Annual Report

2008

Year in Review

NCRP
National Council on Radiation Protection & Measurements

NCRP

Contents

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.

NCRP

President's Message

NCRP continued to be scientifically productive and advances were made in several important report projects in 2008. Highlights of the year included the completion of four reports and the proceedings of the 2007 NCRP Annual Meeting. The drafting of other reports was completed and they were either peer reviewed by Council or brought to the point of Council review during the first part of 2009. NCRP publications completed in 2008 are the following.

Report No. 159, *Risk to the Thyroid from Ionizing Radiation*, prepared by Scientific Committee 1-8 chaired by Henry D. Royal, provides an analysis of the risk of carcinogenic and benign diseases of the thyroid gland from ionizing radiation, and includes an assessment of the risk of diseases of the parathyroid gland from radiation exposure. The Report also reviews dosimetry, molecular research, animal studies, human epidemiology, and modeling in addressing risk to the thyroid and parathyroid from ionizing radiation exposure of adults and children, including medical evaluation and screening procedures.

Report No. 161, *Management of Persons Contaminated with Radionuclides*, prepared by Scientific Committee 4-1 chaired by William J. Bair, provides a comprehensive update of Report No. 65 (1980) in which the focus was on managing and treating exposures of workers and the public from radionuclides released through accidents at nuclear facilities. NCRP Report No. 161 extends this scope to include a broader range of contamination scenarios, including both "accidental" and "deliberate" incidents that are not necessarily associated with nuclear facilities (for example, exposures associated with nuclear or radiological terrorism incidents). The Report has been prepared in two volumes, the first of which provides a quick reference guide for use by responders to nuclear contamination incidents, and the second of which contains extensive documentation of recommendations on early post-exposure actions and guidance for longer-term management and treatment of exposed persons.

NCRP Scientific Committees 6-6 and 6-7, chaired by Thomas F. Gesell and Randall S. Caswell, respectively, prepared reviews of *Skin Doses from Dermal Contamination* and *Evaluation of Inhalation Doses in Scenarios Involving Resuspension by Nuclear Detonations at Nevada Test Site.* The bases for these reviews were draft reports written by SENES Oak Ridge, Inc. and related published literature. They provide extensive evaluations of state-of-the-art methods for calculating skin and inhalation doses from exposure to radionuclides associated with nuclear atmospheric tests conducted by the United States from 1945 to 1962, for which compensation claims by veterans of radiogenic cancers are still being adjudicated by the U.S. Department of Veterans Affairs (VA).

Another 2008 publication was the proceedings of the 43rd NCRP Annual Meeting held on April 16–17, 2007 on the topic *Advances in Radiation Protection in Medicine.* The proceedings, along with the 31st Annual Lauriston S. Taylor Lecture by Patricia W. Durbin on *The Quest for Therapeutic Actinide Chelators*, were published in the November 2008 issue of *Health Physics* (Vol. 95, No. 5). NCRP is appreciative of the efforts of the Program Committee, led by Jerrold T. Bushberg, for

organizing a timely meeting on an important topic. Presentations were made on the remarkable progress that has occurred in the development and application of new medical technologies that utilize radiation for the early detection and effective treatment of cancer and other diseases.

Another major achievement by NCRP in 2008 was the issuing of its *2008–2010 Strategic Program Plan*. The Plan describes six strategic initiatives that will be a focus of NCRP's activities over the 2008 to 2010 triennium, and the implementation of these plans. The six strategic initiatives are in the following areas: (1) low dose and low dose-rate biological effects and implications for human health; (2) radiation protection in medicine; (3) preparation for and response to possible acts of nuclear or radiological terrorism; (4) worker, public health, and environmental radiation protection; (5) analysis of uncertainties in radiation measurement and dosimetry and basic principles and practices in radiation dose reconstruction; and (6) safety, health and environmental protection issues in advanced reactor design and spent-fuel processing. The Plan can be accessed on the NCRP website (http://NCRPonline.org).

The year 2009 will have special significance for NCRP since it represents the 80th anniversary of the establishment of NCRP's first predecessor organization, the U.S. Advisory Committee on X-Ray and Radium Protection in 1929, and the 45th anniversary of NCRP's Congressional Charter in 1964 under Public Law 88-376. Throughout these many years NCRP has consistently served as a national resource to the government and public in providing guidance on matters related to radiation protection and measurements.

It is expected that 2009 will be another highly productive year for NCRP with the publication of several important reports. The initial publication will be Report No. 160, *Ionizing Radiation Exposure of the Population of the United States*, prepared by Scientific Committee 6-2 chaired by Kenneth R. Kase. Report No. 160 provides a comprehensive update of Report No. 93 published in 1987, and presents extensive data current through 2006 describing all sources of exposure of the U.S. population to ionizing radiation. Although most occupational, environmental and consumer product sources of radiation exposure have not changed significantly over the past two decades, Report No. 160 has documented a sixfold increase in the average annual exposure of members of the population to ionizing radiation from medical sources over the last 25 y. This increase has primarily resulted from the rapid increase in use of computed tomography and nuclear medicine for diagnostic medical procedures.

Other NCRP reports that have been drafted, subjected to Program Area Committee reviews, and will enter the Council review process in the first half of 2009 include: *Impact of Individual Genetic Susceptibility and Previous Radiation Exposure on Radiation Risk for Astronauts*, prepared by Scientific Committee 1-13 chaired by Antone L. Brooks; *Self Assessment of Radiation Safety Programs*, prepared by Scientific Committee 2-4 chaired by David S. Myers; *Uncertainties in Internal Radiation Dosimetry*, prepared by Scientific Committee 6-3 chaired by Andre Bouville; and *Principles and Practices of Radiation Dose Reconstruction*, prepared by Scientific Committee 6-4 chaired by Bruce A. Napier. It is also expected that a report on *Population Monitoring and Decontamination Following a Nuclear or Radiological Incident*, will be reviewed by Council in 2009.

The proceedings of the 44th NCRP Annual Meeting held on April 17-18, 2008 on *Low Dose and Low Dose-Rate Radiation Effects and Models* will be published in *Health Physics* in 2009. The focus of the 2008 Annual Meeting, which was planned by a Program Committee chaired by Antone L.

Brooks, was on the latest scientific findings on low dose and low dose-rate effects of ionizing radiation based on studies with experimental biological systems, human epidemiological studies, and modeling of radiation effects as a function of dose. The potential impacts of these findings on future regulatory guidance and public health policies were also discussed.

The 45th 2009 NCRP Annual Meeting will be held on March 2-3, 2009 on the topic *Future of Nuclear Power Worldwide: Safety, Health and Environment.* The meeting will provide a forum for discussing safety, health and environmental issues associated with the projected increase in use of nuclear power systems during the coming decades and related aspects of fuel production and processing strategies. The meeting has been planned by an international Program Committee chaired by Michael L. Corradini, and will feature participation by representatives of many nations, scientific organizations, nuclear industries, and governmental agencies involved in the development and regulatory control of advanced reactor systems and fuel concepts.

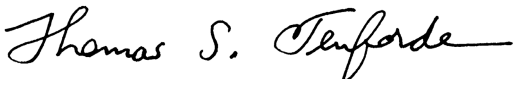
NCRP continued its role in 2008 in providing technical and administrative support to the Veterans' Advisory Board on Dose Reconstruction (VBDR), which was established in 2005 as a requirement of Public Law 108-183 enacted on December 16, 2003. The Board provides oversight and makes recommendations for improvement of the radiation dose reconstruction and claims adjudication programs for veterans who occupied Hiroshima and Nagasaki, Japan following detonation of atomic bombs in 1945, who were prisoners of war in those locations at the time of the atomic bombs, or who participated in atmospheric nuclear weapons testing in the Pacific and Nevada Test Site until 1962. These veterans are eligible for compensation and medical benefits from the VA if they contract diseases that may be associated with radiation exposure. When required, the reconstruction of radiation doses received by the veterans is performed by the Defense Threat Reduction Agency (DTRA) under the Nuclear Test Personnel Review Program.

