and Associates); and Rocketdyne Propulsion and Power.

Also in attendance, as observers, were six other state and compact officials; a staff person from DOE's National Low-Level Waste Management Program; one NRC headquarters staff person; and seven representatives of other interested parties, including a regional generators' organization, two generators, one California anti-nuclear group, and two private companies.

A report on the meeting follows.

Low-Level Radioactive Waste Forum Meeting Report

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Tuesday, Wednesday, Thursday, Friday—February 10-13, 1998

Editor, Cynthia Norris; Associate Editor, Holmes Brown

Contributing Writers: Todd Lovinger, Cynthia Norris, Laura Scheele, M. A. Shaker

Project Manager: Rick Gedden

Attendance: Janice Euell

Layout and Design: M. A. Shaker

As a result of a decision made unanimously by LLW Forum Participants in May 1997, the *Low-Level Radioactive Waste Forum Meeting Report* for each meeting is now printed in a single version and distributed as a document accompanying *LLWNotes*. The meeting report includes a condensed attendance list. An expanded list including full titles is distributed to the Executive Committee and to the State of Washington contract officer, and is available on request to other Forum Participants.

The *Low-Level Radioactive Waste Forum Meeting Report* is distributed by Afton Associates, Inc. to those who receive *LLWNotes*.

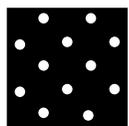
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The Low-Level Radioactive Waste Forum is an association of state and compact representatives, appointed by governors and compact commissions, established to facilitate state and compact implementation of the Low-Level Radioactive Waste Policy Act of 1980 and the Low-Level Radioactive Waste Policy Amendments Act of 1985 and to promote the objectives of low-level radioactive waste regional compacts. The LLW Forum provides an opportunity for state and compact officials to share information with one another and to exchange views with officials of federal agencies and other interested parties.

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LLW
FORUM

Low-Level Radioactive Waste Forum
c/o Afton Associates, Inc.
403 East Capitol Street
Washington, DC 20003

VOICE (202)547-2620
FAX (202)547-1668
E-MAIL llwforum@afton.com
INTERNET <http://www.afton.com/llwforum>

Key to Abbreviations

Code of Federal Regulations	CFR
U.S. Department of Energy	DOE
U.S. Department of Transportation	DOT
U.S. Environmental Protection Agency	EPA
U.S. General Accounting Office	GAO
U.S. Nuclear Regulatory Commission	NRC
naturally-occurring and accelerator-produced radioactive materials	NARM
naturally-occurring radioactive materials	NORM

New Developments in States and Compacts

Forum Participants reported on recent events. Matters discussed included

- the nature and cause of differences between the Southeast Compact Commission and the State of North Carolina regarding funding for development of a regional low-level radioactive waste disposal facility;
- the decision by the State of New Jersey to suspend its current siting process;
- litigation by the California Department of Health Services and US Ecology concerning the state's efforts to purchase federal land in Ward Valley, California, for use in siting a low-level radioactive waste disposal facility;
- the Central Midwest Commission's decision to sign the Interregional Access Agreement for Waste Management;
- the State of Utah's processes for (1) renewing Envirocare of Utah's radioactive material license and (2) considering an application by Laidlaw Environmental Services for a low-level radioactive waste disposal facility; and
- public hearings held by the State of Nebraska on two draft documents analyzing US Ecology's license application for a low-level radioactive waste disposal facility.

Plans for Continued Operation of Barnwell

George Antonucci of Chem-Nuclear Systems summarized revisions in Chem-Nuclear's long-term plan to meet the State of South Carolina's revenue expectations and to assure extended access to Barnwell.

Closure of the Beatty LLRW Facility and Transfer of the License to the State of Nevada

Rich Paton of US Ecology reported on the company's transfer of the radioactive material license for the closed low-level radioactive waste disposal facility at Beatty, Nevada, to the Nevada Bureau of Health Protection Services.

Army Waste Management: New Activities

Tritium Recycling Stephen Mapley of the U.S. Department of the Army reported on the tritium recycling pilot project that the Army and Lawrence Livermore National Laboratory are jointly sponsoring.

Transfer of the Formerly Utilized Sites Remedial Action Program (FUSRAP) to the Army Corps of Engineers Mapley discussed the transfer of FUSRAP from DOE to the U.S. Army Corps of Engineers.

Utility Decommissioning: Impact on LLRW Disposal Needs

Status of DOE High-Level Radioactive Waste Disposal Program Martin Letourneau of DOE's Office of Waste Management reported on the status of DOE's work at the proposed Yucca Mountain high-level radioactive waste repository in Nevada.

Implications of Recent Court Rulings Paul Genoa of the Nuclear Energy Institute gave a report on recent court rulings concerning DOE's responsibility to take spent fuel by the January 1998 statutorily mandated deadline. Genoa's presentation included a summary of DOE's alleged obligations, a review of prior court decisions, an analysis of the federal government's reaction to the court decision, and a description of recent petitions to the court addressing this issue.

Letourneau then read a prepared statement on DOE's obligation to accept spent fuel by the January 1998 deadline, reiterating the department's commitment to dispose of the nation's spent fuel, but only after a complete study and analysis of the proposed site.

Potential Federal Legislation Todd Lovinger, LLW Forum Congressional Liaison, reported on the status of H.R. 1270 and S. 104, the House and Senate versions of the Nuclear Waste Policy Act of 1997. In addition, Lovinger discussed related bills introduced during the last two Congresses.

Private Initiative for Spent Fuel Storage in Utah

Genoa reported on the utility perspective concerning a private initiative to construct an above-ground facility for the temporary storage of spent nuclear fuel on a Native American reservation in Tooele County, Utah. Using slides, Genoa provided a history of the project, discussed current activities, explained the tribal lease agreement, and commented upon concerns raised by opposition groups and the U.S. Nuclear Regulatory Commission.

William Sinclair of the Utah Division of Radiation Control provided the State of Utah's perspective on the proposal, explaining the basis for the Governor's opposition. Sinclair reviewed a list of the Governor's concerns and the issues involved. He also reported on several bills that have been introduced in the legislature that address the proposal.

James Kennedy of NRC's Division of Waste Management reported on a prehearing conference that NRC is conducting on the application to construct the facility.

Proposal for Reactor Component Disposal at Hanford Michael Garner of the Northwest Compact and the State of Washington discussed a proposal to dispose of a reactor component at the commercial disposal facility at Hanford.

Panel Discussion: Disposal Needs and Timing Paul Genoa, Carol Hornibrook of the Electric Power Research Institute, and William Sinclair discussed

- utility decommissioning schedules;
- projected volumes and classes of decommissioning waste; and
- projected disposal needs in comparison with existing low-level radioactive waste capacity.

