

Chairman's Massage

In this, my first statement in the Newsletter as chairman of CHAL, I want to tell you about my vision for the Division. Many people in CHAL know that my major avocation is classical music. I was brought up on the 3 B's - Bach, Beethoven and Brahms. Borrowing from that phrase, I can say my vision for CHAL is the 3 B's - new Blood, more Breadth and more Bucks.

The infusion of new blood comes at two levels - management and membership. There are changes in the Officers and Board of Directors, some by design of our electoral process and some ad hoc. Of course, we have a retiring Past Chair (Dan Burk), a new Past Chair (Mike Kaminski), a new Chair (yours truly) and a new Chair-Elect (Charles Hauff). I appreciate everything that Dan and Mike have done for the Division over the last several years, and I won't let them get away that easily. I will continue to rely on them for advice and counsel, for programming, and for presentation of papers. I also welcome Charles Hauff as Chair-Elect. I have come to know Chuck through his

participation in CHAL and other ACS activities and I know he will be a worthy addition to the Board and a capable Chair in 2001.

I also welcome to the Board three new subcommittee chairs. Cathryn Campbell of Campbell & Flores (San Diego) is our new representative to the Biotechnology Secretariat. Diane Robertson of Fox, Bennett & Turner (DC) is our new Regulatory Affairs Chair and Carl Meyers of Kapsa & Meyers (Berkeley) is our new Litigation Chair. They all have been involved in our programming in the past and I look forward to new and exciting programming from them. While Alice Robertson has been an officer and Board Member for several years, she has recently been elected Councilor for 1999-2001 and I look forward to working with her in that capacity. I also want to thank outgoing Biotechnology Secretariat representative, Rochelle Seide, and outgoing Litigation Subcommittee chair, Jim Carver, for all they have done; we will continue to rely on them.

Although those who steer the division are entitled to a great deal of credit and thanks, the lifeblood of a division is its members. I am delighted to see our membership increase, and I invite your continued membership. I also want to see our membership continue to grow; we occupy a unique place in ACS that complements the specific technical disciplinary interests we all have. Because we all are touched by legal and regulatory issues in all

OPEN BUSINESS MEETING

March 27, 2000
Monday 12:00 Noon
Right after morning session

Social Hour

Sponsored by
Rosenblum, Parish & Issacs, San Jose, CA
March 26, 2000
Sunday Evening
5:00-6:00 p.m.
Rosenblum, Parish & Isaacs
555 Montgomery St., 15th Fl.
San Francisco, CA

All members are welcome to stay for the Executive Board Meeting

Executive Board Meeting

Sunday, March 26, 2000
Following the Social Hour

NEWSLETTER INDEX - PAGE 36

that we do, in a sense the entire society membership should be members of our division. More important than simple membership, however, is your participation. We need all of you to participate in the Division - presenting papers, helping to plan symposia, and serving on the Board of Directors. Please contact any of the Officers or Board to offer your help.

The second B is more Breadth. As you can see elsewhere in the Newsletter, under the able leadership of Program chair, Mitch Katz, and the present and former subject area chairs, we have an exciting and broad program planned for the San

continued on next page

This newsletter is
a publication of *Division of
Chemistry and The Law, Inc.*

Address all correspondence

CHAL Newsletter

2994 Cottonwood Court
Santa Clara, CA 95051

CALL FOR PAPERS

Chemists and chemical engineers in countries bordering the Pacific Ocean and in all other countries are invited to submit papers for consideration and to attend the 2000 International Chemical Congress of Pacific Basin Societies. Scheduled for 14-19 December, 2000, in Honolulu, Hawaii, USA, it is being cosponsored by the American Chemical Society, Chemical Society of Japan, the Canadian Society for Chemistry, the New Zealand Institute of Chemistry and the Royal Australian Chemical Institute. Many of the Chemical Societies in the countries that border the Pacific Ocean are Official Participating Organizations.

Some 6,000 reports on current research and development will be presented in about 180 symposia in oral and poster general sessions. The Congress will also feature specific scientific events, including plenary lectures, an exposition of chemically-related scientific products and services, and pre- and

post-tours of neighboring islands. General tours will also be offered during the Congress to places on Oahu related to the culture and history of the Hawaiian islands that are not normally part of typical tourist activities.

Papers will be presented in symposia and in general oral and poster sessions in the 10 topical areas in which symposia are grouped (see web site for list). A few selected symposia will be for invited papers only. An abstract of approximately 150 words must be submitted for each contributed paper. The Congress abstract form is available for electronic retrieval and submission from the pacificchem 2000 web site at:

www.acs.org/meetings/pacific2000

Paper forms can be obtained by contacting the Congress Secretariat.

The deadline for invited or contributed abstracts in paper format will be April 3. The deadline for abstracts submitted electronically will be April 14.

Abstracts of both contributed and invited papers should be submitted to the Congress Secretariat at the American Chemical Society.

Pacificchem Congress Secretariat
American Chemical Society
1155 Sixteenth St., NW,
Washington, DC 20036, USA
e-mail: pacificchem@acs.org
Fax: 202-872-6128

The advance member registration fee will be \$340. Other details on advance registration, accommodations, Congress events and tours can be found on the Pacificchem web site (www.acs.org/meeting/pacific2000) and will be made available in the July 17 issue of C&EN.



Chairman's Report, continued from front page

San Francisco meeting. Planning for Washington is well underway and planning for 2001 and 2002 is beginning. Please contact Mitch Katz or any of the subject area chairs to participate in planning and organizing the symposia or to present papers. It goes without saying that the new Blood and new Breadth go hand in hand - we get more interest in membership if our programming is broad and broader programming if we have active members whose interests cover a broad area of legal and regulatory issues.

The third B is more Bucks. We need a better financial base in order

to attract speakers who cannot otherwise afford to participate and in order to underwrite those programming expenses that the Society does not support. This additional funding can come from four sources - royalties, advertising, event sponsorship and general sponsorship. We are grateful for donation of royalties to CHAL by recent symposium chairs/editors Mike Burns (Low-Level Radioactive Waste Regulation, 1988) Mark Farley, Forensic Science, and Carl Meyers. We invite other symposia chairs who publish their proceedings to consider this as well. We have begun to solicit ads for the

Newsletter. We thank the firm of Rosenblum, Parish & Isaacs for underwriting and hosting the San Francisco social hour and board meeting, and we solicit - and appreciate - similar hospitality from other firms for our upcoming meetings. Finally, I would like to begin a program of regular and general sponsorship from firms and corporations interested in the division's programming.

If anybody is interested in helping out in any of these areas, please contact me or the appropriate chair. I look forward to an exciting year and future for CHAL.

Program Chair's Report

Upcoming National Meeting 219th ACS National Meeting San Francisco, California March 26-30, 2000

Following the successful programs we had at the New Orleans meeting, we will be presenting many interesting programs at the San Francisco meeting.

On Monday, we will have a very high level presentation on intellectual property issues, which will span a whole day's symposium. I am very pleased to announce that, as part of this symposium, on Monday morning at 11:00 am, Mr. Q. Todd Dickinson, the Assistant Secretary of Commerce and Commissioner of Patents and Trademarks, will be presenting an hour long presentation on "Looking Ahead from the Patent and Trademark Office," and we are honored to have him as a speaker at this symposium. This symposium is being organized and presided over by David Jaffer of Rosenblum, Parrish & Isaacs of San Jose, California. In addition to Mr. Dickinson's presentation, this symposium will cover a wide range of topics related to intellectual property, including patents, trademarks, bankruptcy, litigation and alternate dispute resolution.

On Sunday afternoon and Tuesday morning, two one-half day symposia will cover "Survival Skills for the Litigious Third Millennium." This symposium is being organized and presided over by Carl Meyer of Kapsa & Meyer of San Diego, California, and James Carver of Taylor, Porter, Brooks & Phillips of Baton Rouge, Louisiana. The Sunday presentation will cover disputes and dispute resolution

that typically occurs in the chemical industry, and the Tuesday morning presentation will provide a mock trial for sexual harassment in the work place as a paradigm for litigation in the third millennium.

For the SCI-MIX poster session on Monday night, Howard Peters will present an interesting collection of posters. Twenty-one (21) poster presentation will be available for viewing on topics such as (1) Recognition of Inventions, Innovation and Inventors, (2) Women and Minorities in the National Inventors Hall of Fame, and (3) General Symposium.

On Tuesday afternoon, Howard Peters will present a one-half day symposium on the "Life of Chester Carlson in the Invention of the Xerox Copy Process." The presentation will be of a unique format in that it will be presented as a one-man play by George Shea summarizing the life of Chester Carlson.

Finally, on Wednesday afternoon, Howard Peters will present the Dr. Harry and Carol Mosher Awardee's lunch and symposium. This will involve a lunch and a symposium presentation on an overview of Harry and Carol Mosher, including presentations by both Harry and Carol Mosher.

We will have a social hour following the first symposium on Sunday starting at 5:00 p.m. We will have our executive board meeting from 6:00 p.m. to 8:00 p.m. on Sunday evening following the social hour. The social hour and executive board meeting will be held at the San Francisco Offices of Rosenblum, Parrish & Isaacs, 555 Montgomery Street, 15th Floor, San Francisco, CA 94111; phone 415-

421-8232. Thanks go David Jaffer for offering up his facilities. Everyone is invited to both the social hour and the executive board meeting. At noon on Monday, we will hold our Division's open business meeting following the Monday a.m. symposium in that room.

Please contact me if you have any interest in chairing a symposium at any future Chemistry and the Law Division Program. The upcoming future national meetings are as follows:

Future National Meetings
220th ACS National Meeting
Washington, D.C.
August 20-24, 2000

221st ACS National Meeting
San Diego, California
April 1-5, 2001

222nd ACS National Meeting
Chicago, Illinois
August 26-30, 2001

223rd ACS National Meeting
Orlando, Florida
April 7-11, 2002

224th ACS National Meeting
Boston, Massachusetts
September 8-12, 2002



Minutes of the ACS Division of Chemistry and The Law Executive Committee Meeting

6:00 p.m., August 21, 1999

601 Poydras Street, New Orleans, Louisiana

Michael Kaminski called the meeting to order followed by introductions of Alan Ehrlich, Carl Meyer, Jim Carver, Barbara Lences, Howard Peters, David Jaffer, Hugh Dubb, Alice Robertson, Chuck Hauff, Ann Norberg, Clark Sullivan, John Surdyk and Dan Hodgins.

The minutes of the March 21, 1999, CHAL executive session were approved.

Income sources for the division were discussed. Advertising charges for the division newsletter were viewed as a possibility. Other potential income programs discussed were corporate sponsorship, a teaching workshop by Alice Robertson and Dan Hodgins, Carl Meyer's book (CRC Press), and Corporate Associates grants of \$2,000.

A motion was made and accepted that advertising in the newsletter be: a full page \$250.00, a half page - \$150.00, and a quarter page - \$100.00. A suggestion was made by Carl Meyer that the division be more closely integrated into overall ACS program symposiums. A report on division finances was made by Treasurer, Barbara Lences. It was found that the current balance was about \$4,000.00, as compared to \$7,000.00 the previous March. A motion was made and carried to allot \$1,000.00 in travel funds for the division chair and chair-elect and secretary to attend an ACS divisional officers training program.

Hugh Dubb and Alan Ehrlich agreed to investigate the sale of video tapes for divisional income.

Alan Ehrlich indicated that the corporate associates and officers of division activities were in touch.

Alice Robertson and Dan Hodgins spoke of the planned workshop, and Alice indicated that she too was in contact with the corporate associates for potential sponsorship of any such workshop.

Mike Kaminski asked Alice Robertson to report on the progress of a Teaching Workshop, also to be used as a source of CHAL income. Ms. Robertson reported that she and Dan Hodgins were making progress on organizing a tutorial on patents for chemists. After describing the tutorial to the Board, Ms. Robertson noted that the ACS Meetings and Expositions Committee must be notified at the National Meeting previous to the Meeting at which the workshop would be held.

Mike Kaminski also reported that ACS Corporate Associates is offering grants of \$2,000 for programs directed toward industry and noted that the application for the grant required a listing of the program speakers. Jim Carver volunteered he could supply such a list for his upcoming program in San Francisco and Barbara Lences volunteered to send the appropriate Corporate Associates grant application to Mr. Carver. Mike Kaminski thanked Carl Meyer for donating the future royalties of his recently published book, *Science For Judges And Juries* (CRC Press) to CHAL and initiated a discussion on further potential income sources from published proceedings and videotapes of CHAL presentations. On

this topic, Carl Meyer suggested CHAL try to get funding from the Petroleum Research Division for the publication of proceedings and Alan Ehrlich volunteered to contact ACS for publishing and videotaping mechanisms. Hugh Dubb volunteered to investigate the possibility of obtaining CEB (CLE) accreditation for CHAL symposia as a means to increase potential interest.

Mike Kaminski reported on his concerns regarding the AAAS Court-Appointed Witness Project and initiated a lively discussion thereon. Alan Ehrlich volunteered to put the topic on the agenda of the next meeting of the Committee on Patents and Related Matters. Carl Meyer suggested the Expert Witness issue be put on the next CHAL Program with both sides presenting. Chuck Hauff volunteered to organize said program.

Alan Ehrlich reported his meeting with Mike Shea, the above-mentioned ACS contact. Mr. Ehrlich also discussed the proposed joint symposium on regulatory matters to be held at a future National Meeting.

Dan Hodgins reported on his adventures with the minutes of the previous meeting. All present commended Mr. Hodgins on his work. Mr. Hodgins asked all who were present to contact him if they wanted a particular item emphasized in his minutes.

Barbara Lences, Treasurer, distributed a copy of the Treasurer's Report for the period March 19, 1999, to August 19, 1999. In summary, CHAL has a balance of \$3,876.67

in the treasury and although CHAL is in the black and operating self-sufficiently, additional income would be very welcome so that CHAL programming could be expanded.

Howard Peters, Councilor, reported that the CHAL division may be becoming less favorably viewed by the ACS Board and initiated a discussion thereon. It was agreed that the CHAL program locations at National meetings were generally unsatisfactory and CHAL program attendance would benefit greatly by more favorable locations. Mr. Peters volunteered to write to the Committee on Meetings and Expositions regarding the positioning of CHAL program location at National Meetings.

Alice Robertson, Councilor, reported on her attendance at the Divisional Activities Meeting.

Mike Kaminski, for Mitch Katz, reported on the San Francisco, California Spring 2000 meeting. Mr. Kaminski reported the ACS now requires abstracts to be submitted online and the deadline for abstract submission is two months earlier. The deadline for the San Francisco meeting was October 1, 1999. David Jaffer and Hugh Dubb volunteered to put together a half day program on wine and chemistry. Mr. Jaffer reported on a program featuring Q. Todd Dickinson which will be part of the ACS Millennial Event. Alan Ehrlich reported he has obtained Diane Robertson for the CHAL program. Howard Peters indicated that plans were being finalized for a play concerning the life of Chester Carlsen to be put on at the San Francisco meeting.