VBDR has 16 members who represent a broad range of expertise relevant to the Board's mission, and is chaired by Vice Admiral (ret.) James A. Zimble, who served as the 30th Surgeon General of the U.S. Navy. Since establishment of VBDR in 2005, NCRP has organized eight Board meetings that were open to the public under the Federal Advisory Committee Act. In 2008 meetings of VBDR were held in San Diego, California on April 2-3 and in Linthicum, Maryland on September 10-11. During its public meetings, VBDR has made a total of 18 recommendations to DTRA and 28 recommendations to the VA for improvements in the dose reconstruction and claims adjudication programs, respectively. Many of these recommendations have been implemented by the two agencies, and several others are in progress. Since 2007 NCRP health physics consultants have also been performing independent radiation dose assessments for validation of dose reconstruction results obtained by DTRA contractor organizations.

During 2008 NCRP continued its electronic publications program and contract agreements with data aggregators and eBook providers. Overall these methods of selling and disseminating the content of NCRP publications have been successful. The status of NCRP's financial position remained strong in 2008 with the income from grants and contracts exceeding expenses for operations. It is anticipated that there will be continued growth of funding for new work by NCRP in 2009 and beyond. However, because of the downturn in the U.S. stock market during 2008, NCRP had unrealized losses in its

investment portfolio that resulted in a net decrease in the value of its assets for the first time in six years. It is expected that these losses will be reversed as the U.S. market recovers its strength in the future. A detailed description of NCRP's finances in 2008 is presented in Appendix 1.

As I approach the end of my seventh year as President of NCRP, I look forward with enthusiasm to continuing to work with members of the Council, NCRP's scientific committees, staff, and collaborators in meeting the challenges that face NCRP in 2009 and beyond.



Thomas S. Tenforde
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 2008 there were 16 vacancies; six new members were elected and ten members were re-elected. The six new members were:

Stephen V. Musolino
Terry C. Pellmar
J. Anthony Seibert
Robert C. Whitcomb, Jr.
X. George Xu
R. Craig Yoder

2008 Council Membership

John F. Ahearne	Sigma Xi	2005–2011
E. Stephen Amis, Jr.	Montefiore Medical Center	2007–2013
Sally A. Amundson	Columbia University Medical Center	2005–2011
Kimberly E. Applegate	Riley Hospital for Children	2007–2013
Benjamin R. Archer	Baylor College of Medicine	2006–2012
Stephen T. Balter	Columbia-Presbyterian Medical Center	2007–2013
Steven M. Becker	University of Alabama at Birmingham	2005–2011
Joel S. Bedford	Colorado State University	2004–2010
Eleanor A. Blakely	Lawrence Berkeley National Laboratory	2006–2012
William F. Blakely	Armed Forces Radiobiology Research Institute	2003–2009
John D. Boice, Jr.	International Epidemiology Institute	2003–2009
Wesley E. Bolch	University of Florida	2005–2011

Thomas B. Borak	Colorado State University	2007–2013
Andre Bouville	National Cancer Institute	2005–2011
Leslie A. Braby	Texas A&M University	2007–2013
David J. Brenner	Columbia University	2004–2010
James A. Brink	Yale University School of Medicine	2005–2011
Antone L. Brooks	Washington State University, Tricities	2003–2009
Jerrold T. Bushberg	University of California, Davis	2008–2014
John F. Cardella	BayState Health System	2008–2014
Stephanie K. Carlson	Mayo Clinic	2003–2009
Charles E. Chambers	Penn State Hershey Medical Center	2007–2013
Polly Y. Chang	SRI International	2005–2011
S.Y. Chen	Argonne National Laboratory	2005–2011
Mary E. Clark	U.S. Environmental Protection Agency	2008–2014
Kelly L. Classic	Mayo Clinic	2003–2009
Michael L. Corradini	University of Wisconsin, Madison	2004–2010
Allen G. Croff	Retired	2004–2010
Paul M. DeLuca	University of Wisconsin Medical School	2008–2014
David A. Eastmond	University of California, Riverside	2004–2010
Stephen A. Feig	University of California Medical Center, Irvine	2006–2012
John R. Frazier	Independent Consultant	2008–2014
Donald P. Frush	Duke University Medical Center	2004–2010
Ronald E. Goans	MJW Corporation	2007–2013
Robert L. Goldberg	University of California, San Francisco	2006–2012
Raymond A. Guilmette	Lovelace Respiratory Research Institute	2003–2009
Roger W. Harms	Mayo Clinic	2003–2009
Kathryn D. Held	Massachusetts General Hospital	2006–2012
F. Owen Hoffman	SENES Oak Ridge, Inc.	2004–2010
Roger W. Howell	University of Medicine and Dentistry of New Jersey	2003–2009
Timothy J. Jorgensen	Georgetown University Medical Center	2007–2013
Kenneth R. Kase	Lyncean Technologies, Inc.	2005–2011
Ann R. Kennedy	University of Pennsylvania School of Medicine	2007–2013
William E. Kennedy, Jr.	Dade Moeller & Associates, Inc.	2004–2010
David C. Kocher	SENES Oak Ridge, Inc.	2005–2011
Ritsuko Komaki	MD Anderson Cancer Center	2006–2012
Amy Kronenberg	Lawrence Berkeley National Laboratory	2005–2011
Susan M. Langhorst	Washington University School of Medicine	2005–2011
Edwin M. Leidholdt, Jr.	U.S. Department of Veterans Affairs	2006–2012
Howard L. Liber	Colorado State University	2004–2010
James C. Lin	University of Illinois, Chicago	2005–2011
Jill A. Lipoti	New Jersey Department of Environmental Protection	2007–2013

John B. Little	Harvard University School of Public Health	2003–2009
Paul A. Locke	Johns Hopkins University	2004–2010
Jay H. Lubin	National Cancer Institute	2006–2012
C. Douglas Maynard	Wake Forest University School of Medicine	2006–2012
Debra McBaugh	Washington State Department of Health	2006–2012
Ruth E. McBurney	Conference of Radiation Control Program Directors, Inc.	2007–2013
Cynthia H. McCollough	Mayo Clinic	2003–2009
Fred A. Mettler, Jr.	University of New Mexico	2004–2010
Charles W. Miller	Centers for Disease Control and Prevention	2006–2012
Donald L. Miller	National Naval Medical Center	2006–2012
William H. Miller	University of Missouri, Columbia	2005–2011
William F. Morgan	University of Maryland School of Medicine	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	2006–2012
Carl J. Paperiello	Independent Consultant	2008–2014
Terry C. Pellmar	Armed Forces Radiobiology Research Institute	2008–2014
R. Julian Preston	U.S. Environmental Protection Agency	2003–2009
Jerome C. Puskin	U.S. Environmental Protection Agency	2006–2012
Abram Recht	Beth Israel Deaconess Medical Center	2007–2013
Allan C.B. Richardson	Retired	2003–2009
Michael T. Ryan	Michael T. Ryan and Associates	2004–2010
Thomas M. Seed	Tech Micro Services Company	2005–2011
J. Anthony Seibert	University of California Davis Medical Center	2008–2014
Stephen M. Seltzer	National Institute of Standards and Technology	2004–2010
Edward A. Sickles	University of California Medical Center	2007–2013
Steven L. Simon	National Cancer Institute	2004–2010
Paul Slovic	Decision Research	2005–2011
Christopher G. Soares	National Institute of Standards and Technology	2005–2011
Daniel J. Strom	Pacific Northwest National Laboratory	2008–2014
Thomas S. Tenforde	National Council on Radiation Protection and Measurements	2008–2014
Julie K. Timins	Christ Hospital	2004–2010
Richard E. Toohey	Oak Ridge Associated Universities	2006–2012
Lawrence W. Townsend	University of Tennessee, Knoxville	2004–2010
Fong Y. Tsai	University of California Medical Center, Irvine	2006–2012
Richard J. Vetter	Mayo Clinic	2004–2010
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	2004–2010
J. Frank Wilson	Medical College of Wisconsin	2003–2009
Susan D. Wiltshire	JK Research Associates, Inc.	2003–2009
Gayle E. Woloschak	Northwestern University	2003–2009
Shiao Y. Woo	MD Anderson Cancer Center	2005–2011
Andrew J. Wyrobek	Lawrence Livermore National Laboratory	2006–2012
X. George Xu	Renesselaer Polytechnic Institute	2008–2014
R. Craig Yoder	Landauer, Inc.	2008–2014
Marco A. Zaider	Memorial Sloan-Kettering Cancer Center	2005–2011

