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Mr. Michael McCann
US Nuclear Regulatory Commission
Region III
Materials Licensing Section
799 Roosevelt Road
Glen Ellyn, Il 60137

5/17/85

RE : Control #16404

Dear Mike,

Enclosed you will find 2 copies of the additional information you requested. This information addresses the following issues:

1) **Minimum Significant Quantities** - Clarification of the controls placed on these materials. Changes were made in page 1 of Item #9, and page 19 of the safety manual.

2) **Required Survey Frequencies** - Changes in the activity ranges. Changes were made in page 3 of Item #9, and page 17 of the safety manual.

3) **Air and Ventilation Monitoring** - Clarification of program. Appended as Section III, part E of the safety manual.

4) **Laboratory Audit Program** - Clarification of program. Appended as Section III, part F of the safety manual.

I hope you will find this information sufficient to clarify the areas of our application in need of revision. I submit this information as binding revisions to our Byproduct Materials License Application.

Sincerely,

Michael D. Powell

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ITEM #9 - **Facilities and Equipment**

NEOUCOM's facilities and equipment are outlined on the following pages. Radioactive materials areas will be categorized as Minimum Quantity, Type C, Type B, or Type A depending on various factors such as ventilation, shielding, equipment, and the proximity to unrestricted areas.

Attached are our proposed guidelines for the maximum allowable activities in NEOUCOM laboratories, a radiotoxicity classification system, and the required survey frequencies for corresponding areas. These guidelines are taken from those developed by the International Atomic Energy Agency.

GUIDELINES FOR MAXIMUM ACTIVITIES IN NEOUCOM LABORATORIES

Radiotoxicity Of Radionuclides	*Minimum Significant Quantity	Type Of Working Laboratory Required		
		Type C	Type B	Type A
1) Very High	0.1 uCi	< 10 uCi	10 uCi - 10 mCi	> 10 mCi
2) High	1.0 uCi	<100 uCi	100 uCi - 100 mCi	>100 mCi
3) Moderate	10 uCi	< 1 mCi	1 mCi - 1 Ci	> 1 Ci
4) Low	0.1 mCi	< 10 mCi	10 mCi - 10 Ci	> 10 Ci

Type A is a specially designed laboratory for handling large activities of highly radioactive materials. Type B is a specially designed radioisotope laboratory. Type C is a good quality chemical laboratory with adequate ventilation, fume hoods, and non-absorbent surfaces. With the approval of the Radiation Safety Officer, it may be possible to increase the upper limits for Type C laboratories towards those of Type B laboratories for toxicity clases 3 and 4. Laboratories without hoods may not work with amounts qreater than the minimum significant quantities.

Modifying factors must be applied to the allowable quantities indicated according to the complexity of the procedures to be followed. The following factors are suggested but due regard must be paid to all circumstances affecting individual cases.

Procedure	Modifying Factor
Storage (stock solutions)	x 100
Very simple wet operations	x 10
Normal chemical operations	x 1
Complex wet operations with risk of spills	x 0.1
Simple dry operations	x 0.1
Volatile radioactive compounds	x 0.1
Exposure of non-occupational personnel	x 0.1
Dry and dusty operations	x 0.01

* Minimum Significant Quantities (MSQ) - The use of MSQ's must still meet the approval of the RSO. Multiple MSQ's in one area may necessitate authorization as a lype C area. MSQ areas shall be monitored at Type C frequencies.

Required Laboratory Survey Frequencies

Toxicity Class	Monthly	Weekly	Daily
1	< 10 uCi	10 uCi - 10 mCi	> 10 mCi
2	< 1 mCi	1 mCi - 100 mCi	> 100 mCi
3	< 10 mCi	10 mCi - 1 Ci	> 1 Ci
4	< 100 mCi	100 mCi - 10 Ci	> 10 Ci

The maximum laboratory activity must be multiplied by the appropriate modifying factor to determine the **required survey frequency.**

Procedure	Modifying Factor
Simple Storage	x 100
Very simple wet operations	x 10
Normal chemical operations	x 1
Complex wet operations	x 0.1
Simple dry operations	x 0.1
Volatile radioactive compounds	x 0.1
Exposure of non-occupational personnel	x 0.1
Dry and dusty operations	x 0.01

2. Survey Frequency

NEOUCOM designates 3 levels (Monthly, Weekly, Daily) of survey frequency based on the maximum activity of radionuclide, the physical and chemical form, and the specific proposed use. The table below gives ranges and appropriate modifying factors for various procedures.

Required Laboratory Survey Frequencies

Toxicity Class	Monthly	Weekly	Daily
1	< 10 uCi	10 uCi - 10 mCi	> 10 mCi
2	< 1 mCi	1 mCi - 100 mCi	> 100 mCi
3	< 10 mCi	10 mCi - 1 Ci	> 1 Ci
4	< 100 mCi	100 mCi - 10 Ci	> 10 Ci

The maximum laboratory activity must be multiplied by the appropriate modifying factor to determine the required survey frequency.

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Very simple wet operations	x 10
Normal chemical operations	x 1
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Simple dry operations	x 0.1
Volatile radioactive compounds	x 0.1
Exposure of non-occupational personnel	x 0.1
Dry and dusty operations	x 0.01

Every investigator, technician, student, or other individual is responsible for monitoring his own operations. Many projects are of such a nature that monitoring instruments must be on hand at all times. The RSO maintains an inventory of calibrated survey meters to be distributed to those laboratories desiring or needing such equipment.

D. Pregnant Workers

To assure the health and safety of a developing fetus, the NRC has outlined specific steps to be taken in the protection of pregnant radiation workers. Regulatory Guide 8.13 contains information which must be presented, both orally and in writing, to the pregnant worker, her supervisor, and all laboratory co-workers. In order that NEOUCOM may comply with these guidelines, all female employees must notify the Radiation Safety Officer if they become pregnant. This information will be held in strict confidentiality, and only those individuals listed above will be notified.

E. Air and Ventilation Monitoring

The RSO shall conduct investigations of air and ventilation quality as part of the laboratory monitoring program. The purpose of the investigations is to detect defective ventilation equipment (hoods, unit ventilators, general exhaust) and evaluate concentrations of potential airborne radioactive contaminents. Areas of particular concern are those laboratories utilizing volatile radioactive materials or operations producing dusts or aerosols.

Ventilation checks shall be performed at monthly intervals using a Florite Model #1000-B air volume meter with 0-1000 cfm capacity. Air sampling shall be performed on a random basis in all radioisotope laboratories, as a general surveillance technique. Air sampling shall also be performed during all radioiodinations in E-48, during waste handling procedures in E-46, and during any other operations deemed necessary by the RSO. Sampling shall be performed with a Staplex Model BS air sampler capable of sampling between 5-20 LPM, and/or with a Draeger Gas Detecter Pump with various filter tubes.

F. Laboratory Audits

The RSO shall conduct periodic audits of all laboratories for the purpose of evaluating compliance with license conditions. Two main items of concern are the verification of monthly inventory reports, and the inspection of wipe test and survey records. The frequencies of laboratory audits shall be as follows:

Type Of Laboratory	**Frequency**
Minimum Quantity	Semiannually
Type C	Semiannually
Type B	Quarterly
Type A	Monthly

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