Mike Kaminski, for Mitch Katz, commented on the Washington, D.C. Fall 2000 meeting. Mr. Kaminski distributed copies of the tentative program of a symposium

to be cosponsored with the Committee on Science. The symposium will present international issues on patent law and will feature the Honorable Pauline Newman, U.S. Circuit Judge and Q. Todd Dickinson, Secretary of Commerce and Commissioner of Patents and Trademarks, as well as five additional distinguished speakers. Alan Ehrlich reported he is organizing a symposium on "Where Regulatory Agencies Are Going."

The Board expressed its appreciation to Rochelle Seide for her tenure as the CHAL representative to the Biotechnology Secretariat and approved a motion to name Cathryn Campbell to the now vacant position.

All present expressed their gratitude and appreciation to Mike

Kaminski for his service as CHAL Chair and gave him a well-deserved standing ovation.

The potential March 4 officers' nominations were discussed. Issues concerning minority affairs were also mentioned by Howard Peters. Mention was made that the last newsletter was an excellent issue and Shirley B. Radding was complimented. Planning for San Francisco programming is underway and the possibility of a District of Columbia meeting workshop on global intellectual property issues was discussed. Various new business discussed included problems of obtaining additional funds and new membership to keep the division growing and vital. The meeting was then adjourned by general approval.

Treasurer's Report

6/1/99-12/31/99

Starting Balance	\$ 7,487.59
Income	
ACS Division Dues (January-June, 1999)	4,121.15
ACS Reimbursement for Councilors' Expenses	2,000.00
New Member Dues	100.00
Royalty, CRC Press Inc. (January-June, 1999)	175.92
Royalty, C. B. Meyer	940.00
Total Income	\$ 14,824.66
Expenses	
Fall Newsletter	4,509.45
Ballot Mailing	397.42
Councilors Expenses	2,314.15
Speaker Registration fee for Spring Meeting	105.00
CHAL Reception, Spring Meeting	145.00
Division Officers' Caucus 1999 Dues	40.00
Division Officers' Conference Travel Expenses	444.36
Bank Charges	14.60
Total Expenses	\$ 7,970.58
Enging Balance	\$ 6,854.08

Program for San Francisco Meeting

Division of Chemistry and The Law

March 26-30, 2000

Mitchell A. Katz, Program Chairman

Other Symposia of Interest

Technology Transfer Techniques for the New Millennium, (see Small Chemical Businesses, Monday)

SUNDAY AFTERNOON

March 26, 2000
Moscone Convention Center
Room 274-276

Survival Skills for the Litigious Third Millennium - Part I

J.C. Carver and Carl B. Meyer, Organizers; Carl B. Meyer, Presiding

1. 1:30 How one chemist has resolved disputes.
L. Brewer
2. 2:30 Effective career planning for the professional chemist.
C.B. Meyer
3. 3:30 Dispute resolution demonstration: Mediation of an authorship dispute.
C.B. Meyer

MONDAY MORNING

March 27, 2000
Moscone Convention Center
Room 274-276

Intellectual Property Issues at the Millennium - Part I

David Jaffer, Organizer and Presiding

4. 9:00 Domain names and trademarks in the Internet age.
N. Smith
5. 9:30 Protecting collections of information
D.S. Saari
6. 10:00 Intellectual properties in bankruptcies.
M. St. James
7. 10:30 Legislative developments affecting patent rights.
K. Colton
8. 11:00 Looking ahead from the Patent and Trademark Office.
Q. Todd Dickinson

MONDAY AFTERNOON

March 27, 2000
Moscone Convention Center
Room 274-276

Intellectual Property Issues at the Millennium - Part II

David Jaffer, Organizer and Presiding

9. 1:30 Leveraging Intellectual property to finance start-up companies.
S.M. Wurzburg
10. 2:00 Business model patents.
R.O. Guillot
11. 2:30 New Rules for Interpreting and Enforcing Patent Claims.
C.F. Hauff
12. 3:00 Alternative Dispute Resolution in Intellectual Property Litigation.
G.E. Westreich

MONDAY EVENING

March 27, 2000
Moscone Convention Center
8.00 p.m.

SCI-MIX

H.M. Peters, Presiding

13. Abraham Lincoln - Only Presidential Patentee, U.S. Patent 6,459.
B. L. Lences
14. 1999 Inductees into the National Inventors Hall of Fame.
H. M. Peters
15. Wang, Pulse Transfer Controlling Device, U.S. Patent 2,708,722.
H. M. Peters, E.P. Bhatt
16. Death by chocolate: A brief history of chocolate.
H. M. Peters, S. B. Peters
17. Dr. George Washington Carver, peanut products, U.S. patents 1,522,176 and 1,632,365.
H. M. Peters, T.M. Peters

18. Dr. Gertrude B. Elion, Leukemia-fighting drug, 6-mercaptopurine, U.S. patent 2,884,667.
S.B. Peters, E.P. Bhatt
19. Dr. Mark Dean, bus control means for computer processing devices, U.S. patent 4,528,626.
H.M. Peters, E.P. Bhatt
20. Dr. Percy L. Julian - preparation of cortisone, U.S. patent 2,752,339.
S.B. Peters, R. Bhatt
21. Elizabeth L. Hazen and Rachel Brown, Nystatin, U.S. Patent 2,797,183.
S.B. Peters, E.P. Bhatt
22. Everyday inventions of African Americans.
H.M. Peters, S.B. Peters
23. Highly successful silicon valley inventions.
H.M. Peters, S.B. Peters
24. Inventors make a difference day event.
H.M. Peters
25. Inventure place at www.invent.org.
H.M. Peters
26. Milton S. Hershey - One of a kind, founder of the Hershey Chocolate Company.
H.M. Peters, S.B. Radding
27. Monopoly: The board game - U.S. Patent 2,026,082.
H.M. Peters, S.B. Peters
28. National inventors hall of fame.
H.M. Peters
29. National medal of technology and national medal of science.
H.M. Peters
30. Norbert Rillieux - Sugar chemist.
H.M. Peters, S.B. Radding

31. Stephanie Kwolek, Kevlar, U.S. Patents 3,819,587 and RE30,352.
S.B. Radding, T.M. Peters
32. Surprising patents and inventions of famous people.
H.M. Peters, S.B. Peters
33. Trends of 1995, 1996, 1997, 1998, and 1999 for top companies obtaining issued U.S. patents.
H.M. Peters, S.B. Peters
34. You don't need to be a rocket scientist to be an inventor.
H.M. Peters, S.B. Peters

TUESDAY MORNING

March 28, 2000
Moscone Convention Center
Room 274-276

Survival Skills for the Litigious Third Millennium - Part II

C.B. Meyer, J.C. Carver, Organizers
J.C. Carver, Presiding

35. 9:00 Sexual harassment in the work place: A Mock Trial.
J.C. Carver, V.M. Crochet

TUESDAY AFTERNOON

March 28, 2000
Moscone Convention Center
Room 274-276

A One Man Play - Chester, Chester, Chester: The Life of Chester Carlson and the Invention of the XEROX Copy Process.

H.M. Peters, Organizer and Presiding

36. 1:30 Chester, Chester: A one man play by George Shea summarizing the life of Chester Carlson, the inventor of the XEROX copying process
H.M. Peters
- 3:30 Repeat of performance

WEDNESDAY NOON

March 29, 2000
Hilton Hotel, Room Union Square 113
Luncheon for Harry and Carol Mosher Awardees

Check the final program in C&EN for event number and availability of tickets.

WEDNESDAY AFTERNOON

March 29, 2000
Moscone Convention Center
Room 274-276

Dr. Harry and Carol Mosher Awardee Lunch and Symposium

H.M. Peters, Organizer
J. Talhouk, Organizer and Presiding

- 12:00 Introduction of Mosher Awardees.
37. 2:00 Remarkable story of the structure of Taricatoxin.
H. Mosher
38. 2:30 Overview of a research career at SRI.
C. Mosher
39. 3:00 Asymmetric synthesis: The book.
J.D. Morrison
40. 4:00 Thirty years in research chemistry, patent law and information technology in the silicon valley.
H.M. Peters
41. 4:30 Current status of natural products chemistry.
P. Wender



The Harry and Carol Mosher Award

The award was established in 1980 by the Santa Clara Valley Section of ACS to: (1) recognize and encourage outstanding work in chemistry; (2) advance chemistry as a profession; (3) recognize service to ACS. The award is named for Dr. Harry S. Mosher of Stanford University, Stanford, California, and Dr. Carol W. Mosher of SRI International, Menlo Park, California, husband and wife, charter members and long-time supporters of this section.

The first scientists to receive this award were Doctors Harry and Carol Mosher in recognition of the inspiration of their example. The committee noted that the Moshers, including a brother, Dr. William A. Mosher, also a chemist and former Chairman of the Department of

Chemistry at the University of Delaware, are outstanding examples of the qualities to be recognized and honored by this award.

Any scientist residing in the United States who is a member of the ACS is eligible to be nominated for the Mosher Award. Five copies of the nomination, including printed materials (reprints) should be furnished for distribution to the award Selection Committee. The nomination and its accompanying material must be sent to the Award committee:

*Chairman of
Mosher Award Committee
Santa Clara Valley Section
American Chemical Society
P.O. Box 395
Palo Alto, California 94302*

Past Recipients of the Mosher Award

1980	<i>Harry and Carol Mosher</i>	Stanford Univ. & SRI International
1981	<i>Robert C. Brasted*</i>	University of Minnesota
1982	<i>Ernest L. Eliel</i>	University of North Carolina
1983	<i>Alfred and Helen Free</i>	Miles Laboratories
1984	<i>Albert C. Zettlemoyer*</i>	Lehigh University
1985	<i>Malcolm Renfrew</i>	University of Idaho
1986	<i>Robert and Gloria* Lyle</i>	Southwest Research Institute & UTSA
1987	<i>John G. Verkade</i>	Iowa State University
1988	<i>Richard M. Lemmon</i>	Lawrence Berkeley Laboratory, UCB
1989	<i>Arthur W. Adamson</i>	University of Southern California
1990	<i>Fred Basolo</i>	Northwestern University
1991	<i>Jean'ne M. Shreeve</i>	University of Idaho
1992	<i>Carl R. Johnson</i>	Wayne State University
1993	<i>Koji Nakanishi</i>	Columbia University
1994	<i>Peter Beak</i>	University of Illinois
1995	<i>Ned D. Heindel</i>	Lehigh University
1996	<i>Joginder Lal</i>	Goodyear Tire and Rubber Company
1997	<i>Joseph A. Dixon</i>	Pennsylvania State University
1998	<i>Glenn A. Crosby</i>	Washington State University

* indicates deceased

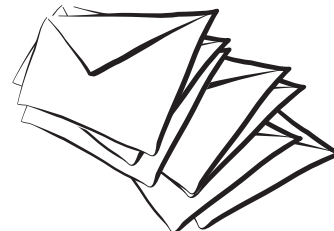
Travel Grants Available for Young Chemistry Scholars

To encourage attendance at the Congress by young chemistry professionals from developing countries that border the Pacific Ocean, the Sponsoring Societies of Pacificchem 2000 are making available up to 40 grants of \$US1000 plus complimentary registration to assist with travel and attendance costs.

Eligibility applications for a "Young Scholar" award must:

1. Be 40 years of age or less at the time of the Congress.
2. Be in their first permanent position as a member of the professional staff of an educational institution, non-profit organization or government agency, but not a commercial organization.
3. Belong to an organization officially participating in Pacificchem 2000 from a developing country of the Pacific Basin.
4. Be a practicing chemist in a country that borders the Pacific Ocean that does not have a national society for chemistry or whose society is not officially participating.
5. Be the principal author and presenter of a paper submitted and acceptable either for oral or poster presentation at Pacificchem 2000.

Further information on applying for a grant can be obtained from the Congress Secretariat or by accessing the Congress web site. The deadline for applications is February 11, 2000.



A Hugh Success – Inventors Make a Difference Day

On October 23rd the Division of Chemistry and the Law, The Santa Clara (Silicon) Valley Section, and the Intel Museum joined forces with others for the first time to create the "Inventors Make a



Difference Day" Event as part of the national Make a Difference Day and the Points of Light Foundation event. Several hundred students and parents attended the high tech museum and informal poster displays. Many local and National U.S. patents were presented. Many of the posters involved chemists and chemistry; however, because the Event was in the Silicon Valley, it included a number of electronic and semiconductor inventions. The Tiger Woods Foundation gave permission for a one-time poster presentation concerning Tiger Woods's involvement in trademark and copyright law to protect his image and work.

Hundreds of ACS documents concerning invention, the Chemistry and the Law Newsletter, minority affairs, and local section activities



were distributed. The U.S. Patent and Trademark Office provided over 1000 copies of documents which were distributed at the Event and also to local school libraries. Information tables were available for the planned Museum of African American Inventors in Oakland (the Society of Black Professional Engineers/NCCBPE) and for the Santa Clara County Alliance of Black Educators.

There were a number of local speakers. The most prominent speaker was Dr. Douglas Engelbart, the local SRI International (Menlo Park) inventor of the computer



mouse. He was inducted into the National Inventors Hall of Fame (now in Akron, Ohio) last year. Ms Autumn Stanley talked about her book, "Mothers and Daughters of Invention."

Many elementary school student attendees were asked "what did they think about when they were asked about chemists and chemistry." They created original colored posters of their impressions and thoughts. These original posters will be placed (by National Chemistry Week committee of Santa Clara Valley Section) inside local San Mateo County public transit buses and the Commuter trains from San Jose to San Francisco for the next six months.

Light refreshments were available all day for the Event attendees.

The local Silicon Valley Intellectual Property Associations (the patent lawyers) and the Palo Alto IP firm of Sawyer & Associates bought the drinks for the Event. The left-over food and drink were delivered to the Palo Alto Food Closet to be distributed to the homeless.

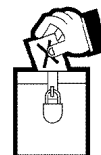


The Intel Corporation is the largest maker of semiconductor chips in the world and introduced the Pentium III chip several months ago.

Howard M. Peters

Peters, Verny, Jones & Biksa

*385 Sherman Avenue, Suite 6
Palo Alto, CA 94306*



ELECTION

The Nominations and Elections Committee are asking for nominations for the following offices:

Councilor

Alternate Councilor

The requirements are:

- (1) Must be a member of the ACS and the Division of Chemistry and The Law
- (2) Must agree to run for office
- (3) Must be able to attend meetings

Send nominations with a brief biography and statement to:

Mr. Michael Kaminski

Foley and Lardner

3000 K Street, N.W., Suite 500

Washington, D.C. 20007-5109

email:mkaminski@foleylaw.com

219th ACS National Meeting March 26-30, 2000

Abstracts for Chemistry and The Law Papers

1. How One Chemist Has Resolved Disputes

Leo Brewer, Chemistry Department, University of California, Berkeley, CA 94709, lbrewer@chem.ucb.edu

In his book "The Structure of Scientific Revolutions" Thomas Kuhn underscores the need to accept progress. Examples will be provided from our laboratory demonstrating how novel innovations have become accepted technique since the Manhattan Project.