Board of Directors

Leslie A. Braby	Raymond A. Guilmette*	Debra McBaugh
Jerrold T. Bushberg	Kathryn D. Held*	David S. Myers*
S.Y. Chen	Kenneth R. Kase	Thomas S. Tenforde
Paul M. DeLuca*	Paul A. Locke*	Julie E.K. Timins

*Newly elected to the Board of Directors on April 15, 2008

Officers

President	Thomas S. Tenforde
Senior Vice President	Kenneth R. Kase
Secretary and Treasurer	David A. Schauer

Distinguished Emeritus Members

Warren K. Sinclair, *President Emeritus*; Charles B. Meinhold, *President Emeritus*
S. James Adelstein, *Honorary Vice President*
W. Roger Ney, *Executive Director Emeritus*; William M. Beckner, *Executive Director Emeritus*

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Lynn R. Anspaugh
John A. Auxier
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Robert L. Brent
Randall S. Caswell
J. Donald Cossairt
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R.J. Michael Fry
Thomas F. Gesell*
Ethel S. Gilbert
Joel E. Gray
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Arthur W. Guy
Eric J. Hall
Naomi H. Harley
William R. Hendee
Donald G. Jacobs
Bernd Kahn
Charles E. Land
Roger O. McClellan
Barbara J. McNeil*
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Dade W. Moeller
A. Alan Moghissi
Wesley L. Nyborg
John W. Poston, Sr.
Andrew K. Poznanski
Genevieve S. Roessler
Marvin Rosenstein
Lawrence N. Rothenberg
Henry D. Royal*
William J. Schull
Roy E. Shore*
John E. Till
Robert L. Ullrich
Arthur C. Upton
F. Ward Whicker
Marvin C. Ziskin

†Deceased during 2008.
*Elected to Distinguished Emeritus Membership April 15, 2008.

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

†Deceased during 2008.
*Elected to Consociate Membership April 15, 2008.

Administrative Committees

Budget & Finance Committee (appointed by the Board of Directors, April 16, 2008)

Richard E. Toohey, *Chairman*[*]

Mary E. Clark
John R. Frazier
Ruth E. McBurney
R. Craig Yoder

[*]Appointed December 10, 2007.

Nominating Committee (appointed by the Board of Directors, April 16, 2008)

Amy Kronenberg, *Chairman*

John F. Ahearne
Jerrold T. Bushberg
Donald P. Frush
Susan M. Langhorst

Program Committee for 2009 Annual Meeting

(appointed by the Board of Directors, April 16, 2008)

Michael L. Corradini, *Chairman*

John F. Ahearne
Ralph L. Andersen
S.Y. Chen
Marvin Fertel
Alan S. Hanson
Ryoko Kusumi
Shizuyo Kusumi
Edward Lazo
Paul W. Lisowski
William H. Miller
Carl J. Paperiello
Mark T. Peters
Sylvain Saint-Pierre

Scientific and Administrative Staff

David A. Schauer	Executive Director
Isaf Al-Nabulsi	VBDR Program Administrator
Laura J. Atwell	Office Manager, ICRU Assistant Executive Secretary
Patricia H. Barnhill	VBDR Administrative Assistant
R. Thomas Bell	Technical Staff Consultant
James F. Berg	Accounting Consultant
Bruce B. Boecker	Technical Staff Consultant
Charles C. Church	Technical Staff Consultant
Brian D. Dodd	Technical Staff Consultant
Joel E. Gray	Technical Staff Consultant
Michael P. Grissom	Technical Staff Consultant
Kenneth L. Groves	Technical Staff Consultant
Luvenia J. Hawkins	Text Processor
Constantine J. Maletskos	Technical Staff Consultant
Morton W. Miller	Technical Staff Consultant
Cindy L. O'Brien	Managing Editor
Beverly A. Ottman	Receptionist, Text Processor, ISR Support Staff
Harold T. Peterson, Jr.	Technical Staff Consultant
Marvin Rosenstein	Technical Staff Consultant
Carlotta M. Teague	Publications Manager, Sales and Marketing
Melanie H. Todd	VBDR Senior Administrative Assistant
Bonnie G. Walker	Assistant Managing Editor
E. Ivan White	Technical Staff Consultant
Jean York	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, William F. Morgan
Operational Radiation Safety, David S. Myers
Nuclear and Radiological Security and Safety, John W. Poston, Sr.
Radiation Protection in Medicine, Jerrold T. Bushberg
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, William F. Morgan

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

William F. Morgan, *Vice President*
Joel S. Bedford
Bruce B. Boecker
Antone L. Brooks
David J. Grdina
Eric J. Hall
Kenneth R. Kase
Ann R. Kennedy
Amy Kronenberg
Charles E. Land
Gregory A. Nelson
Roy E. Shore
Julie E.K. Timins
Susan D. Wiltshire
Gayle E.Woloschak
Warren K. Sinclair, *Advisor*
Thomas S. Tenforde, *NCRP Contact*

Authorized but Unfunded Activities

- Lung cancer risks from inhaled radionuclides

Active Scientific Committees Under PAC 1

SC 1-13 Impact of Individual Susceptibility and Previous Radiation Exposure on Radiation Risk for Astronauts

Status: Preparing for Council review
Antone L. Brooks, *Chairman*
Mary M. Austin-Seymour
Joel S. Bedford
Keith H. Dinger
Roger W. Howell
Ritsuko Komaki
William F. Morgan
Roger P. Shaw
Ellen Baker, *Consultant*
Barbara Hinze, *Consultant*
C. Griffin Trotter, *Consultant*
Michael P. Grissom, *Technical Staff Consultant*

SC 1-15 Radiation Protection and Science Goals for Short-Term Lunar Missions

Status: Preparing for Council review
Thomas S. Tenforde, *Chairman*
Jay Apt
Stephen A. Benjamin
Ethel S. Gilbert
Michael J. Golightly
Richard P. Hill
George E. Iliakis
Karen E. Jenni
Stephen W.S. McKeever
John E. Moulder
Peggy L. Olive
C. Griffin Trotter
Kathryn D. Held, *Advisor*
Richard A. Mewaldt, *Advisor*
J. Leslie Redpath, *Advisor*
R.J. Michael Fry, *Consultant*
Amy Kronenberg, *Consultant*
Gregory A. Nelson, *Consultant*
Kenneth Souza, *Consultant*
Harold T. Peterson, Jr., *Technical Staff Consultant*

SC 1-16 Uncertainties in the Estimation of Radiation Risks and Probability of Disease Causation

Status: Committee drafting stage
R. Julian Preston, *Chairman*
John D. Boice, Jr.
A. Bertrand Brill
Ranajit Chakraborty
Rory Conolly
Richard W. Hornung
Dale L. Preston
Gayle E. Woloschak
F. Owen Hoffman, *Advisor*
Charles E. Land, *Advisor*
Morton W. Miller, *Technical Staff Consultant*

SC 1-17 Second Cancers and Cardiopulmonary Effects After Radiotherapy

Status: Committee drafting stage
Lois B. Travis, *Chairman*
John D. Boice, Jr., *Vice Chairman*
Kimberly E. Applegate
Louis S. Constine
Jean M. Cosset
Ethel S. Gilbert
Ann R. Kennedy
David Malkin
Andrea K.M. Ng
Ching-Hon Pui
James A. Purdy
X. George Xu
Joachim Yahalom
James M. Allan, *Consultant*
Charles C. Church, *Technical Staff Consultant*

SC 85 Risk of Lung Cancer from Radon

Status: Preparing for Council review
Naomi H. Harley, *Chairman*
Douglas B. Chambers
Fred T. Cross
Aurel Goodwin
Jay H. Lubin
John S. Neuberger
Janet B. Schoenberg

Peter G. Groer, *Advisor*
Howard L. Kusnetz, *Advisor*
Edith S. Robbins, *Consultant*
David A. Schauer, *NCRP Contact*

Published in 2008

NCRP Report No. 159, *Risk to the Thyroid from Ionizing Radiation*, was published in 2008. The Report was drafted by Scientific Committee 1-8 under the chairmanship of Henry D. Royal.

