

Annual Report

2012

Year in Review





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Charter

The National Council on Radiation Protection and Measurements is a nonprofit corporation chartered by Congress in 1964 to:

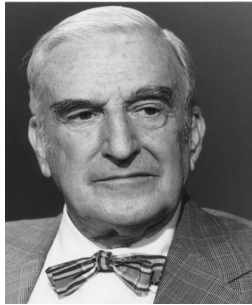
1. Collect, analyze, develop and disseminate in the public interest information and recommendations about (a) protection against radiation and (b) radiation measurements, quantities and units, particularly those concerned with radiation protection.
2. Provide a means by which organizations concerned with the scientific and related aspects of radiation protection and of radiation quantities, units and measurements may cooperate for effective utilization of their combined resources, and to stimulate the work of such organizations.
3. Develop basic concepts about radiation quantities, units and measurements, about the application of these concepts, and about radiation protection.
4. Cooperate with the International Commission on Radiological Protection, the International Commission on Radiation Units and Measurements, and other national and international organizations, governmental and private, concerned with radiation quantities, units and measurements and with radiation protection.

The Council is the successor to the unincorporated association of scientists known as the National Committee on Radiation Protection and Measurements and was formed to carry on the work begun by the Committee in 1929.

Participants in the Council's work are the Council members and members of scientific, advisory and administrative committees. Council members are selected on the basis of their scientific expertise and serve as individuals, not as representatives of any particular organization. The scientific committees, composed of experts having detailed knowledge and competence in the particular area of the committees' interests, draft reports, commentaries and statements. These are then submitted to the full membership of the Council for careful review and approval before being published.

Mission

To support radiation protection by providing independent scientific analysis, information and recommendations that represent the consensus of leading scientists.



Lauriston S. Taylor
1929–1977



Warren K. Sinclair
1977–1991



Charles B. Meinhold
1991–2002



Thomas S. Tenforde
2002–2012



John D. Boice, Jr.
2012–



President's Message

These are exciting times for the National Council on Radiation Protection and Measurements (NCRP) and I am happy to be at the helm as we embark on new opportunities in radiation protection for the 21st century. The March 11, 2011 Fukushima nuclear reactor accident brought into vivid focus the need for updated radiation guidance and improved risk communication. The 2007 International Commission on Radiological Protection recommendations have generated interest around the world and they coincide with U.S. initiatives to update and revise our protection regulations. The remarkable increase in public exposure to medical radiological imaging (over 85 million computed tomography exams per year!) accentuates the need for continued protection guidance in this important medical advance in the beneficial uses of ionizing radiation.

The vision for NCRP is illuminated in the 2013 Annual Meeting entitled, "Population Dose and Impact on Exposed Populations," which is dedicated to the people of Fukushima who suffered after the earthquake, tsunami, and reactor accident. Our 2014 Annual Meeting will showcase NCRP and the past 50 y of accomplishments since being chartered by Congress in 1964, and our plans, goals and dreams for future. Our financial difficulties have turned around with interagency support for research efforts to study one million U.S. radiation workers and veterans. We prepare a column on NCRP activities ("The Boice Report") each month for the *Health Physics News* covering recent activities in radiation protection, measurements, science, and health. NCRP activities were presented before the National Academies of Science, the Health Physics Society, the Interagency Steering Committee on Radiation Standards, the Veterans Advisory Board for Dose Reconstruction, the Applied Physics Laboratory, the National Cancer Institute, the U.S. Department of Energy, U.S. Nuclear Regulatory Commission, the Food and Drug Administration, and at an international symposium in Fukushima City.

The 2012 calendar year was productive with the publication of NCRP commentaries, reports, proceedings, and scientific articles. These include:

- NCRP Report No. 170, *Second Primary Cancers and Cardiovascular Disease After Radiation Therapy* (Chaired by Lois B. Travis).
- NCRP Report No. 171, *Uncertainties in the Estimation of Radiation Risks and Probability of Disease Causation* (Chaired by R. Julian Preston).
- NCRP Report No. 172, *Reference Levels and Achievable Doses in Medical and Dental Imaging: Recommendations for the United States* (Chaired by James A. Brink).
- NCRP Report No. 173, *Investigation of Radiological Incidents* (Chaired by David S. Myers).
- The NCRP 47th Annual Meeting on "Scientific and Policy Challenges of Particle Radiations in Medical Therapy and Space Missions" was published in the *Health Physics* (Volume 103, Issue 5). Commendably chaired by Kathryn D. Held, the publication showcases the current scientific

knowledge regarding charged particles, enhanced cross-fertilization between the oncology and space scientific communities, and identified common needs and challenges to both communities and suggestions to address them. An informative overview with photos is found in the June 2011 issue of Health Physics News.

- The 2011 Proceedings included the 35th Lauriston S. Taylor Lecture on Radiation Protection and Measurements by Eleanor A. Blakely on “What Makes Particle Radiation so Effective?” [Health Phys. **103**(5), 508–528, 2012] and the 8th Annual Warren K. Sinclair Keynote Address by Marco Durante on “Heavy Ions in Therapy and Space: Benefits and Risks” [Health Phys. **103**(5), 532–539, 2012].
- A commentary on NCRP Report No. 170 was published in the Journal of the National Cancer Institute by the Scientific Committee members. Travis, L.B., Ng, A.K., Allan, J.M., Pui, C.H., Kennedy, A.R., Xu, X.G., Purdy, J.A., Applegate, K., Yahalom, J., Constine, L.S., Gilbert, E.S. and Boice, J.D., Jr. (2012). “Commentary: Second cancers and cardiovascular disease following radiotherapy,” J. Natl. Cancer Inst. **104**, 1–14. Publishing a summary of completed NCRP reports and commentaries in the broader scientific literature is now a recommended goal.

NCRP is continuing to move forward to address the evolving and challenging, issues of radiation protection facing our nation. Anticipated publications in 2013 include:

- NCRP Report No. 174 on *Preconception and Prenatal Radiation Exposure: Health Effects and Protective Guidance* (Chaired by Robert L. Brent).
- NCRP Report No. 175 on *Decision Making for Late-Phase Recovery from Nuclear or Radiological Incidents* (Chaired by S.Y. Chen).
- The Proceedings of the 48th Annual Meeting in 2012 on “Emerging Issues in Radiation Protection in Medicine, Emergency Response, and then Nuclear Fuel Cycle” admirably chaired by Richard E. Toohey will be published in the Health Physics (see the informative summary appearing in the April 2012 issue of Health Physics News).
- The Proceedings of the 49th Annual Meeting Proceedings in 2013 on “Population Dose and Impact on Exposed Populations” (Chairs S.Y. Chen and Bruce A. Napier) is planned to be published in the same year (2013) as the meeting is held. This is a new attempt to make our publications more timely and accessible.
- Guidance on computed tomography (CT) use in emergency medicine will be provided in a journal publication entitled “Applications of Justification and Optimization in Medical Imaging: Examples of Clinical Guidance for Computed Tomography Use in Emergency Medicine.”

Active committees are preparing the following reports or commentaries:

- NCRP commentary on Integrating Basic Science with Epidemiological Studies on Low-Dose Radiation Effects (Chaired by Sally A. Amundson and Jonine L. Bernstein);
- NCRP report on Biological Effectiveness of Low Energy Radiations (Chaired by Steven L. Simon);

- NCRP peer-review report on Operation Tomodachi Radiation Dose Assessment Peer Review (Chaired by John E. Till);
- NCRP report on U.S. Radiation Workers and Nuclear Weapons Test Participants - Radiation Dose Assessment (Chaired by Andre Bouville); and
- NCRP commentary on Radiation Safety Aspects of Nanotechnology (Chaired by Mark D. Hoover and David S. Myers).

Possible committee and NCRP activities being considered in 2013 and beyond include:

- workshop on training, engaging and retaining radiation scientists to address our national needs;
- approaches to improve radiation risk communication, perception and outreach.
- environmental radiation such as tritium, ^{14}C and ^{226}Ra from man-made and natural sources and technically enhanced NORM (*e.g.*, fracking);
- radiation exposures in space and the potential for central nervous system effects;
- updating NCRP Report No. 116 (1993) on basic recommendations for radiation protection in the United States;
- issues surrounding mobile phone, radiofrequency and other nonionizing radiation uses; and
- expanding our efforts in medicine, such as quality management in radiological medical imaging and electronically tracking patient exposures.

Finally we will be considering these general NCRP activities in 2013:

- partnering with the Radiation Research Society to provide travel awards for young scientists to attend the annual meeting;
- assigning each Council member to a Program Area Committee and having more frequent PAC meetings;
- developing approaches to broaden our financial integrity;
- becoming more attuned to the modern age with Twitter, Facebook, webcasts, dynamic electronic publishing, and website development; and
- participating in meetings or conferences of the International Commission on Radiological Protection, the United Nations Scientific Committee on the Effects of Atomic Radiation, the Radiation Research Society, the Health Physics Society, the Veterans Advisory Board for Dose Reconstruction, the NRC Regulatory Information Conference, and seminar series sponsored by the U.S. Food and Drug Administration, Memorial Sloan-Kettering Cancer Center, Harvard University, Johns Hopkins Applied Physics Laboratory, The American Board of Radiology Foundation national summit to address the safe and appropriate use of medical imaging, and other venues to increase NCRP visibility and impact.

Our reports, activities, members, programs and more can be found on the NCRP website <http://www.ncrponline.org>. The NCRP program of activities is made possible by the partnership and financial support from many governmental agencies, including the U.S. Department of Energy, U.S. Nuclear Regulatory Commission, Centers for Disease Control and Prevention, U.S. Environmental Protection



Agency, U.S. Department of Homeland Security, National Cancer Institute, National Aeronautics and Space Administration, and U.S. Department of Defense. Gifts from our corporate sponsors and many collaborating organizations remain critical to our continued success and are gratefully acknowledged. Finally, the NCRP remains a dynamic and influential organization only because of the generous contributions of time and knowledge made by Council members, the Senior Vice President, Scientific Vice Presidents, committee members, Board of Directors, consultants, and the NCRP staff!

These are the best of times and opportunities abound. We're only limited by our imagination. Please help NCRP as we forge forward for a fabulous future!

A handwritten signature in blue ink that reads "John".