2. Effective Career Planning for the Professional Chemist

Carl B. Meyer, Kapsa & Meyer, 2701 Second Avenue, #302, San Diego, CA 92103, cbmeyer@msn.com

Adjustment to the scientific advances of the last hundred years has forced industry to make changes that affect the relationship between the chemists and his/her employer and forces each individual to plan his/her own career. The chemist who fails to plan his own career makes plans to fail. According to Dr. Andrew Grove, a physicist and former CEO of Intel, only paranoids can succeed in the current business world. However, effective professional performance and personal fulfillment depend on relationships of trust. The answer to this dilemma is careful, continued career planning and preventive analysis, recognition and resolution of personal, employment, property right and other disputes that are an intrinsic part of any chemist's career. Recognizing and resolving disputes requires analytical and procedural skills that are outside of the chemical curriculum. Chemists should seek long term association with an attorney who has the skills necessary for recognizing, preventing or resolving problems that can delay or destroy otherwise successful careers.

3. Dispute Resolution Demonstration: Mediation of an Authorship Dispute

Carl B. Meyer, Kapsa & Meyer, 2701 Second Avenue, 9302, San Diego, CA 92103, cbmeyer@msn.com

This demonstration will consist of four parts: I. Introduction and explanation of the mediation process; II. Explanation of the dispute scenario, III. Demonstration of a complete mediation process of an authorship dispute in chemical industry consisting of Stage 1: opening statement; Stage 2: uninterrupted time; Stage 3: the exchange; Stage 4: building the agreement; Stage 5: writing the agreement; Stage 6: closing, and IV: Evaluation of process and demonstration.

4. Domain Names and Trademarks in the Internet Age

Neil Smith, Limbach & Limbach, 2001 Ferry Building, San Francisco, CA 94111, nsmith@limbach.com

Domain names and trademarks form the public's perception of a company. The Internet has expanded the scope of trademark use worldwide, and the domain name system has brought companies which previously co-existed with similar trademarks into conflict. This talk will address developments involving domain name and trademark issues in electronic commerce.

5. Protecting Collections of Information

David S. Saari, Technical Information Center, Global Ag, Products Research Division, American Cyanamid Company, P.O. Box 400, Princeton, NJ 08543-0400, saarid@pt.cyanamid.com

The 1991 US Supreme Court decision in Feist Publications vs Rural Telephone Service initiated a national debate on how to provide protec-

tion for collections of information while preserving access to important information resources. Currently, the discussion focuses on two legislative proposals, specifically the Collections of Information Antipiracy Act (HR 354) and the Consumer and Investor Access to Information Act of 1999 HR 1858). The implications of this pending legislation will be discussed.

6. Intellectual Property in Bankruptcies

Michael St. James, Rosenblum, Parish & Isaacs, 555 Montgomery Street, 15th Floor, San Francisco, CA 94111, stjames@rosenblum.com

Intellectual property undergoes strange transformations in bankruptcies. Bankruptcy Code protections for licensees apply differently depending on the type of intellectual property at issue. Merely commencing a bankruptcy reorganization, with more, can cause license rights to irretrievably explode. Bankruptcy Courts, applying commercial law principles to the Copyright Act and the Patent Act, have left the scope and effect of security interests in intellectual property in serious question.

7. Legislative Developments Affecting Patent Rights

Kenfrew Colton, Pillsbury Madison & Sutro, 1100 New York Avenue, N.W., Ninth Floor, Washington, D.C. 20005-3918, colton_kh@pillsburylaw.com

Legislation pending in both houses of Congress will change US patent law and the operation of the Patent and Trademark Office. The most significant elements of this legislation and their expected effects will be discussed.

8. Looking Ahead from the Patent and Trademark Office

Q. Todd Dickinson, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks, United States Patent and Trademark Office, United States Patent and Trademark Office, 2900 Crystal Drive, Arlington, VA 22202

The Commissioner will discuss the role of the Patent and Trademark Office in a new economy where intellectual property has become a key asset, how the Office is responding to increasing demands upon it, and the issues the Commissioner sees on the horizon for the Office and in the intellectual property area.

9. Leveraging Intellectual Property to Finance Start-up Companies

Stephen M. Wurzburg, Rosenblum, Parish & Isaacs, 160 W. Santa Clara Street, 15th Floor, San Jose, CA 95113, wurzburg@rosenblum.com

The success of a start-up company depends on obtaining adequate financing to allow the company to bring a product to market. Many start-ups develop significant intellectual property rights before their products are ready. Licensing, joint ventures, contract development work, and intellectual property pledged as security will be discussed as alternatives for financing start-ups.

10. Business Model Patents

Robert O. Guillot, Oppenheimer Wolff & Donnelly, 3373 Hillview Avenue, Suite 200, Palo Alto, CA 94304, rguillot@owodlaw.com

Since the Supreme Court's State Street Bank decision in summer 1998, the Patent Office has been issuing patents on "business models". Many companies are filing patent applications in this area, particularly on electronic commerce models. The coverage of these patents, and the value of filing business model patents, will be discussed.

11. New Rules for Interpreting and Enforcing Patent Claims

Charles F. Hauff, *Snell & Witmer, One Arizona Center, Phoenix, AZ 85004-0001, 602-382-6070, hauffc@swlaw.com*

In the past, the US Supreme Court infrequently ruled on cases involving patent law. In recent years the Court has been unusually busy in this area, reflecting the growing importance of patents as business assets. These recent cases affect patent claim drafting and interpretation, and how patent infringement matters are handled.

12. Alternative Dispute Resolution in Intellectual Property Litigation

Glenn E. Westreich, *Rosenblum Parish & Isaacs, 555 Montgomery Street, 15th Floor, San Francisco, CA 94111, westreich@rosenblum.com*

Patent, trademark, and copyright cases are usually very fact intensive. They are difficult to resolve without significant discovery and often expert testimony, which make the cases very expensive for both the plaintiff and defendant. Mediation, court-ordered settlement conferences, and other alternative dispute resolution mechanisms provide means for resolving many of these disputes without protracted litigation.

13. Abraham Lincoln - Only Presidential Patentee, U.S. Patent 6,469

Barbara L. Lences, *Agricultural Research Center, American Cyanamid, P.O. Box 400, Princeton, NJ 08540*

Abraham Lincoln is the only U.S. president to hold a patent. His patent #6,469 describes an apparatus and method for using airbags to help refloat a beached flat bed river boat from a sandbar. Despite numerous attempts to commercialize the invention, Honest Abe is reported to have not made a penny (or a five dollar bill) from his invention.

14. 1999 Inductees into the National Inventors Hall of Fame (www.invent.org)

Howard M. Peters, *Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Ste. 6, Palo Alto, CA 94306*

In September 1999, The National Inventors Hall of Fame (NIHF) inducted ten new inventors into the Hall. These include George de Mestral for U.S. Patent 2,717,437 (VELCRO), Donald L. Campbell, Homer Z. Martin, Eger V. Murphree and Charles W. Tyson for U.S. Patent 2,451,804 (fluid catalytic cracking at EXXON), Bryan B. Malloy and Klaus K. Schmiegler for U.S. Patent 4,314,081 (for PROZAC at Eli Lilly), Percy L. Spencer for U.S. Patent 2,408,235 (for microwave ovens at Raytheon), and Gerhard M. Sessler and James E. West for U.S. Patent 3,118,022 (for electret microphone) at Bell Labs now Lucent tech. Descriptive information and the U.S. patents are presented.

15. An Wang, Pulse Transfer Controlling Device, U.S. Patent 2,708,722

Howard Peters, *Peters, Verny, Jones & Biksa, L.L.P., 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306; and E.P. Bhatt, Kellogg School, Northwestern University, Evanston, IL 60201*

An Wang made contributions to the advancement of computer technology, including the magnetic pulse controlling device, upon which magnetic core memory is based. Wang was born in Shanghai, China, and came to the U.S. in 1945. He received his B.S. from Chiao Tung University in Shanghai in 1940 and Ph.D. in applied physics from Harvard University in 1948. He founded Wang Labs in 1951 to develop specialty electronic devices. Dr. Wang was Chairman of the Board and CEO of Wang Labs. Dr. Wang held more than 35 patents relating to computer technology. In 1965 he introduced a desktop computer named LOCI. This forerunner of the Wang electronic desk calculators used a keyboard

resembling that of an adding machine but offered the unique feature of generating logarithms with a single keystroke. Wang provided a steady stream of innovations in the office automation and information processing field. (NIHF -1988)

16. Death by Chocolate: A Brief History of Chocolate

Howard M. Peters, *Peters, Verny, Jones & Biksa, L.L.P., 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Sally B. Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304*

Chocolate was eaten and drunk by the natives of Central and South America long before Columbus. Chocolate taken to Europe was touted as having a variety of medicinal uses. In the 1800's chocolate production increased greatly because of the mixing of chocolate with milk products. A brief history of chocolate as food and drink is presented. Several chocolate references will be provided. Guittard Chocolate, the See's Candies supplier, will be available.

17. Dr. George Washington Carver, Peanut Products, U.S. Patents 1,522,176; 5,541,478 and 1,632,365

Howard M. Peters, *Peters, Verny, Jones & Biksa, L.L.P., 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Theresa Peters, Mayfield School, 500 Bellefontaine Avenue, Pasadena, CA 91105*

George Washington Carver was born of slave parents in Diamond Grove, MO. In 1887 he was accepted at Simpson College in Indianola, Iowa. He attended Iowa Agriculture College (now Iowa State University) and earned a B.S. in 1894 and an M.S. in agriculture in 1897. Booker T. Washington, founder of the Tuskegee Normal and Industrial Institute for Negroes, convinced Carver to serve as the school's director of agriculture. Carver developed 325 uses for peanuts—from cooking oil to printer's ink and helped to create new markets. When he discovered that the sweet potato and the pecan also enriched depleted soils, Carver found almost 200 uses for those crops, including synthetic rubber and material for paving highways. He synthesized organic dyes, which proved to be superior to the imported ones. Upon his death on January 5, 1943, Carver contributed his life savings to establish a research institute at Tuskegee. His birth place was declared a national monument in 1953. (Inducted into NIHF in 1990).

18. Dr. Gertrude B. Elion, Leukemia-fighting Drug 6-Mercaptopurine, U.S. Patent 2,884,667

Sally B. Peters, *Xerox-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94034, and Elizabeth P. Bhatt, Kellogg School, Northwestern University, Evanston, IL 60201*

Dr. Gertrude Elion attended Hunter College at the age of 15 and graduated summa cum laude in 1937. She received her MS in Chemistry from New York University, and has ten honorary Doctoral degrees. Dr. Elion has 45 patents and over 280 scientific publications. "Imuran," a derivative of 6-mercaptopurine was found to block the body's rejection of foreign tissues and was quickly used for successful kidney transplants from unrelated donors. Her breakthroughs were the result of a rational approach to drug development, which replaces the reliance upon a hit-or-miss process. Dr. Elion officially retired in 1983 and is now Scientist Emeritus with Burroughs-Wellcome. In 1988 Dr. Elion shared the Nobel Prize in Medicine with her colleague George Hitchings and Sir James Black. She was inducted into the Inventors Hall of Fame in 1991.

19. Dr. Mark Dean, Bus Control Means for Computer Processing Devices, U.S. Patent 4,528,626

Howard Peters, *Peters, Verny, Jones & Biksa, L.L.P., 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and E.P. Bhatt, Kellogg School, Northwestern University, Evanston, IL 60201.*

Mark Dean and D. Moeller created a microcomputer system with bus control means for peripheral processing devices. Their invention paved the way for the growth in the information technology industry by allowing the use of plug-in subsystems and peripherals like disk drives, video gear, speakers, and scanners. Dean was born in Jefferson City, TN and received his B.S.E.E. from University of Tennessee, his MSEE from Florida Atlantic University and his Ph.D. in Electrical Eng. from Stanford University. At IBM, Dean was chief engineer working with personal computers. The IBM Models PS/2 Models 70 and 80 and the Color Graphics Adaptor are among his early work. He holds three of IBM's original nine PC patents. Currently, Dean is Vice Pres. of Performance for the RS 6000 Division. Dean was named an IBM Fellow in 1996 and in 1997 received the Black Engineer of the Year President's Award. He holds more than 20 patents. (NIHF-1997)

20. Dr. Percy L. Julian - Preparation of Cortisone, U.S. Patent 2,752,339

Sally Peters, XEROX-PARC Information Center, 3333 Coyote Hill Road, Palo Alto, CA 94304; Ramesh Bhatt, Department of Pharmacology, Stanford University Medical Center, Stanford, CA 94305

Percy Lavon Julian, the grandson of former slaves, was born in Montgomery, AL on April 11, 1889. Julian graduated in 1920 from DePauw University as class valedictorian with Phi Beta Kappa honors. With no scholarship aid he went to Fisk University to teach chemistry. In 1923, with an Austin Fellowship in Chemistry, he earned a Master's degree from Harvard. After teaching at West Virginia State College and Howard University, Julian received his Ph.D. in Organic Chemistry from the University of Vienna in 1931 under the direction of Ernst Spath. Julian was noted for his synthesis of cortisone, used in the treatment of rheumatoid arthritis and other inflammatory conditions. Julian's method of synthesis reduced the price of cortisone extracted from oxen bile at high cost. He died in 1975. (NIHF inductee 1990).

21. Elizabeth L. Hazen and Rachel Brown, Nystatin - U.S. Patent 2,797,183

Sally Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304, and E.P. Bhatt, Kellogg School, Northwestern University, Evanston, IL 60201

The world's first useful antifungal antibiotic, NYSTATIN, was developed through a long-distance scientific collaboration. Researchers for the New York State Department of Health, Elizabeth Hazen in NYC and Rachel Brown in Albany shared tests and samples through the U.S. Mail. The antibiotic they developed, named "NYSTATIN" for the New York State Department of Health, was first introduced in 1954. It cured many disfiguring and disabling fungal infections of the skin, mouth, throat, and intestinal tract and could be combined with antibacterial drugs to balance their effects. They donated all NYSTATIN royalties - \$13 million - to academic science through the nonprofit Research Corp. Hazen earned a B.S. at the Mississippi State College for Women and an M.S. degree in bacteriology from Columbia University, becoming one of its first women doctoral candidates. Brown received her B.A. from Mount Holyoke College and an MA and Ph.D. in chemistry from the University of Chicago. (NIHF-1994)

22. Everyday Inventions of African Americans

Howard M. Peters, Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Sally B. Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304

The American Chemical Society has embarked on a major program to encourage and support women and minorities in the chemical sciences. It is not generally known that some important, now very common everyday, items were invented and patented by African-Americans. Patents and posters include: Dr. Charles R. Drew, U.S. #2,301,710 for blood banking (American Red Cross); Garrett A. Morgan, U.S. #1,475,024 for a traffic signal; Fred Jones, U.S. #2,475,841 for a refrigerated truck; J. L. Love,

U.S. #594,114 for an early pencil sharpener; W.B. Purvis, U.S. #419,065 for a fountain pen; W. Johnson, U.S. #292,821 for an early egg beater; Thomas W. Stewart, U.S. #499,402 for a mop handle connector; and G.F. Grant, U.S. #638,920 for an early wooden golf tee.

