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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Fisheries Center
Charleston Laboratory
P. O. Box 12607
Charleston, SC 29412

October 15, 1980

NRC Control No. 03800

U. S. Nuclear Regulatory Commission
Material Licensing Branch
Division of Fuel Cycle and
Material Safety
Washington, D.C. 20555

Attn: Ms. Mary Ellen Solberg

Dear Ms. Solberg:

Attached please find the additional information you requested in support of our application for a byproduct material license. Answers are provided, in duplicate, and are keyed to your original questions and comments.

I trust that this information will expediate review of our application. Please let us know should you have need of our further input.

Sincerely,

G. Malcolm Meaburn
Chief, Marine Contaminants Division
(Radiation Safety Officer)

Attachments (6)

Attachment 1 (NRC Question #1)

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Radionuclide Experience of G. Malcolm Meaburn
(Supplement to Attachment F.II of
original license application)

Project Description	Radionuclides Max. Activities	Capacity	Institution
1) Photonuclear production and purification of potassium-38 for use as a radiopharmaceutical.	^{38}K up to 70mCi	Supervisory Chemist	Department of Defense Armed Forces Radiobiology Research Institute, Bethesda, MD
2) Electron linear acceleration production and purification of potassium-43 for use as radio-pharamaceutical.	^{43}K up to 1mCi	" "	" " "
3) Reactor production and purification of fluorine-18 for use as bone scanning agent.	^{18}F up to 5mCi	" "	" " "
4) Reactors production and purification of bromine-82 for use as a radiopharmaceutical.	^{82}B up to 1mCi	" "	" " "

The timeframe over which these materials were handled was approximately June, 1969 to August, 1974.

Extensive experience in handling large radiation sources (^{60}Co up to 100KCi)and high energy electron and photon beams (up to 40 MeV), and associated emissions after striking various targets, 1956 - 1974.

Attachment 2 (NRC Questions 2a, 2c and 2d)

Individual qualifications of users

2a. Daniel Goldmintz: The two week course at the University of Maryland was oriented largely towards civil defense and provided instruction in the use of radiation detection instruments, safety precautions and decontamination procedures. The basic elements of radiation physics were included. The course was offered in June, 1969; name of instructor, Dr. Samin Bdreldrin.

Experience listed in license application in volved handling ^{14}C (up to 5mCi) and ^{125}I (up to 0.01mCi). Mr. Goldmintz was working in the capacity of a research microbiologist as a principal investigator.

2c. Thomas Siewicki: Will work under the supervision of an NRC authorized user of radioactive materials (preferably, G.M. Meaburn) until he gains sufficient experience to become authorized. His name will be deleted from Attachment A of the license application.

2d. Lloyd Regier: Will not be a user of radioactive materials; his name will be deleted from Attachment A of the license application. However, Dr. Regier will serve as a member of the Laboratory Radiation Safety Committee. His qualification are therefore presented in the response to NRC Question 3 (Attachment 4 of this package).

Attachment 3 (NRC Question #2d)

Radionuclide Experience of Lowell V. Sick
(Supplement to Attachment F.II of original license application)

Project Description	Radionuclides Max. Activities		Capacity	Institution
1) Radiobiological Experimentation in Nutrition (^{14}C). Five years active research.	$^{14}C(BaCO_4)$	5mCi	Chemist (Principal Investigator)	National Marine Fisheries Service, Beaufort Lab, Beaufort, NC.
2) Food chain dynamics, chemical fractionations, metabolic pathway tracers. Five years active research.	^{14}C	5mCi	Faculty (Principal Investigator)	University of Georgia, Skidaway Institute of Oceanography.
	^{203}Hg	10mCi		
	^{109}Cd	1mCi		
	C_s	50mCi		
3) Metabolic tracers, insulin and amino syntheses, trace metal environmental fluxes.	^{14}C	5mCi	Faculty (Principal Investigator)	University of Delaware
	^{45}Ca	10mCi		
	^{203}Hg	10mCi		
	^{125}I	1mCi		
	^{109}Cd	5mCi		

4) Publication of 28 research papers while at the above institutions involving the use of radionuclides as described.

5) Instrumental (Radiation Safety Officer) in establishing radiation safety programs at the University of Georgia and the University of Delaware.

6) Taught a course entitled "Radioisotope Techniques in Biochemical Research" at the University of Delaware (2 semesters).