John D. Boice, Jr.
President

Membership

There are 100 Council Members serving six-year terms. There are normally 15 to 19 vacancies each year. Election of Council Members is based on nominations made by committee chairmen, current and Distinguished Emeritus Council members, and the Nominating Committee. New members are nominated and elected based primarily on the scientific contributions they have made to the work of the Council and/or recognized interest and scientific or professional competence in some aspect of radiation protection and measurements. In addition, the Board of Directors recommends that candidates with specific areas of expertise be sought based on the needs of the Council. The Council is comprised of specialists in biophysics, dentistry, dosimetry, environmental transport, epidemiology, genetics, health physics, medical physics, molecular and cellular biology, nuclear energy, nuclear medicine, pathology, physics, public health, public policy, radiation measurements, radiation therapy, radiobiology, radiology, risk analysis and communication, statistics, and waste management. In 2012 there were 16 vacancies plus Thomas S. Tenforde's retirement; eight new members were elected, eight members were re-elected, and John D. Boice, Jr. was elected President. The eight new members were:

A. Iulian Apostoaei	Andrew J. Einstein
Edouard I. Azzam	Harald Paganetti
Jonine L. Bernstein	Steven G. Sutlief
Lawrence T. Dauer	Jacqueline P. Williams

2012 Council Membership

E. Stephen Amis, Jr.	Montefiore Medical Center	2007–2013
Sally A. Amundson	Columbia University Medical Center	2010–2016
A. Iulian Apostoaei	SENES Oak Ridge, Inc.	2012–2018
Kimberly E. Applegate	Emory University School of Medicine	2007–2013
Edouard I. Azzam	New Jersey Medical School	2012–2018
Stephen Balter	Columbia-Presbyterian Medical Center	2007–2013
Steven M. Becker	University of Alabama at Birmingham	2011–2017
Joel S. Bedford	Colorado State University	2010–2016
Jonine L. Bernstein	Memorial Sloan-Kettering Cancer Center	2012–2018
Mythreyi Bhargavan	American College of Radiology	2009–2015

Eleanor A. Blakely	Lawrence Berkeley National Laboratory	2012–2018
William F. Blakely	Armed Forces Radiobiology Research Institute	2009–2015
John D. Boice, Jr.	National Council on Radiation Protection and Measurements	2012–2018
Wesley E. Bolch	University of Florida	2011–2017
Thomas B. Borak	Colorado State University	2007–2013
Leslie A. Braby	Texas A&M University	2007–2013
James A. Brink	Yale University School of Medicine	2011–2017
Brooke R. Buddemeier	Lawrence Livermore National Laboratory	2009–2015
Jerrold T. Bushberg	University of California, Davis	2008–2014
John F. Cardella	BayState Health System	2008–2014
Charles E. Chambers	Penn State Hershey Medical Center	2007–2013
Polly Y. Chang	SRI International	2011–2017
S.Y. Chen	Argonne National Laboratory	2011–2017
Lawrence L. Chi	General Electric Hitachi Nuclear Energy Americas	2010–2016
Mary E. Clark	U.S. Environmental Protection Agency	2008–2014
Michael L. Corradini	University of Wisconsin, Madison	2010–2016
Allen G. Croff	Retired	2010–2016
Lawrence T. Dauer	Memorial Sloan-Kettering Cancer Center	2012–2018
Paul M. DeLuca	University of Wisconsin Medical School	2008–2014
Christine A. Donahue	Energy Solutions	2009–2015
Andrew J. Einstein	Columbia University	2012–2018
Alan J. Fischman	Massachusetts General Hospital	2009–2015
Patricia A. Fleming	Saint Mary’s College, Notre Dame	2009–2015
Norman C. Fost	University of Wisconsin – Madison	2011–2017
John R. Frazier	Independent Consultant	2008–2014
Donald P. Frush	Duke University Medical Center	2010–2016
Ronald E. Goans	MJW Corporation	2007–2013
Milton J. Guiberteau	Greater Houston Radiology Associates	2010–2016
Raymond A. Guilmette	Lovelace Respiratory Research Institute	2009–2015
Roger W. Harms	Mayo Clinic	2009–2015
Martin Hauer-Jensen	University of Arkansas for Medical Sciences	2010–2016
Kathryn D. Held	Massachusetts General Hospital	2012–2018
Roger W. Howell	University of Medicine and Dentistry of New Jersey	2009–2015
Hank C. Jenkins-Smith	University of Oklahoma	2010–2016
Cynthia G. Jones	U.S. Nuclear Regulatory Commission	2011–2017
Timothy J. Jorgensen	Georgetown University Medical Center	2007–2013
Ann R. Kennedy	University of Pennsylvania School of Medicine	2007–2013
William E. Kennedy, Jr.	Dade Moeller & Associates, Inc.	2010–2016
David C. Kocher	SENES Oak Ridge, Inc.	2011–2017

Amy Kronenberg	Lawrence Berkeley National Laboratory	2011–2017
Susan M. Langhorst	Washington University School of Medicine	2011–2017
John J. Lanza	Florida Department of Health	2010–2016
Edwin M. Leidholdt, Jr.	U.S. Department of Veterans Affairs	2012–2018
Martha S. Linet	National Cancer Institute	2010–2016
Jonathan M. Links	Johns Hopkins University Bloomberg School of Public Health	2011–2017
Jill A. Lipoti	New Jersey Department of Environmental Protection	2007–2013
Paul A. Locke	Johns Hopkins University	2010–2016
Debra McBaugh	Washington State Department of Health	2012–2018
Ruth E. McBurney	Conference of Radiation Control Program Directors, Inc.	2007–2013
Charles W. Miller	Centers for Disease Control and Prevention	2012–2018
Donald L. Miller	Food and Drug Administration	2012–2018
William H. Miller	University of Missouri, Columbia	2011–2017
William F. Morgan	Pacific Northwest National Laboratory	2008–2014
Stephen V. Musolino	Brookhaven National Laboratory	2008–2014
David S. Myers	Retired	2007–2013
Bruce A. Napier	Pacific Northwest National Laboratory	2008–2014
Gregory A. Nelson	Loma Linda University Medical Center	2012–2018
Andrea K. Ng	Harvard Medical School, Brigham & Women's Hospital	2009–2015
Harald Paganetti	Massachusetts General Hospital	2012–2018
Carl J. Paperiello	Independent Consultant	2008–2014
David J. Pawel	U.S. Environmental Protection Agency	2011–2017
Terry C. Pellmar	Armed Forces Radiobiology Research Institute	2008–2014
R. Julian Preston	U.S. Environmental Protection Agency	2009–2015
Kathryn H. Pryor	Pacific Northwest National Laboratory	2010–2016
Sara Rockwell	Yale School of Medicine	2011–2017
Adela Salame-Alfie	New York State Department of Health	2009–2015
Beth A. Schueler	Mayo Clinic	2009–2015
J. Anthony Seibert	University of California Davis Medical Center	2008–2014
Stephen M. Seltzer	National Institute of Standards and Technology	2010–2016
Edward A. Sickles	University of California Medical Center	2007–2013
Steven L. Simon	National Cancer Institute	2010–2016
Christopher G. Soares	National Institute of Standards and Technology	2011–2017
Michael G. Stabin	Vanderbilt University	2010–2016
Daniel J. Strom	Pacific Northwest National Laboratory	2008–2014
Steven G. Sutlief	VA Puget Sound Health Care System	2012–2018
Tammy P. Taylor	Los Alamos National Laboratory	2010–2016
Julie K. Timins	Diagnostic Radiology	2010–2016
Richard E. Toohey	Oak Ridge Associated Universities	2012–2018



Elizabeth L. Travis	MD Anderson Cancer Center	2009–2015
Louis K. Wagner	University of Texas-Houston Medical School	2010–2016
Michael M. Weil	Colorado State University	2011–2017
Chris G. Whipple	Environ	2007–2013
Robert C. Whitcomb, Jr.	Centers for Disease Control and Prevention	2008–2014
Stuart C. White	University of California, Los Angeles	2010–2016
Jacqueline P. Williams	University of Rochester Medical College	2012–2018
Gayle E. Woloschak	Northwestern University	2009–2015
Shiao Y. Woo	University of Louisville	2011–2017
X. George Xu	Rensselaer Polytechnic Institute	2008–2014
R. Craig Yoder	Landauer, Inc.	2008–2014
Gary H. Zeman	Argonne National Laboratory	2011–2017

Board of Directors

John D. Boice, Jr.*	Kathryn D. Held	David S. Myers
James A. Brink	Paul A. Locke	Bruce A. Napier
Jerrold T. Bushberg	Debra McBaugh	Julie E.K. Timins
Paul M. DeLuca	William F. Morgan	Richard E. Toohey
Raymond A. Guilmette		

*Newly elected to the Board of Directors on March 13, 2012.

Officers

President	John D. Boice, Jr.
Senior Vice President	Jerrold T. Bushberg
Secretary and Treasurer	David A. Schauer [March 13 – June 30, 2012] James R. Cassata [July 1, 2012 –]

Distinguished Emeritus Members

Charles B. Meinhold, *President Emeritus*
Warren K. Sinclair, *President Emeritus*
Thomas S. Tenforde, *President Emeritus**
S. James Adelstein, *Honorary Vice President*
Kenneth R. Kase, *Honorary Vice President*
William M. Beckner, *Executive Director Emeritus*
W. Roger Ney, *Executive Director Emeritus*
David A. Schauer, *Executive Director Emeritus** [July 1, 2012]

Seymour Abrahamson
John F. Ahearn
Lynn R. Anspaugh
Benjamin R. Archer*
John A. Auxier
William J. Bair
Harold L. Beck
Bruce B. Boecker
Andre Bouville
Robert L. Brent
Antone L. Brooks
Randall S. Caswell
J. Donald Cossairt
James F. Crow†
Gerald D. Dodd
Sarah S. Donaldson
William P. Dornsife
Keith F. Eckerman
Thomas S. Ely
Stephen A. Feig*

R.J. Michael Fry
Thomas F. Gesell
Ethel S. Gilbert
Joel E. Gray
Robert O. Gorson
Arthur W. Guy
Eric J. Hall
Naomi H. Harley
William R. Hendee
F. Owen Hoffman
Donald G. Jacobs†
Bernd Kahn
Ritsuko Komaki*
Charles E. Land
John B. Little
Roger O. McClellan
Barbara J. McNeil
Fred A. Mettler, Jr.
Kenneth L. Miller

A. Alan Moghissi
John W. Poston, Sr.
Andrew K. Poznanski
Jerome S. Puskin*
Genevieve S. Roessler
Marvin Rosenstein
Lawrence N. Rothenberg
Henry D. Royal
Michael T. Ryan
William J. Schull
Roy E. Shore
Paul Slovic
John E. Till
Lawrence W. Townsend
Robert L. Ullrich
Arthur C. Upton
Richard J. Vetter
F. Ward Whicker
Susan D. Wiltshire
Marvin C. Ziskin

†Deceased during 2012.

*Elected to Distinguished Emeritus Membership March 13, 2012.

Consociate Members

Full members of the Council become Consociate Members at the end of their terms provided they are not re-elected to another term on the Council or are not appointed to Distinguished Emeritus membership.