23. Highly Successful Silicon Valley Inventions

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Sally B. Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304

California and the Silicon Valley are well known for their inventions and innovations. In 1995 there were more patentees in Santa Clara County than in any other county in the U.S. Patents and inventions presented include: Robert Noyce, U.S. #2,981,877 for the integrated circuit//Intel; Stanley Cohen, and Herbert Boyer, U.S. #4,237,224 for gene splicing at Stanford U. and UCSF//Genentech; Douglas Engelbart, U.S. #3,541,541, the computer mouse at SRI Intn. in Menlo Park; Paul Cook, U.S. #3,806,242 for radiation shrinking of polymers//RayChem; and William Hewlett, U.S. #2,268,872 for the audio oscillator//Hewlett Packard.

24. Inventors Make a Difference Day Event

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The Santa Clara (Silicon) Valley Section joined forces with the Intel Museum to host a first-of-its-kind event on October 23 as part of the national Make a Difference Day sponsored by the Points of Light Foundation. The high tech museum, which was open for the first time on a Saturday, hosted self-guided tours of semiconductor history, manufacture and applications. The ACS local section presented posters of women and minority inventors, local highly successful commercial inventions in the Silicon Valley, patents of toys and common objects to demonstrate that you don't need to be a rocket scientist to be an inventor, patents of famous people, and historical African American inventions. (<http://intel.com> and <http://www.intel.com/go/museum>)

25. Invention Place at (www.invent.org)

Howard M. Peters, Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306

Invention Place celebrates the creative and entrepreneurial spirit of invention, innovation and inventors. The creative genius of invention is showcased through exhibits and presentations which allow visitors to experience the excitement of discovery, creativity and imagination. Invention Place furthers the inventive spirit to address specific aspects of encouraging technological leadership and creativity in America. Invention Place was created in 1991 and moved into new facilities at 221 S. Broadway Street, Akron, OH 44308-1505 in 1995. The programs of invention and innovation are presented.

26. Milton S. Hershey - One of a Kind, Founder of the Hershey Chocolate Company

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Shirley B. Radding, 2994 Cottonwood Court, Santa Clara, CA 95051

Milton S. Hershey founded and incorporated the Hershey Chocolate Company in 1901. It has become the giant international Hershey Foods Company of Hershey, PA. Mr. Hershey believed more in trade secrets than in patents, hence the company had only three U.S. Patents before his death at 88 in 1945. Hershey's sole U.S. Patent 1,740,693 was to a process of purifying sugar. Copies of these U. S. Patents will be presented, as well as some representative U.S. trademarks. A portion of this presentation will be devoted to the life and the \$5,000,000,000 philanthropic founda-

tion of Mr. Hershey.

27. National Inventors Hall of Fame (www.invent.org)

Howard M. Peters, Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306

The National Inventors Hall of Fame (NIHF) celebrates the creative and entrepreneurial spirit of great inventors. The creative genius of invention is showcased through exhibits and presentations which allow visitors to experience the excitement of discovery, creativity and imagination. The NIHF furthers the inventive spirit to address specific problems of declining technological leadership and creativity in America. The NIHF was established in 1973 by the National Council of Patent Law Associations, now the National Council of Intellectual Property Law Associations, and the Patent and Trademark Office of the U.S. Department of Commerce. The National Inventors Hall of Fame Foundation was created to administer it. National Inventors Hall of Fame, 221 S. Broadway Street, Akron, OH 44308-1505.

29. National Medal of Technology National Medal of Science (www.ta.doc.gov/medal)

Howard M. Peters, Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306

The National Medal of Technology and the National Medal of Science within the U.S. Department of Commerce are the Nation's highest honors for technological achievement presented annually by the President of the United States. The companies, men and women awarded these Medals are those whose extraordinary works in research, development and design have made significant contributions to U.S. prosperity and competitiveness, and our overall quality of life and our understanding of the world around us. The American Chemical Society Patent Committee solicits your recommendations for companies and individuals for future nominations. National Medal of Technology: e-mail NMT@ta.doc.gov

30. Norbert Rillieux - Sugar Chemist

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Shirley B. Radding, 2994 Cottonwood Court, Santa Clara, CA 95051

Norbert Rillieux was a 19th Century inventor who greatly improved the process to convert sugar cane to sugar. The old process using fire at atmospheric pressure was slow, inefficient and labor intensive. The old process was often called "the Jamaica Train." Rillieux's U.S. Patent 4,897 described a reduced atmosphere evaporation that was cost effective and very efficient. It revolutionized the sugar industry in Louisiana and elsewhere. Rillieux was an African American cousin of Impressionist French Painter, Edgar Degas. Rillieux eventually became so dissatisfied with race relations in New Orleans in the 1850's that he moved back to Paris and never returned to the U.S.

31. Stephanie Kwolek, Kevlar, U.S. Patents 3,819,587 and RE 30,352

Shirley Radding, Tetrac, 2994 Cottonwood Court, Santa Clara, CA 95051, and T.M. Peters, Mayfield School, 500 Bellefontaine Avenue, Pasadena, CA 91105

Stephanie Kwolek was born in New Kensington, PA, and received her B.S. in chemistry from the Carnegie Institute of Technology in 1946. As a chemist at Du Pont, Kwolek's earliest work pioneered low-temperature processes for the preparation of condensation polymers, and resulted in hundreds of new polymers, including KAPTON polyimide film and NOMEX aramid polymer and fiber. The most famous product is KEVLAR, a polymer fiber five times stronger than the same weight of steel. It is material for bullet-resistant vests and many other worldwide. Kwolek moved to the Pioneering Research Lab. at Du Pont's Experimental Station in Wilmington, DE in 1950. She retired in 1986 as a

research associate but continues to consult for Du Pont and serves on the committees of the National Research Council and the National Academy of Sciences. She holds 17 patents. (NIHF-1995)

32. Surprising Patents and Inventions of Famous People

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Sally B. Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304

Many famous people in careers unrelated to science and technology have obtained patents over the years. The patents presented include: Hedy Lamar, U.S. #2,292,387 (actress) for secret communication system (for torpedos); Mark Twain, U.S. #140, 245 (author) for a scrapbook; Lillian Russell, U.S. #1,014,853 (actress) for a dressing trunk; Edgar Bergen, U.S. #Des. 129,255 (ventriloquist) for a fishy doll; Glenn (Pop) Warner, U.S. #1,887,473 (coach) for a football shoulder protector (Palo Alto); Jack Johnson, U.S. #1,413,121 (prizefighter) for a wrench; Paul Winchell, U.S. #3,097,366 (ventriloquist), for a heart machine; and Julie Newmar, U.S. #4,003,093 (dancer and actress / the Catwoman) for cheeky stockings.

33. Trends of 1995, 1996, 1997, 1998 & 1999 for Top Companies Obtaining Issued U.S. Patents

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306; and Sally B. Peters, XEROX-PARC, 3333 Coyote Hills Road, Palo Alto, CA 94304

Statistics for 1995 to 1999 from the U.S. Patent and Trademark Office and the Intellectual Property Owners (IPO) Association are presented and discussed. The origin and number of U.S. patents issued to the top 100 U.S. and foreign companies and trends are presented.

34. You Don't Need to be a Rocket Scientist to be an Inventor

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P. 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, and Sally B. Peters, XEROX-PARC, 3333 Coyote Hill Road, Palo Alto, CA 94304

Simple toys and games have been patented and are then later protected by copyright and trademark in the marketplace. Representative common and toy patents include: the KOOSH ball, U.S. #4,756,529; the FRIS-BEE, U.S. #3,350,678; Paper Cup Sleeves, U.S. #5,425,497; Paper Cup Spill Resistant Lids, U.S. #5,589,569; McDonald's French Fry Sleeve U.S. #3,630,430 & Clam Shell Container U.S. #5,205,476; the SLINKY, U.S. #2,415,012; SILLY PUTTY, PLAY DOH, & HYDROGELS, U.S. #4,369,284; a robot (R2D2), U.S. #Des 251,628; and the AEROBIE, U.S. #4,560,358

35. Sexual Harassment in the Work Place: A Mock Trial

James C. Carver and Vicki M. Crochet. Taylor, Porter, Brooks & Phillips, 451 Florida Street, 8th Floor, Baton Rouge, LA 70801, james@tpbp.com

Professional chemists and chemical engineers, who are either employees or supervisors, must be concerned today with Sexual Harassment of others in the work place. Sexual Harassment on the job is not uncommon, and claims by victims of such harassment against coworkers and supervisors have become more frequent. In the fields of chemistry and chemical engineering most of the professionals had been male until the last decade or so, and thus the possibility for sexual harassment was not as great. Today, however, the situation is different. Unfortunately, many chemists and chemical engineers seem oblivious to the problem and the consequences of such activity. When a person believes that he or she has been sexually harassed, not only is the victim injured, but the accused person is placed in a difficult position regardless of whether the matter goes to trial. In addition, although there are numerous legitimate reasons for a person being demoted, being denied a promotion, or dismissed, a serious legal problem often arises when an affected employee claims that

continued on next page

the treatment that he or she received was the result of sexual harassment.

36. Chester, Chester - A One Man Play by George Shea Summarizing the Life of Chester Carlson, the Inventor of the Xerox Copying Process

Howard M. Peters, Peters, Verny, Jones & Biksa, L.L.P., 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306, fax: 650-324-1678

George Shea has created an inspiring one-man play that accurately describes the odyssey of Carlson and puts an important human touch on the invention and commercialization process. Chester F. Carlson (1906-1968) was born in Seattle, WA, grew up in Riverside, CA and graduated in physics from the California Institute of Technology in the Great Depression. His eventual employment was in with a New York patent law firm and he later became a patent attorney. Frustrated with having to hand copy documents and drawings, Carlson embarked on a personal research program to create an electrostatic copying process and copier. Many disappointments and false starts awaited even after Battelle Memorial institute and HALOID (later XEROX) undertook to commercialize the process. Once introduced into the marketplace in 1958, the XEROX 914 copier became a sensation.

37. Remarkable Story of the Structure of Tarichatoxin

Harry S. Mosher, Department of Chemistry, Stanford University, Stanford, CA 94305, hmosher@stanford.edu

In the 1960s the structure of the Japanese pufferfish (fugu) toxin, tetrodotoxin, was being investigated by R.B. Woodward at Harvard University and by two Japanese groups. At Stanford we had undertaken a study of a toxin discovered in the eggs of the local salamander; Taricha torosa, by Prof. Twitty in the Biology Department in the 1930s. It was established that this salamander toxin, tarichatoxin, was in fact identical to tetrodotoxin. All four groups working on this problem converged on the same unique structure which was reported at an historic meeting in Kyoto, Japan in 1964. The history of our research is presented.

38. Overview of a Research Career at SRI

Carol Mosher, retired, 713 Mayfield, Stanford, CA 94305, hmosher@stanford.edu

Dr. Carol Mosher was one of the first chemists hired at the fledgling Stanford Research Institute in 1947. Her research career spanned 30 years

in various synthetic research areas – including anti-cancer agents. A retrospective of her research career in chemistry is presented.

39. Asymmetric Synthesis – The Book

James D. Morrison, Department of Chemistry, University of New Hampshire, Parsons Hall, 23 College Road, Durham, NH 03824, jandjmorrison@earthlink.net

In the 1950s and 1960s asymmetric (chiral) synthesis was becoming a very attractive synthetic field, particularly in the pharmaceutical sciences, to provide specific therapeutic benefit with a minimum of side effects. The history leading to the publication of the book Asymmetric Synthesis in 1971 is reported.

40. Thirty Years in Research Chemistry, Patent Law and Information Technology in the Silicon Valley

Howard M. Peters, Peters, Verny, Jones & Biksa, LLP, 385 Sherman Avenue, Suite 6, Palo Alto, CA 94306

This talk will discuss using the author's careers, the changes in the Silicon Valley in chemistry, patent law and information technology over the past 30 years. Howard Peters came from a rural community 30 miles from Penn State. A 1962 graduate in chemistry of Geneva College, he did his first chemical research at Gulf Oil which produced 3 U.S. patents. He received his Ph.D. in chemistry at Stanford in 1967 under the direction of Dr. Harry Mosher. After a research career at Dow and SRI Int., he received the J.D. degree in Law from Santa Clara University in 1978 and has been a patent attorney for the past 20 years. He was chair of the Santa Clara Valley Section in 1986 and 1996. Sally Peters is from Pittsburgh PA and received a chemistry degree from Geneva College in 1964. She earned the Master of Library Science (MLS) degree from San Jose State University in 1983 and has been a technical information specialist at XEROX PARC in Palo Alto for the past 15 years. She is a Councilor for SCVS and will be the section chair in 2001.

41. Current Status of Natural Products Chemistry

Paul Wender, Department of Chemistry, Stanford University, Stanford, CA 94305, wenderp@leland.stanford.edu

From the 1950s to the 1980s the Mosher group at Stanford was involved in various aspects of natural products chemistry in addition to the toxin

Membership in CHAL

Chemistry and The Law continues to grow as an ACS Division. A good sign is the number of new ACS members who choose CHAL as their one, free Division for their first year of ACS membership. If we meet their needs and interest, they are apt to sign up as full members after their "free year". In 1999, CHAL had 101 "free members". We had a total of 998 Full Members, 13 National Affiliates and 22 Division Affiliates. Unfortunately, 112 Members failed to pay 1999 dues and will be dropped from the roster.

The names of the 211 Members new to the Division in 1999 are listed together with their cities. Please welcome each into the best ACS Division.

