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BOX No. B-53-12 Bldg. 2714-H
40-550-75 NRC
FOLDER 1977

712346

Union Carbide Corporation
Nuclear Division
ATTN: Dr. Herman Postma, Director
Oak Ridge National Laboratory
Post Office Box X
Oak Ridge, Tennessee 37830

SEP 19 1977

Gentlemen:

ORNL TECHNICAL ASSISTANCE TO NRC (INTERAGENCY AGREEMENT ERDA NO. 40-550-75)

The enclosed Standard Order for ERDA Work (SOEW) No. 60-77-157, accepted by ERDA, provides additional NRC funding in the amount of \$58,000 to support ORNL conduct of a new Project FIN No. B0410 entitled "Methods in Dosimetry for Nuclear Regulation" during FY 1977 (estimated).

You are authorized to conduct the new project for NRC in accordance with the ORNL proposal dated April 26, 1977, and the enclosed SOEW. Sufficient funds will be included in the ORNL FY 1977 Financial Plan for Program 40 under Activity 40 10 01 06 1 to cover the \$58,000 authorized by this letter.

Sincerely,

Original Signed by
Joseph A. Lenhard

Joseph A. Lenhard, Director
Research and Technical Support Division

ORR:JDB

Enclosure: ✓ *NFF*
SOEW

- cc w/encl:
- R. F. Hibbs, UCCND
- G. W. Horde, UCCND
- J. K. Denton, UCCND
- W. T. Carter, UCCND
- C. A. Keller
- C. W. Hill

W10150
OK

ORGANIZATION & MANAGEMENT

-12-2 (NRC)
40-550-75

OFFICE	H. S. Oster	R&D BRANCH	BUDGET DIV.	R&TS DIVISION	
SURNAME	T. W. White (2)	<i>Barney</i>	<i>Thomas</i>	<i>[Signature]</i>	
DATE		9-14-77	9-16-77	SEP 16 1977	

Mr. Frank J. Arsenault, Acting Director
Division of Safeguards, Fuel Cycle, and
Environmental Research
Nuclear Regulatory Commission
Washington, D. C. 20555

SEP 19 1977

Dear Mr. Arsenault:

ORNL TECHNICAL ASSISTANCE TO NRC (INTERAGENCY AGREEMENT ERDA
NO. 40-550-75)

The Standard Order for ERDA Work (SOEW) No. 60-77-157 transmitted to us by your letter of August 31, 1977, is acceptable and a copy signed on behalf of ERDA is enclosed. The SOEW provides additional NRC funding in the amount of \$58,000 to support Project FIN No. B0410 entitled "Methods in Dosimetry for Nuclear Regulation" during FY 1977 (estimated). Based on verbal authorization from your Ms. Diana Dandois to Mr. J. D. Burleson of my staff, we have included the word "estimated" after the date 9-30-77 in the column designated Work Period on the SOEW. Accordingly, we have authorized ORNL to conduct this new work for NRC during FY 1977 and FY 1978 until the authorized funding is exhausted. We understand that an additional \$196,000 will be made available by NRC to continue the work during FY 1978.

Sincerely,

Original Signed by
Joseph A. Lennard

Joseph A. Lennard, Director
Research and Technical Support Division

ORR:JDB

Enclosure:
SOEW

cc w/encl:
J. L. Liverman, BER-HQ, MS E-201, GTN
Len Barry, NRC

cc w/o encl:
C. W. Hill

R&D BRANCH BUDGET DIV. R&TS DIVISION

Burleson:qq
9-44-77

YELLOW
O+M-12-2(NRC)
40-550-75

1077967



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

September 2, 1977

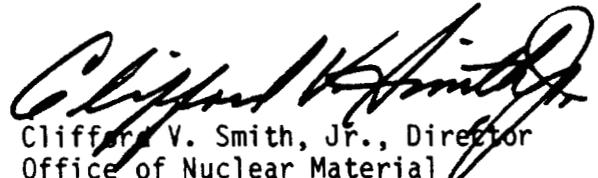
Mr. R. J. Hart, Manager
U.S. Energy Research and
Development Administration
Oak Ridge Operations Office
P.O. Box E
Oak Ridge, Tennessee 37830

Dear Mr. Hart:

The work period indicated on NRC Forms 173, Standard Orders for ERDA Work, originated by the Office of Nuclear Material Safety and Safeguards, should be considered fixed in all cases. In addition, when only the month and year are indicated in the "from" and "to" blocks of the form, the work period is from the first day of the beginning month to the last day of the ending month.

This Office will make every effort to work with you to make you aware of our plans for follow-on or continuing work.

Sincerely,


Clifford V. Smith, Jr., Director
Office of Nuclear Material
Safety and Safeguards

ORGANIZATION & MANAGEMENT

-12-2 (100)

10-5-77

W 9911

SEP 13 1977

1077968



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

AUG 31 1977

Mr. R. J. Hart, Manager
Oak Ridge Operations Office
U.S. Energy Research and
Development Administration
P.O. Box E
Oak Ridge, Tennessee 37830

1300

Dear Mr. Hart:

FY 1977 NUCLEAR REGULATORY RESEARCH ORDER NO. 60-77-157 FOR
OAK RIDGE NATIONAL LABORATORY

Please authorize Oak Ridge National Laboratory to execute
the program as described in the enclosed NRC Order.

If this meets with your approval, it is requested that acceptance be
indicated on the enclosed form and the original be returned to this
office and a signed copy to the NRC Controller.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frank J. Arsenault".