Peter R. Almond	Kenneth R. Foster	Peter C. Nowell
Larry E. Anderson	Everett G. Fuller	Eugene F. Oakberg
Mary M. Austin-Seymour	Arthur H. Gladstein	Gilbert S. Omenn
Charles M. Barnes	Barry B. Goldberg	Frank L. Parker
John W. Baum	Robert L. Goldberg*	Lester J. Peters
Michael A. Bender	Marvin Goldman	Ronald C. Petersen
Merrill A. Bender	Douglas Grahn	Adam Recht
B. Gordon Blaylock	Andrew J. Grosovsky	William C. Reinig
Frederick J. Bonte	Ellis M. Hall	Allan C.B. Richardson
Harold S. Boyne	Robert J. Hasterlik	Robert Robbins
John W. Brand	John M. Heslep	Lester Rogers
David J. Brenner	John W. Hirshfeld, Jr.	Robert E. Rowland
A. Bertrand Brill	David G. Hoel	Jonathan M. Samet
Thomas F. Budinger	George B. Hutchison	Keith J. Schiager
Patricia A. Buffler	Marylou Ingram	Robert A. Schlenker
William W. Burr, Jr.	A. Everette James, Jr.	Thomas M. Seed
Stephanie K. Carlson	John R. Johnson	Raymond Seltser
Paul L. Carson	James G. Kereiakes	Ferdinand J. Shore
Donald K. Chadwick	H. William Koch	Kenneth W. Skrable
Chung-Kwang Chou	Harold L. Kundel	David H. Sliney
Kelly L. Classic	Richard W. Leggett	James H. Sterner
Stephen F. Cleary	George R. Leopold	Louise C. Strong
James E. Cleaver	Howard L. Liber	Herman D. Suit
Fred T. Cross	James C. Lin	Richard A. Tell
Francis A. Cucinotta	Thomas A. Lincoln	Joop W. Thiessen
Stanley B. Curtis	David I. Livermore	Ralph H. Thomas
Carter Denniston	Ray D. Lloyd	Lois B. Travis
John F. Dicello	Richard A. Luben	Fong Y. Tsai*
Richard L. Doan	Jay H. Lubin*	John C. Villforth
Carl H. Durney	Arthur C. Lucas	Niel Wald
David A. Eastmond	Harry R. Maxon	Daniel E. Wartenberg
Marc Edwards	C. Douglas Maynard	David A. Weber
Charles M. Eisenhauer	Claire M. Mays	J. Frank Wilson
Joe A. Elder	Cynthia H. McCollough	H. Rodney Withers
Edward R. Epp	Mortimer L. Mendelsohn	Andrew J. Wyrobek*
Donald C. Fleckenstein	Jack Miller	Marco A. Zaider
H. Keith Florig	William A. Mills	Pat B. Zanzonico
	John E. Moulder	

*Elected to Consociate Membership March 13, 2012.

Administrative Committees

Budget & Finance Committee (appointed by the Board of Directors, March 13, 2012)

Richard E. Toohey, *Chairman*

Jerrold T. Bushberg
Ruth E. McBurney

Terry C. Pellmar
R. Craig Yoder

Nominating Committee (appointed by the Board of Directors, March 13, 2012)

Amy Kronenberg, *Chairman*

Christine A. Donahue
Donald P. Frush

Paul A. Locke
Chris G. Whipple

Program Committee for 2013 Annual Meeting

(appointed by the Board of Directors, March 13, 2012)

S. Y. Chen, *Co-Chair*

Bruce A. Napier, *Co-Chair*

Christopher H. Clement
Barrett Fountos
Kathryn D. Held
Paul A. Locke
David J. Pawel

Kazuo Sakai
Steven L. Simon
John E. Till
Shunichi Yamashita

Scientific and Administrative Staff

David A. Schauer	Executive Director [March 13 – June 30, 2012]
James R. Cassata	Executive Director [July 1, 2012 –]
Laura J. Atwell	Office Manager, ICRU Assistant Executive Secretary
R. Thomas Bell	Technical Staff Consultant
James F. Berg	Accounting Consultant
Bruce B. Boecker	Technical Staff Consultant
Charles C. Church	Technical Staff Consultant
Sarah S. Cohen	Technical Staff Consultant
Brian Dodd	Technical Staff Consultant
John R. Frazier	Technical Staff Consultant
Steven R. Frey	Technical Staff Consultant
Joel E. Gray	Technical Staff Consultant
Michael P. Grissom	Technical Staff Consultant
Kenneth L. Groves	Technical Staff Consultant
Morton W. Miller	Technical Staff Consultant
Cindy L. O'Brien	Managing Editor
Terry C. Pellmar	Technical Staff Consultant
Harold T. Peterson, Jr.	Technical Staff Consultant
R. Julian Preston	Technical Staff Consultant
Marvin Rosenstein	Technical Staff Consultant
Richard E. Toohey	Technical Staff Consultant
E. Ivan White	Technical Staff Consultant
Myrna A. Young	Financial Records Manager

Program Area Committees and Advisory Panels

The program area and advisory committees advise the NCRP President and Board of Directors on issues specific to their expertise. They have responsibility for evaluating the need for new NCRP activities related to the philosophy and the basic principles and requirements in their subject areas.

The work of the Council is supported by six program area committees and two advisory panels. They are:

Program Area Committees

Basic Criteria, Epidemiology, Radiobiology, and Risk	Kathryn D. Held
Operational Radiation Safety	David S. Myers
Nuclear and Radiological Security and Safety	John W. Poston, Sr.
Radiation Protection in Medicine	James A. Brink
Environmental Radiation and Radioactive Waste Issues	S.Y. Chen
Radiation Measurements and Dosimetry	Raymond A. Guilmette

Advisory Panels

Public Policy
Nonionizing Radiation

Vice Presidents

Each scientific program area committee is chaired by an NCRP Vice President. The Vice Presidents:

- Chair their program area committee
- Provide recommendations for new work in their area
- Represent NCRP to federal agencies and other potential supporters
- Represent NCRP at scientific meetings
- Advise on membership of their program area committee
- Assist NCRP President and chairmen of new scientific committees with selection of potential committee or advisory members
- Assist in management of scientific committee efforts
- Provide the chairman of the nominating committee with potential candidates for Council membership
- Review all draft publications within their program area committee prior to Council review

Basic Criteria, Epidemiology, Radiobiology, and Risk

Vice President, Kathryn D. Held

Key Functions of Program Area Committee (PAC) 1

- Evaluate and approve all NCRP scientific committee draft recommendations on exposure limits
- Evaluate new epidemiological and radiobiological data and determine their potential effect on human risk coefficients for radiation protection

Members of PAC 1

Kathryn D. Held, *Vice President*
 Sally A. Amundson
 Joel S. Bedford
 Antone L. Brooks
 Ann R. Kennedy
 Amy Kronenberg
 Charles E. Land
 William F. Morgan
 Gregory A. Nelson
 Roy E. Shore
 Julie E.K. Timins
 Gayle E. Woloschak
 John D. Boice, Jr., *NCRP Contact*

Active Scientific Committees Under PAC 1

SC 1-20 Biological Effectiveness of Photons as a Function of Energy

Status: Early draft stage

Steven L. Simon, *Chairman*

Leslie A. Braby

Polly Y. Chang

Dudley Goodhead

Stephen C. Hora
David C. Kocher
Kiyohiko Mabuchi
Jerome S. Puskin
David Richardson
James D. Tucker
Eliseo Vano
Marvin Rosenstein, *Technical Staff Consultant*

SC 1-21 Multiplatform National Approach for Providing Guidance on Integrating Basic Science and Epidemiological Studies on Low-Dose Radiation Biological and Health Effects

Status: Early draft stage

Sally A. Amundson, *Co-Chairman*
Jonine L. Bernstein, *Co-Chairman*
Keith F. Eckerman
Raymond A. Guilmette
Amy Kronenberg
Mark P. Little
William F. Morgan
Jac A. Nickoloff
Simon N. Powell
Daniel O. Stram
Terry C. Pellmar, *Technical Staff Consultant*

Completed in 2012

NCRP Report No. 171, *Uncertainties in the Estimation of Radiation Risks and Probability of Disease Causation*, was completed in 2012. This Report was drafted by Scientific Committee 1-16 under the chairmanship of R. Julian Preston. A manuscript for publication in the scientific literature is being developed to publicize as well as reach a larger audience for NCRP reports.

Authorized but Unfunded Activities

- Lung cancer risks from inhaled radionuclides

Operational Radiation Safety

Vice President, David S. Myers

Key Functions of Program Area Committee (PAC) 2

- Serve as a national resource for information on operational radiation safety
- Formulate guidance regarding the application of operational radiation safety principles

Members of PAC 2

David S. Myers, *Vice President*
Edgar D. Bailey
Carol D. Berger
Mary L. Birch
John R. Frazier
Eric M. Goldin
Kenneth L. Miller
John W. Poston, Sr.
Kathryn H. Pryor
Joshua Walkowicz
James G. Yusko
John D. Boice, Jr., *NCRP Contact*

Active Scientific Committees Under PAC 2

SC 2-6 Radiation Safety Aspects of Nanotechnology

Status: Just formed

Mark D. Hoover, *Chairman*

David S. Myers, *Vice Chairman*

Raymond A. Guilmette

Leigh J. Cash

Wolfgang G. Kreyling

Gunter Oberdoerster

Rachel Smith

Bruce B. Boecker, *Technical Staff Consultant*

Completed in 2012

NCRP Report No. 173, *Investigation of Radiological Incidents*, was completed in 2012. This Report was drafted by Scientific Committee 2-5 under the chairmanship of David S. Myers. A manuscript for publication in the scientific literature is being developed to publicize as well as reach a larger audience for NCRP reports.

Authorized but Unfunded Activities

- Air monitoring
- Operational radiation safety in medical fusion imaging procedures
- Design of facilities and installed equipment for handling unsealed radioactive materials
- Radiation protection guidelines for industrial accelerators and irradiators

Nuclear and Radiological Security and Safety

Vice President, John W. Poston, Sr.