NCRP

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
Thomas S. Tenforde, *NCRP Contact*

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
- Response to and investigation of radiological accidents and incidents
- Radiation protection guidelines for industrial accelerators and irradiators

Active Scientific Committees Under PAC 2

SC 2-2 Key Decision Points and Information Needed by Decision Makers in the Aftermath of a Nuclear or Radiological Terrorism Incident
Status: Committee drafting stage
John W. Poston, Sr., *Chairman*
Brooke R. Buddemeier
Abel J. Gonzalez
Robert Ingram
Cynthia G. Jones
Kathleen Kaufman
John Lanza
Edwin M. Leidholdt
Debra McBaugh
Stephen V. Musolino
Tammy P. Taylor
Jerrold T. Bushberg, *Consultant*
Kenneth L. Groves, *Technical Staff Consultan*t

SC 2-3 Radiation Safety Issues for Image-Guided Interventional Medical Procedures
Status: Committee drafting stage
Stephen Balter, *Chairman*
Donald L. Miller, *Vice Chairman*
Beth A. Schueler, *Vice Chairman*
Jeffrey A. Brinker
Charles E. Chambers
Kenneth F. Layton
M. Victoria Marx
Cynthia H. McCollough
Keith J. Strauss
Louis K. Wagner
Andrew J. Einstein, *Consultant*
John W. Hopewell, *Consultant*
Norman J. Kleiman, *Consultant*
Matthew Williams, *Consultant*
Marvin Rosenstein, *Technical Staff Consultant*

SC 2-4 Self Assessment of Radiation Safety Programs
Status: Preparing for Council review
David S. Myers, *Chairman*
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
Thomas S. Tenforde, *NCRP Contact*

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*
Thomas S. Tenforde, *NCRP Contact*

Radiation Protection in Medicine

Vice President, Jerrold T. Bushberg

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

Jerrold T. Bushberg, *Vice President*
E. Stephen Amis
James A. Brink
John F. Cardella
Cindy C. Cardwell
Marc Edwards
Donald P. Frush
Ronald E. Goans
Linda A. Kroger
Edwin M. Leidholdt
Fred A. Mettler, Jr.
Theodore L. Phillips
J. Anthony Seibert
Stuart C.White
Shiao Y. Woo
Thomas S. Tenforde, *NCRP Contact*

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)

Active Scientific Committees Under PAC 4

SC 4-2 **Population Monitoring and Decontamination Following a Nuclear/Radiological Incident**
Status: Preparing for Council review
Richard J. Vetter, *Chairman*
Steven M. Becker
Eugene Carbaugh
James R. Cassata
Scott Davis
Fun H. Fong, Jr.
P. Andrew Karam
Steven H. King
Adela Salame-Alfie
Casper Sun
Katherine Uraneck
George J. Vargo
Bruce B. Boecker, *Technical Staff Consultant*

SC 4-3 **Diagnostic Reference Levels in Medical Imaging: Recommendations for Application in the United States**
Status: Committee drafting stage
James A. Brink, *Chairman*
John M. Boone
Jeffrey M. Michalski
David C. Spelic
Stuart C. White
Judy Yee
Joel E. Gray, *Technical Staff Consultant*

SC 4-4 **Risks of Ionizing Radiation to the Developing Embryo, Fetus and Nursing Infant**
Status: Committee early drafting stage
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
Susan D. Wiltshire, Consultant
Brian D. Dodd, *Technical Staff Consultant*

Published in 2008

NCRP Report No. 161, *Management of Persons Contaminated with Radionuclides*, was published in 2008. This Report was drafted by Scientific Committee 4-1 under the chairmanship of William J. Bair.

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 F. Gesell
Martin J. Letourneau
Jill A. Lipoti
Margaret M. MacDonell
Bruce A. Napier
Carl J. Paperiello
Frank L. Parker
Andrew Wallo, III
Chris G. Whipple
Anthony B. Wolbarst
Thomas S. Tenforde, *NCRP Contact*

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

Active Scientific Committees Under PAC 5

SC 64-22 Design of Effective Effluent and Environmental Monitoring Programs
Status: Preparing for Council review
Bernd Kahn, *Chairman*
James D. Berger
John Glissmeyer
Carl V. Gogolak
Norbert Golchert
Richard E. Jaquish
Janet A. Johnson
Shyam K. Nair
Bruce A. Napier, *Consultant*
E. Ivan White, *Technical Staff Consultant*

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*
Harold L. Beck
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
David A. Schauer, *NCRP Contact*

Authorized but Unfunded Activities

- Aerosol measurements
- Assessment of measurement methodologies for environmental indicators of past releases (joint with PAC 5)
- Biological dosimetry
- Evaluation of ultrasensitive measurement techniques
- Guidance on measurements for quality assurance and verification for conformal radiation therapy
- Update of NCRP Report No. 58, *Handbook of Radioactivity Measurements*

Active Scientific Committees Under PAC 6

SC 6-2 **Radiation Exposure of the U.S. Population** (listed by subcommittee)
Status: Revising after Council review
Kenneth R. Kase, *Chairman*
Marvin Rosenstein, *Technical Staff Consultant*

Industrial Exposures
Dennis M. Quinn, *Subcommittee Chairman*
Ralph L. Andersen
Regis A. Greenwood
Cynthia G. Jones
E. Scott Medling
Carl J. Paperiello
Linda M. Sewell

Occupational Exposures
Kenneth L. Miller, *Subcommittee Chairman*
David J. Allard
Kelly L. Classic
Michael A. Lewandowski
Kathleen L. Shingleton
George J. Vargo

Medical Patient Exposures
Bruce R. Thomadsen, *Subcommittee Chairman*
Mythreyi Bhargavan
Debbie B. Gilley
Joel E. Gray
Jill A. Lipoti
Mahadevappa Mahesh
Fred A. Mettler, Jr.
Terry T. Yoshizumi
John L. McCrohan, *Consultant*

Background Exposures
Daniel J. Strom, *Subcommittee Chairman*
Alan Birchall
Thomas B. Borak
David J. Brenner
Thomas F. Gesell
Paul E. Goldhagen
Keran O'Brien, III
Jerome S. Puskin
Anthony C. James, *Consultant*

Consumer Products and Miscellaneous Source Exposures
Orhan H. Suleiman, *Subcommittee Chairman*
Jennifer Goodman
Raymond A. Johnson
Cheryl K. Rogers
Paul W. Frame, *Consultant*
Ronald L. Kathren, *Consultant*

SC 6-3 Uncertainties in Internal Radiation Dosimetry
Status: Preparing for Council review
Andre Bouville, *Chairman*
A. Iulian Apostoaei
Wesley E. Bolch
Anthony C. James
Kimberlee J. Kearfott
Guthrie Miller
David J. Pawell
Charles A. Potter
George Sgouros
Michael G. Stabin
Richard E. Toohey
Richard W. Leggett, *Advisor*
Alan Birchell, *Consultant*
Clayton French, *Consultant*
R. Thomas Bell, *Technical Staff Consultant*

SC 6-4 Fundamental Principles of Dose Reconstruction
Status: Preparing for Council review
Bruce A. Napier, *Chairman*
Lynn R. Anspaugh
Robert D. Daniels
George D. Kerr
David C. Kocher
Kenneth J. Kopecky
James W. Neton
Steven L. Simon
Richard E. Toohey
Paul G. Voilleque
John E. Till, *Advisor*
Elena Buglova, *Consultant*
Marvin Rosenstein, *Technical Staff Consultant*

Published in 2008

A review of *Skin Doses from Dermal Contamination*, was issued in 2008. This review was drafted by Scientific Committee 6-6 under the chairmanship of Thomas F. Gesell.