Following the panel presentations, Forum Participants and panelists discussed the impact of utility decommissioning on low-level radioactive waste disposal needs.

Radiation Exposure and Health: Current Studies

Overview and International Research Efforts NRC Commissioner Greta Dicus discussed the relationship between radiation exposure and health effects and reported on international research efforts in this area. (The full text of her remarks is included in a supplement to the meeting report.)

Following Commissioner Dicus' presentation, she and Forum Participants discussed the topics addressed in her remarks. Forum Participants thanked the Commissioner for the continuing participation of James Kennedy of NRC at LLW Forum meetings.

Case Study: The Rocketdyne Facility Larry Bilick of the California Public Health Institute explained the role of the California Department of Health Services in the study of Rocketdyne facility workers.

Philip Rutherford of Rocketdyne discussed the findings of the study and a review of the study.

Forum Participants and panelists engaged in a lengthy discussion of the points raised by both speakers.

DOE Use of Commercial Disposal Facilities

Recent Court Rulings and Related DOE Activities

Todd Lovinger, LLW Forum Legal Clearinghouse Director, reported on a U.S. district court's issuance of a preliminary injunction against DOE concerning the award of new contracts for low-level or mixed radioactive waste disposal services. He also provided information on DOE's review of potential options for procurement strategies to increase competition for the disposal of department waste by private contractors.

Implications of Court Rulings and DOE Actions

The following individuals discussed the implications of *Waste Control Specialists, LLC v. U.S. Department of Energy* and potential DOE procurement strategies:

- Tom Curtis of the National Governors' Association,
- James Kennedy of NRC,
- Martin Letourneau of DOE,
- Ken Alkema of Envirocare of Utah, and
- Martin Malsch of Egan and Associates, representing Waste Control Specialists.

Low-Level Radioactive Waste Forum Meeting Report *continued*

The panelists addressed

- means to increase competition for DOE waste disposal services and the benefits and drawbacks thereof;
- the impact of such competition on DOE procurement and cleanup activities;
- whether or not DOE can delegate its regulatory authority;
- the impact of the potential outcomes in *Waste Control Specialists* on NRC external regulation of DOE facilities; and
- state authority to regulate DOE.

Discussion followed during which Forum Participants and Alternate Forum Participants commented upon state and compact authorities over waste management facilities, the time frame for the the pilot project for external regulation of DOE, and the process for relicensing the Envirocare of Utah facility.

Regulatory Issues

Ramp Cleanup: A Case Study of the Implementation of EPA's Standards Leonard Slosky of the Rocky Mountain Compact provided background information on the Ramp facility.

Chuck Mattson of the State of Colorado and Richard Graham of EPA Region 8 discussed the cooperative effort by the state health department and EPA Region 8 to ensure timely and effective cleanup and removal of hazardous, radioactive and mixed wastes from Ramp facility grounds.

Commercial Mixed Waste Management Ken Henry of DOE's National Low-Level Waste Management Program provided a report on the mixed waste study that the LLW Forum had requested.

Ronald Gingerich of Connecticut explained how individual Forum Participants had tracked the status of the mixed waste study since the October 1997 meeting of the LLW Forum. He then outlined some options for future action by the LLW Forum pertaining to mixed waste. Forum Participants discussed the next steps for the LLW Forum pertaining to mixed waste management. (See resolution on mixed waste management, page 13.)

Issuance of EPA's Title VI Guidance for Environmental Complaints Michael Hogan of New Jersey reported on:

- a recent ruling in the case of *Chester Residents Concerned for Quality Living v. Pennsylvania Department of Environmental Protection* and the implications of the ruling for the concept of environmental justice;
- the activities of the Environmental Council of the States (ECOS) related to the issuance of EPA's guidance for interpreting environmental justice using Title VI of the Civil Rights Act; and
- specific issues of interest to state agencies regarding the Title VI guidance.

Pete Baldrige of California discussed

- the process that EPA used to develop the Title VI guidance;
- the lack of state involvement in the development of the Title VI guidance;
- the fact that EPA states in the guidance that adherence to EPA-developed policies and regulations does not constitute compliance with the Title VI guidance; and
- the non-applicability of the guidance to EPA.

NRC-DOE Pilot Project on External Regulation James Kennedy of NRC reported upon the status of the pilot project for external regulation of DOE by NRC.

Assured Isolation Peer Review Meeting Ronald Gingerich reported on a January 1998 meeting on the assured isolation concept for long-term management of low-level radioactive waste. He explained that a draft guide addressing topics discussed at the meeting should be available in March 1998.

Low-Level Radioactive Waste Forum Meeting Report *continued*

Executive Session

1997 Financial Report M. A. Shaker, Forum Management Advisor, reported that the LLW Forum ended the year on budget. Forum Participants agreed to the following motion.

**1997 Financial Report
Number 98.2.1(a)**
Adopted on February 12, 1998

Resolved, That, upon the recommendation of the Forum Executive Committee, the LLW Forum accept the Fourth Quarter 1997 Financial Report.

LLW Forum Future Funding Forum Convenor Gregg Larson reported that the Executive Committee had reviewed the prospects for continuing organizational funding after December 1999 and had recommended discussion of the following three issues:

- whether there is a need for the LLW Forum after 1999,
- if there is a need, how the LLW Forum should be funded after 1999, and
- what entity would be able to serve as the grantee for such funding.

Regarding the third issue, Larson notified Forum Participants that the State of Washington is currently considering whether or not to continue as grantee for the LLW Forum at the end of the current grant cycle.

Following discussion, Janice Deshais moved that the LLW Forum continue in existence beyond calendar year 1999 and secure funding from the U.S. Department of Energy. Kathryn Haynes seconded the motion. After discussion, Deshais and Haynes agreed to divide the question at the request of Steve Moeller. The following two motions were then passed.

**Operation After December 31, 1999
Number 98.2.1 (b)**
Adopted on February 12, 1998

Resolved, That the LLW Forum continue its operations beyond December 31, 1999.

Approved by all parties with an abstention from the representative from Nebraska.

**Funding After December 21, 1999
Number 98.2.1 (c)**

Adopted on February 12, 1998

Resolved, That the LLW Forum seek funding for the next LLW Forum grant cycle from the U.S. Department of Energy.

Unanimously approved.

1998 Budget M. A. Shaker reviewed the 1998 proposed budget, to which the Executive Committee had given preliminary approval in December 1997. She noted that this is the second calendar year in which the LLW Forum is operating under a flat budget with no allowance for inflation.