Attachment 4 (NRC Question 3)

Names and qualifications of Charleston Laboratory Radiation Safety Committee

Dr. G. Malcolm Meaburn (RSO)
Dr. Sylvia A. Braddon
Dr. Lowell V. Sick
Dr. Lloyd W. Regier
Daniel Goldmintz
Thomas C. Siewicki

With the exception of Dr. Regier, the qualifications of the RSC members are presented in the original license application of elaborated upon in this package. Dr. Regier's radiation safety related education and experience are summarized below:

Lloyd Regier	BS, Chemistry, U.C. Berkeley Ph.D, Agr.Chem., U.C. Davis
1959	Short Course (6 weeks) in Radiotracer Techniques at National Canners Assn. Laboratory by Univ. Calif. Rad. Hygiene Professor. Berkeley, Calif.
1959-63	User of radiotracers, ^{35}S, ^{14}C and ^{3}H in laboratory and pilot plant food washing studies, NCA, Berkeley.
1963-68	Assoc. Professor, Environmental Chemistry, Department of Environmental Sciences and Engineering, Univ. of North Carolina, Chapel Hill - responsibility for course in Environmental Health which included Radiological Hygiene.
1963-78	Scientist and Program Manager, Halifax Laboratory, Fisheries and Oceans Canada - project leader of a four year study on the radiopasteurization of fish, wholesomeness and microbial effects studied, responsibility for safety in use of ^{60}Cobalt source for fish irradiation.
1978-Present	Chief, Division of Utilization and Development, Charleston Laboratory

Attachment 5 (NRC Questions 4-7)

4. Selection/qualifications of Radiation Safety Officer (RSO)

The appropriate sections of the Laboratory Radiation Safety Manual and the RSC Charter (Item 2.1 and Part III, respectively) will be reworked to make the RSO position permanent. In the event of a change of incumbents, the qualifications of the proposed new RSO will be submitted to NRC for scrutiny/approval.

5. Designate of Radiation Safety Officer

The Laboratory RSC has named Dr. Sylvia A. Braddon as RSO designate. She is authorized to undertake the responsibilities and perform the duties of the permanent RSO at any time he is absent from the facility, or cannot otherwise carry out the functions shown in Item 2.2 of the Radiation Safety Manual. Item 2.2 will be changed to reflect the naming of a designate. Dr. Braddon's qualifications were provided in the original license application.

6. Survey of incoming packages

Upon receipt, packages of radioactive material shall be monitored for external radiation levels pursuant to the standards and exclusions set forth in Title 10, Chapter 1 CFR, Part 20.205. Removal of radioactive material in excess of 0.01 μCi per 100 cm^2 of package surface or, radiation levels in excess of 200 mrem/hr (10 mrem/hr at 3 ft.) shall be cause for notification of the carrier and the NRC.

7. Handling of radioactive waste

Radioactive waste generated in a laboratory and destinated for transfer to a central waste disposal area, as specified in Item 3.4(4) of the Laboratory Radiation Safety Manual, will be stored in a closed container of approved design and color, prominently marked to indicate the nature of its contents. Containers will be surveyed for external radiation levels pursuant to 10 CFR Part 20.201. Accumulated waste will be transferred daily to the central disposal area, under the supervision of the Radiation Safety Officer.

Attachment 6 (NRC Question 8-10)

8. Air sampling

Laboratories in which particulate radioactive material may arise will be monitored with the use of an approved design portable air sampler (Air Sampling Instruments for Evaluation of Atmospheric Contaminants, ACGIH, 1966). Appropriate methods for collecting and counting representative samples will be used, such as those described in Radiological Monitoring Methods and Instruments, National Committee on Radiation Protection and Measurements, NBS Handbook 51.

9. Use of methylmercuric chloride

There appears to be a misconception regarding the use of this compound in the research program. Small amounts of this material in aqueous solution (and, therefore, relatively non-volatile) will be introduced into secure tissue culture systems at levels not to exceed 10 microgram per gram of biological material. This work is related to the Laboratory's research in which methylmercury (an environmental marine contaminant) is routinely extracted from fish tissues for survey and monitoring purposes. Personnel conducting this work are highly trained and use appropriate safety devices (protective clothing, hoods, good ventilation).

10. Bioassay procedures

Criteria for the type and frequency of bioassays to be performed have not yet been finalized. Bioassay services may be performed by the radiological health department of a local medical university or by a commercial organization. The need for this type of personnel monitoring is recognized particularly when working with tritium. Details will be provided NRC in accordance with 10 CFR 20.108.