A review of *Evaluation of Inhalation Doses in Scenarios Involving Resuspension by Nuclear Detonations at Nevada Test Site*, was issued in 2008. This review was drafted by Scientific Committee 6-7 under the chairmanship of Randall S. Caswell.

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
Thomas S. Tenforde, *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
Thomas S. Tenforde, *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 2008 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 Fairobent, Angela R. Keyser
American Brachytherapy Society	Rick Guggolz, Mark J. Rivard
American College of Cardiology	James Dove, Barbara Greenan
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	James B. Bramson
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 Pharmaceutical Association	Anne Burns
American Podiatric Medical Association	James Christina, Glenn B. Gastwirth
American Public Health Association	Georges C. Benjamin
American Radium Society	Jackie Weinstein
American Roentgen Ray Society	James A. Brink
American Society for Therapeutic Radiology and 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	Steven Carter
American Society of Radiologic Technologists	F. Lynn May, Greg Morrison
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, Richard 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
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 Marburger
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	Michael Poon
Society of Chairmen of Academic Radiology Departments	Lise Swanson
Society of Interventional Radiology	Stephen Balter, Debbie Katsarelis
Society of Nuclear Medicine	Virginia Pappas, Henry D. Royal

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, Elizabeth Cotsworth
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 2008 are:

Organization	Contact Person
Australian Radiation Laboratory	Keith H. Lokan
Bundesamt fur Strahlenschutz (Germany) (Federal Office for Radiation Protection)	Wolfram Konig
Canadian Nuclear Safety Commission	J.K. Pereira
Central Laboratory for Radiological Protection (Poland)	Slawomir Sterlinski
China Institute for Radiation Protection	Huating Yang
Commissariat a l'Energie Atomique (France)	Annie Sugier
Commonwealth Scientific Instrumentation Research Organization (Australia)	Stan Barnett
European Commission	Hans Forsstrom
Health Council of the Netherlands	A. Wijbenga
Health Protection Agency	Roger Cox
International Commission on Non-Ionizing Radiation Protection	Paolo Vecchia
International Commission on Radiation Units and Measurements	Paul M. DeLuca
Japanese Nuclear Safety Commission	Atsuyki Suzuki
Japan Radiation Council	Yasuhito Sasaki
Korea Institute of Nuclear Safety	Kwang Sik Choi
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 2008 are:

Organization	Contact Person
Duke Energy Corporation	Larry Haynes
GE Healthcare	Mark Doruff
Global Dosimetry Solutions	Sander Perle
Landauer, Inc.	R. Craig Yoder
Nuclear Energy Institute	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 PAC Vice President. 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 (51), Collaborating organizations (77), and Special Liaison organizations (19). 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
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: *Unde Venimus Quoque Imus*	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

2008 Lauriston S. Taylor Lecture

The Thirty-Second Lauriston S. Taylor Lecture presented by Dade W. Moeller, *Radiation Standards, Dose/Risk Assessments, Public Interactions, and Yucca Mountain: Thinking Outside the Box*, will be published in *Health Physics*.

Annual Meetings

Year	Topic
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

2008 Annual Meeting

The Forty-Fourth Annual Meeting of NCRP was held April 14–15, 2008 in North Bethesda, Maryland. The topic of the meeting was *Low Dose and Low Dose-Rate Radiation Effects and Models*. The sessions and presentations were as follows:

Fifth Annual Warren K. Sinclair Keynote Address
Issues in Quantifying the Effects of Low-Level Radiation, Dudley T. Goodhead

Opening Session
Overview of Goals of the Meeting, Antone L. Brooks
Low-Dose Extrapolation of Radiation-Related Health Risks: Status of Human Studies and State of the Art, Charles E. Land

Molecular, Cellular, Tissue and Animal Radiation Responses of Relevance to Radiation Protection
Molecular Responses: Introductory Remarks, Amy Kronenberg
DNA Damage and Repair as a Factor Contributing to Risk from Radiation, Penny A. Jeggo
Low-Dose Gene Expression Phenotyping – Molecular Pathways for Radioprotection Against DNA Damage and Chromosomal Abnormalities in Tissues, Andrew J. Wyrobek
Radiation Protection and Nontargeted Cellular and Tissue Responses at Low Radiation Doses, William F. Morgan
Low-Dose Radiation Responses in Cells, Tissues and Animals: Introductory Remarks, Gayle E. Woloschak
Chromosome Aberrations as a Function of Dose, Dose Rate, and Linear Energy Transfer: Implications for Radiation Risk, Michael N. Cornforth
Factors that Modify Radiation-Induced Carcinogenesis, Ann R. Kennedy
Role of Tissue Responses in Modification of Radiation Effects, Mary Helen Barcellos-Hoff
Influence of Low Linear Energy Transfer Radiation Dose and Dose Rate on Radiation Risk: Life-Span Dog Studies, Antone L. Brooks
Variations in Radiation Sensitivity Among Individuals—The Potential Impact on Risk Assessment, Joel S. Bedford
Biophysical Modelling and Systems Biology Approaches to Understanding Low-Dose Radiation Effects, Herwig G. Paretzke

Human Epidemiology Studies

Human Epidemiology Studies as a Basis for Current Radiation Risk Estimates: Introductory Remarks, John D. Boice, Jr.

Low-Dose Radiation Epidemiology Studies: Status and Issues, Roy E. Shore

Impact of Dosimetry Uncertainties on Dose-Response Analyses, Ethel S. Gilbert

Debate on the Topic "Does Scientific Evidence Support a Change from the LNT Model for Low-Dose Radiation Risk Extrapolation?": Moderator's Introductory Remarks, Eric J. Hall

Low-Dose Radiation Effects, Regulatory Policy and Impacts on the Public

What Would It Take to Promote or Require a Change in Regulations?: Introductory Remarks, Jill A. Lipoti

Low-Dose Effects and Modeling in Public Health Decision Making: Examining the Past, Explaining the Present, and Exploring the Future, Paul A. Locke

Low-Dose Radiation Effects, Regulatory Policy, and Impact on the Public: U.S. Nuclear Regulatory Commission Perspective, Martin J. Virgilio

U.S. Department of Energy Perspective: Supporting Research to Inform Regulatory Policy, Noelle F. Metting

U.S. Environmental Protection Agency's Perspective on What it Would Take to Promote or Require a Change in Radiation Protection Regulations, Juan Reyes

Public Perception and Policy: Introductory Remarks, Susan D. Wiltshire

Beliefs About Radiation: Scientists, the Public, and Public Policy, Hank C. Jenkins-Smith

Federal Programs to Reimburse the Public for Environmental and Occupational Exposures, Paul L. Ziemer

How Do We Combine Science and Regulations for Decision Making Following Radiological Accidents and Incidents?, John W. Poston, Sr.

