RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE DEPARTMENT OF ENERGY

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It is as true today as it was yesterday and will be tomorrow and many tomorrows thereafter that a good workman must ever and always pass a poor workman. The world still beats a track to the door of the man who is most able in his line, even if that line be only the making of mousetraps. . . . B. C. Forbes

"Happy New Year!!"

Thank you . . the most appropriate words we know to convey our gratitude for the cooperation, friendship, and confidence you have shown RSIC throughout the year. It is truly because of you that our progress has been maintained.

Our bulletin boards again are filled with your greetings received from around the world. It is a pleasure to work with you to promote better radiation and shielding knowledge and practice.

May the coming year bring an abundance of good health, professional success, happiness, and prosperity to you and your family—The RSIC Staff

NEWSLETTER HAS NEW LOOK

This is the first edition of the RSIC Newsletter whose type was set by the new ORNL Aps μ5 phototypesetter. New software, based on the VERSACOMP system, was used to process the input text. You may see some peculiarities until the system is fully developed. The newsletter was first produced by a typesetter in 1974.

Gamma-Ray Dose Constant Errata

There is a typographical error for the value of ^{137}Cs in the RSIC report "Specific Gamma-Ray Dose Constants for Nuclides Important to Dosimetry and Radiological Assessment". The value given is 1.03×10^{4}; it should be 1.03×10^{-4}.

It should be noted also that the format for the probability and dose values give a problem for very small probabilities causing the two values to run together when the dose is less than 10^{-9}. In such cases the dose is given correctly, but the probability is given as zero.

The nuclides identified as 33mBa, 35mBa and 37mBa should be 133mBa, 135mBa, and 137mBa respectively.

Radioactive Decay Data Book Available

The Technical Information Center, U.S. Department of Energy, has published a book *Radioactive Decay Data Tables* , by David C. Kocher, Oak Ridge National Laboratory.

The estimation of radiation dose to man from either external or internal exposure to radionuclides requires a knowledge of the energies and intensities of the atomic and nuclear radiations emitted during the radioactive decay process. The availability of evaluated decay data for the large number of radionuclides of interest is thus of fundamental importance for radiation dosimetry.

Decay data are listed for approximately 500 radionuclides, which include those occurring naturally in the environment, those of potential importance in routine or accidental releases from the nuclear fuel cycle, those of current interest in nuclear medicine and fusion reactor technology, and some of those of interest to Committee 2 of the International Commission on Radiological Protection for the estimation of annual limits on intake via inhalation and ingestion for occupationally exposed individuals. This handbook supersedes Report ORNL/NUREG/TM-102, which was concerned only with radionuclides from the nuclear fuel cycle.

The data are also available from RSIC in computer-readable form as DLC-80/DRALIST. The library is written in two formats, the MEDLIST format (similar to ENDF/B) and a simplified format.

The book is available as DOE/TIC-11026 for $13.75 from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Paper binding, 8½ × 11 in., 227 book pages. Library of Congress catalog card number 81-607800.

CHANGES TO THE CODES COLLECTION

The following changes have been made to the computer codes collection: an error correction, two extensions, and a replacement to existing code packages, and two new contributions.

CCC-266/ONETRAN

The IBM version (B) of ONETRAN, a one-dimensional multigroup discrete ordinates finite element transport code package, was updated to correct errors called to RSIC attention by V. Brandl, I.N.R. KfK Karlsruhe, Federal Republic of Germany, Enrico Sartori, OECD NEA Data Bank, Gif-sur-Yvette, France, and Thomas R. Hill, Los Alamos National Laboratory, Los Alamos, New Mexico. Details of the update may be requested from RSIC.

CCC-289/SKYSHINE II

SKYSHINE II, the code package for Monte Carlo integration of 6-MeV gamma-ray transmission, reflection, and air-scattered data to compute dose rates outside concrete-steel buildings, has been extended to include a CDC version (B) which was contributed by Century Research Center Corporation of Tokyo, Japan. FORTRAN IV.