In the context of the 1998 budget, Gregg Larson discussed the LLW Forum's pending request that DOE's National Low-Level Radioactive Waste Management Program to reproduce printed materials for the LLW Forum Outreach Project. After considerable discussion, on a motion by Leonard Slosky, seconded by Kathryn Haynes, Forum Participants unanimously approved a plan to cut costs and more efficiently distribute LLW Forum materials.

**Distribution of LLW Forum Materials to
Members of the Public
Number 98.2.1 (d)**

Adopted on February 12, 1998

Resolved, That the Forum Convenor notify the U.S. Department of Energy's National Low-Level Waste Program of the LLW Forum's intent to place *LLW Notes* on the LLW Forum's World Wide Web page and to provide a single copy of the publication in camera-ready format to DOE's National Low-Level Waste Management Program (Program) at the Idaho National Engineering and Environmental Laboratory to distribute as they deem fit.

Resolved, That to ensure continued public access to archival LLW Forum publications, the Forum Convenor request that the Program continue to provide copies of LLW Forum publications to the National Technical Information Service (NTIS).

Resolved, That the Forum Convenor request that the Department notify those persons currently on the LLW Forum/DOE Outreach Project List of these facts.

Low-Level Radioactive Waste Forum Meeting Report *continued*

The resolution was subsequently transmitted to DOE by letter dated February 25 from Kathryn Haynes, Forum Convenor, to Mike LaFreniere, Program Manager, National Low-Level Waste Program, Idaho Operations Office, DOE. The following are excerpts from the letter.

As you know, the LLW Forum has been working cooperatively on a public outreach project with the Department and its National Low-Level Waste Management Program at INEEL since April 1994. At that time, the Program agreed to handle the distribution portion of the Outreach Project, but asked that the LLW Forum provide printed materials as needed. The LLW Forum concurred, but reserved the right to reexamine its decision if increased requests for materials resulted in significantly higher costs.

In 1997, due to budget constraints, we requested that the Program, as part of its public outreach function, assume responsibility for reproducing LLW Forum materials needed for public distribution. The Department turned down our request.

Therefore, both as a cost-saving measure and to increase the availability of LLW Forum publications to members of the public, the LLW Forum has unanimously agreed to a policy change—to put all appropriate LLW Forum publications on the World Wide Web. We will implement the new policy immediately with the upcoming report on the February 1998 LLW Forum meeting...

In a related matter, the LLW Forum does request that the Program continue to provide a single copy of LLW Forum publications to the National Technical Information Service (NTIS) so that the public can continue to have access to archival LLW Forum material.

Since the spring of 1994, staff of the National NLLWMP at INEEL have reliably and cordially cooperated on this joint project. The LLW Forum would like to thank the staff for their efforts and, in particular, would like to commend Donna Lake for her work on this project.

Discussion then moved to consideration of an Executive Committee proposal to meet with officials at DOE and NRC and other agencies in Washington, D.C. in the spring as feasible. This long-standing LLW Forum activity was canceled in 1997 to save resources. Shaker suggested that the savings from the streamlining of the Outreach Project might be applied to the spring meeting if the group decided to move forward with the Executive Committee proposal.

Following discussion, the group agreed to instruct the staff to schedule such meetings if possible. Then, on a motion by A. Eugene Crump, seconded by Edward Ford, the LLW Forum approved the following motion.

1998 LLW Forum Budget Number 98.2.1 (e) *Adopted on February 12, 1998*

Resolved, That, on the recommendation of the Forum Executive Committee, the LLW Forum Calendar Year 1998 Budget be approved with a movement of \$8,986 from the Outreach Project to the Executive Committee.

LLW Forum Business Session

Staff Report M. A. Shaker reported that in 1997 LLW Forum staff

- answered hundreds of specific requests for information from state, compact and federal agency officials;
- faxed or mailed information on an individual basis over 400 times;
- forwarded Internet postings or news articles over 600 times;
- provided other information via e-mail over 200 times;
- provided background or referral information to national and regional press over 100 times and referred those press contacts to Forum Participants for further information;
- provided liaison with other groups such as the National Governors' Association, the Western Governors' Association, the Southern Governors' Association, the Host State Technical Coordinating Committee (TCC), the Conference of Radiation

Low-Level Radioactive Waste Forum Meeting Report *continued*

Control Program Directors (CRCPD), the National Conference of State Legislatures, the Environmental Council of the States (ECOS), the National Environmental Justice Advisory Committee (NEJAC), the Nuclear Energy Institute (NEI), and the Health Physics Society;

- held an annual meeting and two other regular meetings as well as a briefing for Governors' staff working in Washington, D.C.;
- published nine issues of *LLW Notes* (totaling over 300 pages) including a special extra edition in December about the U.S. Department of Energy's use of commercial low-level radioactive waste disposal facilities;
- published two issues of the *Summary Report: Low-Level Radioactive Waste Management Activities in the States and Compacts* including a summary chart;
- published three *LLW Forum Meeting Reports*, and
- faxed out 32 *New Flashes* and 68 informational memos to disseminate information that needed to be provided quickly.

1999 LLW Forum Meeting Locations M. A. Shaker announced the results of the meeting location straw ballot. Following discussion, Edward Ford moved

to plan to have three meetings for the next calendar year with consideration being given to making the second meeting a seminar or workshop.

Don Womeldorf seconded the motion, which passed.

LLW Forum meetings will be held in 1999 in	
San Diego, California	February
<i>Southwestern Compact/California</i>	
Portland, Maine	May/June
<i>Texas Compact</i>	
Annapolis, Maryland	October
<i>Appalachian Compact</i>	

Election of Convenor On the nomination by the Executive Committee, the LLW Forum unanimously approved the election of

Kathryn Haynes of the Southeast Compact to be Forum Convenor for calendar year 1998.

Election of Executive Committee On the nomination by the Executive Committee, the LLW Forum unanimously approved the election of the following individuals to serve as members of the Forum Executive Committee for calendar year 1998:

Janice Deshais (Northeast Compact)

Lee Mathews (Texas)

Leonard Slosky (Rocky Mountain Compact)

Thor Strong (Michigan)

Don Womeldorf (Southwestern Compact)

The committee includes an ex officio member,

Jeff Breckel (Washington)

Election of Alternate Convenor On the nomination by the Executive Committee, the LLW Forum unanimously approved the election of

Janice Deshais to be Forum Alternate Convenor for calendar year 1998.