Key Functions of Program Area Committee (PAC) 3

- Identify important steps to be taken in the interdiction of, preparedness for, and effective responses to possible acts of nuclear or radiological terrorism
- Define performance requirements, instrumentation, and testing criteria for security surveillance systems
- Develop operational strategies and optimization procedures for early, intermediate and late-phase responses to a nuclear or radiological terrorism incident
- Recommend effective methods for protecting against, mitigating, and treating traumatic injuries and long-term health and psychological effects of radiation exposure and other immediate stress effects such as thermal burns, shock, and contaminated shrapnel wounds resulting from a nuclear or radiological explosions to possible acts of nuclear or radiological terrorism
- Analyze methods for optimizing the cleanup, site restoration, and disposition of contaminated materials resulting from a nuclear or radiological terrorism incident
- Develop operational strategies and optimization procedures for early, intermediate and late-phase responses to a nuclear or radiological terrorism incident

Members of PAC 3

John W. Poston, Jr., *Vice President*
 Debra McBaugh, *Vice Chair*
 Steven M. Becker
 Brooke R. Buddemeier
 Stephen V. Musolino
 Terry C. Pellmar
 Tammy P. Taylor
 Leslie A. Braby, *Liaison*
 Jerrold T. Bushberg, *Liaison*
 Jill A. Lipoti, *Liaison*
 Julie E.K. Timins, *Liaison*
 John D. Boice, Jr., *NCRP Contact*

Radiation Protection in Medicine

Vice President, James A. Brink

Key Functions of Program Area Committee (PAC) 4

- Identify areas with which NCRP should be concerned in radiation protection of patients in medical, dental and chiropractic practice
- Examine and evaluate techniques and procedures to eliminate unnecessary radiation exposure to the patient
- Examine and evaluate training of medical personnel in radiation protection

Members of PAC 4

James A. Brink, *Vice President*
E. Stephen Amis
Jerrold T. Bushberg
John F. Cardella
Charles E. Chambers
Donald P. Frush
Ronald E. Goans
Linda A. Kroger
Edwin M. Leidholdt
Fred A. Mettler, Jr.
John H. O'Connell
Theodore L. Phillips
Ehsan Samei
J. Anthony Seibert
Steven G. Sutlief
Stuart C. White
Shiao Y. Woo
John D. Boice, Jr., *NCRP Contact*

Active Scientific Committees Under PAC 4

- SC 4-4 **Risks of Ionizing Radiation to the Developing Embryo, Fetus and Nursing Infant**
Status: Preparing for publication
Robert L. Brent, *Chairman*
Donald P. Frush

Robert O. Gorson
Roger W. Harms
Linda A. Kroger
Martha S. Linet
Andrew D. Maidment
John J. Mulvihill
Shiao Y. Woo
Jerrold T. Bushberg, *Consultant*
Joseph J. Morissey, *Consultant* (deceased)
Susan D. Wiltshire, *Consultant*
Marvin C. Ziskin, *Consultant*
Brian Dodd, *Technical Staff Consultant* (2008–2010)
Marvin Rosenstein, *Technical Staff Consultant* (2010–)

Completed in 2012

NCRP Report No. 172, *Reference Levels and Achievable Doses in Medical and Dental Imaging: Recommendations for the United States*, was completed in 2012. This Report was drafted by Scientific Committee 4-3 under the chairmanship of James A. Brink.

Authorized but Unfunded Activities

- Medical evaluation of workers
- Radiological protection standards and ethical issues in studies involving radiation exposure of human research subjects
- Revision of NCRP Report No. 102 on *Medical X-Rays, Electron Beam and Gamma-Ray Protection for Energies Up to 50 MeV* (1989)

Environmental Radiation and Radioactive Waste Issues

Vice President, S.Y. Chen

Key Functions of Program Area Committee (PAC) 5

- Serve as a national resource for environmental radiation and radioactive waste information and data
- Prepare scientific reports, commentaries and statements that can be used as fundamental scientific references dealing with radionuclides in the environment
- Help formulate NCRP recommendations on disposal of radioactive and mixed wastes
- Encourage scientific and technical discourse on the disposal of radioactive and mixed wastes including environmental and human risk from disposal
- Encourage scientific and technical discourse on the cost-benefit of activities generating radioactive and mixed wastes

Members of PAC 5

S.Y. Chen, *Vice President*
Mary E. Clark
Thomas Hinton
E. Vincent Holahan
Martin J. Letourneau
Jill A. Lipoti
Ruth E. McBurney
Bruce A. Napier
Carl J. Paperiello
Frank L. Parker
Andrew Wallo, III
Chris G. Whipple
John D. Boice, Jr., *NCRP Contact*

Active Scientific Committees Under PAC 5

**SC 5-1 Approach to Optimizing Decision Making for Late-Phase Recovery from Nuclear
or Radiological Terrorism Incidents**

Status: Preparing for Council review

S.Y. Chen, *Chairman*

Daniel J. Barnett
Brooke R. Buddemeier
Vincent T. Covello
Katherine A. Kiel
Jill A. Lipoti
Debra McBaugh
Andrew Wallo, III
David J. Allard, *Advisor*
Jonathan D. Edwards, *Advisor*
Helen A. Grogan, *Advisor*
Anne F. Nisbet, *Advisor*
John J. Cardarelli, *Consultant*
Michael A. Noska, *Consultant*
John A. MacKinney, *Consultant*
Steven R. Frey, *Technical Staff Consultant*

Authorized but Unfunded Activities

- Assessment of measurement methodologies for environmental indicators of past releases (joint with PAC 6)
- Case studies and lessons learned from remediation of sites and facilities with radioactive contamination
- Clearance as a radiation protection strategy for radioactive material management
- Development of a risk assessment and risk management parameter handbook
- Radiation protection criteria for plants and animals
- Risk-based corrective actions in remediation of contaminated ecosystems
- Usage factors for environmental dose calculations

Radiation Measurements and Dosimetry

Vice President, Raymond A. Guilmette

Key Functions of Program Area Committee (PAC) 6

- Evaluate the field of radiation measurements and dosimetry
- Serve as a source of information to scientific committees preparing reports that include radiation measurements and dosimetry
- Maintain liaison with other organizations and professional societies that have similar interests

Members of PAC 6

Raymond A. Guilmette, *Vice President*
William F. Blakely
Wesley E. Bolch
Leslie A. Braby
Paul M. DeLuca
John F. Dicello
Keith F. Eckerman
Shawna Eisele
Richard T. Kouzes
Margaret McMahn-Norris
David A. Schauer
Steven L. Simon
Christopher G. Soares
Jeffrey J. Whicker
James R. Cassata, *NCRP Contact*

Active Scientific Committees Under PAC 6

SC 6-8 Operation TOMODACHI Radiation Dose Assessment Peer Review

Status: Preparing for review
John E. Till, *Chairman*
A. Iulian Apostoaei
John D. Boice, Jr.
William E. Kennedy, Jr.
John R. Mercier, *Advisor*
Michael P. Grissom, *Technical Staff Consultant*

Authorized but Unfunded Activities

- Aerosol measurements
- Biological dosimetry
- Requirements and methods for recording information for accurate dose reconstruction in nuclear or radiological incidents
- Update of Report 58, A Handbook of Radioactivity Measurements
- Wound model dose coefficients

Public Policy

Key Functions of Public Policy Panel

- Identify policy implications of NCRP publications
- Suggest members or serve as members of new NCRP scientific committees whose topics relate to public policy
- Provide advice and wording on public policy issues when needed for NCRP reports
- Ensure that NCRP communications make it clear that NCRP's publications provide scientific information and recommendations to assist policy makers, but that NCRP does not participate in policy decisions

Members of Advisory Panel

John F. Ahearne
Steven M. Becker
Mary E. Clark
David C. Kocher
Jill A. Lipoti
Paul A. Locke
Charles W. Miller
Paul Slovic
Chris G. Whipple
Susan D. Wiltshire
John D. Boice, Jr., *NCRP Contact*

Nonionizing Radiation

Key Functions of Nonionizing Radiation Panel

- Analyze mechanisms of interaction of nonionizing radiation with biological systems, including humans
- Identify biological responses and potential human health effects
- Evaluate theoretical and applied aspects of dosimetry and exposure assessment of humans to nonionizing radiation
- Provide recommendations on acceptable exposure levels for nonionizing radiation in occupational, medical and public environments
- Analyze procedures for mitigating exposure in public and occupational settings

Members of Advisory Panel

Jerrold T. Bushberg
James E. Cleaver
Arthur W. Guy
David G. Hoel
James C. Lin
David H. Sliney
Jan A.J. Stolwijk
Richard A. Tell
Marvin C. Ziskin
John D. Boice, Jr., *NCRP Contact*

Collaborating Organizations

Organizations or groups of organizations that are national in interest and are concerned with scientific problems involving radiation quantities, units, measurements and effects, or radiation protection may be granted collaborating status by NCRP. Collaborating Organizations provide a means by which NCRP can gain input into its activities from a wider segment of society. At the same time, the relationships with the Collaborating Organizations facilitate wider dissemination of information about the Council’s activities, interests and concerns. Collaborating Organizations have the opportunity to comment on draft documents at the time that drafts are submitted to the members of the Council. This is intended to capitalize on the fact that Collaborating Organizations are in an excellent position to both contribute to the identification of what needs to be treated in NCRP documents and to identify problems that might result from proposed recommendations. The Collaborating Organizations for the year 2012 are:

Organization	Contact Person
American Academy for Dermatology	Karen Collishaw, Robert O. Gorson
American Academy of Environmental Engineers	William C. Anderson
American Academy of Health Physics	Howard W. Dickson
American Academy of Orthopaedic Surgeons	Karen L. Hackett
American Association of Physicists in Medicine	Lynne Fairbent, Angela R. Keyser
American Brachytherapy Society	Rick Guggolz, Mark J. Rivard
American College of Cardiology	Rebecca Kelly Gretchen Wyatt
American College of Medical Physics	Lawrence N. Rothenberg
American College of Nuclear Physicians	Bennett Greenspan, Virginia Pappas
American College of Occupational and Environmental Medicine	Joel R. Bender, Thomas S. Ely
American College of Radiology	Harvey L. Neiman
American Conference of Governmental Industrial Hygienists	James Price

American Dental Association	Kathleen O’Laughlin
American Industrial Hygiene Association	O. Gordon Banks, Irene Patrek
American Institute of Ultrasound in Medicine	Carmine M. Valente, Marvin C. Ziskin
American Medical Association	Barry Dickinson, James Lyznicki
American Nuclear Society	Bernard L. Cohen, Shawn Coyne-Naubett, Patricia Schroeder
American Pharmacists Association	Anne Burns
American Podiatric Medical Association	James Christina, Glenn B. Gastwirth
American Public Health Association	Georges C. Benjamin
American Radium Society	Ritsuko Komaki
American Roentgen Ray Society	James A. Brink
American Society for Radiation Oncology	Laura Thevenot
American Society of Emergency Radiology	Stephen R. Baker
American Society of Health-System Pharmacists	Henri Manasse, Jr.
American Society of Nuclear Cardiology	Beth Hodge
American Society of Radiologic Technologists	F. Lynn May, Greg Morrison
American Thyroid Association	Barbara Smith
Association of Educators in Imaging and Radiological Sciences	Valerie Christensen
Association of University Radiologists	Josette Szalko
Bioelectromagnetics Society	Stefan Engstrom, Gloria Parsley
Campus Radiation Safety Officers	Ninni Jacob
College of American Pathologists	Myron Pollycove, Lee Van Breman
Conference of Radiation Control Program Directors, Inc.	David Allard, Ruth McBurney
Council on Radionuclides and Radiopharmaceuticals	Henry Kramer, Leonard R. Smith
Defense Threat Reduction Agency	Paul K. Blake
Electric Power Research Institute	Kurt E. Yeager

