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CENTRAL RESEARCH — NEW ENGLAND LABORATORY
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WAYLAND, MASSACHUSETTS 01778

March 14, 1980

617-235-5422

Ms. Mary Ellen Solberg
Material Licensing Branch
Division of Fuel Cycle & Material Safety
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Ms. Solberg:

It was very nice talking to you on March 12, 1980 and I am herewith enclosing two copies of the revised application (Control Number 01758) to possess and use byproduct material.

In response to your comments in your letter dated February 8, 1980, we have made several changes both in our application as well as in the Radiation Protection Manual. They are:

1. We have designated Dr. Munirathnam K. Chaguturu as the new Radiation Safety Officer in place of Dr. Nancy L. Boardway. Dr. Chaguturu, unlike Dr. Boardway, has continuous extensive laboratory research experience in using radioisotopes and has received both formal as well as on-the-job training in radiochemistry and radiation safety. In addition, Dr. Chaguturu is also planning to take an intensive Radiation Safety Course in the near future either at Lowell University, Lowell, MA, or at Harvard Medical School, Cambridge, MA.
2. We have signed a contract with Jasin and Sayles Associates, Inc., Natick, MA (NRC License Number 20-16852-01) for calibrating our Geiger-Muller counter once every six months. The counting efficiency of our Liquid Scintillation Counter will be determined using Sample Channels Ratio method. The Sample Channels Ratio will be checked against prerun quench curves prior to its use each time for monitoring the contamination survey samples.
3. The experiments with radioisotopes (^{14}C and ^3H) will be conducted in serum stoppered glass vials and in fume hoods (ordinarily closed). The amount of radioisotopes used at any given time will only be a few microcuries and almost certainly less than one millicurie. Furthermore, we also do not plan to use radionuclotic precursors under any circumstance. Therefore, we do not feel the necessity for a bioassay program other than the usual contamination survey monitoring. We also feel that this assumption is in strict accordance with your guidelines set forth for bioassay requirements for tritium and item 12, page 10.7-3 of Regulatory Guide 10-7.

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4a. All experiments and operations involving radioisotopes will be carried in Lab 8 West fume hood. The air-flow through the fume hood (Browne and Morse make) is generally in the range of 150-200 LFPM as measured with Alnor Velometer (Illinois Laboratories Inc., Chicago, IL). The air-velocity measurements will be made twice a year.

There are no filters in the exhaust system of the fume hood. In view of the type of radionuclide and the amounts that are proposed to be used, the air-born radioactivity will certainly be well below the range specified in Appendix B of Regulatory Guide 10 CFR Part 20. Therefore, any special installation of filters in the fume hood has not been undertaken. However, air-sampling of the exhaust system for radioactivity will be made to determine the concentration to unrestricted areas and in the breathing zone. The method consists of passing air in the exhaust system through an open-end drying column containing silica gel plugged at both ends with cotton swabs. After a predetermined time, the cotton swabs will be removed and the silica gel will be thoroughly rinsed with water. The decanted water will then be counted for radioactivity. In view of the planned usage of minute quantities of ^{14}C and ^3H , no significant detection of radioactivity is anticipated. Therefore, if no significant radioactivity (i.e., about 100 cpm above the background count rate of 30 cpm) is detected after 5-6 weeks of air sampling, we intend to discontinue the routine air sampling analyses.

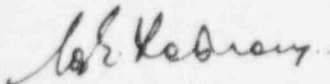
4b. The radionuclides will be stored in a Hotpoint (no-frost) refrigerator located in Lab 8.

5. Item J.3, page 18, loose radioisotope procedure in our Radiation Protection Manual was deleted from the Manual, since it is almost impossible that 100 mCi of ^{14}C and ^3H will produce radiation levels of 200mR/hr.

6. It is Dow Chemical Company's policy that any radiation emergency be promptly reported to NRC as well as Dow's Industrial Hygiene Laboratory in Midland, Michigan. However, it should be noted that, if an emergency arises, the first responsibility of the Radiation Safety Officer and/or the person(s) involved is to take an appropriate precautionary and decontamination measure(s) for safeguarding the people, laboratory and the surrounding environment. While bringing the emergency under control, both the NRC and the Industrial Hygiene Laboratory will be duly notified at the earliest possible time.

I hope that the revisions and our response to your comments are satisfactory.

Yours sincerely,



M. K. Chaguturu
Senior Research Biologist

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