Executive Committee Proposal to Change the LLW Forum Statement of Principals The Executive Committee then recommended extending the pool of possible members of the Executive Committee to include Alternate Forum Participants. After considerable discussion, Forum Participants

instructed LLW Forum staff to study the implications of the proposal and to place it on the agenda of the Executive Committee and possibly the LLW Forum for discussion at the May 1998 meeting.

Recognition of Contributions of William Dornsife On behalf of the Executive Committee, Gregg Larson formally thanked William Dornsife for his contributions to the work of the committee and of the LLW Forum since the inception of the organization. Forum Participants joined in wishing William Dornsife well in his future endeavors.

Recognition of the Contributions of Gregg Larson as Forum Convenor On a motion by Don Womeldorf, seconded by Edward Ford, the following resolution was passed unanimously.

**Resolution to Thank Gregg Larson for His Dedicated Service as LLW Forum Convenor
Number 98.2.2**

Adopted on February 12, 1998

Whereas, Gregg Larson has faithfully served as LLW Forum Convenor since taking over the gavel from Jerry Griepentrog in January 1993; and

Whereas, he diligently and effectively has carried out the obligations of this position including chairing LLW Forum meetings, chairing Executive Committee meetings, managing financial affairs, and handling correspondence and supporting all other LLW Forum endeavors; and

Whereas, he now hands the gavel to Kathryn Haynes; therefore, be it

Resolved, That the LLW Forum thanks Gregg Larson for his dedicated service to the LLW Forum and national low-level radioactive waste management efforts.

Resolved, That the LLW Forum is confident that he will be outstandingly successful in dealing with whatever challenges the future may hold for him.

National Conference of State Legislatures

Recent and Upcoming Activities of the LLRW Working Group Cynthia Norris, the LLW Forum's liaison with the National Conference of State Legislatures (NCSL), summarized discussions and presentations that took place at the November 1997 meeting of NCSL's Low-Level Radioactive Waste Working Group. She noted that the working group's next meeting is scheduled for April 1998.

Revised Policy on Radioactive Waste Management Norris reported on a substantially changed policy on radioactive waste management that was adopted by NCSL's Assembly on Federal Issues in November 1997. (See *LLWNotes*, Winter 1997, pp. 12-13.)

Viewing LLRW Management from a State Legislator's Perspective

Experiences of Former State Legislators Carol Amick of Massachusetts, Edward Ford of the Central Midwest Compact, and Stanley York of the Midwest Compact described their responsibilities and involvement in controversial issues when serving in the state legislatures for Massachusetts, Kentucky, and Wisconsin, respectively.

Working Effectively with State Legislatures Based on their experiences, the panelists provided analysis of the legislative decision-making process and offered advice on productive ways to interact with state legislators.

Waste Manifesting and Tracking

Consideration of Draft Agreement for the Uniform Application of Manifesting Procedures Todd Lovinger summarized changes to the draft *Interstate Agreement for the Uniform Application of Manifesting Procedures* that were suggested during an earlier caucus. Forum Participants then discussed the most current draft of the agreement. They also discussed the process for endorsement of the agreement by the full LLW Forum and for states and compacts to become signatories.

Don Womeldorf moved that the agreement be endorsed by the full LLW Forum. Carl Lischeske seconded the motion. After discussion, Janice Deshais offered a substitute to Womeldorf's motion, which was accepted by Womeldorf. The full text of Deshais' motion was then read into the record. Kevin McCarthy moved that the motion be tabled. Katherine Haynes seconded the motion, which passed unanimously.

The motion was removed from the table later in the meeting and passed unanimously. (See page 12.)

Commercial Low-Level Radioactive Waste Disposal Data Don Womeldorf introduced a resolution on commercial low-level radioactive waste disposal data. The motion was seconded by A. Eugene Crump. Following discussion, Janice Deshais moved to table the resolution. Carl Lischeske seconded the motion, which passed unanimously.

The motion was removed from the table later in the meeting and passed unanimously. (See page 12.)

DOE Low-Level Waste Management Program

Status of FY '98 Projects and Expenditures Ken Henry of DOE's National Low-Level Waste Management Program, referred Forum Participants and Alternates to a meeting document entitled "Status of Technical Assistance Activities" and gave a slide presentation on the National Low-Level Waste Management Program's FY '98 projects and expenditures. Discussion followed.

Process for Obtaining State and Compact Input re Projects for FY '98 and FY '99 Mike LaFreniere reviewed the planning process for FY '98 and FY '99 and the process for setting priorities. Forum Participants and Alternates provided input on the process.

How the National Program fits into DOE's 2006 Plan—Technical Support to the States and the LLW Forum Grant to the State of Washington LaFreniere provided information on DOE's 2006 plan and its potential impact on the low-level radioactive waste program. He cautioned Forum Participants and Alternates about shrinking budgets and escalating costs.

Discussion followed with Forum Participants.

Function and Role of the Compact System

Forum Participants and Alternate Forum Participants exchanged views on the following questions. To encourage full participation in the discussion, lead speakers were determined by lottery as each question was addressed.

- What are states' continuing responsibilities under the federal act and respective state laws?
- What are compacts' continuing responsibilities under their compact legislation?
- Since 1985, what changes have there been in the environment in which compacts must fulfill their responsibilities?

How have these changes affected their ability to fulfill these responsibilities?

What has stayed the same?

- Which compact functions should be emphasized?
- Is there a role for compacts that are not siting a facility? If so, what is it?
- Are compact facilities at an economic advantage or disadvantage in comparison with non-compact commercial facilities?
- What kind of planning should be done to ensure that planned new regional facilities can be operated economically?

Does the report by F. Gregory Hayden concerning economics of the compact system affect your planning?

- Should the compact system be changed? If so, how?

Low-Level Radioactive Waste Forum Meeting Report *continued*

Role of the LLW Forum

Forum Participants and Alternate Forum Participants discussed the continuing role of the LLW Forum in low-level radioactive waste management and disposal policy. During the discussion, shaped by a series of questions, Forum Participants agreed that

- the services of the LLW Forum will be needed for the foreseeable future;
- LLW Forum services are an essential component of the assistance provided to states and compacts by DOE and have been given the highest priority for continued DOE assistance, with states and compacts contributing staff time, as well as travel costs, for Forum Participants and other state/compact experts;
- the LLW Forum should continue to focus mainly on sharing information and facilitating communication among states, compacts and federal agencies;
- the LLW Forum's current operating practices should not be altered;
- the LLW Forum should continue to act by consensus whenever possible and by majority rule when necessary;
- the LLW Forum's method of reaching agreement on policy recommendations has worked well and should continue to be used; and
- the LLW Forum should continue to facilitate discussion among all concerned parties about the future of the commercial low-level radioactive waste system.