ABED, BASELL
ACKERMAN, JOEL
AGHAZADIAN, LAURA
AIZAWA, YURIE
ALBERGO, NICHOLAS
ALMONTE, CHRISTINA
ASHCRAFT, KATHERINE
BABICH, MARY ANNA
BALOGH, MELISSA

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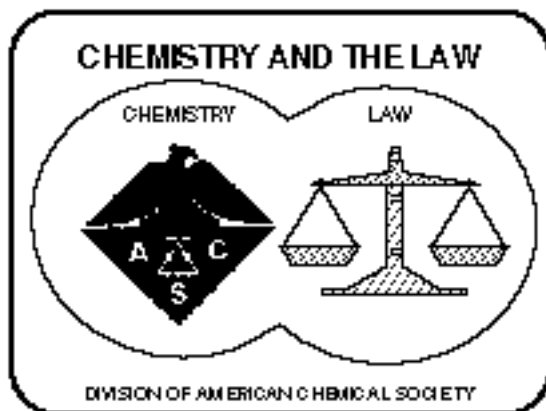
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Conducting Patent Prosecution With a View Toward Potential Litigation*

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An enforceable patent is the means by which a U.S. patent owner's property rights are protected. There are, however, inexperienced and even experienced patent attorneys who view patent issuance as an end in itself, rather than a means to an end. These ends are sometimes fostered by quotas for issued patents, in corporate patent departments, or quotas for billable hours, at law firms. Too often patent prosecutors focus on only the immediate hurdle of activities before the United States Patent and Trademark Office ("USPTO"), forgetting to consider the possibility of future infringement litigation. This problem is often compounded by the frequent situation in which patent prosecutors are not patent litigators, so they do not see the downstream problems this philosophy can cause.

Although only a small fraction of issued patents are ever litigated, it is recommended that the patent prosecutor always prosecute the application before the PTO with a view toward possible future infringement litigation. The purpose of this paper is not to set forth hard and fast rules for patent prosecutors, but rather to suggest to patent prosecutors and inventors a number of guidelines that may facilitate future infringement litigation.

1. Remember Your Audience

The ultimate arbiter of a patent's infringement and validity is the trier of fact, either a judge or a jury. Assuming a bench trial, the likelihood that the decision maker is familiar with, or even understands, the technical subject matter at issue is slim. Justice Frankfurter, a well-recognized American judge, once lamented that "it is an old observation that the training of Anglo-American judges ill fits them to discharge the duties cast upon them by patent legislation." *Marconi Wireless Telephone Co. v. U.S.*, 320 U.S. 1, 60, 57 U.S.P.Q. 471, 496 (1943). Justice Frankfurter's "old observation" is perhaps still true, over 50 years later.

Justice Frankfurter's observation is, unfortunately, perhaps even more applicable to juries. It is highly unlikely that any member of a jury in a patent infringement suit will be conversant with the technical subject matter at issue. In fact, it is much more reasonable to expect that none of the members of the jury will have any understanding of the technology involved. (Of course, those practitioners who are familiar with both

prosecution and infringement litigation might well cringe at the alternative of a jury comprised of Examiners from the USPTO.)

It is from this perspective that the patent prosecutor should begin his work in preparing and prosecuting the patent application. From the beginning, wherever possible, both the practitioner and the inventor should avoid the use of technical jargon, at least in certain places. This is a very common mistake on the part of many practitioners.

Too often they consider only the immediate audience for the application and prosecution materials, namely, the inventors or the Examiners at the USPTO. Of course, the inventors are well-versed in the technical jargon. Examiners are usually well-versed in the technology involved in an application. Quite often, especially in the biotechnology field, the Examiners have extensive experience, such as postgraduate research, in the area of technology they examine. Patent prosecutors and inventors are thus more apt to include technical language in their applications and prosecution papers without considering the future ramifications of such inclusions.

The patent prosecutor, both in drafting the application and during prosecution, should write with the image of a jury, as the trier of fact, trying to read and understand each paper. Accordingly, in addition to avoiding the use of technical jargon, the patent prosecutor should attempt to use simple idiomatic English whenever possible. This means not only avoiding classic legalese, such as "said" (use "the"), but also words that are uncommon in everyday language, such as "distal" and "proximate" (use "far" and "near"). When dealing with a jury, clarity is of paramount importance.

In addition, it is useful to formulate some simple expression that encompasses the essence of the claimed invention. While one does not want to limit the scope of the invention in any way, the use of a simple phrase to capture the essential novelty of the invention facilitates the trier of fact's understanding and appreciation of the inventor's contribution to the art. For example, instead of reciting simply "a pharmaceutical composition", one might say "an antibiotic composition" or "an anti-inflammatory composition".

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a. Focusing on the "Background" Section

But many times, particularly with biotechnological and chemical inventions, it is impractical to fashion the entire patent application and every response to an Office Action in wholly non-technical language. Many components of an invention have no equivalent, non-technical moniker. What could be done, then?

At a minimum, a number of these objectives can be accomplished by focusing on the "Background" or "Background of the Invention" section of the patent application. Being up at the front of the specification, it is one of the way first things that a trier of fact would read in the patent. If that section is written in a lot of non-technical language, then at least that would be understood by a judge or jury.

For example, a "catch-phrase" chosen for the invention could be introduced there, even if used just once. That would provide some express basis for using that phrase later in litigation. Also, the invention's purpose or end uses could be spelled out in the "Background" section. Quick understanding of this by the trier of fact facilitates persuasion of the patentee's side of the litigation.

Unfortunately, many prosecutors take a very formalistic view of the "Background" section: "It's only to discuss 'prior art,'" or "It's not a part of the specification I spend much time on" or "It's just a section the USPTO wants to see; it has no value." But a greater potential for this oft-neglected section could be realized by a little attention to it.

2. Disclose Advantages/Superiorities of the Claimed Invention In the "Summary Section"

The patent prosecution should disclose in the specification a number of the advantage and superiorities of the claimed invention, certainly those which the inventor regards as significant. These advantage and superiorities are typically included in the "Summary" section. This ensures that, during infringement litigation, the trier of fact will not view an assertion of some particular advantage over the art as merely a desperate litigation strategy designed to convince the court of patentability, but rather as something that was contemplated by the inventor at the time the invention was made. In addition, the disclosure of the advantages and superiorities of the claimed invention in the specification may serve to obviate the need for a subsequent affidavit or declaration under Rule 132 to overcome a prima facie case of obviousness.

Another way to highlight the superiority of the invention is to set up in the "Background" section a

"straw man" that corresponds to the state of the art, including the problems or disadvantages thereof. The "straw man" can then readily be knocked down in either or both the "Background" and "Summary" sections with the advantages and superiorities of the claimed invention. This serves to help convince the judge or jury of the nonobviousness of the patented invention, even if the state of the art has changed significantly during the time between patenting and litigation. What may appear irrefutably nonobvious at the time the patent issues may well appear painfully obvious with the benefit of years of improved technology. A discussion in the application of the advantages and benefits of the claimed invention will provide a necessary picture of how important the claimed invention was at the time that the application was filed.

Some commentators have warned against having too many objects in the specification. Their rationale is generally that, if an issued claim does not have all of the objects, then the claim could be more easily distinguished from the accused device or process by the trier of fact. This advice should be considered.

3. Hedge Your Language

Remember, during litigation it is important to be able to assert the broadest "reasonable" scope of the claimed invention.

But absolutes, such as "always", are potential minefields for the patent litigator that can prove to be fatal. Absolute terms present an opening whereby a competitor may more easily demonstrate noninfringement. Absolute terms also provide an opportunity to show that the specification or attorney argument during prosecution was inaccurate and may well open the door to a charge of inequitable conduct, by arguably constituting a misrepresentation made to the Examiner—"this always occurs in the claimed invention," when it does not.

Consequently, a simple rule of thumb to remember, both drafting the application and during prosecution, is to completely avoid the use of absolute terminology. The patent prosecutor should instead hedge his language and employ terms such as "may", "preferably," and "substantially." This readily prevents the claims from being pigeonholed into a single narrow interpretation that may defeat a charge of infringement. Avoiding absolute language also helps avoid the specter of inequitable conduct in that no assertion on the part of the inventor or solicitor need be proved utterly accurate. If assertions are couched in nonabsolute terms, exceptions to a general statement cannot render the statement false.

4. Where Possible, Avoid the Use of Affidavits and Declarations

This suggestion is not meant to convey the impression that affidavits and declarations should never be used. Certainly, there are instances where an affidavit or a declaration is desirable, or even mandated, by the given facts. However, the pitfalls that can arise in litigation from the use of either in prosecution can overshadow their utility in all but the most ardent circumstances. Specifically, it should always be remembered that an "imperfect" affidavit or declaration will result in the affiant or declarant being called to testify during a subsequent infringement litigation. Accordingly, the following guidelines should be kept in mind.

First, ensure that the affiant or declarant is extremely comfortable with all the statements being made. Incorrect or misleading statements in an affidavit or declaration may be used to challenge the validity of a patent. State facts and not conclusions. It serves no beneficial purpose to file an affidavit or a declaration and later hear the affiant/declarant testify that he was not completely sure about one or more assertions in the paper. Quite to the contrary, such testimony may prove difficult during any infringement litigation.

Second, ensure that the showing in the affidavit or declaration is sufficient to prove the point asserted. In other words, the showing must be commensurate with the claimed invention. Otherwise, an opponent in litigation may be able to narrow the scope of the claimed invention by use of the affiant's/declarant's statements. For example, a comparative test evidencing the superiority of a species within a claimed genus, while acceptable to an Examiner familiar with the relevant art, may not be considered by a trier of fact to support a conclusion that all the compounds of the claimed genus possess this same superiority.

Third, even when compelled by circumstances to resort to an affidavit or a declaration, do not abandon any other patentability arguments. If the patent prosecutor, backed by an affidavit or a declaration, asserts patentability solely on the basis of that affidavit or a declaration, then he has severely limited the arguments regarding claim patentability that can be made in litigation. That is, the patent litigator is bound by the prosecution history of the patent; if the patent was, on its face, issued exclusively on the basis of an affidavit or a declaration then that specific patentability argument will be the only one the accused infringer will need to rebut to establish the claims' invalidity. In other words, the accused infringer will argue that the

claim is invalid because the affidavit or declaration that resulted in its allowability was incorrect. In contrast, even if an affidavit or a declaration is used and the Examiner relies on that paper as a justification for patentability, if the patent prosecutor has not abandoned any earlier, alternative arguments, these arguments may be presented in court by the litigator against an allegation of invalidity and could be given full consideration by the trier of fact, even if the Examiner found them unpersuasive.

5. Vary the Claims

By employing claims that vary both in scope and type, the chances for successful litigation increase significantly. Each different type of claim and significantly different claim scope presents another hurdle for the accused patent infringer. That is, by varying the wording of the claims, the patent litigator has a greater likelihood of showing infringement and defending against an allegation of invalidity. Drafting varied claims is readily achieved by claiming inventions directed to different statutory classes, such as compositions of matter and processes.

At least two independent sets of claims should therefore be present in any application, preferably overlapping in scope. It should always be remembered that, in any action for infringement, at least one set of claims is going to come under extremely close scrutiny by the accused infringer and the trier of fact. By claiming variably, even in the situation where one set of claims is found either not infringed or invalid, the other set of claims may still be asserted as infringed. This situation is preferable to relying on dependent claims, as sometimes a trier of fact may view an assertion of infringement of dependent claims as a desperate attempt in litigation to use a fall back position when the primary argument has failed. The judge or jury could likely then perceive the patentee's case as weak, thus implicitly raising the patentee's burden of persuasion.

Of course, the necessary corollary to this rule is to not overclaim. The patent prosecutor and the inventor should be absolutely convinced that all of the claims are fully supported by the specification. If it is discovered at trial that a patentee has overclaimed, then the trier of fact may look askance at the remainder of the patentee's case. It serves no purpose at all for the judge or jury to be rendered distrustful of the patentee's position; it merely increases the likelihood of an infringer successfully defending against a charge of infringement.

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In addition, it is also useful to include at least one narrow independent claim, preferably drawn to the embodiment of the invention that is most likely to be infringed. Narrow claims are much less likely to suffer an attack for invalidity on the basis of Section 112. Moreover, it is much easier to persuade a trier of fact that an accused composition literally infringes a narrow claim; excessive claim interpretation becomes unnecessary.

6. Avoid Margin Notes

This point cannot be overly emphasized. This is also true of documents residing with a non-U.S. patent agent or attorney. One difficulty for the litigator defending a patent against assertions of invalidity is comments written on papers in the patent prosecutor's personal files of the prosecution history. The "attorney-client privilege" should not be relied on for the protection against these comments ever being discovered. It must always be assumed when writing margin notes that each and every note will be read, scrutinized and interpreted by the future accused infringer, for these papers may be discovered during U.S. litigation. Margin notes may suggest to the infringer some grounds with which to challenge the validity of the patent or a means with which to narrow the scope of the claims. Margin notes set forth, at least in part, the mental processes with which the patent at issue was prosecuted.

Inventors and patent prosecutors would do well to remember the policies of the USPTO with respect to margin notes in their files. USPTO specifically forbids its Examiners from writing on any papers contained in a patent application. In fact, the checklist that Examiners are required to complete for passing an application to issue requires the Examiner to review all the papers in the file for any extraneous marks or comments, to ensure the removal of such marks or comments. The USPTO is well aware that an Examiner's thoughts would be critical to both the issue of validity and the issue of claim interpretation. Patent practitioners should follow suit.

7. Practice Appropriate Document Retention

Along a similar vein, effective document retention is also essential to successful infringement litigation. Prosecution files should be stripped of extraneous papers as a matter of course once the application issues. Such extraneous papers include most patent prosecutor documents; if, at some later time, prosecution papers that have been discarded are needed, copies of these may readily be obtained from the files maintained by

the USPTO. Papers that should always be removed from files include comments written by the inventor or prosecutor regarding a particular reference or the scope of a claim, copies of prior art references, and evidence of unsuccessful tests.

Similarly, inventors should also strip their own files of unnecessary papers. Only those documents essential to prosecution of the application should be kept, particularly those relating to the conception and actual reduction to practice of the claimed invention. Failed test results, evidence of unsuccessful syntheses, others' publications, and the like can and should be discarded. In a litigation, these documents will likely be discovered and can provide an infringer with an opportunity to attack the validity of the patent of the asserted scope of the claims.

8. Avoid the Specter of Section 112 Defenses

With the demise of invalidity for obviousness as the primary defense invoked by infringers, assertions of invalidity for failure to satisfy the requirements of Section 112, especially the requirements for enablement and disclosure of best mode, have increased. The patent prosecutor and inventor should therefore work together to ensure that these defenses are unavailable to any future infringers.

At the outset, the specification should contain statements of objective enablement, i.e., that the claimed invention can be made and used by those skilled in the art. Such statements can be as simple as "the compounds according to the present invention may be made by methods known to the art" and "the compounds of the present invention may be used for..." Once these assertions have been made in a patent specification, the burden is on the patent challenger to prove that they are false and the specification is not enabling.

Similarly, extrinsic references could be easily incorporated by reference into the application, to supplement whatever discussion exists on how to make and use the invention.

If the inventor or patent prosecutor is aware of any inoperative embodiments that may fall within the literal scope of the claims, then it may be useful to exclude these embodiments from the claim by the use of functional language. For example, when claiming a composition for treating infection comprising a particular inventive genus of compounds, and it is known that at least one of the members of that genus is ineffective at treating a certain infection, this species may be excluded from the scope of the claim by including the limitation "in an amount effective to treat the infec-

tion." The inoperative embodiment will thus be excluded from the scope of the claim for the simple reason that it can never be in an amount effective to treat infection.