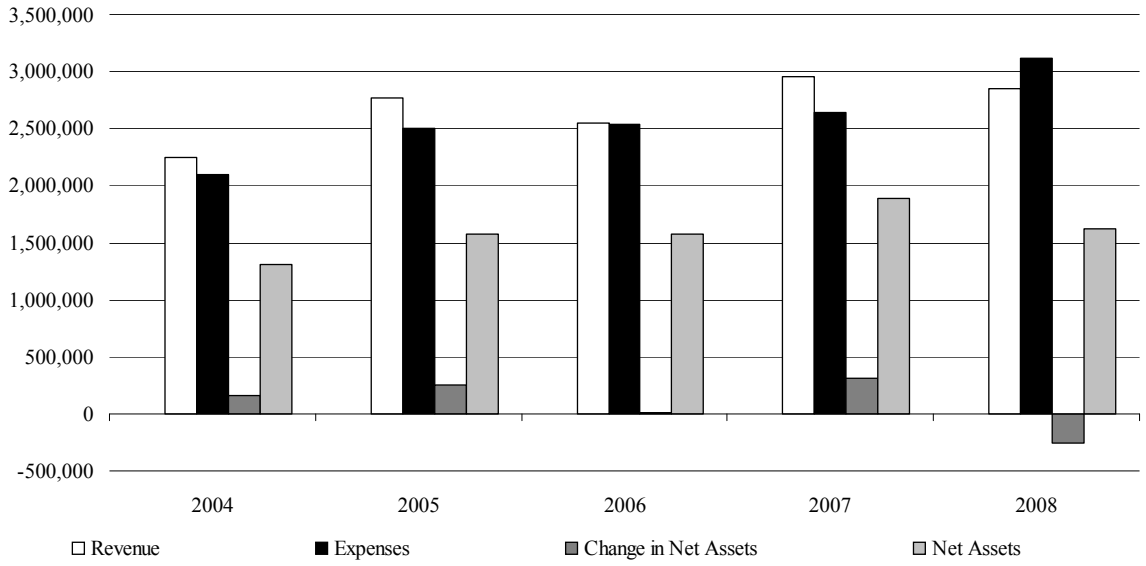
Serving on the Program Committee for the 2008 Annual Meeting were: Antone L. Brooks, *Chairman*; Joel S. Bedford, Bruce B. Boecker, R.J. Michael Fry, Dudley T. Goodhead, Eric J. Hall, Kenneth R. Kase, Ann R. Kennedy, Amy Kronenberg, Charles E. Land, Roy E. Shore, Julie E. Timins, Susan D. Wiltshire, and Gayle E. Woloschak. The proceedings of the 2008 Annual Meeting will be published in *Health Physics.*

APPENDICES

Financial Summary

The table and bar graph presented below exhibit NCRP's year-end financial data for 2008 and the four preceding years in the categories: (1) total revenue from grants, contracts, contributions, corporate sponsorships, 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. Although from an operational perspective NCRP had a financially successful year with income exceeding expenses by $143.8K, there was a net loss in value of NCRP's investment portfolio of $405.9K. The net change in assets in 2008 was therefore ($262.1K), which was the first decrease in NCRP's assets during the past six years. Of the net change in value of NCRP's investments, $371.3K were unrealized losses that are expected to be reversed as the U.S. stock market recovers its strength in the future.

Year	Revenue	Expenses	Change in Net Assets	Net Assets
2004	2,249,303	2,093,973	155,330	1,313,083
2005	2,765,706	2,507,843	257,863	1,570,946
2006	2,548,731	2,542,101	6,630	1,577,576
2007	2,955,060	2,647,516	307,544	1,885,120
2008	2,856,006	3,118,078	(262,072)	1,623,048



Appendix 1: Finances

Exhibit A
Statement of Financial Position
December 31, 2008

(unaudited)

Current Assets	
Cash and cash equivalents	620,186
Investments [at market]	1,070,283
Accounts receivable:	
Publications [net of allowance of 1,963]	35,906
Grants and contracts	199,678
International Commission on Radiation Units and Measurements	804
International Society of Radiology	1,078
Other	6,530
Inventory—publications	307,898
Prepaid expenses and other assets	24,170
Total current assets	2,266,533
Property and Equipment [at cost]	
Furniture and equipment	345,440
Leasehold improvements	8,610
	354,050
Less accumulated depreciation and amortization	315,893
Total property and equipment	38,157
TOTAL ASSETS	2,304,690
Liabilities	
Accounts payable and accrued expenses	211,050
Total current liabilities	211,050

Other Liabilities	
Deferred rent liability	9,360
Accrued post retirement benefits	461,232
Total other liabilities	470,592
TOTAL LIABILITIES	681,642
Net Assets	
Unrestricted:	
Undesignated	509,541
Board designated	995,449
Temporarily restricted	118,058
TOTAL NET ASSETS	1,623,048
TOTAL LIABILITIES AND NET ASSETS	2,304,690

Exhibit B
Statement of Activities
For the year ended December 31, 2008
(unaudited)

	Unrestricted	Temporarily Restricted	Total
Revenue and Other Increases			
Contracts and grants	2,385,408		2,385,408
Contributions	116,490		116,490
Corporate sponsorship	35,000		35,000
Sales of publications	228,697		228,697
Dividends and interest	50,200	5,088	55,288
Professional and administrative services	35,123		35,123
Total revenue and other increases	2,850,918	5,088	2,856,006
Expenses and other decreases			
Net realized and unrealized loss on investments	363,112	71,938	435,050
Program costs:			
Contracts and grants	1,359,826		1,359,826
Publications	179,541		179,541
Investment fees	15,319	2,594	17,913
	1,917,798	74,532	1,992,330
Management and general expenses	1,125,748	0	1,125,748
Total expenses	3,043,546	74,532	3,118,078
Change in Net Assets	(192,628)	(69,444)	(262,072)
Interfund transfers	(4,583)	4,583	0
Net Assets at Beginning of Year	1,702,201	182,919	1,885,120
Net Assets at End of Year	1,504,990	118,058	1,623,048

Exhibit C
Statement of Cash Flow
For the year ended December 31, 2008

(unaudited)

Cash flows from operating activities:	
Change in net assets	(262,072)
Adjustments to reconcile change in net assets to cash provided by operating activities	
Depreciation and amortization	15,134
Net realized and unrealized loss on investments	435,050
(Increase) decrease in assets:	
Accounts receivable	(12,629)
Inventory—publications	22,105
Prepaids and other assets	4,648
Increase (decrease) in liabilities:	
Accounts payable and accrued expenses	(47,747)
Deferred rent liability	(4,811)
Accrued post retirement benefits	(10,652)
Net cash provided by operating activities	139,026
Cash flows from investing activities:	
Purchase of furniture, equipment and leasehold improvements	(22,220)
Purchase of investments	(1,275,448)
Sale of investments	1,204,582
Net cash used by investing activities	(93,086)
Net increase in cash and cash equivalents	45,940
Cash and cash equivalents at beginning of year	574,246
	620,186
Cash and cash equivalents at end of year	

Schedule 1
Schedule of Contracts and Grants Revenue
For the year ended December 31, 2008

(unaudited)

Contracts	
Centers for Disease Control and Prevention	411,336
Defense Threat Reduction Agency and Veterans Administration	1,221,601
Department of Homeland Security, Domestic Nuclear Detection Office	228,390
National Institute for Occupational Safety and Health	10,602
U.S. Navy	49,044
Total contracts	1,920,973
Grants	
Department of Energy	13,739
National Aeronautics and Space Administration	95,000
National Cancer Institute	355,696
Total grants	464,435
Total contracts and grants revenue	2,385,408

Schedule 2
Schedule of Contributions & Corporate Sponsorship Revenue
For the year ended December 31, 2008

(unaudited)