Agenda Planning

Cynthia Norris, Forum Program Director, announced the results of the voting for May 1998 meeting topics.

Resolution to Recommend Adoption of A Memorandum of Understanding on Generation of Residual Waste (Number 98.2.3)

Adopted on February 13, 1998

Whereas, At its fall 1992 meeting, the Low-Level Radioactive Waste Forum passed a resolution recommending that the compacts and unaffiliated states enter into a certain Interregional Access Agreement for Waste Management, dated as of October 23, 1992 (the "Original Agreement"), relating to the transfer of low-level radioactive waste between compact regions and unaffiliated states for the purpose of management; and

Whereas, On March 27, 1995, the Nuclear Regulatory Commission published a final rule at 50 *Fed. Reg.* 15649 et. seq, entitled Low-Level Waste Shipment Manifest Information and Reporting (the "Uniform Manifest Rule"), relating to the transfer of low-level radioactive waste that is ultimately intended for disposal at a land disposal facility; and

Whereas, The Uniform Manifest Rule and related commentary by the staff of the Nuclear Regulatory Commission contain certain recommendations (the "NRC Recommendations"), relating to the persons to whom low-level radioactive waste resulting from decontamination and incineration activities should be attributed; and

Whereas, The Low-Level Radioactive Waste Forum desires to recommend that compacts and unaffiliated states adopt common understandings with respect to decontamination and incineration waste; therefore, be it

Resolved, That the Low-Level Radioactive Waste Forum recommends that the compacts and unaffiliated states individually sign on to the attached Interstate Agreement for the Uniform Application of Manifesting Procedures.

**Resolution on Commercial Low-Level Radioactive Waste Disposal Data
(Number 98.2.4)**

Adopted on February 13, 1998

Whereas, On February 15, 1996, the Low-Level Radioactive Waste Forum unanimously passed a resolution to request the National Low-Level Radioactive Waste Management Program to include low-level radioactive waste disposal data from Envirocare of Utah in the national Manifest Information Management System (MIMS), the data to be presented so as to identify commercial low-level radioactive waste; and

Whereas, In March 1996, this motion was transmitted to DOE's National Low-Level Waste Program; and

Whereas, In August 1996, the LLW Forum communicated directly with Envirocare to request that the company cooperate with DOE to provide the information in the format requested; and

Whereas, It is the LLW Forum's understanding that DOE is about to conclude an agreement with the company to provide the information requested in the format requested; and

Whereas, The data from the MIMS system continue to be used by individuals to analyze functioning of the commercial low-level radioactive waste system; therefore, be it

Resolved, That, in the event that the information is so provided, the LLW Forum thanks DOE's National Low-Level Waste Management Program and Envirocare for their response to the request.

Resolved, That in the future the National Low-Level Waste Management Program ensure that any low-level radioactive waste, as defined by Public Law 99-240, being disposed of at any facility accepting that type of waste be included in the national Manifest Information Management System (MIMS). This should be done in such a way that these commercial low-level radioactive wastes are presented distinctly from other low-level radioactive waste disposed of at that facility.

Resolved, That the LLW Forum instruct the Forum Convenor to communicate these resolutions to the U.S. Department of Energy's National Low-Level Waste Program.

**Resolution on Request for Commercial Mixed Waste Final Work Report
(Number 98.2.5)**

Adopted on February 13, 1998

Whereas, The LLW Forum, through its Regulatory Issues Discussion Group (Formerly the Commercial Mixed Waste Working Group) has been working since 1989 to help identify solutions for the treatment and disposal of commercial mixed waste; and

Whereas, The LLW Forum's Regulatory Issues Discussion Group conducted a survey of a limited sample of commercial mixed waste generators; and

Whereas, The LLW Forum requested that the U.S. Department of Energy's National Low-Level Waste Management Program, in cooperation with Forum Participants and Alternate Forum participants, refine the commercial mixed radioactive waste data resulting from the survey to remove uncertainties; and

Whereas, The LLW Forum in May 1997 put the proposed mixed waste pilot project on hold pending further information from the National Low-Level Waste Management Program; and;

Whereas, The National Low-Level Waste Management Program has reported back to the LLW Forum concerning the commercial mixed radioactive waste data; and

Whereas, Forum Participants recognize the value of the information related to currently available commercial mixed waste treatment capacity that the National Low-Level Waste Management Program has compiled; therefore be it

Resolved, That the LLW Forum requests that the U.S. Department of Energy direct its National Low-Level Waste Management Program, in cooperation with Forum Participants and Alternate Forum Participants, to produce as the final product resulting from the mixed waste survey and data refinement activities a list of commercial mixed waste treatment companies and each company's currently available mixed waste treatment capacity.

Resolved, That the LLW Forum requests that the U.S. Department of Energy distribute the final product to to state radiation control officials, low-level radioactive waste management officials, and Forum Participants and Alternate Forum Participants.

Resolved, That the LLW Forum keep the commercial mixed waste pilot project on hold unless and until a need to reactivate the pilot project is identified.

Resolved, That the LLW Forum discuss developments in commercial mixed waste management on an annual basis to maintain expertise and familiarity on the issues.

Low-Level Radioactive Waste Forum Meeting Report *continued*

Low-Level Radioactive Waste Forum Meeting • February 10–13, 1998 • San Diego, California

Attendance

LLW Forum Participants, Alternate Participants and Meeting Designees

Appalachian Compact

Marc Tenan Participant

Central Compact

A. Eugene Crump Alternate 1

Nebraska

Steve Moeller Alternate 2

Central Midwest Compact

Edward Ford Participant

Central Midwest Compact

Marcia Marr Alternate 1

Illinois

Tom Carlisle meeting designee

Midwest Compact

Stanley York Alternate 1

Gregg Larson

Participant
Forum Convenor (1/98)

Northeast Compact

Janice Deshais Participant
Alternate Forum Convenor
(2/98)

Connecticut

Kevin McCarthy Participant
Alternate 1 Northeast
Compact

Ronald Gingerich Alternate 1

New Jersey

Michael Hogan Participant

Northwest Compact

Michael Garner

Rocky Mountain Compact

Leonard Slosky Participant

Southeast Compact

Kathryn Haynes Participant
Alternate Forum Convenor
(1/98)
Forum Convenor (2/98)

Southwestern Compact

Don Womeldorf Participant

California

Carl Lischeske Participant

Pete Baldrige meeting designee

District of Columbia

Norma Stewart Participant

Phillip Sumner Alternate 1

Carmen Johnson Alternate 2

Massachusetts

Carol Amick Alternate 1

New York

Jack Spath meeting designee

Rhode Island

Terrence Tehan Participant

Resource Persons

Envirocare of Utah, Inc.