CCC-371/ORIGEN II

The IBM version (A) in the ORIGEN II code package was replaced by a newly frozen version provided by the Oak Ridge National Laboratory. The new version represents a number of corrections and minor modifications made as a result of user feedback and internal examination of the uses of ORIGEN II. Select changes were made to enhance usefulness of the package. Cross section libraries for thorium-cycle LMFBRs were added. A description of the new version may be requested from RSIC. The CDC version (B) in the package remains unchanged. FORTRAN IV; IBM 360/370.

CCC-408/INGDOS

INGDOS, a code package for implementing U.S. NRC Regulatory Guide 1.109 Models for estimation of annual doses from ingestion of atmospherically released radionuclides in foods, was contributed by the Oak Ridge National Laboratory. A conversational FORTRAN IV program, INGDOS calculates concentrations of airborne radionuclides in foods and annual doses to various organs of man from ingestion of foods contaminated by radionuclides released to the atmosphere. Reference: ORNL/TM-8571. FORTRAN IV; PDP-10.

PSR-63/AMPX

AMPX, a modular code system for generating coupled multigroup neutron-gamma-ray cross-section libraries from data in ENDF format, was extended with the addition of 7 subroutines: QPINTO, PINTO, BASTE, SEASON, HPINT, QPINTE, and CQ. These routines make possible implementation of a new procedure for ROLAIDS which eliminates much of the repetitive work and affords a significant reduction in CPU time for ROLAIDS. These subroutines may be requested separately or with the entire code package. FORTRAN IV; IBM 360.

PSR-155/DOGS

A collection of routines for the graphical display of calculated data generated by discrete ordinates codes (DOGS), was contributed by the Oak Ridge National Laboratory. The package includes EGAD for plotting two-dimensional geometries, ISOPLOT4 for plotting 2-D fluxes in a contour line fashion, FORM for plotting 2-D fluxes in a 3-D surface fashion, ACTUAL for calculating 2-D activities, TOOTH for calculating and plotting

space-energy contributon fluxes, and ASPECT for plotting energy spectra. All of the codes use the FIDO input formats (also in ANISN, DOT, etc.) and DISSPLA graphics software including the DISSPOP post processors. FORTRAN IV; IBM 360/370.

CHANGE IN DATA COLLECTION

A data retrieval code was added to an existing data package.

DLC-60/MACKLIB IV

The MACKLIB-IV data package (171-neutron, 36-gamma-ray group nuclear response function data library calculated with PSR-132/MACK-IV from data in the ENDF/B-IV master files) has been extended to add RIPOFF, a data retrieval program contributed by the Oak Ridge National Laboratory. The retrieval code may be separately requested. FORTRAN IV; IBM 360/370.

PERSONAL ITEMS

We have been informed that *Robert (Bob) A. Dannels* died on Christmas Eve, 1981 following a long illness. An expert in reactor physics, Bob managed Methods Development in the Nuclear Safety Department, Nuclear Technology Division of the Nuclear Energy Systems of Westinghouse Electric Corporation, Pittsburgh, Pennsylvania. He was a long-time participant in standards and other technical activities within the American Nuclear Society and deeply involved in evaluation efforts through the National Cross Section Evaluation Working Group which produces the Evaluated Nulcear Data File (ENDF) disseminated by the National Nuclear Data Center, Brookhaven National Laboratory. He participated in all efforts to advance the state of the art in his reactor physics professional field. Bob Dannels will be sorely missed throughout the technical community and RSIC has lost a friend. Condolences may be sent to his wife, Beverly Dannels, 191 Everest Drive, North Huntington, Pennsylvania 15642 (Telephone: 412-863-2470).

Sam E. Berk, former staff member in the DOE Office of Reactor Research and Technology, has accepted responsibility for the Blanket and Shield Engineering Program of the DOE Office of Fusion Research, Division of Development and Technology, Reactor Systems and Applications Branch. He is the principal point of contact for all programmatic matters in Blanket and Shield Engineering, including the First Wall, Blanket, and Shield Engineering Test Program, blanket tritium breeding and recovery, blanket concept development, nuclear data, and neutronics.