Federal Aviation Administration	Wallace Friedberg, Frederick Tilton
Federal Communications Commission	Robert F. Cleveland, Jr.
Federal Emergency Management Agency	Vanessa Quinn
Genetics Society of America	Seymour Abrahamson
Health Physics Society	President, Brett J. Burk
Institute of Electrical and Electronics Engineers, Inc.	Ronald C. Petersen, Mary Ward-Callan
Institute of Nuclear Power Operations	Jeff Place
International Brotherhood of Electrical Workers	William F. Paul
International Society of Exposure Science	Tina Bahadori
National Aeronautics and Space Administration	NASA Administrator
National Association of Environmental Professionals	Clay E. Easterly
National Center for Environmental Health / Agency for Toxic Substances and Disease Registry	Sam Keith
National Electrical Manufacturers Association	Stephen Vastagh
National Institute for Occupational Safety and Health	William G. Lotz
National Institute of Standards and Technology	David Gilliam, James Turner
Nuclear Energy Institute	Ralph Andersen
Office of Science and Technology	John Holdren
Paper, Allied-Industrial, Chemical and Energy Workers International Union	Mark Griffon, Herman Potter
Product Stewardship Institute	Scott Cassel
Radiation Research Society	Martin Brown
Radiological Society of North America	Mark Watson
Society for Cardiovascular Angiography and Interventions	Charles Chambers, Wayne Powell, Bonnie H. Weiner
Society for Pediatric Radiology	Marilyn J. Goske
Society for Risk Analysis	Robin Cantor
Society of Cardiovascular Computed Tomography	President, Carrie Kovar
Society of Chairmen of Academic Radiology Departments	Lise Swanson
Society of Interventional Radiology	Stephen Balter, Debbie Katsarelis



Society of Nuclear Medicine and Molecular Imaging	Fred Fahey, Virginia Pappas
Society of Radiologists in Ultrasound	Susan Roberts
Society of Skeletal Radiology	David Rubin
U.S. Air Force	Ramachandra K. Bhat
U.S. Army	Surgeon General U.S. Army, Robert Eng
U.S. Coast Guard	Michael Adess
U.S. Department of Energy	Secretary of DOE
U.S. Department of Housing and Urban Development	Secretary of HUD
U.S. Department of Labor	Secretary of DOL
U.S. Department of Transportation	Richard W. Boyle
U.S. Environmental Protection Agency	EPA Administrator, Michael Flynn
U.S. Navy	Chairman, Navy Radiation Safety Committee
U.S. Nuclear Regulatory Commission	NRC Chairman, Terry Brock
U.S. Public Health Service	Petro Shandruk
Utility Workers Union of America	John M. Walsh, Jr.

Special Liaison Organizations

Special Liaison relationships are established with various organizations outside of the United States that have an interest in radiation protection and measurements. This relationship provides: (1) an opportunity for participating organizations to designate an individual to provide liaison between the organization and NCRP; (2) that the individual designated will receive copies of draft NCRP publications (at the time that these are submitted to the members of the Council) with an invitation to comment but not vote; and (3) that new NCRP efforts might be discussed with liaison individuals as appropriate, so that they might have an opportunity to make suggestions on new studies and related matters. The Special Liaison Organizations for 2012 are:

Organization	Contact Person
Australian Radiation Protection and Nuclear Safety Agency	Keith H. Lokan
Bundesamt für Strahlenschutz (Germany) (Federal Office for Radiation Protection)	Wolfram König
Canadian Association of Medical Radiation Technologists	Charles A. Shields
Canadian Nuclear Safety Commission	J.K. Pereira
Central Laboratory for Radiological Protection (Poland)	Slawomir Sterlinski
China Institute for Radiation Protection	Huating Yang
Commissariat à l'Énergie Atomique (France)	Jean-Francois Lecomte
Commonwealth Scientific Instrumentation Research Organization (Australia)	Stan Barnett
European Commission	Hans Forsstrom
Heads of the European Radiological Protection Competent Authorities	Olvido Guzman
Health Council of the Netherlands	A. Wijnbenga
Health Protection Agency	John Cooper
International Commission on Non-Ionizing Radiation Protection	Paolo Vecchia
International Commission on Radiation Units and Measurements	Hans G. Menzel
International Commission on Radiological Protection	Claire Cousins
International Radiation Protection Association	Kenneth R. Kase
Japan Radiation Council	Yasuhito Sasaki



Korea Institute of Nuclear Safety	Kwang Sik Choi
Nuclear Safety Commission of Japan	Atsuyuki Suzuki
Russian Scientific Commission on Radiation Protection	Anatoly F. Tsyb
South African Forum for Radiation Protection	D. van As
World Association for Nuclear Operators	Edgar Hux
World Health Organization, Unit of Radiation and Environmental Health	Zhanat Carr

Corporate Sponsors

The Corporate Sponsor's Program facilitates the interchange of information and ideas, and corporate sponsors provide valuable fiscal support for the NCRP program. The Corporate Sponsors for 2012 are:

Organization

3M

Global Dosimetry Solutions

Lambert Radiation Shielding

Landauer, Inc.

Nuclear Energy Institute

Contact Person

Frederick Entwistle

Sander Perle

Fred Lambert

R. Craig Yoder

Ralph L. Andersen

Review Process

The review process for draft publications is elaborate and comprehensive. It begins with a review by a group of critical reviewers designated by the appropriate Program Area Committee Vice President and the NCRP Secretariat. Second, following modification of the draft on the basis of the comments of the critical reviewers, the publication is submitted for review to the full Council membership (100), Distinguished Emeritus Members (66), Collaborating Organizations (80), and Special Liaison Organizations (23). At the time a draft is submitted for Council review it is also placed on NCRP's website for public comment (<http://NCRPonline.org>). Further modification of draft reports on the basis of the comments received follows, with the goal of reaching a scientific consensus on the material included in the report. An NCRP report can be released for publication by the President only if there are no more than two remaining disapprovals by members of the Council after resolution of review comments.

In addition to full reports, NCRP also produces statements, commentaries, and presidential reports. Statements are brief documents (usually four or fewer pages) that succinctly address topics of contemporary interest and importance for radiation protection. The review and approval process for statements is the same as for reports. NCRP commentaries are documents that provide preliminary evaluations, critiques, reviews and results of exploratory studies, or extensions of previously published NCRP reports on an accelerated schedule when time for the normal review process is not available. Approval is by the Board of Directors with involvement by other Council members to an extent dependent on the time available. Presidential reports are documents on specific issues in radiation health protection that are developed by a scientific committee, reviewed by members of Council and other subject-area experts as needed, and approved for publication by the Board of Directors and the President.

Lauriston S. Taylor Lectures

Year	Title	Lecturer
2012	From the Field to the Laboratory and Back: The <i>What Ifs</i> , <i>Wows</i> , and <i>Who Cares</i> of Radiation Biology	Antone L. Brooks
2011	What Makes Particle Radiation so Effective?	Eleanor A. Blakely
2010	Radiation Protection and Public Policy in an Uncertain World	Charles E. Land
2009	Radiation Epidemiology: The Golden Age and Remaining Challenges	John D. Boice, Jr.
2008	Radiation Standards, Dose/Risk Assessments, Public Interactions, and Yucca Mountain: Thinking Outside the Box	Dade W. Moeller
2007	The Quest for Therapeutic Actinide Chelators	Patricia W. Durbin
2006	Fifty Years of Scientific Investigation: The Importance of Scholarship and the Influence of Politics and Controversy	Robert L. Brent
2005	Nontargeted Effects of Radiation: Implications for Low-Dose Exposures	John B. Little
2004	Radiation Protection in the Aftermath of a Terrorist Attack Involving Exposure to Ionizing Radiation	Abel J. Gonzalez
2003	The Evolution of Radiation Protection: From Erythema to Genetic Risks to Risks of Cancer to ?	Charles B. Meinhold
2002	Developing Mechanistic Data for Incorporation into Cancer Risk Assessment: Old Problems and New Approaches	R. Julian Preston
2001	Assuring the Safety of Medical Diagnostic Ultrasound	Wesley L. Nyborg
2000	Administered Radioactivity: <i>Unde Venimus Quoque Imus</i>	S. James Adelstein
1999	Back to Background	Naomi H. Harley
1998	From Chimney Sweeps to Astronauts: Cancer Risks in the Work Place	Eric J. Hall
1997	Radionuclides in the Body: Meeting the Challenge	William J. Bair

1996	70 Years of Radiation Genetics: Fruit Flies, Mice and Humans	Seymour Abrahamson
1995	Certainty and Uncertainty in Radiation Research	Albrecht M. Kellerer
1994	Mice, Myths, and Men	R.J. Michael Fry
1993	Science, Radiation Protection and the NCRP	Warren K. Sinclair
1992	Dose and Risk in Diagnostic Radiology: How Big? How Little?	Edward W. Webster
1991	When is a Dose Not a Dose?	Victor P. Bond
1990	Radiation Protection and the Internal Emitter Saga	J. Newell Stannard
1989	Radiobiology and Radiation Protection: The Past Century and Prospects for the Future	Arthur C. Upton
1988	How Safe is Safe Enough?	Bo Lindell
1987	How to be Quantitative about Radiation Risk Estimates	Seymour Jablon
1986	Biological Effects on Non-Ionizing Radiations: Cellular Properties and Interactions	Herman P. Schwan
1985	Truth (and Beauty) in Radiation Measurements	John H. Harley
1984	Limitation and Assessment in Radiation Protection	Harald H. Rossi
1983	The Human Environment—Past, Present and Future	Merril Eisenbud
1982	Ethics, Trade-Offs and Medical Radiation	Eugene L. Saenger
1981	How Well Can We Assess Genetic Risk? Not Very	James F. Crow
1980	From “Quantity of Radiation” and “Dose” to “Exposure” and “Absorbed Dose”—An Historical Review	Harold O. Wyckoff
1979	Radiation Protection—Concepts and Trade Offs	Hymer L. Friedell
1978	Why be Quantitative About Radiation Risk Estimates?	Sir Edward Pochin
1977	The Squares of the Natural Numbers in Radiation Protection	Herbert M. Parker

Annual Meetings

Year	Topic
2012	Emerging Issues in Radiation Protection in Medicine, Emergency Response, and the Nuclear Fuel Cycle
2011	Scientific and Policy Challenges of Particle Radiations in Medical Therapy and Space Missions
2010	Communication of Radiation Benefits and Risks in Decision Making
2009	Future of Nuclear Power Worldwide: Safety, Health and Environment
2008	Low Dose and Low Dose-Rate Radiation Effects and Models
2007	Advances in Radiation Protection in Medicine
2006	Chernobyl at Twenty
2005	Managing the Disposition of Low-Activity Radioactive Materials
2004	Advances in Consequence Management for Radiological Terrorism Events
2003	Radiation Protection at the Beginning of the 21st Century—A Look Forward
2002	Where the New Biology Meets Epidemiology: Impact on Radiation Risk Estimates
2001	Fallout from Atmospheric Nuclear Tests—Impact on Science and Society
2000	Ionizing Radiation Science and Protection in the 21st Century
1999	Radiation Protection in Medicine: Contemporary Issues
1998	Cosmic Radiation Exposure of Airline Crews, Passengers and Astronauts
1997	The Effects of Pre- and Postconception Exposure to Radiation
1996	Implications of New Data on Radiation Cancer Risk
1995	Environmental Dose Reconstruction and Risk Implications
1994	Extremely-Low-Frequency Electromagnetic Fields: Issues in Biological Effects and Public Health
1993	Radiation Science and Societal Decision Making
1992	Radiation Protection in Medicine
1991	Genes, Cancer and Radiation Protection
1990	Health and Ecological Implications of Radioactively Contaminated Environments
1989	Radiation Protection Today—The NCRP at Sixty Years

1988	Radon
1987	New Dosimetry at Hiroshima and Nagasaki and Its Implications for Risk Estimates
1986	Nonionizing Electromagnetic Radiations and Ultrasound
1985	Radioactive Waste
1984	Some Issues Important in Developing Basic Radiation Protection Recommendations
1983	Environmental Radioactivity
1982	Radiation Protection and New Medical Diagnostic Approaches
1981	Critical Issues in Setting Radiation Dose Limits
1980	Quantitative Risk in Standards Setting
1979	Perceptions of Risk

2012 Annual Meeting

The Forty-Eighth Annual Meeting of NCRP was held March 12–13, 2012 at the Hyatt Regency Bethesda in Bethesda, Maryland. The topic of the meeting was *Emerging Issues in Radiation Protection in Medicine, Emergency Response, and the Nuclear Fuel Cycle*. The sessions and presentations were as follows:

Ninth Annual Warren K. Sinclair Keynote Address

Childhood Exposure: An Issue from Computed Tomography Scans to Fukushima, Fred A. Mettler, Jr.

