offical

APR 2 4 1990

Docket Nos. 50-325, 50-324
License Nos. DPR-71, DPR-62

Carolina Power and Light Company
ATTN: Mr. Lynn W. Eury
Executive Vice President
Power Supply
P. O. Box 1551
Raleigh, NC 27602

Gentlemen:

SUBJECT: INFORMATION REGARDING INTERPRETATION OF BIOASSAY MEASUREMENTS

This is to provide you information regarding the interpretation of bioassay measurements to assess intakes of radioactive material. Enclosed is an NRC memorandum which updates a position taken in Information Notice 82-18, "Interpretation of Bioassay Measurements; Assessment of Intakes." This NRC memorandum specifies that assessment of individual intakes using bioassay data should be based on the best data and models available for that purpose rather than the models in place at the time the NRC regulations in 10 CFR Part 20 were implemented.

If you have any questions on the above, please give me a call.

Sincerely,

ORIGINAL SIGNED BY
DOUGLAS M. COLLINS

Douglas M. Collins, Chief
Emergency Preparedness and
Radiological Protection Branch
Division of Radiation Safety
and Safeguards

Enclosure:
Memorandum dated March 14, 1990

cc w/encl:
R. B. Starkey, Jr.
Vice President
Brunswick Nuclear Project
Box 10429
Southport, NC 28461

cc w/encl: (Cont'd on page 2)

IE06 1/1

cc w/encl: (cont'd)
J. L. Harness
Plant General Manager
Brunswick Steam Electric Plant
P. O. Box 10429
Southport, NC 28461

R. E. Jones, General Counsel
Carolina Power & Light Company
P. O. Box 1551
Raleigh, NC 27602

Ms. Frankie Rabon
Board of Commissioners
P. O. Box 249
Bolivia, NC 28422

Chrys Bagget
State Clearinghouse
Budget and Management
116 West Jones Street
Raleigh, NC 27603

Dayne H. Brown, Director
Division of Radiation Protection
N. C. Department of Environment,
Health & Natural Resources
P. O. Box 27687
Raleigh, NC 27611-7687

H. A. Cole
Special Deputy Attorney General
State of North Carolina
P. O. Box 629
Raleigh, NC 27602

Robert P. Gruber
Executive Director
Public Staff - NCUC
P. O. Box 29520
Raleigh, NC 27626-0520

bcc w/encl:
Document Control Desk

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
Star Rte. 1, Box 208
Southport, NC 28461

RII:DRSS	RII:DRP
CPotter	HDance
4/11/90	4/11/90

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 14, 1990

MEMORANDUM FOR: Those on the Attached List

FROM: LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Radiation Protection
and Emergency Preparedness
Office of Nuclear Reactor Regulation

SUBJECT: DRAFT NRC INFORMATION NOTICE, "INTERPRETATION OF BIOASSAY MEASUREMENTS; ASSESSMENT OF INTAKE"

In a July 13, 1988 memorandum, I informed you that we had decided not to issue the enclosed draft information notice which had been prepared after resolution of NRC headquarters and regional office comments on earlier drafts. (Note: The technical contacts have been updated on the enclosed copy of the draft.)

A primary reason for this decision was that a regulatory guide endorsing the use of NUREG/CR-4884, "Interpretation of Bioassay Measurements," was to have been issued within a few months and we intended to have that guide incorporate the message in the enclosed draft information notice concerning the incorrect "position" in Information Notice No. 82-18. That regulatory guide has not been issued and, although the guide is still under development, we do not expect it to be issued in the near future.

We have reconsidered issuing the enclosed draft notice; however, we again have decided not to do so primarily because the regulatory guide incorporating the information is still planned and because the importance of the information contained in the enclosed draft is below the current threshold of importance sufficient to warrant issuance of an NRC information notice. However, to make this information available to the public, we are placing a copy of this memorandum enclosure in the public document room. Therefore, you are free to transmit copies to licensees if you so desire.

LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Radiation Protection
and Emergency Preparedness
Office of Nuclear Reactor Regulation

Enclosure: Subject Information Notice

CONTACT: John D. Buchanan, NRR
492-1097

9003190087 4pp

Enclosure

DRAFT

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

June xx, 1988

NRC INFORMATION NOTICE NO. 88-XX: INTERPRETATION OF BIOASSAY MEASUREMENTS; ASSESSMENT OF INTAKES

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit, research and test reactors, fuel facilities, and Priority 1 material licensees.