The retirement of *James O. Buchanan* of the Office of Research, Federal Emergency Management Agency (FEMA), Washington, D.C., has been announced by FEMA. Replacing him in RSIC's Directory is David W. Bensen, Program Manager for the FEMA Office of Research's National Preparedness Program. Buchanan served as an RSIC sponsor (DoD Civil Defense Agency) for several years for coverage of shelter (fallout) shielding and other radiation protection information, including the literature, numeric data, and computer codes. RSIC continues to hold this information to preserve the state of the art.

Dr.-Ing. Gerhard Hopp reports that the engineering office of IGN near Munich, West Germany, has recently transferred its nuclear technology functions and employees to the IGN Engineering Society for Nuclear Protection, Inc. Work continues for both public and private enterprises in the treatment of assigned tasks primarily in the areas of radiation shielding analysis and technology, radiation behavior analysis of electronic circuits, and nuclear damage potential and survivability analysis. The managers of the IGN are *Mr. Hors Reker* and *Mr. Gerd P. Hopp.*

W. K. Sinclair has accepted the position of full-time president of the National Council on Radiation Protection and Measurements. The NCRP announced concurrently its decision to change from a part-time presidency and Sinclair's acceptance of the full-time position. Sinclair formerly divided his time between serving as part-time NCRP President and Associate Laboratory Director for Biomedical and Environmental Research at Argonne National Laboratory.

Robert (Bob) French, an RSIC participant for many years, has returned to the radiation protection community with his former associates at Radiation Research Associates at Fort Worth, Texas. He has been in other types of work for about 10 years, most recently at Planco, Inc. in Dallas working in technology assessment.

VISITORS TO EPIC

The following persons came for an orientation visit and/or to use EPIC facilities during the month of December: *Fujishige Yamauchi,*

Director of Data Management of the Institute of Nuclear Safety, Tokyo, Japan; *Takeshi Ikishima,* Manager Data Control Office; and *Hiroshi Mitzuta,* Principal Engineer Nuclear Fuel Cycle, of the Japan Atomic Energy Research Institute, Tokyo, Japan.

RSIC Staff Changes

RSIC begins CY 1982 with the assistance of a new staff replacement for Nancy Smith who transferred to another ORNL position and the return of a long-term staff member from a foreign assignment.

Henrietta R. Hendrickson is again working in RSIC's computer code/data processing section following a 2½ year assignment in the Nuclear Data Section of the International Atomic Energy Agency in Vienna, Austria. She served as data service coordinator in IAEA/NDS, one of the world's major data centers which holds computerized data libraries, reports, and other nuclear data information for dissemination to scientists in IAEA Member States.

Alice F. Rice, experienced in information/word processing, has assumed responsibility for preparation of RSIC publications, including this newsletter, and for other information science activities.

UPCOMING MEETINGS

1982 Annual Meeting of the NCRP

The National Council on Radiation Protection and Measurements (NCRP) has announced the provisional program for the 1982 Annual Meeting. The meeting will be held on April 6–7, 1982 in the Auditorium of the National Academy of Sciences, 2100 Block of C Street, N.W., Washington, D.C. The Scientific Session scheduled for April 6, 1982 is entitled "Radiation Protection and New Medical Diagnostic Approaches". The topics and speakers for the session, to be chaired by Charles B. Meinhold, include the following: Introduction by Warren K. Sinclair; Radiation Protection and New Medical Diagnostic Approaches by Charles B. Meinhold; Bureau of Radiological Health Responsibilities in Medical Radiation by John C. Villforth; Basic Principles in Choosing Diagnostic Tests -- Decision Analysis by Lee B. Lusted; New Approaches to Choosing Diagnostic Tests—Radiological Diagnostic Experience by Robert D. Moseley, Jr.; New Approaches to Choosing Diagnostic Tests—Design of Studies to Choose Among Modalities by Dennis G. Fryback; New Approaches to Choosing Diagnostic Tests—Image Content by A. Everette James; New Approaches to Dose Reduction by Joel E. Gray; Computed Tomography—Dose to the Patient by J. Thomas Payne; Digital Radiography by Joachim F. Seeger; Position Emission Tomography by David Kuhl; Nuclear Magnetic Resonance by Thomas F. Budinger; and Ultrasound by Raymond Gramiak. The program also includes the Lauriston S. Taylor Lecture on Radiation Protection and Measurements. The sixth Lecture in the series will be presented by Dr. Eugene L. Saenger.