Radiation Protection of the Patient: An Integral Part of Quality of Care

Radiological Protection of the Patient: An Integral Part of Quality of Care, Claire Cousins
 Enhancing Safety in Radiation Therapy: Structural and Cultural Underpinnings, Michael Steinberg
 Efforts to Optimize Radiation Protection in Interventional Fluoroscopy, Donald L. Miller
 Standardization Versus Individualization: How Each Contributes to Managing Radiation Dose in Computed Tomography, Cynthia H. McCollough

Implications of the Fukushima Daiichi Accident for Radiation Protection: Part I

What Happened at Fukushima and Lessons Learned, Michael L. Corradini
 Fukushima Daiichi Accident: Community Impacts and Responses, Steven M. Becker
 Rad Resilient City: A Preparedness Checklist to Save Lives Following a Nuclear Detonation, Monica Schoch-Spana

Thirty-Sixth Lauriston S. Taylor Lecture on Radiation Protection and Measurements

From the Field to the Laboratory and Back: The *What Ifs, Wows, and Who Cares* of Radiation Biology, Antone L. Brooks

Implications of the Fukushima Daiichi Accident for Radiation Protection: Part II

U.S. Public Health Response to the Fukushima Radiological Emergency: One Agency's Perspective, Charles W. Miller, Robert C. Whitcomb, Jr., Jennifer Buzzell, M. Carol McCurley, Armin Ansari, and Lynn Evans

U.S. Department of Energy/National Nuclear Security Administration's Response to the Fukushima Daiichi Nuclear Power Plant Emergency, Joseph J. Krol, Jr.

Reference Levels in the Context of Fukushima: Lessons Learned and Challenge to Radiation Protection System, Kazuo Sakai

Findings of the Blue Ribbon Commission on America's Nuclear Future, Richard A. Meserve

Serving on the Program Committee for the 2012 Annual Meeting were: Richard E. Toohey, *Chairman*; Steven M. Becker, S.Y. Chen, Christopher H. Clement, Michael L. Corradini, Paul A. Locke, Debra McBaugh, Julie E.K. Timins, Richard J. Vetter, and Kenneth R. Kase, *Advisor*. The proceedings of the 2012 Annual Meeting will be published in *Health Physics*.

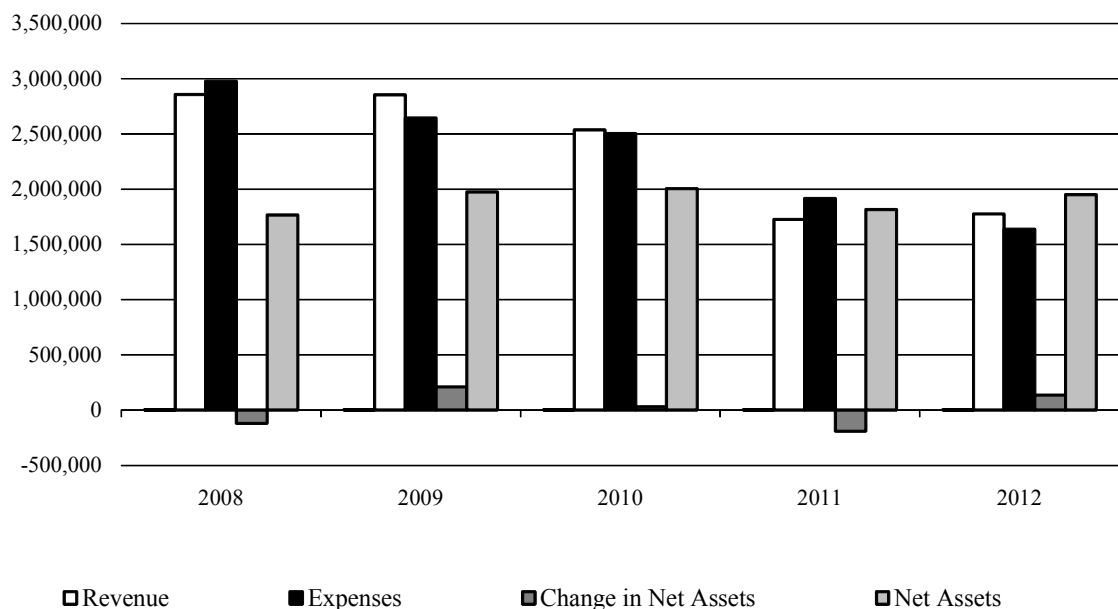
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Financial Summary

The table and bar graph presented below exhibit NCRP’s year-end financial data for 2012 and the four preceding years in the categories: (1) total revenue from grants, contracts, contributions, corporate sponsorships, contributed professional services, administrative services, sales of publications, and investments; (2) total operating and investment expenses; (3) change in net assets of the corporation; and (4) net assets.

Year	Revenue	Expenses	Change in Net Assets	Net Assets
2008	2,856,006	2,975,790	(119,784)	1,765,336
2009	2,854,973	2,645,035	209,938	1,975,274
2010	2,535,213	2,505,323	29,890	2,005,164
2011	1,725,326	1,916,162	(190,836)	1,814,328
2012	1,776,001	1,638,754	137,247	1,951,574



Appendix 1. Finances

Exhibit A Statement of Financial Position For the year ended December 31, 2012 (unaudited)

Current Assets

Cash and cash equivalents	138,245
Investments [at market]	1,699,820
Accounts receivable:	
Publications [net of allowance of \$514]	11,140
Grants and contracts	225,600
International Commission on Radiation Units and Measurements	1,449
International Society of Radiology	0
Other	664
Inventory—publications [net of allowance of \$9,364]	302,757
Prepaid expenses and other assets	14,946
Total current assets	<u>2,394,621</u>

Property and Equipment [at cost]

Furniture and equipment	369,518
Less accumulated depreciation	355,190
Total property and equipment	<u>14,328</u>

TOTAL ASSETS

2,408,949

Liabilities

Accounts payable and accrued expenses	256,610
Total current liabilities	<u>256,610</u>

Other Liabilities

Deferred rent liability	21,681
Accrued post-retirement benefits	179,084
Total other liabilities	<u>200,765</u>
TOTAL LIABILITIES	<u>457,375</u>



Net Assets	
Unrestricted:	
Undesignated	250,537
Board designated	1,500,421
Temporarily restricted	200,616
TOTAL NET ASSETS	<u>1,951,574</u>
TOTAL LIABILITIES AND NET ASSETS	<u><u>2,408,949</u></u>

Exhibit B Statement of Activities For the year ended December 31, 2012 (unaudited)

	Unrestricted	Temporarily Restricted	Total
Revenue and Other Increases			
Contracts and grants	1,059,944		1,059,944
Contributions	105,554	35,066	140,620
Corporate sponsorship	25,000		25,000
Contributed professional services	112,550		112,550
Sales of publications	230,618		230,618
Dividends and interest	43,127	5,640	48,767
Net realized and unrealized gain on investments	111,339	8,209	119,548
Professional and administrative services	38,954		38,954
Total revenue and other increases	1,727,086	48,915	1,776,001
Expenses and other decreases			
Program costs:			
Contracts and grants	631,908		631,908
Publications	82,417		82,417
Contributed professional services	112,550		112,550
Total program costs	826,875		826,875
Management and general expenses	796,177		796,177
Total expenses	1,623,052		1,623,052
Investment fees	14,044	1,287	15,331
Post-retirement benefit change	371		371
	1,637,467	1,287	1,638,754
Change in Net Assets	89,619	47,628	137,247
Interfund Transfer	2,600	(2,600)	0
Net Assets at Beginning of Year	1,658,739	155,588	1,814,327
Net Assets at End of Year	1,750,958	200,616	1,951,574

Exhibit C
Statement of Cash Flow
For the year ended December 31, 2012
(unaudited)

Cash flows from operating activities:	
Change in net assets	137,247
Adjustments to reconcile change in net assets to cash provided by operating activities	
Depreciation	9,875
Donated securities	(35,066)
Net realized and unrealized gain on investments	(119,548)
(Increase) decrease in assets:	
Accounts receivable	(150,469)
Inventory—publications	8,183
Prepaid expenses and other assets	5,252
Increase (decrease) in liabilities:	
Accounts payable and accrued expenses	54,135
Deferred rent liability	(1,919)
Accrued post-retirement benefits	371
Net cash used by operating activities	<u>(91,939)</u>
Cash flows from investing activities:	
Purchase of equipment	(7,354)
Purchase of investments	(450,840)
Sale of investments	415,721
Net cash used by investing activities	<u>(42,473)</u>
Net decrease in cash and cash equivalents	(134,412)
Cash and cash equivalents at beginning of year	<u>272,657</u>
Cash and cash equivalents at end of year	<u><u>138,245</u></u>

Schedule 1 Schedule of Contracts and Grants Revenue For the year ended December 31, 2012

(unaudited)

Contracts

Defense Threat Reduction Agency	170,221
Department of Homeland Security	162,962
Environment Protection Agency	29,989
National Institute for Occupational Safety and Health	86,860
Nuclear Regulatory Commission	26,977
U.S. Navy	49,076

Total contracts

526,085

Grants

Centers for Disease Control and Prevention	305,987
Department of Energy	227,872

Total grants

533,859

Total contracts and grants revenue

1,059,944



Schedule 2

Schedule of Contributions & Corporate Sponsorship Revenue

For the year ended December 31, 2012

(unaudited)

Contributions

American Academy of Health Physics	1,000
American Academy of Oral and Maxillofacial Radiology	1,000
American Association of Physicists in Medicine	5,000
American College of Radiology Foundation	25,000
American Nuclear Society	3,000
American Osteopathic College of Radiology	275
American Roentgen Ray Society	7,500
American Society for Radiation Oncology	3,000
American Society of Radiologic Technologists	6,000
Council on Radionuclides and Radiopharmaceuticals	2,500
Health Physics Society	12,000
Individuals	5,779
Landauer, Inc.	3,000
Radiation Research Society	2,500
Radiological Society of North America	25,000
Society for Pediatric Radiology	500
Society of Nuclear Medicine	2,500

Total contributions	105,554
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Corporate Sponsors

3M	5,000
Lambert Radiation Shielding	5,000
Landauer, Inc.	10,000
Mirion Technologies (GDS), Inc.	5,000
Nuclear Energy Institute*	10,000

Total Corporate Sponsors	35,000
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*Contribution pledged in 2012 but received in January 2013.