Kenneth Alkema

Chem-Nuclear Systems, L.L.C.

George Antonucci

California

Larry Bilick

National Governors' Association

Tom Curtis

Low-Level Radioactive Waste Forum Meeting Report *continued*

U.S. Nuclear Regulatory Commission

Greta Dicus

Nuclear Energy Institute

Paul Genoa

U.S. Environmental Protection Agency

Richard Graham

DOE/Idaho National Engineering and Environmental Laboratory

Ken Henry

Electric Power Research Institute

Carol Hornibrook

U.S. Nuclear Regulatory Commission

James Kennedy

U.S. Department of Energy

Mike LaFreniere

Martin Letourneau

Egan and Associates, P.C. (representing Waste Control Specialists)

Martin Malsch

U.S. Department of the Army

Stephen Mapley

Colorado

Chuck Mattson

U.S. Ecology

Rich Paton

U.S. Department of Energy

Terry Plummer

Rocketdyne Propulsion and Power

Phil Rutherford

Utah

William Sinclair

Other Officials: Low-Level Radioactive Waste Compacts, Their Affiliates Member States, and Host States

Nebraska

Rick Becker

Connecticut

Charles Walsh

New Jersey

Rick McGoey

Jim Shissias

North Carolina

Steven Rose

California

Russ Huck

Federal Agency and Commission Officials

Advisory Committee on Nuclear Waste/NRC

Howard Larson

DOE/Idaho National Engineering and Environmental Laboratory

Sandra Birk

U.S. Nuclear Regulatory Commission

Joel Lubenau

Other Interested Parties

Appalachian Compact Users of Radioactive Isotopes

John Vincenti

Committee to Bridge the Gap

Shannon Hart

Joseph Lyou

AmerenUE

Neal Slaten

Southern California Edison Company

Eric Goldin

Yankee Atomic Electric Company

William Riethle

LLW Forum Staff

Afton Associates, Inc.

Holmes Brown

Janice Euell

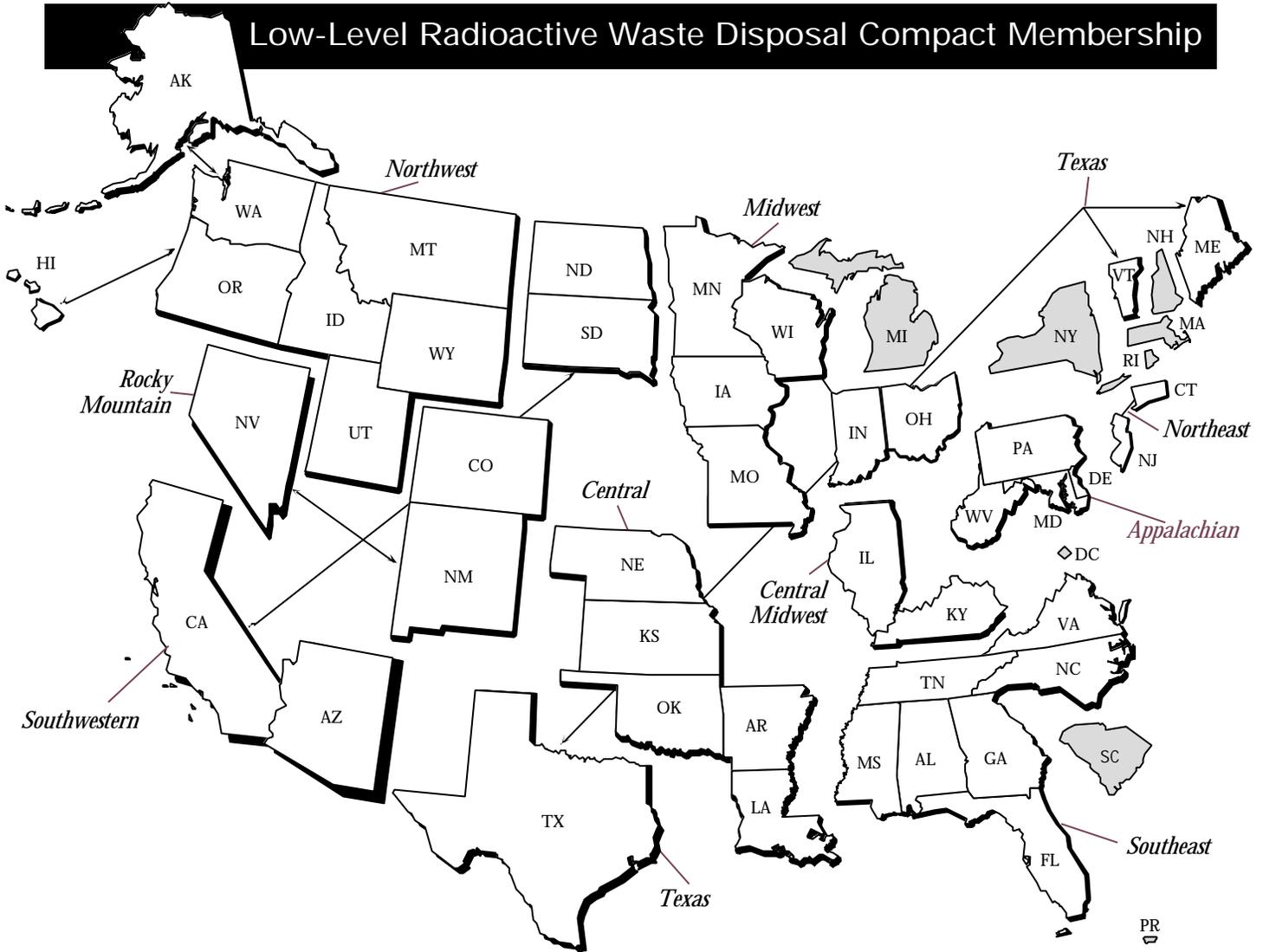
Todd Lovinger

Cynthia Norris

Laura Scheele

M. A. Shaker

Low-Level Radioactive Waste Disposal Compact Membership



Appalachian Compact

Delaware
Maryland
Pennsylvania *
West Virginia

Central Compact

Arkansas
Kansas
Louisiana
Nebraska *
Oklahoma

Central Midwest Compact

Illinois *
Kentucky

Midwest Compact

Indiana
Iowa
Minnesota
Missouri
Ohio
Wisconsin

Northwest Compact

Alaska
Hawaii
Idaho
Montana
Oregon
Utah
Washington * •
Wyoming

Rocky Mountain Compact

Colorado
Nevada
New Mexico

Northwest accepts Rocky Mountain waste as agreed between compacts.