Contributions	
American Academy of Health Physics	1,000
American Academy of Oral and Maxillofacial Radiology	500
American Association of Physicists in Medicine	5,000
American College of Medical Physics	500
American College of Radiology Foundation	25,000
American Industrial Hygiene Association	1,000
American Nuclear Society	3,000
American Osteopathic College of Radiology	275
American Roentgen Ray Society	7,500
American Society for Therapeutic Radiology and Oncology	3,000
American Society of Radiologic Technologists	6,000
Council on Radionuclides and Radiopharmaceuticals	2,500
Health Physics Society	25,000
Individuals	7,215
International Commission on Radiation Units and Measurements	1,000
Landauer, Inc.	3,000
Lillian and Robert Brent Fund	2,000
Radiological Society of North America	20,000
Society of Nuclear Medicine	2,500
Society for Pediatric Radiology	500
Total contributions	116,490
Corporate Sponsors	
Duke Energy Corporation	5,000
GE Healthcare	10,000
Global Dosimetry Solutions	5,000
Landauer, Inc.	10,000
Nuclear Energy Institute	5,000
Total Corporate Sponsors	35,000

Appendix 2: Publications

Distribution of NCRP Publications

(during the period May 16, 1931 through December 31, 2008)

No.	Title and Year of Publication	Number of Copies Distributed				
			NCRP Publications[b]			
		Government Printing Office[a]	2008		Total NCRP Publications	All Sources Combined
			Hardcopy	E-Pub		
NCRP Reports						
161	Management of Persons Contaminated with Radionuclides					
160	Ionizing Radiation Exposure of the Population of the United States					
159	Risk to the Thyroid from Ionizing Radiation					
158	Uncertainties in the Measurement and Dosimetry of External Radiation (2007)	__d	376	42	418	418
157	Radiation Protection in Educational Institutions (2007)	__d	580	119	699	699
156	Development of a Biokinetic Model for Radionuclide-Contaminated Wounds and Procedures for Their Assessment, Dosimetry and Treatment (2006)	__d	108	68	593	593
155	Management of Radionuclide Therapy Patients (2006)	__d	66	115	820	820
154	Cesium-137 in the Environment: Radioecology and Approaches to Assessment and Management (2006)	__d	19	34	485	485
153	Information Needed to Make Radiation Protection Recommendations for Space Missions Beyond Low-Earth Orbit (2006)	__d	46	19	592	592
152	Performance Assessment of Near-Surface Facilities for Disposal of Low-Level Radioactive Waste (2005)	__d	9	14	504	504
151	Structural Shielding Design and Evaluation for Megavoltage X- and Gamma-Ray Radiotherapy Facilities (2005)	__d	66	213	2,667	2,667
150	Extrapolation of Radiation-Induced Cancer Risks from Nonhuman Experimental Systems to Humans (2005)	__d	14	11	645	645
149	A Guide to Mammography and Other Breast Imaging Procedures (2004)	__d	11	32	1,036	1,036
148	Radiation Protection in Veterinary Medicine (2004)	__d	11	40	1,030	1,030
147	Structural Shielding Design for Medical X-Ray Imaging Facilities (2004)	__d	31	189	3,534	3,534

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b]		Total NCRP Publications	All Sources Combined
			2008			
			Hardcopy	E-Pub		
	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	5	17	1,037	1,037
145	Radiation Protection in Dentistry (2003)	__d	15	98	1,831	1,831
144	Radiation Protection for Particle Accelerator Facilities (2003)	__d	42	79	1,841	1,841
143	Management Techniques for Laboratories and Other Small Institutional Generators to Minimize Off-Site Disposal of Low-Level Radioactive Waste (2003)	__d	2	7	696	696
142	Operational Radiation Safety Program for Astronauts in Low-Earth Orbit: A Basic Framework (2002)	__d	5	12	1,115	1,115
141	Managing Potentially Radioactive Scrap Metal (2002)	__d	3	7	1,174	1,174
140	Exposure Criteria for Medical Diagnostic Ultrasound: II. Criteria Based on All Known Mechanisms (2002)	__d	2	10	758	758
139	Risk-Based Classification of Radioactive and Hazardous Chemical Wastes (2002)	__d	3	14	943	943
138	Management of Terrorist Events Involving Radioactive Material (2001)	__d	11	43	7,377	7,377
137	Fluence-Based and Microdosimetric Event-Based Methods for Radiation Protection in Space (2001)	__d	11	4	753	753
136	Evaluation of the Linear-Nonthreshold Dose-Response Model for Ionizing Radiation (2001)	__d	9	22	1,286	1,286
135	Liver Cancer Risk from Internally-Deposited Radionuclides (2001)	__d	1	4	1,094	1,094
134	Operational Radiation Safety Training (2000)	__d	10	14	1,231	1,231
133	Radiation Protection for Procedures Performed Outside the Radiology Department (2000)	__d	11	32	1,560	1,560
132	Radiation Protection Guidance for Activities in Low-Earth Orbit (2000)	__d	4	12	982	982
131	Scientific Basis for Evaluating the Risks to Populations from Space Applications of Plutonium (2001)	__d	1	2	783	783
130	Biological Effects and Exposure Limits for “Hot Particles” (1999)	__d	1	13	1,076	1,076
129	Recommended Screening Limits for Contaminated Surface Soil and Review of Factors Relevant to Site-Specific Studies (1999)	__d	3	13	1,616	1,616
128	Radionuclide Exposure of the Embryo/Fetus (1998)	__d	7	18	1,505	1,505
127	Operational Radiation Safety Program (1998)	__d	12	39	2,084	2,084

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b] 2008		Total NCRP Publications	All Sources Combined
			Hardcopy	E-Pub		
126	Uncertainties in Fatal Cancer Risk Estimates Used in Radiation Protection (1997)	__d	7	12	1,837	1,837
125	Deposition, Retention and Dosimetry of Inhaled Radioactive Substances (1997)	__d	0	9	2,493	2,493
124	Sources and Magnitude of Occupational and Public Exposures from Nuclear Medicine Procedures (1996)	__d	16	20	3,053	3,053
123	Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground (1996)	__d	0	17	3,039	3,039
122	Use of Personal Monitors to Estimate Effective Dose Equivalent and Effective Dose to Workers for External Exposure to Low-LET Radiation (1995)	__d	6	14	3,130	3,130
121	Principles and Application of Collective Dose in Radiation Protection (1995)	__d	0	8	2,400	2,400
120	Dose Control at Nuclear Power Plants (1994)	__d	0	7	2,971	2,971
119	A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields (1993)	__d	0	20	3,396	3,396
118	Radiation Protection in the Mineral Extraction Industry (1993)	__d	0	8	2,604	2,604
117	Research Needs for Radiation Protection (1993)	__d	2	3	1,920	1,920
116	Limitation of Exposure to Ionizing Radiation (1993)	__d	14	51	6,900	6,900
115	Risk Estimates for Radiation Protection (1993)	__d	2	18	3,091	3,091
114	Maintaining Radiation Protection Records (1992)	__d	1	7	2,410	2,410
113	Exposure Criteria for Medical Diagnostic Ultrasound: I. Criteria Based on Thermal Mechanisms (1992)	__d	1	7	3,254	3,254
112	Calibration of Survey Instruments Used in Radiation Protection for the Assessment of Ionizing Radiation Fields and Radioactive Surface Contamination (1991)	__d	2	26	3,699	3,699
111	Developing Radiation Emergency Plans for Academic, Medical and Industrial Facilities (1991)	__d	2	10	4,031	4,031
110	Some Aspects of Strontium Radiobiology (1991)	__d	0	1	2,544	2,544
109	Effects of Ionizing Radiation on Aquatic Organisms (1991)	__d	0	2	2,164	2,164
108	Conceptual Basis for Calculations of Absorbed-Dose Distributions (1991)	__d	1	3	3,100	3,100
107	Implementation of the Principle of As Low As Reasonably Achievable (ALARA) for Medical and Dental Personnel (1990)	__d	3	14	3,304	3,304
106	Limit for Exposure to “Hot Particles” on the Skin (1990)	__d	0	4	2,857	2,857
105	Radiation Protection for Medical and Allied Health Personnel (1989)	__d	6	23	6,667	6,667