Appendix 2. Publications

Distribution of NCRP Publications

(during the period May 16, 1931 through December 31, 2012)

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
		Hardcopy	E-Pub			
NCRP Reports						
173	Investigation of Radiological Incidents (2012)	__d	94	25	119	119
172	Reference Levels and Achievable Doses in Medical and Dental Imaging: Recommendations for the United States (2012)	__d	108	63	171	171
171	Uncertainties in the Estimation of Radiation Risks and Probability of Disease Causation (2012)	__d	114	39	153	153
170	Second Primary Cancers and Cardiovascular Disease After Radiation Therapy (2011)	__d	121	37	158	158
169	Design of Effective Radiological Effluent Monitoring and Environmental Surveillance Programs (2010)	__d	113	38	151	151
168	Radiation Dose Management for Fluoroscopically-Guided Interventional Medical Procedures (2010)	__d	68	65	641	641
167	Potential Impact of Genetic Susceptibility and Previous Radiation Exposure on Radiation Risk for Astronauts (2010)	__d	23	7	140	140
166	Population Monitoring and Radionuclide Decorporation Following a Radiological or Nuclear Incident (2010)	__d	61	39	278	278
165	Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers (2010)	__d	64	43	688	688
164	Uncertainties in Internal Radiation Dosimetry (2009)	__d	0	39	156	156
163	Radiation Dose Reconstruction: Principles and Practices (2009)	__d	25	18	316	316
162	Self Assessment of Radiation-Safety Programs (2009)	__d	34	22	491	491
161	Management of Persons Contaminated with Radionuclides (2009)	__d	63	85	1,122	1,122
160	Ionizing Radiation Exposure of the Population of the United States (2009)	__d	105	72	1,379	1,379
159	Risk to the Thyroid from Ionizing Radiation (2008)	__d	13	16	263	263

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
158	Uncertainties in the Measurement and Dosimetry of External Radiation (2007)	__d	11	15	695	695
157	Radiation Protection in Educational Institutions (2007)	__d	9	10	848	848
156	Development of a Biokinetic Model for Radionuclide-Contaminated Wounds and Procedures for Their Assessment, Dosimetry and Treatment (2006)	__d	11	12	762	762
155	Management of Radionuclide Therapy Patients (2006)	__d	22	32	1,093	1,093
154	Cesium-137 in the Environment: Radioecology and Approaches to Assessment and Management (2006)	__d	7	7	574	574
153	Information Needed to Make Radiation Protection Recommendations for Space Missions Beyond Low-Earth Orbit (2006)	__d	5	6	699	699
152	Performance Assessment of Near-Surface Facilities for Disposal of Low-Level Radioactive Waste (2005)	__d	10	6	576	576
151	Structural Shielding Design and Evaluation for Megavoltage X- and Gamma-Ray Radiotherapy Facilities (2005)	__d	53	60	3,372	3,372
150	Extrapolation of Radiation-Induced Cancer Risks from Nonhuman Experimental Systems to Humans (2005)	__d	8	9	710	710
149	A Guide to Mammography and Other Breast Imaging Procedures (2004)	__d	6	14	1,152	1,152
148	Radiation Protection in Veterinary Medicine (2004)	__d	9	16	1,172	1,172
147	Structural Shielding Design for Medical X-Ray Imaging Facilities (2004)	__d	70	76	4,260	4,260
	Compact disk version of Report No. 147	__d	0	0	143	143
146	Approaches to Risk Management in Remediation of Radioactively Contaminated Sites (2004)	__d	6	4	1,100	1,100
145	Radiation Protection in Dentistry (2003)	__d	26	56	2,217	2,217
144	Radiation Protection for Particle Accelerator Facilities (2003)	__d	18	31	2,158	2,158
143	Management Techniques for Laboratories and Other Small Institutional Generators to Minimize Off-Site Disposal of Low-Level Radioactive Waste (2003)	__d	5	3	727	727
142	Operational Radiation Safety Program for Astronauts in Low-Earth Orbit: A Basic Framework (2002)	__d	6	4	1,143	1,143
141	Managing Potentially Radioactive Scrap Metal (2002)	__d	5	4	1,233	1,233
140	Exposure Criteria for Medical Diagnostic Ultrasound: II. Criteria Based on All Known Mechanisms (2002)	__d	6	6	807	807

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
		Hardcopy	E-Pub			
139	Risk-Based Classification of Radioactive and Hazardous Chemical Wastes (2002)	__d	4	3	986	986
138	Management of Terrorist Events Involving Radioactive Material (2001)	__d	8	8	7,568	7,568
137	Fluence-Based and Microdosimetric Event-Based Methods for Radiation Protection in Space (2001)	__d	3	2	772	772
136	Evaluation of the Linear-Nonthreshold Dose-Response Model for Ionizing Radiation (2001)	__d	7	11	1,368	1,368
135	Liver Cancer Risk from Internally-Deposited Radionuclides (2001)	__d	2	1	1,115	1,115
134	Operational Radiation Safety Training (2000)	__d	5	12	1,340	1,340
133	Radiation Protection for Procedures Performed Outside the Radiology Department (2000)	__d	10	28	1,685	1,685
132	Radiation Protection Guidance for Activities in Low-Earth Orbit (2000)	__d	3	7	1,025	1,025
131	Scientific Basis for Evaluating the Risks to Populations from Space Applications of Plutonium (2001)	__d	2	1	796	796
130	Biological Effects and Exposure Limits for "Hot Particles" (1999)	__d	3	8	1,128	1,128
129	Recommended Screening Limits for Contaminated Surface Soil and Review of Factors Relevant to Site-Specific Studies (1999)	__d	2	6	1,677	1,677
128	Radionuclide Exposure of the Embryo/Fetus (1998)	__d	3	5	1,587	1,587
127	Operational Radiation Safety Program (1998)	__d	16	17	2,329	2,329
126	Uncertainties in Fatal Cancer Risk Estimates Used in Radiation Protection (1997)	__d	2	4	1,887	1,887
125	Deposition, Retention and Dosimetry of Inhaled Radioactive Substances (1997)	__d	2	5	2,555	2,555
124	Sources and Magnitude of Occupational and Public Exposures from Nuclear Medicine Procedures (1996)	__d	7	18	3,166	3,166
123	Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground (1996)	__d	3	11	3,145	3,145
122	Use of Personal Monitors to Estimate Effective Dose Equivalent and Effective Dose to Workers for External Exposure to Low-LET Radiation (1995)	__d	4	10	3,293	3,293
121	Principles and Application of Collective Dose in Radiation Protection (1995)	__d	2	6	2,450	2,450
120	Dose Control at Nuclear Power Plants (1994)	__d	1	3	3,001	3,001

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
119	A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields (1993)	__d	4	9	3,499	3,499
118	Radiation Protection in the Mineral Extraction Industry (1993)	__d	3	6	2,633	2,633
117	Research Needs for Radiation Protection (1993)	__d	1	3	1,945	1,945
116	Limitation of Exposure to Ionizing Radiation (1993)	__d	14	50	7,184	7,184
115	Risk Estimates for Radiation Protection (1993)	__d	4	4	3,152	3,152
114	Maintaining Radiation Protection Records (1992)	__d	6	6	2,459	2,459
113	Exposure Criteria for Medical Diagnostic Ultrasound: I. Criteria Based on Thermal Mechanisms (1992)	__d	1	5	3,278	3,278
112	Calibration of Survey Instruments Used in Radiation Protection for the Assessment of Ionizing Radiation Fields and Radioactive Surface Contamination (1991)	__d	3	8	3,829	3,829
111	Developing Radiation Emergency Plans for Academic, Medical and Industrial Facilities (1991)	__d	5	6	4,074	4,074
110	Some Aspects of Strontium Radiobiology (1991)	__d	2	4	2,561	2,561
109	Effects of Ionizing Radiation on Aquatic Organisms (1991)	__d	1	4	2,200	2,200
108	Conceptual Basis for Calculations of Absorbed-Dose Distributions (1991)	__d	0	4	3,128	3,128
107	Implementation of the Principle of As Low As Reasonably Achievable (ALARA) for Medical and Dental Personnel (1990)	__d	4	15	3,369	3,369
106	Limit for Exposure to "Hot Particles" on the Skin (1990)	__d	0	3	2,875	2,875
105	Radiation Protection for Medical and Allied Health Personnel (1989)	__d	3	22	6,799	6,799
104	The Relative Biological Effectiveness of Radiations of Different Quality (1990)	__d	1	3	2,410	2,410
103	Control of Radon in Houses (1989)	__d	1	2	3,760	3,760
102	Medical X-Ray, Electron Beam and Gamma-Ray Protection for Energies up to 50 MeV (Equipment Design, Performance and Use) (1989)	__d	19	32	7,758	7,758
101	Exposure of the U.S. Population from Occupational Radiation (1989)	__d	0	2	4,158	4,158
100	Exposure of the U.S. Population from Diagnostic Medical Radiation (1989)	__d	1	2	4,974	4,974
99	Quality Assurance for Diagnostic Imaging (1988)	__d	7	18	4,829	4,829
98	Guidance on Radiation Received in Space Activities (1989)	__d	0	5	3,399	3,399

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
97	Measurement of Radon and Radon Daughters in Air (1988)	__d	1	4	4,231	4,231
96	Comparative Carcinogenicity of Ionizing Radiation and Chemicals (1989)	__d	1	4	4,088	4,088
95	Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources (1987)	__d	2	6	4,261	4,261
94	Exposure of the Population in the United States and Canada from Natural Background Radiation (1987)	__d	3	8	4,414	4,414
93	Ionizing Radiation Exposure of the Population of the United States (1987)	__d	2	10	7,379	7,379
92	Public Radiation Exposure from Nuclear Power Generation in the United States (1987)	__d	0	2	3,684	3,684
91	Recommendations on Limits for Exposure to Ionizing Radiation (1987)	__d	0	0	8,486	8,486
90	Neptunium: Radiation Protection Guidelines (1988)	__d	1	2	2,902	2,902
89	Genetic Effects from Internally Deposited Radionuclides (1987)	__d	1	3	3,962	3,962
88	Radiation Alarms and Access Control Systems (1986)	__d	4	8	4,804	4,804
87	Use of Bioassay Procedures for Assessment of Internal Radionuclide Deposition (1987)	__d	12	3	4,245	4,245
86	Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields (1986)	__d	1	14	5,286	5,286
85	Mammography—A User's Guide (1986)	__d	0	0	32,654	32,654
84	General Concepts for the Dosimetry of Internally Deposited Radionuclides (1985)	__d	1	2	4,252	4,252
83	The Experimental Basis for Absorbed-Dose Calculations in Medical Uses of Radionuclides (1985)	__d	0	3	3,546	3,546
82	SI Units in Radiation Protection and Measurements (1985)	__d	0	6	4,578	4,578
81	Carbon-14 in the Environment (1985)	__d	2	2	3,992	3,992
80	Induction of Thyroid Cancer by Ionizing Radiation (1985)	__d	0	2	4,267	4,267
79	Neutron Contamination from Medical Electron Accelerators (1984)	__d	6	14	4,813	4,813
78	Evaluation of Occupational and Environmental Exposures to Radon and Radon Daughters in the United States (1984)	__d	0	3	6,474	6,474
77	Exposures from the Uranium Series with Emphasis on Radon and Its Daughters (1984)	__d	2	2	6,648	6,648
76	Radiological Assessment: Predicting the Transport, Bioaccumulation, and Uptake by Man of Radionuclides Released to the Environment (1984)	__d	1	5	6,683	6,683