Background and Purpose:

This information notice is intended to correct an NRC position in Information Notice 82-18 (Reference 1) that was in conflict with the NRC staff position published in several regulatory guides. The NRC position in Information Notice 82-18 indicates that, for purposes of determining compliance with the 10 CFR Part 20 intake limits, only the methodology of the International Commission on Radiological Protection (ICRP) Publication 2 (Reference 2) can be used in assessing intakes of radioactive material using bioassay data. Another purpose of this 1988 information notice is to call attention to a comprehensive new manual prepared for the NRC that can be used to compute intakes from both in vivo and in vitro bioassay measurements, "Interpretation of Bioassay Measurements," (NUREG/CR-4884). It is expected that recipients will review the information in this information notice for applicability to their programs. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Discussion:

The NRC staff position with respect to bioassay is presented in NRC Regulatory Guides 8.9, 8.11, 8.20, 8.22, and 8.26. In general, the position is that assessment of individual intake using bioassay data should be based on the best data and models available for that purpose.

IE Information Notice 82-18, "Assessment of Intakes of Radioactive Material by Workers," issued in 1982, pointed out that the present NRC limits on intake are based on ICRP Publication 2 and concluded with the NRC position: "The NRC will continue to use the ICRP Publication 2 methodology in determining compliance with 10 CFR 20 until the revision of 10 CFR 20 has been published as a final rule."

DRAFT

The NRC staff now recognizes that this position in Information Notice 82-18 (1) is incorrect in implying that only ICRP Publication 2 can be used for assessing bioassay data to determine compliance with 10 CFR Part 20 and (2) conflicts with the NRC staff position expressed in relevant regulatory guides. Although ICRP Publication 2 provides the basis for current 10 CFR Part 20 limits on intake (based on long-term, chronic exposures), it does not always provide an adequate basis for assessing individual intake because it does not provide information on body content or excreta following single (acute) intake or information applicable to an individual differing from the "standard man" defined in ICRP Publication 2. This inadequacy is recognized in ICRP Publications 10 and 10A (References 3 and 4), which are endorsed in Regulatory Guide 8.9 and which are mentioned in Information Notice 82-18 as being used by the NRC to evaluate bioassay data to determine compliance with regulatory requirements.

The NRC staff became aware of the problem with the NRC position in Information Notice 82-18 as a result of reviews and discussions during (its draft stage) of a draft report, "Interpretation of Bioassay Measurements" (Reference 5), prepared by Brookhaven National Laboratory (BNL) under an NRC contract. This report (which was published in July 1987) is a comprehensive manual that, for the first time, provides information on how to compute intakes from both in vivo and in vitro bioassay measurements and contains tables for the interpretation of bioassay results, in terms of intake, for several hundred nuclides. This manual conforms to the positions in existing regulatory guides, and the computed intake retention fractions in the report have been verified by comparison with results generated by other computer models using the same set of assumptions (REMEDY and DOSEDAY/DOSEYR). The use of this report, with its straightforward methodology, could help licensees avoid the difficulties associated with the use of the methodology in ICRP Publication 2.

The NRC plans to issue, for comment, a draft regulatory guide that would endorse the BNL report for use in assessing intakes of radioactive material from the results of bioassay measurements. In the interim, use of this report for the interpretation of bioassay measurements is consistent with the regulatory positions in existing regulatory guides on bioassay; therefore, the report may be used for this purpose. Of course, the limits on intake given in 10 CFR 20.103 and based on ICRP Publication 2 continue to apply until they are changed in a revision of 10 CFR Part 20. Furthermore, to the extent it is applicable, ICRP Publication 2 may continue to be used for assessing intakes of radioactive material for comparison with the intake limits of 10 CFR Part 20.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the regional administrator of the appropriate regional office or this office.

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: John D. Buchanan
~~G. C. Lainas~~, NRR
(301) 492-~~3307~~ 1097

Barbara G. Brooks, RES
(301) 492-3738

Cheryl A. Trottier
~~Donald A. Cool~~, NMSS
(301) 492-3422

References

(1) IE Information Notice 82-18, "Assessment of Intakes of Radioactive Material by Workers," June 11, 1982.

(2) "Report of Committee II on Permissible Dose for Internal Radiation," Recommendations of the International Commission on Radiological Protection, ICRP Publication 2, 1959.

(3) "Report of Committee IV on Evaluation of Radiation Doses in Body Tissues from Internal Contamination due to Occupational Exposure," Recommendations of the International Commission on Radiological Protection, ICRP Publication 10, 1968.

(4) "The Assessment of Internal Contamination Resulting from Recurrent or Prolonged Uptakes; A Report of ICRP Committee 4," Recommendations of the International Commission on Radiological Protection, ICRP Publication 10A, 1969.

(5) Edward T. Lessard, Xia Yihua, Kenneth W. Skrable, et al., "Interpretation of Bioassay Measurements," NUREG/CR-4884 (BNL-NUREG-52063), July 1987.

Attachment: List of Recently Issued NRC Information Notices