

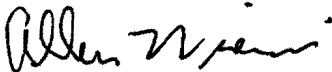
Materials Licensing Branch
United States Nuclear Regulatory Commission
2443 Warrenville Road
Lisle, Illinois 60532

May 21, 2012

To Whom It May Concern:

Please accept the enclosed application of Dr. Gary Fahnenstiel, Research Scientist in Civil and Environmental Engineering at Michigan Technological University, for authorized user status (DRU). Our license number is 21-00278-02. Dr. Fahnenstiel is requesting authorization to use P-33 and C-14 in his research at MTU. Although he has indicated a request for specific possession limits, we are not requesting any changes in our licensed isotopes or activity limits. We will reallocate existing amounts to accommodate Dr. Fahnenstiel's needs.

Sincerely,



Dr. Allen Niemi, Director
Occupational Safety and Health
AN
Enc.

RECEIVED MAY 25 2012

Application for DRU Status at Michigan Technological University

Name: Gary Fahnenstiel

Date: May 16, 2012

I. Educational Training and Experience

- 1997-2012 Senior Ecologist, Great Lakes Environmental Research Lab (GLERL), National Oceanic and Atmospheric Administration (NOAA), Muskegon, MI.
- 1995- 2005 Head, Lake Michigan Field Station/GLERL/NOAA, Muskegon, MI.
- 1984-1997 Aquatic Ecologist, GLERL/NOAA, Ann Arbor, MI.
- 1983-1984 Biological Lab Technician, GLERL/NOAA, Ann Arbor, MI.
- 1980-1983 Research Associate, Great Lakes Research Division, Univ Michigan, Ann Arbor, MI.
- 1978-1980 Graduate Teaching Assistant, Dept. Biological Sciences, Michigan Technological University, Houghton, MI.
- 1986 Ph. D. in Aquatic Ecology, University of Michigan, Ann Arbor, MI.
- 1980 M.S. in Biology, Michigan Technological University, Houghton, MI.
- 1978 B.S. in Biology and Chemistry, Eastern Michigan University, Ypsilanti, MI.

II. Radiation Safety Training

Michigan Technological University (1979)

Completed course "Use of Radiosotopes in Biological Sciences" taught by Dr. Whitten

GLERL/NOAA (1980-2012)

Completed annual radiation safety training

University of Michigan (1992)

Completed Radiation Safety Training course

III. Radiation Work Experience

GLERL/NOAA (1982-2012)

Carbon-14-- During the past 30 years I have performed a variety of algal photosynthesis and growth experiments where C-14 sodium bicarbonate was added to lake water to determine the rate of uptake by algae. Approximately 45 scientific publications have resulted from this radioisotope work. I added 10-2000 μ Ci of C-14 to incubation bottles. Lab inventory was 10-25 mCi of C-14.

Phosphorus- 33—10-100 μ Ci of P33 (carrier free) was added to lakewater to determine the rate of phosphorus uptake (V_{\max} , K_s) for algal communities. Lab inventory was 500 μ Ci.

University of Michigan (1993-1995)

Carbon-14-- For three years I conducted C-14 growth and photosynthesis experiments on board the R/V Laurentian, a University of Michigan research vessel. The experiments were similar to those performed as a NOAA scientist (see above). Lab inventory was kept at NOAA and transferred to UM before and after each cruise.

IV. Radionucleotide Possession Limit Request

P-33 1 mCi

C-14 25 mCi or whatever the maximum I can get

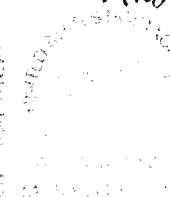
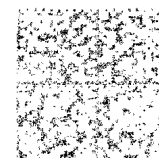
V. Statement of Purpose for the DRU Designation

I am requesting for DRu status in order to conduct radioisotope experiments to measure algal photosynthesis and growth rate via the incorporation of C-14 sodium bicarbonate. These experiments will be similar to those I have conducted the last 30 years, and will be conducted at the new Great Lakes Research Center at MTU. The use of C-14 is critical for my new position at MTU and for the future success of the Great Lakes Research Center. There is a chance I will use P-33 to measure the phosphorus uptake kinetics of Lake Superior algae but that is not clear at this time. Upon approval of my application, I will be responsible for all radioisotopes in my lab and use radioisotopes in a safe and appropriate manner consistent with NRC/MTU regulations. Moreover, I will maintain inventory of radioisotopes in my lab and conduct routine monitoring of the lab as needed. I have over 30 years of experience with radioisotopes at a federal research facility and 3 years of experience at the University of Michigan. Thank you for your consideration.

MichiganTech

Michigan Technological University
1400 Townsend Drive, Houghton, MI 49931-1295

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