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
Hardcopy	E-Pub					
75	Iodine-129: Evaluation of Release from Nuclear Power Generation (1983)	__d	1	1	5,944	5,944
74	Biological Effects of Ultrasound: Mechanisms and Clinical Implications (1983)	__d	0	3	11,218	11,218
73	Protection in Nuclear Medicine and Ultrasound Diagnostic Procedures in Children (1983)	__d	0	2	5,497	5,497
72	Radiation Protection and Measurement for Low-Voltage Neutron Generators (1983)	__d	1	5	4,442	4,442
71	Operational Radiation Safety—Training (1983)	__d	0	0	5,067	5,067
70	Nuclear Medicine—Factors Influencing the Choice and Use of Radionuclides in Diagnosis and Therapy (1982)	__d	1	2	5,409	5,409
69	Dosimetry of X-Ray and Gamma-Ray Beams for Radiation Therapy in the Energy Range 10 keV to 50 MeV (1981)	__d	3	2	5,014	5,014
68	Radiation Protection in Pediatric Radiology (1981)	__d	3	5	4,498	4,498
67	Radiofrequency Electromagnetic Fields—Properties, Quantities and Units, Biophysical Interaction and Measurements (1981)	__d	0	3	5,447	5,447
66	Mammography (1980)	__d	0	0	4,598	4,598
65	Management of Persons Accidentally Contaminated with Radionuclides (1980)	__d	0	8	18,429	18,429
64	Influence of Dose and Its Distribution in Time on Dose-Response Relationships for Low-LET Radiations (1980)	__d	0	4	5,245	5,245
63	Tritium and Other Radionuclide Labeled Organic Compounds Incorporated in Genetic Material (1979)	__d	0	3	4,325	4,325
62	Tritium in the Environment (1979)	__d	0	2	3,953	3,953
61	Radiation Safety Training Criteria for Industrial Radiography (1978)	__d	0	4	6,168	6,168
60	Physical, Chemical and Biological Properties of Radiocerium Relevant to Radiation Protection Guidelines (1979)	__d	1	3	4,031	4,031
59	Operational Radiation Safety Program (1979)	__d	0	0	8,046	8,046
58	A Handbook of Radioactivity Measurements Procedures (1978)	__d	3	9	13,626	13,626
57	Instrumentation and Monitoring Methods for Radiation Protection (1978)	__d	1	9	10,967	10,967
56	Radiation Exposure from Consumer Products and Miscellaneous Sources (1977)	__d	__e	0	5,905	5,905
55	Protection of the Thyroid Gland in the Event of Releases of Radioiodine (1977)	__d	0	2	6,839	6,839

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
54	Medical Radiation Exposure of Pregnant and Potentially Pregnant Women (1977)	__d	5	12	10,581	10,581
53	Review of NCRP Radiation Dose Limit for Embryo and Fetus in Occupationally Exposed Women (1977)	__d	__e	0	9,289	9,289
52	Cesium-137 from the Environment to Man: Metabolism and Dose (1977)	__d	1	2	4,702	4,702
51	Radiation Protection Design Guidelines for 0.1-100 MeV Particle Accelerator Facilities (1977)	__d	0	0	8,511	8,511
50	Environmental Radiation Measurements (1976)	__d	0	3	7,918	7,918
49	Structural Shielding Design and Evaluation for Medical Use of X Rays and Gamma Rays of Energies up to 10 MeV (1976)	__d	9	39	17,603	17,603
	Adjunct to NCRP Report 49 (1976)	__d	0	0	2,797	2,797
48	Radiation Protection for Medical and Allied Health Personnel (1976)	__d	__e	0	14,359	14,359
47	Tritium Measurement Techniques (1976)	__d	1	4	6,369	6,369
46	Alpha-Emitting Particles in Lungs (1975)	__d	2	4	6,082	6,082
45	Natural Background Radiation in the United States (1975)	__d	__e	0	7,296	7,296
44	Krypton-85 in the Atmosphere—Accumulation, Biological Significance, and Control Technology (1975)	__d	1	2	6,567	6,567
43	Review of the Current State of Radiation Protection Philosophy (1975)	__d	__e	0	9,722	9,722
42	Radiological Factors Affecting Decision-Making in a Nuclear Attack (1974)	__d	0	4	47,230	47,230
41	Specification of Gamma-Ray Brachytherapy Sources (1974)	__d	0	2	5,464	5,464
40	Protection Against Radiation from Brachytherapy Sources (1972)	__d	1	4	9,789	9,789
39	Basic Radiation Protection Criteria (1971)	__d	__e	0	40,393	40,393
38	Protection Against Neutron Radiation (1971)	__d	6	16	8,960	8,960
37	Precautions in the Management of Patients who have Received Therapeutic Amounts of Radionuclides (1970)	__d	0	0	17,402	17,402
36	Radiation Protection in Veterinary Medicine (1970)	__d	0	0	7,620	7,620
35	Dental X-Ray Protection (1970)	__d	0	0	28,559	28,559
34	Medical X-Ray and Gamma-Ray Protection for Energies up to 10 MeV—Structural Shielding Design and Evaluation (1970)	__d	__e	0	17,622	17,622

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
33	Medical X-Ray and Gamma-Ray Protection for Energies up to 10 MeV—Equipment Design and Use (1968)	__d	__e	0	98,134	98,134
32	Radiation Protection in Educational Institutions (1966)	__d	0	0	22,362	22,362
31	Shielding for High Energy Electron Accelerator Installations (1964)	3,700	__e	0	2,697	6,397
30	Safe Handling of Radioactive Materials (1964)	24,450	3	0	9,937	34,387
29	Exposure to Radiation in an Emergency	55,705	__e	0	3,678	59,383
28	A Manual of Radioactivity Procedures (1961)	22,892	__e	0	3,665	26,557
27	Stopping Powers for Use with Cavity Chambers (1961)	4,144	2	0	3,830	7,974
26	Medical X-Ray Protection up to Three Million Volts (1961)	75,894	__e	0	27,154	103,048
25	Measurement of Absorbed Dose of Neutrons and Mixtures of Neutrons and Gamma Rays (1961)	10,790	0	0	4,083	14,873
24	Protection Against Radiations from Sealed Gamma Sources (1960)	35,710	__e	0	953	36,663
23	Measurement of Neutron Flux and Spectra for Physical and Biological Applications (1960)	11,849	0	0	3,073	14,922
22	Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure (1959)	52,526	3	0	7,445	59,971
21	Safe Handling of Bodies Containing Radioactive Isotopes (1958)	29,304	__e	0	2,352	31,656
20	Protection Against Neutron Radiation up to 30 Million Electron Volts (1957)	16,989	__e	0	353	17,342
19	Regulation of Radiation Exposure by Legislative Means (1955)	15,140	__e	0	0	15,140
18	X-Ray Protection (1955)	98,713	__e	0	0	98,713
17	Permissible Dose from External Sources of Ionizing Radiation (1954)	60,530	__e	0	2,038	62,568
16	Radioactive Waste Disposal in the Ocean (1954)	16,203	__e	0	2,664	18,867
15	Safe Handling of Cadavers Containing Radioactive Isotopes (1953)	14,486	__e	0	0	14,486
14	Protection Against Betatron-Synchrotron Radiations up to 100 Million Electron Volts (1954)	27,190	__e	0	1,710	28,900
13	Protection Against Radiation from Radium, Cobalt-60 and Cesium-137 (1954)	22,785	__e	0	0	22,785
12	Recommendations for the Disposal of Carbon-14 Wastes (1953)	23,506	__e	0	2,571	26,077

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office ^a	NCRP Publications ^b		Total NCRP Publications	All Sources Combined
			2012			
			Hardcopy	E-Pub		
11	Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water (1953)	32,494	__e	0	0	32,494
10	Radiological Monitoring Methods and Instruments (1952)	59,651	__e	0	3,894	63,545
9	Recommendations for Waste Disposal of Phosphorus-32 and Iodine-131 for Medical Users (1951)	28,810	__e	0	5,682	34,492
8	Control and Removal of Radioactive Contamination in Laboratories (1951)	50,500	3	0	7,650	58,150
7	Safe Handling of Radioactive Isotopes (1949)	60,867	__e	0	0	60,867
6	Medical X-Ray Protection up to Two Million Volts (1949)	70,261	__e	0	0	70,261
5	Safe Handling of Radioactive Luminous Compounds (1941)	6,187	__e	0	0	6,187
4	Radium Protection (1938)	10,086	__e	0	0	10,086
3	X-Ray Protection (1936)	16,490	__e	0	0	16,490
2	Radium Protection (1934)	__g	__e	0	0	0
1	X-Ray Protection (1931)	1,596	__e	0	0	1,596
Total NCRP Reports Distributed		959,448	1,559	1,620	949,890	1,909,338

Lauriston S. Taylor Lectures

36	From the Field to the Laboratory and Back: The <i>What Ifs</i> , <i>Wows</i> , and <i>Who Cares</i> of Radiation Biology, Antone L. Brooks (2012)	__i	__i	__i		__i
35	What Makes Particle Radiation So Effective?, Eleanor A. Blakely (2011)	__i	__i	__i		__i
34	Radiation Protection and Public Policy in an Uncertain World, Charles E. Land (2010), <i>Health Phys.</i> 101 (5), 497-629 (2011)	__i	__i	__i		__i
33	Radiation Epidemiology: The Golden Age and Remaining Challenges, John D. Boice, Jr. (2009), <i>Health Phys.</i> 100 (1) 59-76 (2011)	__i	__i	__i		__i
32	Radiation Standards, Dose/Risk Assessments, Public Interactions, and Yucca Mountain: Thinking Outside the Box, Dade W. Moeller (2008), <i>Health Phys.</i> 97 , 376-391 (2009)	__i	__i	__i		__i
31	The Quest for Therapeutic Actinide Chelators, Patricia W. Durbin (2007), <i>Health Phys.</i> 95 , 465-492 (2008)	__i	__i	__i		__i
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