International Nuclear Data Conference Planned

The Call for Papers has been issued for the fourth International Conference on Nuclear Data for Science and Technology to be held September 6–10, 1982 in Antwerp, Belgium.

This meeting continues the cycle of conferences held at Harwell (UK, 1978), Knoxville (USA, 1979) and Kiev (USSR, 1980). The scope is similar to that of its predecessors and will be mainly application oriented, emphasizing Nuclear Data and Neutron Physics which pertain to the fission and fusion energy programs.

The aim of the Conference is to provide information on: progress in nuclear—in particular neutron—data measurements for applied purposes, in the underlying physics and in nuclear data analysis and evaluation, with emphasis on requirements, problem areas, and discrepancies; advances in the understanding of relevant nuclear reaction mechanisms as well as in the calculation of nuclear data which are important for nuclear energy applications; and new developments in facilities, techniques, and methods pertaining to neutron data.

Contributions are expected in the following areas: Differential and integral neutron data of fission reactor core constituents (actinides, structural materials, fission products, etc.) and shielding materials; Nuclear data of relevance to fission reactor fuel cycles, nuclear safety, waste management, and safeguards; Nuclear data pertaining to fusion reactor design; Nuclear data for neutron dosimetry; Neutron standard data; New developments in the theory of nuclear reactions; Nuclear

model calculations and parameter systematics; Neutron data analysis and evaluations; Facilities, instruments, and methods for neutron data measurements; Nuclear data for biomedical applications; Nuclear data for industrial applications; Nuclear data for the understanding of stellar nucleosynthesis; Solid state, molecular, and atomic effects on nulcear data; and Nuclear structure and decay data for energy applications.

A one-page abstract is required before March 1, 1982. Instructions for preparing the abstract and the full paper are available from the Secretariat.

This Conference is being organized by the Central Bureau for Nuclear Measurements, Commission of the European Communities (CEC) Steenweg naar Retie, B-2440 Geel, Belgium, Telephone: 014-589421; Telex: 33589 Eurat B. Inquiries may be addressed to the above address for the attention of Mrs. Faes, Secretariat Antwerp Conference. K. H. Böckhoff (C.E.C.) is Chairman.

Sponsors include the European Physical Society, the Universitaire Instelling Antwerpen, the International Union of Pure and Applied Physics, and the city of Antwerp; and cooperating are the OECD Nuclear Energy Agency Nuclear Data Committee and the International Atomic Energy Agency.

Meeting on Accelerator Health Physics Features Shielding Sessions

The Health Physics Society 15th Mid-Year Topical Meeting, "Accelerator Health Physics," to be held February 21–24, 1982 at Orlando, Florida will feature two half-day sessions on shielding. The leadoff paper, by T. M. Jenkins *et al.* is titled "Accelerator Shielding—The Way It Was; The Way It Is." In addition to these sessions, R. G. Alsmiller, Jr. will lead a continuing education course titled "High- and Medium-Energy Accelerator Shielding." Further information on the meeting can be obtained from the Health Physics Secretariat, 4720 Montgomery Lane, Suite 506, Bethesda, MD 20814.

Energy Technology Conference and Exposition

The 9th Energy Technology Conference and Exposition will be held February 16–18, 1982, at the Sheraton Washington Hotel, Washington, D.C. Further information may be obtained from Energy Technology Conference, Inc., 966 Hungerford Drive, 24, Rockville, MD 20850.

DECEMBER ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. Copies of the literature are not distributed by RSIC. They may generally be obtained from the author or from a documentation center such as the National Technical Information Service (NTIS), Department of Commerce, Springfield, Virginia 22151.

RSIC maintains a microfiche file of the literature entered into SARIS, and duplicate copies of out-of-print reports may be available on request. Naturally, we cannot fill requests for literature which is copyrighted (such as books or journal articles) or whose distribution is restricted.

THIS LITERATURE IS ON ORDER. IT IS NOT IN OUR SYSTEM. PLEASE ORDER FROM NTIS OR OTHER AVAILABLE SOURCE AS INDICATED.

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