Northeast Compact

Connecticut *
New Jersey *

Southeast Compact

Alabama
Florida
Georgia
Mississippi
North Carolina *
Tennessee
Virginia

Southwestern Compact

Arizona
California *
North Dakota
South Dakota

Texas Compact

Maine
Texas *
Vermont

The compact has been passed by all three states and awaits consent by the U.S. Congress.

Unaffiliated States

District of Columbia
Massachusetts
Michigan
New Hampshire
New York
Puerto Rico
Rhode Island
South Carolina •

The Low-Level Radioactive Waste Forum includes a representative from each regional compact, each designated future host state of a compact *, each state with a currently operating facility •, and each unaffiliated state.



*Remarks by Greta Joy Dicus
Commissioner, U.S. Nuclear Regulatory Commission,
at the Panel on Radiation Health Effects, Winter Meeting of the LLW Forum
San Diego, California
February 11, 1998*

Introduction

Let me start by expressing my appreciation for being invited to participate in this meeting. Low-level radioactive waste disposal continues to be a major National issue and the Low-Level [Radioactive] Waste Forum provides an excellent vehicle for focussing attention on current issues.

As many of you are well aware, my experience includes serving first, as member of the Central Interstate Low-Level Waste Compact Commission, and then as its Chairman. Thus, upon becoming an NRC Commissioner, I had the opportunity to view low level radioactive waste issues from the State and Compact perspective and now I view the issues from a National and even international perspective.

However, in my remarks today, I will not focus on specific waste issues but rather on an overarching issue with implications for decisions regarding waste generation, management and disposal. This overarching issue is the health effects of exposure to low doses of radiation or low dose rates and the associated concerns regarding standards setting and regulatory decisions.

Most discussions of radiation health effects will include comments about the basic model underlying most radiation protection standards—the linear, non-threshold (LNT) theory. More specifically, the comments may center on the controversy surrounding the theory.

So, this morning, in keeping with the overall purpose of this panel, I would like to speak briefly about the controversy over the linear, non-threshold theory for radiation health effects, in particular, why there is a controversy, and what could be done to help resolve the controversy.

As you know, the bulk of our knowledge about human radiation health effect that forms the basis for radiation protection standards is derived from studies of the survivors of the atomic bombs that struck Hiroshima and Nagasaki. Other human population groups that have provided significant data on radiation health effects are certain medical patient groups. It is largely the result of these human studies coupled with research on radiation effects on animals and cells that have led to the adoption on the linear, non-threshold (LNT) theory to describe radiation health effects at the low doses and dose rates normally encountered by radiation workers and the public. The strict application of that theory at these low levels is being challenged. The reasons for the challenge are complex. In the opinion of some, the strict application of the LNT theory has led to unnecessarily conservative radiation protection standards particularly for specific purposes such as the decontamination and decommissioning of licensed facilities. As we will see, there is scientific uncertainty about radiation health effects at these low levels. Thus, one way of obtaining relief from radiation protection standards that are viewed as unnecessarily restrictive or overly conservative, is to challenge the theory underlying the standards.

IAEA International Conference on Low Level Radiation

This issue has attained international attention. The International Atomic Energy Agency (IAEA) and the World Health Organization (WHO) sponsored an international conference which was held last November in Seville, Spain. The conference title was, "Low Doses of Ionizing Radiation: Biological Effects and Regulatory Control." More than 600 persons registered for this meeting and I would like to share some observations from it that I believe you will find are relevant to this panel's topic. It was the first time that scientists and regulators have met to jointly discuss the issue.

The conference was also held in cooperation with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). In its first announcement of the meeting the sponsors stated:

The levels and biological effects resulting from exposure to ionizing radiation are continuously reviewed by [UNSCEAR]. Since its creation in 1928, the International Commission on Radiological Protection (ICRP) has published recommendations on protection against ionizing radiation. These recommendations have served as the basis for national, regional and international safety standards on this matter, including those developed by the IAEA and the WHO...

The biological estimates of health effects of low doses of ionizing radiation and the regulatory approach to the control of low level radiation exposure have both been much debated during recent times....The time therefore seems appropriate to take stock of these new advances [in knowledge] and to identify areas towards which new or greater research and development effort might best be directed.

The Seville conference featured two background sessions for reports on developments and findings in the radiation protection field and ten fora on specific aspects of radiation effects and control measures. A special session entitled, "From the Scientific Evidence to Radiation Protection" was interspersed in the fora and provided a transition from sessions on biological effects to those addressing regulatory control. The schedule concluded with a round table on regulatory control and scientific research, a conference summary session and closing of the conference. The conference was opened by Hans Blix, IAEA Director General who noted that this was the last IAEA conference he would open prior to his retirement and by Dr. Hiroshi Nakajima, WHO Director General.

A variety of views were expressed during the course of this conference but the discussions did not lead to putting to bed the current controversies over the appropriateness of using the linear, non-threshold (LNT) model that underlies present ICRP recommendations and regulatory radiation protection programs. U.S. trade press articles, to a great degree, captured the spirit of the debates. (See *Nucleonics Week*, November 20 & 27 and December 4 1997 and *Inside NRC*, Nov. 24 1997.)

In a nutshell, there are uncertainties about the radiation health effects that are associated with the radiation dose and dose rate levels that we regulate. With the possible exception of fetal radiation effects, radiation health effects in humans at these low levels have not been demonstrated. The critical assumption made for creating a radiation protection system is that there is a linear, non-threshold relationship between radiation and health effects at low doses and dose rates. There is some evidence of a threshold and possibly for hormesis for selected biological media and radiation effects. But such evidence, frankly, must become overwhelming and be demonstrated in humans before there will be serious consideration to moving away from the current LNT assumptions that underlie the present radiation protection framework. Further, while their views are not widely accepted, there are also scientists who believe that there is evidence that radiation health effects at low doses and dose rates are underestimated by the LNT assumption.

While no consensus was reached at the end of the Seville conference, the prevailing view was probably best expressed by Dr. Sheldon Wolff of the Radiation Effects Research Foundation who said in the closing session that data on hormesis effects must be convincingly positive before changes to theories underlying radiation protection recommendations could be made, otherwise, "we are dealing with religion, not science." The comment drew applause from many in the audience.