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b]		Total NCRP Publications	All Sources Combined
			2008			
			Hardcopy	E-Pub		
104	The Relative Biological Effectiveness of Radiations of Different Quality (1990)	__d	5	7	2,381	2,381
103	Control of Radon in Houses (1989)	__d	0	3	3,736	3,736
102	Medical X-Ray, Electron Beam and Gamma-Ray Protection for Energies up to 50 MeV (Equipment Design, Performance and Use) (1989)	__d	35	41	7,609	7,609
101	Exposure of the U.S. Population from Occupational Radiation (1989)	__d	0	5	4,140	4,140
100	Exposure of the U.S. Population from Diagnostic Medical Radiation (1989)	__d	2	5	4,949	4,949
99	Quality Assurance for Diagnostic Imaging (1988)	__d	5	14	4,728	4,728
98	Guidance on Radiation Received in Space Activities (1989)	__d	2	5	3,387	3,387
97	Measurement of Radon and Radon Daughters in Air (1988)	__d	0	3	4,175	4,175
96	Comparative Carcinogenicity of Ionizing Radiation and Chemicals (1989)	__d	0	2	4,078	4,078
95	Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources (1987)	__d	2	14	4,231	4,231
94	Exposure of the Population in the United States and Canada from Natural Background Radiation (1987)	__d	0	15	4,374	4,374
93	Ionizing Radiation Exposure of the Population of the United States (1987)	__d	0	12	7,341	7,341
92	Public Radiation Exposure from Nuclear Power Generation in the United States (1987)	__d	0	6	3,672	3,672
91	Recommendations on Limits for Exposure to Ionizing Radiation (1987)	__d	0	0	8,486	8,486
90	Neptunium: Radiation Protection Guidelines (1988)	__d	0	0	2,895	2,895
89	Genetic Effects from Internally Deposited Radionuclides (1987)	__d	0	1	3,948	3,948
88	Radiation Alarms and Access Control Systems (1986)	__d	1	8	4,760	4,760
87	Use of Bioassay Procedures for Assessment of Internal Radionuclide Deposition (1987)	__d	1	10	4,197	4,197
86	Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields (1986)	__d	0	4	5,234	5,234
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	0	8	4,225	4,225
83	The Experimental Basis for Absorbed-Dose Calculations in Medical Uses of Radionuclides (1985)	__d	0	4	3,531	3,531

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b] 2008		Total NCRP Publications	All Sources Combined
			Hardcopy	E-Pub		
82	SI Units in Radiation Protection and Measurements (1985)	__d	1	11	4,548	4,548
81	Carbon-14 in the Environment (1985)	__d	0	1	3,954	3,954
80	Induction of Thyroid Cancer by Ionizing Radiation (1985)	__d	0	0	4,260	4,260
79	Neutron Contamination from Medical Electron Accelerators (1984)	__d	10	22	4,737	4,737
78	Evaluation of Occupational and Environmental Exposures to Radon and Radon Daughters in the United States (1984)	__d	1	5	6,457	6,457
77	Exposures from the Uranium Series with Emphasis on Radon and Its Daughters (1984)	__d	0	1	6,634	6,634
76	Radiological Assessment: Predicting the Transport, Bioaccumulation, and Uptake by Man of Radionuclides Released to the Environment (1984)	__d	0	4	6,658	6,658
75	Iodine-129: Evaluation of Release from Nuclear Power Generation (1983)	__d	0	2	5,930	5,930
74	Biological Effects of Ultrasound: Mechanisms and Clinical Implications (1983)	__d	1	3	11,203	11,203
73	Protection in Nuclear Medicine and Ultrasound Diagnostic Procedures in Children (1983)	__d	0	3	5,483	5,483
72	Radiation Protection and Measurement for Low-Voltage Neutron Generators (1983)	__d	0	8	4,407	4,407
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	0	1	5,396	5,396
69	Dosimetry of X-Ray and Gamma-Ray Beams for Radiation Therapy in the Energy Range 10 keV to 50 MeV (1981)	__d	0	5	4,986	4,986
68	Radiation Protection in Pediatric Radiology (1981)	__d	0	5	4,464	4,464
67	Radiofrequency Electromagnetic Fields—Properties, Quantities and Units, Biophysical Interaction and Measurements (1981)	__d	0	4	5,428	5,428
66	Mammography (1980)	__d	__e	0	4,598	4,598
65	Management of Persons Accidentally Contaminated with Radionuclides (1980)	__d	17	28	18,369	18,369
64	Influence of Dose and Its Distribution in Time on Dose-Response Relationships for Low-LET Radiations (1980)	__d	0	4	5,235	5,235
63	Tritium and Other Radionuclide Labeled Organic Compounds Incorporated in Genetic Material (1979)	__d	0	1	4,317	4,317
62	Tritium in the Environment (1979)	__d	0	6	3,930	3,930
61	Radiation Safety Training Criteria for Industrial Radiography (1978)	__d	1	1	6,147	6,147

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b] 2008		Total NCRP Publications	All Sources Combined
			Hardcopy	E-Pub		
60	Physical, Chemical and Biological Properties of Radiocerium Relevant to Radiation Protection Guidelines (1979)	__d	0	0	4,025	4,025
59	Operational Radiation Safety Program (1979)	__d	0	0	8,046	8,046
58	A Handbook of Radioactivity Measurements Procedures (1978)	__d	1	7	13,565	13,565
57	Instrumentation and Monitoring Methods for Radiation Protection (1978)	__d	1	10	10,921	10,921
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	1	2	6,830	6,830
54	Medical Radiation Exposure of Pregnant and Potentially Pregnant Women (1977)	__d	10	13	10,483	10,483
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	0	1	4,686	4,686
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	6	7,894	7,894
49	Structural Shielding Design and Evaluation for Medical Use of X Rays and Gamma Rays of Energies up to 10 MeV (1976)	__d	1	49	17,361	17,361
	Adjunct to NCRP Report 49 (1976)	__d	0	0	2,796	2,796
48	Radiation Protection for Medical and Allied Health Personnel (1976)	__d	__e	0	14,359	14,359
47	Tritium Measurement Techniques (1976)	__d	0	2	6,356	6,356
46	Alpha-Emitting Particles in Lungs (1975)	__d	0	3	6,069	6,069
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	220	4	6,560	6,560
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	1	2	47,209	47,209
41	Specification of Gamma-Ray Brachytherapy Sources (1974)	__d	0	1	5,455	5,455

No.	Title and Year of Publication	Number of Copies Distributed				
		Government Printing Office[a]	NCRP Publications[b] 2008		Total NCRP Publications	All Sources Combined
			Hardcopy	E-Pub		
40	Protection Against Radiation from Brachytherapy Sources (1972)	__d	1	6	9,756	9,756
39	Basic Radiation Protection Criteria (1971)	__d	__e	0	40,393	40,393
38	Protection Against Neutron Radiation (1971)	__d	1	15	8,873	8,873
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
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	2	1	22,359	22,359
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	0	2	9,921	34,371
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	0	1	3,824	7,938
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	4,082	14,872
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	3,072	14,921
22	Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure (1959)	52,526	1	2	7,437	59,963
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

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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		1,710	28,900
13	Protection Against Radiation from Radium, Cobalt-60 and Cesium-137 (1954)	22,785	__e		0	22,785
12	Recommendations for the Disposal of Carbon-14 Wastes (1953)	23,506	__e		2,571	26,077
11	Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water (1953)	32,494	__e		0	32,494
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8	Control and Removal of Radioactive Contamination in Laboratories (1951)	50,500	6	1	7,640	58,140
7	Safe Handling of Radioactive Isotopes (1949)	60,867	__e		0	60,897
6	Medical X-Ray Protection up to Two Million Volts (1949)	70,261	__e		0	70,261
5	Safe Handling of Radioactive Luminous Compounds (1941)	6,187	__e		0	6,187
4	Radium Protection (1938)	10,086	__e		0	10,086
3	X-Ray Protection (1936)	16,490	__e		0	16,490
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