If, however, a functional limitation is undesirable, then the presence of inoperative embodiments is not necessarily fatal provided the specification does not require "undue experimentation" to determine the identity of these inoperative embodiments. "Undue experimentation" cannot, unfortunately, be quantified; it depends to a large extent on the predictability of the technical field of the invention. To avoid a defense of nonenablement for undue experimentation, it is advantageous to include in the specification a screening test to determine the operability of a given embodiment. This screening test must, however, be within the skill of the worker in the art. If such a screening test has been disclosed in a patent specification, a defense of undue experimentation is almost certainly precluded.

Challenges for failure to disclose the best mode of an invention are fast becoming the defense of the 1990's. Accordingly, the patent prosecutor must stress to the inventor the necessity of disclosing the best mode of the invention contemplated at the time of filing the application. All too often, inventors are hesitant to reveal the optimum conditions for practicing their invention, particularly if it is a commercial product, because they do not want to provide the competition with an opportunity to enter the field, even after expiration of the patent.

Some prosecutors do not emphasize the importance of the best mode requirement, knowing that, unless there is some admission on the record, the USPTO will be unable to determine that the best mode of the invention has been concealed. This does not, however, hold true for litigation purposes; if there has been concealment of the best mode, this will surely be found during discovery. Satisfying the best mode requirement is particularly important in that failure to do so can also result in a finding of unenforceability for inequitable conduct in addition to a holding of invalidity under Section 112.

9. Try To Expand the Applicability of The Doctrine of Equivalents

Each claim element or its equivalent must be found in the accused product to result in infringement under the doctrine of equivalents. To prove equivalency, the burden is on the patentee to show that the accused device, compound, composition or process performs does not

differ substantially from the claimed invention. This allows expansion of the scope of patent protection beyond the literal language of the claims to ensnare the clever infringer.

While the doctrine of equivalents is not typically a part of patent prosecution, it nevertheless should be a consideration for the patent prosecutor during drafting of the application and subsequent prosecution. At the outset, the patent prosecutor should try to build language into both the specification and claims to assist a future infringement litigator in establishing infringement under the doctrine of equivalents.

An example of such a practice is expressing a composition or the like in functional terms where possible. By employing functional language in some of the claims (remember, vary the claims!), the litigator may assert that a particular accused composition infringes the claim, even if that accused composition was not even envisaged by the inventor, especially if it performs substantially the same function in substantially the same way and with substantially the same result as the claimed invention.

A trier of fact will likely be more persuaded of equivalence if it believes that the inventor imagined a broad scope for the claimed invention at the time it was made, rather than during the litigation.

10. Try To Not Run Afoul of the Hilton Davis Decisions

Following are several practice tips or suggestions to consider about the effect of the Hilton Davis decisions on patent prosecution.

a. Watch Out for Creating Prosecution History Estoppel

The first tip is "watch out for creating prosecution history estoppel." In view of the Federal Circuit's recent trends towards certainty in claim interpretation, this rule should be perhaps narrowed down to "make certain that you say what you really mean during prosecution." The old test was generally "what would a competitor reasonably conclude the patentee surrender to gain issuance." Now there is a presumption, albeit a rebuttable one, that any amendment made during prosecution was for the purpose of overcoming the prior art and to gain issuance.

There are several scenarios in which the prosecution history estoppel can arise. It can arise through "silence." This is the Hilton Davis situation. No one really knows why the lower limit of the pH range in the claims was added and perhaps we will never know. Make sure you make clear why you are making a claim amendment.

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Further, there could be an acquiescence by silence. For example, if the patent examiner set forth reasons for allowance in a paper attached to the Notice of Allowance, check to see if you disagree with those reasons.

Second, "estoppel by argument" is perhaps still a viable doctrine. This is prosecution history estoppel arises through attorney argument without claim amendments.

Third, what you say about one set of claims could be used against you to both interpret the claims as well as to develop rationales for why the amendments were made. In these ways, the use of what was said about other claims in concurrent prosecution could be used in a doctrine analogous to the doctrine of claim differentiation in claim interpretation.

Fourth, interviews can give rise to prosecution history estoppel, under the presumption. In typical case, an interview is held and the Interview Summary Sheet states that only that the prior art reference cited were "generally discussed." The follow-up document typically does not elucidate what really happened at the interview. If each one of the prior art citations are not discussed specifically in that follow-up document, then there may be a presumption that all of them had to be overcome in any subsequent amendment.

Fifth, perhaps now more than ever, statements made in related applications as well as statements in parent file for the same invention can be used to provide arguments for prosecution history estoppel.

b. Pennwalt Reaches the Top

In the doctrine of equivalents world, Pennwalt and its "All Elements Rule" have reached the pinnacle. Pennwalt was exalted in all of the Hilton Davis cases, both at the Federal Circuit, at the Supreme Court, and in the remand decision. Further, a number of recent Federal Circuit cases have reiterated Pennwalt.

This doctrine is perhaps not used to its potential when advising clients how to "design around" a known patent. Not only will eliminating an element from the claims that could be asserted against a device or process be free of the doctrine of equivalence, but will also be free of literal infringement.

c. Watch What Is Disclosed But Not Claimed In the Specification

If the patent specification discloses inventions A and B but only claims invention A, to what extent is the doctrine of equivalents later allowed to expand the claim to cover the other invention, invention B. Several

older cases had allowed this type of expansion. However, in two cases, the Federal Circuit has stated that "subject matter disclosed but not claimed is dedicated to the public." *Maxwell v. J. Baker*; *Unique Concepts v. Brown*.

d. The "Two for One" Rule

In the *Dolly, Inc. v. the Spalding & Evenflo Cos.* decision, the Federal Circuit stated that, in two situations, the correspondence between the claim and the accused device of process did not have to be "one-to-one." Specifically, infringement of the doctrine of equivalents can occur if two or more combined components in the accused device process together form the function of a single element in the patented invention. Conversely, equivalence can also exist when separate claim limitations are combined into a single component of the accused device.

e. Hypothetical Claims Are Still Important

The "hypothetical claim" first became an issue in the *Wilson Sporting Goods* case. Remembering when this decision first came out, a number of commentators thought this would lead to a "parade of horrors" such as leading to an increase in the number of charts that would need to have been developed to teach a jury what the hypothetical claims could be. Nowadays, it is perhaps not talked about very much. Instead, in his opinion, perhaps Judge Rich was just reminding us of the power of the prior art versus doctrine of equivalents – the doctrine of equivalence is subservient to the prior art. This is an important point to remember when prosecuting.

One technique may be to consider what a "hypothetical claim" would look like for a claim that you have close to allowance.

f. Erroneous Narrowing Amendments May Not Be Easily Forgiven

This practice suggestion concerns the frequent use of boiler plate language. For example, the patent prosecutor typically says, when amending a claim, "I disagree with the Examiner's rejection. But solely for the purpose of expediting prosecution, I amend the claims." How effective with this boiler plate be in view of the Hilton Davis decisions? Perhaps not very effective at all. Further, the Supreme Court has perhaps addressed this issue: "Such concerns are properly addressed under direct appeal from denial of a patent and will not be revisited" (footnote 7 to the Supreme Court opinion). Therefore, the Supreme Court considers any battles as to whether the examiner was correct to be fought in the USPTO, not later in litigation.

SUMMARY

The bottom line in all this is that the patent prosecutor now needs "a crystal ball" more than ever before. Patent prosecutors have to be more careful, more thoughtful, more deliberate about actions they take during prosecution. This is the legacy of the Federal Circuit's recent trend of decisions on claim interpretation and on the doctrine of equivalents.

* The opinions expressed in this article are solely the co-authors' personal opinions and should not be attributed to any client of Foley & Lardner's or theirs. The article's purpose is to provide ideas, any

one of which may not be applicable to every fact scenario.

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Radioactive Red Tape

How Politics and Overlapping Federal and State Jurisdiction Thwart Sensible Solutions to the Growing Problem of Radioactive Waste Disposal*

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* Adapted from a Presentation Given by the Author at the American Chemical Society 218th National Meeting, New Orleans, LA., August 22, 1999

Other helpful articles on this subject are: Timothy N. Trop, Drafting Patent Applications For Effective Litigation, 70 J.P.T.O.S. 162 (1988); Harold C. Wegner, Filing Evolutionary Inventions Abroad: Pitfalls Under the Paris Convention, 23 Int'l Rev. Indus. Prop. & Copyright L. 184 (1992).

OVERVIEW

Disposal of radioactive waste in the United States is a political, rather than a scientific problem. Currently, the thousands of tons of radioactive waste generated every year by private industry and government operations is stored by both commercial parties and government agencies at multiple, separately managed sites. A more efficient means of managing the hundreds of thousands of tons of radioactive waste that have accumulated over a half-century of commercial and government operations would be to permanently dispose of the waste at one or more central and centrally managed underground repositories. However, for the reasons discussed in this brief paper, radioactive waste will continue to be simply stored, rather than disposed of, unless the federal government fundamentally alters its approach to managing such waste.

INTRODUCTION

The term "briar patch" best describes the overlapping federal and state environmental laws and regulations that govern the nuclear industry generally and radioactive waste disposal in particular. Every federal and state

agency that has any responsibility for protection of the environment or human health has some role in regulating the nuclear industry and the disposal of its byproducts. While human safety should be the primary goal of all environmental regulation, the multiple government stakeholders that overlapping federal and state laws create do not necessarily accomplish this goal where radioactive waste disposal is at issue. Following is a snapshot of the federal and state regulatory structure that governs radioactive waste disposal.

I. Interplay of Federal and State Laws

A. Atomic Energy Act

The Atomic Energy Act (AEA) covers licensing of generation, possession, use, and disposal of all nuclear materials produced and utilized in the U.S., and regulates the import, export, and insurance of nuclear materials. The AEA also authorizes the federal government and its agencies to deputize states to perform certain regulatory functions, but maintains the federal role over any "special nuclear material" (SNM) sufficient to form a critical mass.

B. Nuclear Waste Policy Act & Amendments

The Nuclear Waste Policy Act (NWPA), enacted in 1982 and amended in 1987, provides that the federal government acquires title to, and is responsible for treatment, storage, and disposal of, all spent nuclear fuel (SNF) or other high-level radioactive waste (HLW),

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whether commercially generated or of government or military origin. The NWPA set a deadline (January 31, 1998) by which the Department of Energy (DOE) was to accept SNF and HLW for storage in a monitored retrievable storage repository (MRS site); commercial generators of such substances have thus far paid approximately \$16 billion into a Nuclear Waste Fund that will ostensibly finance such a repository. As discussed in more detail below, DOE has yet to accept any commercial SNF for storage, and continues to resist its statutory and contractual obligations in federal court.

C. Jurisdiction of the Agencies

The Nuclear Regulatory Commission (NRC) has primary authority over licensing and operation of reactors, fuel fabrication facilities, and all other facilities and laboratories that use nuclear material, supervision of state programs, and imports and exports of nuclear material.

The Environmental Protection Agency (EPA) has authority under the NWPA to set radiation standards for the eventual permanent HLW repository, and generally establishes radiation protection standards (theoretically in conjunction with NRC) for management and disposal of spent nuclear fuel, transuranic wastes, and HLW generally.

The Department of Energy (DOE) manages retired nuclear weapons production sites (such as Hanford, Washington, Savannah River, South Carolina, and Rocky Flats, Colorado), performs research and development on waste remediation, and operates or will operate the repositories that will store HLW and other kinds of radioactive waste.

The fact that these three agencies must work together to set standards for and actually effect radioactive waste disposal is a recipe for inter-bureaucratic gridlock. Not surprisingly, very little radioactive waste, and no SNF, has been permanently disposed of as contemplated by the relevant federal statutes. Also, state law radiation standards add another layer of regulatory complexity to an already cumbersome federal process. While a full explanation of the regulatory interaction between NRC, EPA, DOE, and state agencies is beyond the scope of this paper, several examples suffice to show how the agencies attempt to delineate their respective responsibilities.

II. Layers of Regulation: A Few Examples

A. Radiation Protection Standards Under the Federal Clean Air Act

The federal Clean Air Act (CAA) defines "air pollutant" to specifically include a "radioactive (including

source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air." The CAA would apply to emissions of radionuclides if no NRC program regulated radionuclide emissions. However, the CAA grants NRC the authority to "override" EPA or any state's standards if it determines in a public rulemaking that application of such standards to an NRC-regulated facility or source would endanger public health and safety.

In an effort to dispel the confusion created by the CAA's provisions, the EPA and NRC entered into a 1980 Memorandum of Understanding (MOU) delineating each agency's regulatory jurisdiction and general tasks, shortly after EPA had listed "radionuclides" as "hazardous air pollutants." The MOU directs:

(1) EPA to promulgate standards for airborne radionuclide emissions under the Clean Air Act (CAA) in consultation with NRC; (2) NRC to assist EPA with available information on NRC-licensed sources and facilities; (3) NRC to have the lead role in implementing and enforcing EPA's CAA radionuclide standards for NRC-licensed sources and facilities. In 1992, another MOU between EPA and NRC amplified the 1980 MOU's requirement that all NRC-licensed facilities had to comply with EPA standards limiting radionuclide emissions. To summarize, EPA has the statutory authority to regulate radioactive emissions into the air, unless NRC thinks EPA's standards endanger public health and safety. But (pursuant to the MOUs) NRC will enforce EPA's standards at NRC-licensed facilities, presumably unless and until NRC disagrees with those standards.

An NRC licensee (including any public or private radioactive waste storage facility) is thus left in an uncertain position. If NRC and EPA standards are different, it must comply with both sets of agencies' regulations, in addition to applicable state regulations, without necessarily knowing which agency is ultimately in charge. By comparison to the NRC standards ("constraints") set forth at 10 C.F.R. 20.1101-1302, the EPA "Radiation Protection Programs" regulations at 40 C.F.R. part 190 are more comprehensive, applying to "radiation doses received by members of the public in the general environment and to radioactive materials introduced into the general environment as the result of operations which are part of the nuclear fuel cycle." In addition, an NRC licensee must comply with all relevant state environmental laws that are not specifically preempted by federal standards. The administrative obstacle of compliance with these overlapping regula-

tions has proven to be at least as challenging as the engineering of radioactive waste storage facilities.

B. State Radiation Protection Standards

1. Agreement States and Delegated Authority

As indicated above, the AEA provides for NRC cooperation with states in licensing and enforcement of statutory and regulatory provisions relating to nuclear materials. Specifically, NRC may enter agreements with the Governor of any state for "discontinuance" of the NRC's regulatory authority with respect to byproduct materials, source materials, and SNM in non-critical mass quantities. Prerequisites for Agreement State status are that (1) the Governor certifies that the state has an adequate program for the control of radiation hazards that protects public safety, and the state is willing to assume regulatory responsibility for those materials; and (2) NRC finds that program compliant with conditions relating to ownership and control of byproduct material.