With Dr. Wolff's statement in mind, I would like to cite part of my introductory remarks for the conference summary session:

The effects of ionizing radiation on human health can be described as perhaps one of the most studied and better understood health effects relationships from a scientific point of view. Yet, there is still much more to be learned and there is some dispute about what we know in the scientific community. It has also proven to be very challenging to translate our knowledge into a regulatory framework to protect public and worker health and the environment. This is the main issue ... Increasing our knowledge about radiation health effects through well designed and directed research is our most promising path to ultimately increase public and political confidence in our radiological protection standards and regulatory frameworks.

Joint U.S.–Russia Radiation Health Effects Research

After becoming an NRC Commissioner, I was appointed as the NRC's representative to the Joint Coordinating Committee for Radiation Effects Research (JCCRER), a U.S.–Russian endeavor to coordinate joint government-sponsored radiation health effects research. While this research will include both U.S. and Russian populations, it is primarily focussed on workers and populations in the southern Urals area of Russia where the Russian nuclear weapons manufacturing center, Mayak is located. As a result of early operational practices and some accidents at Mayak, workers at the plant and populations around the site were exposed to unusually large amounts of radiation and radioactive materials. In many cases, the doses were comparable to those received by survivors of the Hiroshima and Nagasaki atomic bombings. A significant difference is that the exposures of the Mayak workers and populations were protracted—in many cases extending over many years—in contrast to the doses received by atom bomb survivors. Thus, there is a unique opportunity to not only gain additional insights into radiation health effects by studying the Mayak groups but to also learn more about radiation health effects at protracted exposure rates.

In addition, many of the workers and significant numbers of the surrounding population ingested radioactive materials in amounts large enough to result in significant internal doses and, in some cases, radiation health effects not seen in western radiation workers. For some workers, both internal and external doses were significant. The worker population, in contrast to US radiation worker populations, includes a large number of women as well as men. These are examples of other aspects that have the potential to provide further insights into radiation health effects in humans.

Underlying this are the extensive health records for the workers maintained by the Russian government since the beginning of operations of the Mayak plant. Health records also exist for many members of the surrounding population who were exposed to radiation as a result of operations and accidents at the Mayak complex. While dose reconstruction will be a challenge, especially for the population, it is feasible.

As you can see, the research opportunity is a great one. In the U.S. the DOE, NRC, EPA, DOD and NASA

are joined in the JCCRER effort and work has begun. The unique research opportunities in the southern Urals area of Russia were repeatedly mentioned at the Seville conference.

It is for this reason that I am a strong supporter of the JCCRER research effort. Research is clearly needed to better describe radiation health effects particularly at the radiation levels subject to regulatory effort. In addition to human studies, molecular studies promise to shed further light.

Future Directions

The National Research Council was asked recently whether sufficient new data exist to warrant a reassessment of health risks resulting from exposure to low levels of radiation. On January 21, 1998, Dr. Richard B. Setlow, Chairman of the Committee on Health Effects of Exposure to Low Levels of Ionizing Radiation (otherwise known as BIER VII, Phase 1) responded to this request in a letter to the U.S. Environmental Protection Agency. In that letter, he stated:

In the Committee's judgment, information that has come available since publication of the 1990 *Health Effects of Exposure to Low Levels of Ionizing Radiation* (BIER V) makes this an opportune time to proceed with ... a comprehensive reanalysis of health risks associated with low levels of ionizing radiations. Such a study should begin as soon as possible and is expected to take about 36 months to complete.

This is a significant development which will be followed closely by everyone with an interest in radiation protection.

Such studies are essential to address the problem facing the regulators and the regulated community on how to translate our knowledge of radiation health effects into a regulatory framework that is protective of workers, the public and the environment and, at the same time, takes into account the uncertainties about that knowledge and the resulting need to make assumptions to construct a radiation protection system. The problem is further complicated by the fact that many of the recommended dose limits and constraint levels that are thus derived are comparable to or smaller than background radiation levels. This takes on special importance in the context of developing standards for decontamination and decommissioning of licensed facilities, including those for waste disposal.

Low-Level Radioactive Waste Forum Meeting Report *Supplement*

As Roger Clarke, Director of the UK National Radiological Protection Board and Chairman of the ICRP put it in a recent opinion letter to a scientific journal:

The real issue to be decided between scientists, regulators and the public is not a threshold for risk but the acceptability of risk. They should join forces to determine acceptability in different circumstances—in work and public environments and under normal and accident conditions.

At the conference in Seville, Dr. Abel Gonzales, IAEA Deputy Director General was more succinct:

Don't fix the biology; fix the implementation of the ICRP's recommendations.

In my personal view, there is a need for the U.S. to more closely follow the radiation protection system recommended by the ICRP. The ICRP recommendations, while predicated on the LNT concept, constitute a coherent system. It includes appropriate cautions and warnings that help guard against slavish application of radiation protection recommendations independent of the origin and purpose of the radiation source, the assumed risk of the radiation relative to that from background radiation and the costs to mitigate the assumed risks. Many parts of the world are implementing the ICRP system. For example, in the European Union, member countries are required to implement the IAEA Basic Safety Standards which are based upon ICRP recommendations by May 13, 2000.

We have not done so in the United States nor are there any plans to do so. In my opinion we should. Present U.S. radiation protection requirements are derived only in part from ICRP and NCRP recommendations. Federal statutes, some of which are not specific to radiation protection, and court decisions have influenced the development of U.S. radiation protection requirements. While adopting the ICRP system will not necessarily address all of the present controversies, it will provide a more coherent framework for radiation protection requirements in the U.S. which would also be consistent with international recommendations and with regulatory frameworks elsewhere in the world. Adopting the ICRP system also, in my opinion, would enable the U.S. to maintain a conservative radiation protection approach that will be more in balance with our knowledge of radiation

health effects.

Conclusions

The issue that is increasingly confronting regulators, the regulated community and the public is whether National and State radiation protection standards properly take into account the scientific uncertainties about radiation health effects at the low levels of radiation exposure permitted by regulation.

Knowledge and uncertainty about radiation health effects are not exclusively the domains of any individual country. Radiation health effects is an international science. The ICRP, an international body of experts, develops recommendations for a radiation protection system that are based upon international knowledge about radiation health effects and take into account the uncertainties about that knowledge. The present U.S. radiation protection regulatory system is neither uniform nor consistent with internationally accepted recommendations. In my view, absent persuasive evidence that the science or the ICRP system is faulty, the U.S. should move towards harmonizing its regulatory program with ICRP recommendations. Doing so coupled with continuing support of radiation health effects research will, in my opinion, go a long way towards resolving some of the current controversies in the U.S. about radiation protection standards with the desirable end result of increasing public confidence in our regulatory programs.

Commissioner Dicus' remarks are also available on NRC's website at

<http://www.nrc.gov/OPA/gmo/nrarcv/s98-07.htm>