Frank J. Arsenault, Acting Director
Division of Safeguards, Fuel Cycle,
and Environmental Research

Enclosures: ^{OK}
1. NRC Order
2. Program Brief

cc w/enclosures:
D. Trauger, ORNL

ORGANIZATION & MANAGEMENT -12-2 (NRC) SEP 7 1977

40-550-25

~~W 0000~~

1077969

STANDARD ORDER FOR ERDA WORK

60-77-157

DATE

AUG 31 1977

ISSUED TO (ERDA Field Office)

Oak Ridge Operations Office

ISSUED BY (Responsible Office)

Division of Safeguards, Fuel Cycle, and Environmental Research

ACCOUNTING CITATION

APPROPRIATION SYMBOL

31X0200.607

PERFORMING CONTRACTOR (Lab name and Location)

Oak Ridge National Laboratory

BAR NUMBER

60193001

FIN NUMBER

B0410

FIN TITLE

Methods in Dosimetry for Nuclear Regulation

WORK PERIOD - THIS ORDER

FROM 7-1-77

TO 9-30-77EST

OBLIGATION AVAILABILITY PROVIDED BY:

A. THIS ORDER	\$ 58,000
B. TOTAL OF ORDERS PLACED PRIOR TO THIS DATE WITH THE PERFORMING CONTRACTOR UNDER THE SAME "APPROPRIATION SYMBOL" AND THE FIRST FOUR DIGITS OF THE "BAR NUMBER" CITED ABOVE	12,329,000
C. TOTAL ORDERS TO DATE (Total A & B)	\$ 12,387,000
D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER	\$ 58,000

*This amount constitutes a limitation on obligations authorized to be incurred for the benefit of the above cited issuing authority.

REMARKS

Scope of Work for FY 77:

1. Complete design of a 5-year old phantom.
2. Initiate metabolic model for a 5-year old phantom.
3. Initiate computer code to calculate dose to endosteal cells on bone surfaces in the adult.

Reporting Requirements:

1. Quarterly progress reports.
2. Topical reports as completed.
3. Annual report of all work completed.

Reference 189 dated 4-26-77.

ISSUING AUTHORITY		ACCEPTING ORGANIZATION	
SIGNATURE Frank J. Arsenault <i>Frank J. Arsenault</i>		<input checked="" type="checkbox"/> THIS ORDER IS ACCEPTABLE	
TITLE Acting Director, Division of Safeguards, Fuel Cycle, and Environmental Research		SIGNATURE <i>Joseph A. Lenhard</i>	
DISTRIBUTION: <input type="checkbox"/> ORIGINATING OFFICE, NRC <input type="checkbox"/> OFFICE OF THE CONTROLLER, NRC		DATE Joseph A. Lenhard, Director Research and Technical Support Division Oak Ridge Operations	
		SEP 19 1977	

PROJECT BRIEF

TITLE: METHODS IN DOSIMETRY FOR NUCLEAR REGULATION
BUDGET ACTIVITY: 60193001

FIN#: B0410
CNTR: ORNL
TYPE: ERDA
STATE: Tennessee

PROJECT MANAGER: J. D. Foulke

OBLIG: FY77\$58K

PRINCIPAL INVESTIGATOR: J. K. Poggenburg, S. Bernard, M. Ford

OBJECTIVE:

The general objective is to develop a data base for internal exposure calculations. Specifically, it is necessary to 1) confirm the mathematical design of organs approximating major features such as size, shape, density, and location and 2) construct metabolic models to estimate the time integrals of activity in source organs.

SCOPE:

A series of pediatric phantoms will be designed for the newborn, 1, 10, and 15-year old humans after completing work on the 5-year old. The absorbed fractions and S factors for the radionuclides considered in WASH-1400 will be calculated.

Metabolic models for the pediatric phantoms will be constructed. The $\mu\text{Ci-days}$ and dose factors for tritium, iodine, and cesium radionuclides will be calculated.

1077971

PROJECT BRIEF

TITLE: METHODS IN DOSIMETRY FOR NUCLEAR REGULATION

FIN NO.: B0410
CNTR: ORNL
TYPE: ERDA
STATE: TENNESSEE

PROJECT MANAGER: J. D. Foulke

PRINCIPAL INVESTIGATOR: J. K. Poggendorf, S. Bernard,
M. Ford

OBLIG: FY77:\$58K
FY78: \$138K

BUDGET ACTIVITY: 60193001

OBJECTIVE:

The general objective is to develop a data base for internal exposure calculations. Specifically, it is necessary to: (1) confirm the mathematical design of organs approximating major features such as size, shape, density, and location and (2) construct metabolic models to estimate the time integrals of activity in source organs.

SCOPE:

A series of pediatric phantoms will be designed for the newborn, 1, 10, and 15-year old humans after completing work on the 5-year old. Absorbed energy fractions and S factors (time integrated dose per unit of activity) applicable to those phantoms will be calculated. Initially this calculation will be limited to radionuclides considered in WASH-1400.

Metabolic models for pediatric phantoms will be constructed, starting with elements for which most data is available (e.g. iodine, cesium). The $\mu\text{Ci-days}$ (time integral of activity) will be calculated.

Scope of Work for FY78:

1. Initiate design of newborn, 1, 10, 15-year old phantoms.
2. Complete metabolic model for 5-year old phantom.
3. Initiate metabolic models for newborn, 1, 10, 15-year old phantoms.
4. Document computer code for calculating dose to endosteal cells on bone surfaces in the adult.
5. Document computer codes for calculating absorbed fractions and S values for the adult and four completed pediatric phantoms.

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