NRC regulations retain important aspects of its licensing jurisdiction over persons in Agreement States. NRC retains exclusive authority to regulate: (1) construction and operation of any production or utilization facility or any uranium enrichment facility; (2) the export from or import into the U.S. of byproduct, source material, or SNM, or of any production or utilization facility; (3) the disposal into the ocean of byproduct, source material, or SNM; (4) any other disposal of the above that the NRC believes it should license because of the hazards or potential hazards. Finally, "[n]othing in this section shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards." This is a key provision, because it maintains federal authority over radioactive hazards generally while allowing a range of state environmental laws and regulations to apply to potential or actual releases of hazardous substances (including radionuclides) into the environment.

2. Practical Effects of Agreement State Status

Washington's status as an Agreement State means that the Washington Department of Health (WDOH) must evaluate radiation hazards, develop baseline radiation levels for the state (including the Hanford reservation), monitor radiation-emitting sources within the state, and verify the adequacy of environmental radiation monitoring programs conducted by the federal government at its installations in Washington and by radioactive materials licensees at their installations.

WDOH has no authority to regulate: (1) quantities of

SNM above critical mass (depending upon the particular radioactive elements on hand, quantities over certain thresholds can only be licensed by NRC); and (2) federal facilities or over any nuclear reactors, and is generally excluded from regulation of fuel fabrication and enrichment facilities due to the large quantities (and specific activities) of radioactive material involved.

For example, the fuel fabrication facility in Richland, Washington is governed by both NRC and WDOH licenses: the former covers its main operations; the latter governs its disposition of small quantities of radioactive material ancillary to the fuel fabrication process. WRCA 43.200.901 applies to WNERA and provides that "[i]f any part of this act shall be found to be in conflict with federal requirements which are a prescribed condition to the allocation of federal funds to the state, such conflicting part of this act is hereby declared to be inoperative solely to the extent of such conflict and with respect to the agencies directly affected..." This provision would preserve WDOH's licensing authority pursuant to Washington's status as an Agreement State should the WNERA and other statutory provisions relating to radiation hazard protection be deemed to conflict with federal laws or authority. Though Agreement State agencies such as WDOH are NRC's surrogate regulators, the NRC regularly evaluates the state program to ensure adequate protection of public health and regulatory compatibility (states are allowed free rein in terms of administrative procedure and structure of regulations, but rules that impact interstate commerce are "strict compatibility" rules).

In reality, the practical benefits gained by the multi-layered "Agreement State" system of regulation are marginal. Again, the relationship between Washington's air emission standards and federal standards illustrates this point. Washington's standards for radionuclide emissions state that "[t]he emission limits of this chapter shall apply to all radionuclide emission units." Though "radionuclide" is defined as "any nuclide that emits radiation," "radionuclide emission unit" is not defined in the regulations. The regulations set the ambient standard for radionuclides as follows: "Emissions of radionuclides in the air shall not cause a maximum accumulated dose equivalent of more than 25 millirem per year to the whole body or 75 millirem per year to a critical organ of any member of the public." Most importantly, the regulations provide that "[w]henver another federal or state regulation or limitation in effect controls the emission of radionuclides to the ambient air, the more stringent control of emissions shall gov-

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ern." Based upon this provision, it appears that the NRC standards, as approved by EPA (and assuming NRC's assent), would govern emissions of radionuclides, from any source, in Washington. Accordingly, Washington's air emission standards for radioactive materials provide a regulatory burden without any corresponding benefits to either the industry or the environment.

3. Regulation of Mixed Wastes

Perhaps the best (or worst) example of federal and state environmental standards conspiring to prevent effective disposal of radioactive wastes can be found in the regulatory morass of standards for disposal of mixed wastes. Mixed waste is chemical waste that has components of both radioactive waste and non-radioactive hazardous chemicals, and is subject to all federal and/or state regulations that apply to hazardous waste generally, because of non-radioactive components of the waste. The federal Resource Conservation and Recovery Act (RCRA) applies to the non-radioactive components, which are regulated by EPA; the AEA applies to the radioactive components, which are regulated by NRC. RCRA states that "[n]othing in this chapter shall be construed to apply to (or to authorize any State, interstate, or local authority to regulate) any activity or substance which is subject to...the Atomic Energy Act of 1954 except to the extent that such application (or regulation) is not inconsistent with the requirements of such Acts." Further, RCRA defines "solid waste" to exclude AEA-regulated SNM, source, and byproduct material.

Nevertheless, over a decade of NRC, EPA, and DOE interpretations, in addition to federal court decisions, have collectively determined that regulation of mixed waste under RCRA is not precluded by the law's own provisions exempting nuclear material from its scope, and despite the fact (which DOE recognized in 1987) that RCRA's application to a nuclear waste's non-radioactive medium would appear to entail at least the indirect regulation of the radionuclides dispersed in the medium. The applicability of two separate statutory schemes and three agencies' jurisdiction and control magnifies the difficulties and costs of disposing of such complex waste streams.

The permutation of RCRA into a law that indirectly regulates radioactive mixed waste has directly impeded DOE's establishment of permanent repositories for such waste. DOE is the source (generator) of the vast majority of mixed waste in the U.S. Recognizing this fact, Congress passed the Federal Facility Compliance Act (FFCA) in 1992. The FFCA clarified that RCRA (and

therefore EPA and approved state rules) applied to mixed radioactive and hazardous wastes produced at DOE facilities. DOE thus remains open to suits alleging that the agency is not compliant with RCRA or approved state standards. New Mexico in particular has taken advantage of this opening to delay and greatly increase the costs of permanent mixed waste disposal.

III. Practical Obstacles to Radioactive Waste Disposal: The Battle of the Agencies

Complying with the federal and state regulatory framework that governs radioactive waste disposal is difficult enough. There are two additional, fundamental complications. First, there is only one working permanent repository for radioactive waste in the U.S. (WIPP), and it is not designed or authorized to accept HLW. Second, the only site currently being studied as a permanent repository for HLW, Yucca Mountain in Nevada, is the subject of strong disagreements between the regulatory agencies that would have jurisdiction and/or control over aspects of the facility. Congressional action and threatened litigation may also modify when and whether Yucca Mountain will open.

A. Waste Isolation Pilot Plant (WIPP)

1. Background

The Waste Isolation Pilot Plant (WIPP) is a geologic disposal facility for transuranic radioactive waste (e.g., sludges, clothing, glassware, equipment) generated by weapons production and disassembly processes at various DOE and Department of Defense (DOD) facilities. At WIPP, the waste is (and continue to be) placed in huge, thick underground salt caves, which will gradually close in on themselves and permanently seal the waste. Though WIPP has always been a DOE-operated site, DOE was unable to open the site to even test its capabilities in the late 1980s and early 1990s because there was no clear lead regulatory agency, and EPA's initial standards (issued in 1985) were stalled by litigation. Finally, the WIPP Land Withdrawal Act of 1992 gave EPA the lead role and authority to issue radioactive waste disposal regulations for WIPP; EPA then spent five years (1992-1997) assessing DOE's compliance documentation.

In May 1998, EPA certified WIPP as safe for storage of transuranic radioactive and mixed waste. While EPA's May 1998 certification allowed DOE to begin shipping radioactive waste for emplacement at WIPP within 30 days of that decision, DOE still had to secure a RCRA-type permit from the state of New Mexico prior to disposing of any mixed waste at WIPP.

2. WIPP: Litigation and Opening

In July 1998, two environmental groups and New Mexico's attorney general filed suit against the EPA in federal court, challenging its May 1998 certification of WIPP, and stating that DOE had not proven that it did not need a state RCRA permit for the hazardous constituents of the waste it intended to ship to WIPP. With that lawsuit pending, DOE began to negotiate directly with New Mexico, but in March 1999, New Mexico asserted that it would take until sometime in 2000 before a final mixed waste permit could be issued; that time estimate was later shortened to sometime during fall 1999.

Nevertheless, on March 26, 1999, after another federal judge ruled that DOE did not need a state hazardous waste permit to begin shipping nonhazardous (but radioactive) waste to WIPP, the first shipment of radioactive waste to WIPP left Los Alamos National Laboratories. In mid-April 1999, DOE attempted to certify to New Mexico (by sending the New Mexico Environment Department thousands of documents and boxes of videotapes) that waste being shipped from the Idaho National Engineering and Environmental Laboratory (INEEL) to WIPP was radioactive only; environmental groups protested but no additional lawsuits were filed.

In May 1999, New Mexico's attorney general withdrew from the July 1998 suit against EPA that challenged WIPP's certification; on June 28, 1999, a federal court of appeals upheld EPA's action, dismissing the environmental groups' July 1998 lawsuit.

In June 1999, DOE and New Mexico signed an agreement providing for advance notice to the state of all shipments of transuranic wastes to WIPP, and allowing state inspections of WIPP. DOE also agreed to pay New Mexico \$250,000 to offset the administrative costs of reviewing waste documentation. The actual state RCRA mixed waste permit, however, remained pending.

New Mexico's Environment Department finally issued a draft RCRA permit for WIPP in October 1999; rather than facilitating disposal, it has merely laid the foundation for further litigation. DOE immediately objected to four provisions of the draft permit. First, the draft permit would prohibit DOE from storing radioactive-only waste (LLRW) in the same underground cave compartment ("Panel") with mixed waste. At present, only one "Panel" at WIPP is ready to accept waste; the second is unlikely to be completed before July 2000. Second, New Mexico would require DOE's WIPP contractor (Westinghouse Government Environmental Services, LLC) to obtain liability insurance for a period

following the expected closure of the facility (35 years). DOE objects to incurring this extra expense (it would have to reimburse the contractor) when it is already required to monitor the facility post-closure, and has budgeted \$100 million for that purpose. Under the draft permit, DOE would also be required to visually check and sample each waste container, which would add costs and risk further radiation exposures to workers. Finally, DOE objects to what they deem a redundant groundwater monitoring requirement.

In early November, DOE, unable to resolve these issues with New Mexico, sued the New Mexico Environment Department in federal court. DOE Secretary Richardson summed up the agency's approach: "Because we object to two of the three main permit points, we are [suing]...[w]e have complied with all environmental regulations in moving forward with the storage of [mixed waste] at WIPP. If we keep getting roadblocks from New Mexico, we have to fight." A New Mexico spokesman responded that "[i]t would be irresponsible for the state of New Mexico not to require financial assurance, given the federal government's checkered environmental history." Most recently, New Mexico has imposed a fine of \$1.35 million on DOE for allegedly shipping mixed waste from Rocky Flats, Colorado to WIPP and mischaracterizing it as LLRW only. The fine was imposed for violation of the RCRA permit that DOE is challenging in court; DOE must respond to the fine and corollary compliance order within 30 days of the November 30, 1999 citation. Naturally, DOE issued a statement suggesting that the compliance order lacked "both factual and legal merit." Whatever the outcome of the DOE lawsuit and the challenge to the latest compliance order, it will certainly delay the efficient use of WIPP to permanently dispose of mixed waste.

B. Yucca Mountain

1. Background

The NWPA Amendments of 1987 designated Yucca Mountain, Nevada (100 miles northwest of Las Vegas) as the sole site in the nation that should be evaluated for suitability as a permanent repository for HLW. The NWPA directed DOE to conduct the site assessment in conjunction with a semi-independent commission, the Nuclear Waste Technical Review Board (NTWRB), which was also established by the 1987 Amendments. In 1997, the NTWRB estimated that construction of the facility should begin around 2000, in order to meet DOE's new goal (after it missed its statutory January 1998 deadline) of accepting SNF and HLW for disposal

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at Yucca Mountain by 2010.

Yet, as of 1995, DOE had essentially done nothing to advance the state of knowledge concerning Yucca Mountain's suitability as a long-term disposal site for HLW; meanwhile, over 30,000 metric tons of spent nuclear fuel lay in temporary wet or dry cask storage at 75 utility-owned commercial reactor sites in 35 states across the country. In November 1998, DOE completed a preliminary "viability assessment," concluding that Yucca Mountain merited continued study as a permanent repository for HLW; the buzzword used by the agency is that "no showstoppers" were identified. The head of DOE's Office of Civilian Radioactive Waste Management testified before Congress in February 1999 that DOE had made "substantial progress during the last six years in fulfilling its responsibilities for permanent disposal of SNF and HLW."

In April 1999, the NWTRB issued a report to DOE and the U.S. Congress that concluded that further scientific and engineering work would be necessary at Yucca Mountain before a proper "technical foundation" exists upon which to base a site evaluation or NRC license application. According to DOE's Office of Civilian Radioactive Waste Management, site characterization at Yucca Mountain would be completed by the end of 2001, after which the NRC license application process (slated to take two full years) would begin. On June 28, 1999, NRC's review of the November 1998 viability assessment yielded several areas for which it believes more information from DOE is needed: repository design, waste package corrosion, quantity and chemistry of water contacting waste packages, transportation of radioactive materials, possible volcanic disruption, and quality assurance of all safety systems.

DOE's Yucca Mountain project manager stated in early August 1999 that DOE will release a two-volume "site recommendation consideration report" in late 2000; during the same week, DOE officials complained to Congress that allocations of money to the agency are too low to support both a 2001 decision on technical feasibility and the 2002 beginning to the NRC license application process.

2. Agency Roles

DOE, NRC, and EPA each have their own separate (and in some cases competing) roles in evaluating whether Yucca Mountain is a suitable permanent repository for storage of HLW. DOE has primary jurisdiction to characterize the site, prepare the necessary environmental impact statements, arrange for transport of the HLW to the site, and operate the repository once HLW

begins to arrive. NRC retains authority over licensing requirements for land disposal of radioactive waste. No person, including a sister agency, may dispose of waste containing SNM, source, or byproduct material at a land disposal facility without an NRC license. EPA, pursuant to NWPA and the Energy Policy Act of 1992, has the authority to set the radiation protection standards at Yucca Mountain, which it must promulgate through public (notice and comment) rulemaking. NRC is authorized to implement the standard that EPA sets.

However, EPA and NRC disagree on what the radiation protection standard should be and how it should be applied. First, EPA has proposed a separate groundwater protection standard, whereas NRC believes that a single "all pathways" standard is sufficient. EPA also has set the radiation exposure standard at 15 millirem (mrem) per year, whereas NRC believes that a standard of 25 mrem per year will adequately protect public health and safety. According to DOE's Draft Environmental Impact Statement (EIS), released on August 13, 1999, the average level of radiation exposure to an average person in the United States is 300 mrem per year, though those in the vicinity of Yucca Mountain (without any HLW entombed therein) would be exposed to 360-390 mrem per year. More recently, DOE, in a Yucca Mountain progress report, noted the following:

For 10,000 years after the repository is closed, people living near Yucca Mountain are expected to receive little or no increase in radiation exposure. The maximum radiation exposure from the repository is expected to occur after about 300,000 years. People living approximately 20 kilometers (12 miles) from Yucca Mountain at that time might receive additional radiation exposures equivalent to present-day background radiation.

No agency has publicly explained how it intends to measure radiation levels of 15-25 mrem per year against background levels of radiation at Yucca Mountain.

IV. Cutting the Red Tape?

A. Legislative Efforts to Expedite Radioactive Waste Disposal

During the recently concluded Congressional session, bills that had been pending in the U.S. Senate and House of Representatives to amend the NWPA (H.R. 45, 106th Cong. (1999); S. 1287, 106th Cong. (1999)), were never brought to the floor of either chamber for a vote prior to Congress' late adjournment (November 19, 1999). The pattern is becoming familiar; last year similar efforts failed, despite passage of companion bills in both chambers, due to the threat of a presidential veto. The prospects for passage of a bill next year are even dim-

mer, given election year politics, and the often poisonous relations between the Clinton Administration and Congress.

This past session's flagship bill (S. 1287) and previous years' legislative efforts have had similar basic goals, though S. 1287 had (see discussion below) been watered down to attempt to pacify DOE. Past legislation has had as its centerpiece provisions that would force DOE to store commercial SNF and HLW in an interim repository and thus fulfill the agency's continuing obligation under the NWPA to take title to and store that waste. Such legislation was designed to hedge against potential delays in the opening of Yucca Mountain by mandating construction of such an interim repository within the next 5 years. The most recent bill and its predecessors also sought to avoid the increased costs, to electricity consumers and the nuclear industry, of continuing to store SNF and HLW at commercial reactor sites, and accordingly would force DOE to pay for utilities' costs of storing HLW at their reactor sites. As a quid pro quo, utilities that consented to DOE taking title to their waste would have to settle their current lawsuits against DOE for violating its NWPA obligations (see discussion below). Finally, S. 1287 transfers radiation standard-setting authority from EPA to NRC, a measure that has proved to be extremely politically contentious.

B. Agency Responses to Proposed Legislation

DOE's basic argument against siting an interim repository is that such action would jeopardize the timely opening of Yucca Mountain by diverting resources into planning for the mandated interim repository. DOE of course will not (and legally cannot) guarantee that Yucca Mountain will open as a permanent repository. Yucca Mountain still must be deemed suitable as a permanent geological repository, and then must be licensed by NRC, before it accepts any HLW.

NRC, on the other hand, endorsed the House and Senate Bills' provisions for siting an interim repository, because its centralization of HLW waste would allow federal agencies to exercise more effective and efficient oversight than they can currently at 75 separate reactor sites. NRC also endorsed the original House Bill's establishment of a 100 mrem per year standard for dosage to the average member of the general population in Yucca Mountain's vicinity as "consistent with the protection of public health and safety," though NRC continues to favor a 25 mrem dosage standard for members of the "critical group."

EPA has argued that its WIPP (and generic) radiation protection standard of 15 mrem per year, based on the

"reasonably maximally exposed individual" should apply as well to Yucca Mountain, though it recognizes that nobody lives within 12 miles of the facility. EPA also strongly objected to provisions of the House Bill that preempted, for purposes of DOE activities at Yucca Mountain, all federal and state laws inconsistent with or duplicative of the AEA or NWPA. EPA wants the maximum number of state environmental requirements to apply, ostensibly in order to protect public health and safety. The decade-long battle to open WIPP provides evidence of the practical effects of ensuring that states have a role in determining whether a federal radioactive waste repository opens.

In response to EPA and DOE concerns, and the threat of a presidential veto, the Senate in June 1999 revised and renumbered its Bill (as S. 1287) to delete the requirement for an interim repository, and provide that DOE would accept SNF at Yucca Mountain as soon as practicable after NRC licensed the facility, scheduled to occur by the end of 2006. Senate Bill 1287 would also require dismissal of utilities lawsuits against DOE, earmark money in the Nuclear Waste Fund for Yucca Mountain and transportation costs only. As noted above, it retains the provision that NRC would set the radiation protection standard, and remove EPA from that role.

C. S. 1287

Though the Clinton Administration continues to object to S. 1287's replacement of EPA with NRC as the standard-setting agency, the current version of S. 1287 has been crafted specifically to avoid a presidential veto. With respect to Yucca Mountain, S. 1287 provides that DOE must make its recommendation to the President concerning the suitability of the site by December 2001. The President would then have three months in which to make a decision (as required by the NWPA) on whether to continue the construction and licensing of Yucca Mountain, or cease developing it as a repository. NRC would be required to issue (or not issue) a construction authorization for Yucca Mountain by 2007.

To address the current problem of SNF storage at commercial reactor sites, and DOE's breach of both the NWPA and its waste storage contracts with utilities, S. 1287 would authorize (not require) DOE to (1) take title to SNF at the reactor sites; (2) designate such SNF as "priority" for emplacement within Yucca Mountain; and/or (3) transport the SNF to a private, NRC-licensed facility for interim storage. Utilities that consent to DOE taking title to their SNF would forfeit the rights to sue DOE that exist under their existing waste storage contracts. DOE could compensate the utilities for costs associated with

continued on next page

on-site reactor storage, and/or provide storage casks for the utilities at those sites, but legal settlements with individual utilities would be subject to negotiation and vary accordingly. Note that nothing in S. 1287 would require DOE to move SNF to a permanent repository, nor would it sanction the agency if it failed to do so.

To date, DOE has not taken title to or accepted any HLW from commercial utilities in compliance with the NWPA contracts, and continues to maintain that at the earliest, it can fulfill such obligations 12 years late, in 2010, if Yucca Mountain opens on time.

D. Federal Court Actions Against DOE

To an extent, the proposed legislative "solution" offered by S. 1287 can be better analyzed in the context of ongoing litigation against DOE in the federal courts, based upon its failure to comply with the NWPA and its utility waste storage contracts. DOE's approaches to this litigation undermine the credibility of its public position that it is committed to fulfilling those obligations in any way, but least of all by operating a permanent repository.

In November 1997, the U.S. Court of Appeals for the D.C. Circuit decided *Northern States Power Co. v. DOE*, and held that DOE's statutory obligations under the NWPA, and the contracts it entered into pursuant to the statute, "leave no room for DOE to argue that it does not have a clear duty to take the SNF from the owners and generators by the deadline [January 31, 1998] imposed by Congress." However, the court did not rule that the contracts compelled specific performance of the contracts, meaning that DOE was not forced to take title of the waste effective January 31, 1998; instead, the court directed the utilities to pursue damage remedies under the contracts.

In March 1998, three utilities with decommissioned nuclear plants filed suit in the U.S. Court of Federal Claims, seeking millions of dollars in damages due to DOE's refusal to accept their HLW (*Yankee Atomic case*). In June 1998, after the Senate failed to pass the 1998 version of the interim waste storage bill, five other utilities that own operating nuclear plants filed suit against DOE in the U.S. Court of Federal Claims, seeking billions of dollars in damages due to DOE's breach of the NWPA contracts (*Northern States Power case*).

In October 1998, the court decided in the *Yankee Atomic case* that DOE was directly liable for breach of contract damages due to its failure to accept waste under the NWPA contracts by January 1998. In April 1999, the same court – different judge – decided the *Northern States Power case* in favor of DOE. *Northern States Power* held that the utilities had to exhaust their

administrative remedies through DOE's contract appeal process before suing the agency for damages in federal court. On August 4, 1999, the U.S. Court of Appeals for the Federal Circuit granted the government's petition for review of these two conflicting decisions of the U.S. Court of Federal Claims. DOE's position basically boils down to this: DOE owes the utilities no damages for our failure to comply with the law and our contracts, and the utilities must ask the agency first for any damages that DOE might owe. Meanwhile, DOE believes it has no existing obligation to store utilities radioactive waste, despite the fact that utilities have paid over \$16 billion into the Nuclear Waste Fund for just that purpose.

E. Disposal's Opponents and Their Goals

The current Administration and the relevant regulatory agencies, with the occasional exception of NRC, appear – through delay, inaction, and (in the case of the DOE litigation and EPA's proposed radiation protection standards) active obstruction – to be either actively or passively supporting the goal of those elements in this country that are dedicated to preventing permanent disposal of radioactive waste.

In February 1999 testimony before Congress, a representative of Public Citizen, an anti-nuclear group, clarified that any increase in radiation at Yucca Mountain, no matter how small, is intolerable. However, what is "intolerable" for Public Citizen may be sound policy for the nation as a whole. At the same February 1999 House Commerce Subcommittee hearing, the Commissioner of the Minnesota Public Utilities Commission challenged EPA to justify its opposition to an interim repository, pointing out that the alternative to temporary storage is not no storage. Rather, the lack of a repository effectively strands HLW at 151 sites in 40 states, mostly near major waterways and large population centers. Neither Public Citizen nor its allies at EPA have explained why increased risks of radiation exposure at various reactor sites is tolerable, while increases in radiation levels at the remote Nevada Test Site or Yucca Mountain are "intolerable."

In addition, the national media can always be expected to offer groundlessly biased reporting and programming concerning the potential dangers to the public of nuclear waste. In May 1999, NBC ran a television miniseries named "Atomic Train," which portrayed the derailment of a train carrying nuclear waste and nuclear weapons as a horrible disaster. DOE was forced to issue a press release and post rebuttals on its internet site, which together pointed out that (among other things) nuclear weapons are not transported on trains, and that

HLW has been transported by road and rail without any injuries or environmental consequences since 1965. Yet DOE's continuing political jousting with Congress and utilities concerning interim repositories, radiation protection standards, and its own legal obligations delay or obstruct the safest permanent storage options for HLW, and effectively keep HLW stored where its mishandling or mismanagement could do the most harm to the most people.

V. Conclusion

All risk is relative. The alternative to radioactive waste disposal in permanent underground repositories is not, as opponents of the various initiatives this paper has discussed, no disposal at all. The waste that exists must be disposed of, regardless of whether the efforts of groups like Public Citizen, with aid and comfort from EPA and some in DOE, result in the extinction of the nuclear industry in this country. Most likely, radioactive waste will continue to be generated by commercial and government actors for some time to come. The point of this paper is that the risks of continuing to obstruct and delay disposal of that waste far outweigh the measurable, scientific risks of placing radioactive waste in underground repositories. The real problem of radioactive waste disposal is not the waste itself, but the lack of political will to effect disposal, and the related failure of science and reason to override bureaucratic inertia and public ignorance.

NOTE: The views expressed in this paper are the author's alone, and do not reflect any public or private positions or opinions of Sutherland Asbill & Brennan LLP.

APPENDIX A:

List of Relevant Federal Statutes and Regulations

- AEA (Atomic Energy Act), 42 U.S.C. 2011-2297 (1994)
- CAA ([Federal] Clean Air Act), 42 U.S.C. 7400 et seq. (1994)
- EPCRA (Emergency Planning and Community Right-to-know Act), 42 U.S.C. 11001 et seq. (1994)
- ERA (Energy Reorganization Act of 1974), 42 U.S.C. 5841-5847 (1994)
- HMTA (Hazardous Materials Transportation Act), 49 U.S.C. 5100 et seq. (1994)

- NEPA (National Environmental Policy Act of 1969), 42 U.S.C. 4231 et seq. (1994)
- NWPA (Nuclear Waste Policy Act of 1982), 42 U.S.C. 10101-10270 (1994)
- OSHA (Occupational Safety and Health Act of 1970), 29 U.S.C. 653 (1994)
- RCRA (Resource Conservation and Recovery Act of 1976), 42 U.S.C. 6901 et seq. (1994)
- UMTRCA (Uranium Mill Tailings Radiation Control Act of 1978), 42 U.S.C. 7901 et seq. (1994)
- USEC Privatization Act, 42 U.S.C. 2297h (1996)

Federal Regulations

- NRC (Nuclear Regulatory Commission)
- 10 CFR part 20 (standards for protection against radiation)
- 10 CFR part 30 (licensing of byproduct material)
- 10 CFR part 40 (licensing of source material)
- 10 CFR part 50 (quality assurance criteria for nuclear materials licensees)
- 10 CFR part 51 (Environmental Impact Statements applicable to NRC licensees)
- 10 CFR part 61 (licensing requirements for land disposal of radioactive waste)
- 10 CFR part 70 (licensing of SNM)
- 10 CFR part 71 (transportation of radioactive materials)
- 10 CFR part 140 (liability insurance regulations under the Price Anderson Act)
- 10 CFR part 150 (Agreement State licensing)
- EPA (Environmental Protection Agency)
- 40 CFR part 122 (water quality effluent limitations)
- 40 CFR part 190 (radiation protection)
- 40 CFR part 191 (management and disposal of TRU, SNF, and HLW generally)
- 40 CFR part 192 (disposal and radiation protection concerning uranium mill tailings)
- 40 CFR part 262 (hazardous waste storage)
- 40 CFR part 263 (transportation of hazardous materials)
- 40 CFR parts 264, 265, & 270 (permitting requirements for TSDs under RCRA)
- 40 CFR part 268 (land disposal restrictions)
- 40 CFR part 355 (regulations implementing EPCRA)
- DOT (Department of Transportation)
- 49 CFR parts 171-179 (transportation of hazardous and radioactive materials)

APPENDIX B:

Department of Energy Timeline for Yucca Mountain



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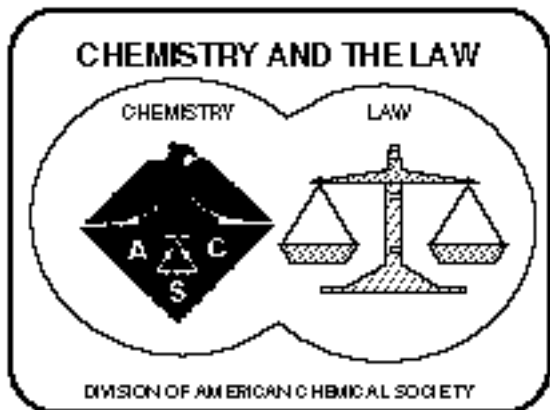
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INDEX



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Chairman's Report	1
Program Chair's Report	2
Minutes, Division of CHAL	4
Treasurer's Report	5
Program for San Francisco Meeting	6
The Harry and Carol Mosher Award	8
Past Recipients of the Mosher Award	8
Election	8
A Huge Success—Inventors Make a Difference Day .	9
Abstracts for CHAL	10
Membership in CHAL.....	14
12 Benefits of ACS Division Membership	17
Mission/Goals of CHAL	17
CHAL Areas of Chemistry and Related Sciences...	17
Application for Membership	18
Conducting Patent Prosecution.....	19
Radioactive Red Tape	25
Officer and Board of Directors	35

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