

VOID SHEET

TO: License Fee Management Branch
FROM: RUII
SUBJECT: VOIDED APPLICATION

Control Number: 89329
Applicant: Univ of MN
Date Voided: 8-13-90
Reason for Void: _____

No resp. to def. letter

P. M. Vachertan 8/13/90
Signature Date

Attachment:
Official Record Copy of
Voided Action

FOR LFMB USE ONLY

Final Review of VOID Completed:

- Refund Authorized and processed
- No Refund Due
- Fee Exempt or Fee Not Required

Comments: _____

Log completed
Processed by: GA

ML30

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

: (FOR LFMS USE)
: INFORMATION FROM LTS
: -----
: PROGRAM CODE: 01100
: STATUS CODE: 2
: FEE CATEGORY: EX 3L 3F
: EXP. DATE: 19880131
: FEE COMMENTS: 170.11(A)(9)-STATE
: ::

LICENSE FEE TRANSMITTAL

4. REGION IV

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: MINNESOTA, UNIVERSITY OF
RECEIVED DATE: 900504
DOCKET NO: 3000842
CONTROL NO.: 389329
LICENSE NO.: 22-00187-46
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: -----
CHECK NO.: -----

3. COMMENTS

SIGNED P. Dwyer
DATE 5-7-90

5. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILITARY ONE OF THE FOLLOWING IS CHECKED)

FEE EXEMPT

1. FEE CATEGORY AND AMOUNT: -----

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT -----
RENEWAL -----
LICENSE -----

3. OTHER -----

SIGNED G. J. [Signature]
DATE -----

2
5
4

AUG 18 1990

University of Minnesota
ATTN: Jerome W. Staiger
Radiation Protection Officer
Roynton Health Service
Environmental Health and Safety
410 Church Street, S.E.
Minneapolis, MN 55455

SUBJECT: REQUEST FOR AMENDMENT DATED APRIL 26, 1990 AND OUR
DEFICIENCY LETTER DATED JUNE 4, 1990

Gentlemen:

We notified you in the above mentioned letter that we would void your request if you did not respond to our notice within 30 days.

You are hereby notified that we consider your application abandoned and have voided your request. This action is without prejudice to resubmission.

Sincerely,

Original Signed By
William J. Adam, Ph.D.
Materials Licensing Section

RIII
wja
Adam/gd
08/8/90

F
JUN 04 1990

University of Minnesota
ATTN: Jerome W. Staiger
Radiation Protection Officer
Boynton Health Service
Environmental Health and Safety
410 Church Street, S.E.
Minneapolis, MN 55455

Gentlemen:

We have reviewed your letter dated April 26, 1990 requesting an amendment to NRC Byproduct Material License No. 22-00187-46 and find that we will need additional information as follows:

1. Please identify, as specifically, as possible, the name(s) and location(s) of each lake where byproduct material will be used in this study. Identification of each location by name and reference to their proximity to adjoining highways is acceptable.
2. Please specify the duration of the entire study.
3. Please provide summaries of the training and experience of each individual directly responsible for supervising and directing the use of byproduct material in this study.
4. Provide evidence that the Minnesota Department of Health has no objections to the proposed study as described in your April 26, 1990 letter.
5. If the lakes within which these studies are to be conducted are not the sole property of the State of Minnesota, please identify the property holder(s) for each lake and provide copies of their written concurrence in your proposed studies.
6. Please provide your step-by-step procedures for the packaging and transportation of stock solutions and labeled sample containers to and from the experimental sites. These procedures should be sufficiently detailed to demonstrate compliance with 10 CFR Part 71 (if applicable) or at least demonstrate that labeled samples will be contained (through use of sufficient absorptive packaging materials) in the event the containers leak or are broken in transit).
7. Assuming worst case conditions (i.e. all sample containers are loaded with the maximum anticipated activity and all sample vessels leak into surrounding water), provide an estimate of the expected dose to humans as a result of this study.

8. Please describe your means for assuring compliance with 10 CFR 20.207(b) during incubation of the sample containers in the lakes.

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 30 days, and refer to Control Number 89329.

Upon failure to file a response within the specified time, we will consider that you have abandoned your request and will void this action. This is without prejudice to resubmission of the application.

Sincerely,

Original Signed By
William J. Adam, Ph.D.
Materials Licensing Section

R111
wja
Adam/bt
06/4/90



UNIVERSITY OF MINNESOTA

Office of the Vice President for Student Development
Boynton Health Service
Environmental Health & Safety
410 Church Street S.E.
Minneapolis, Minnesota 55455
(612) 626-6002

April 26, 1990

William Adam, Ph.D.
Division of Materials Licensing
Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Dr. Adam:

As discussed in our recent telephone conversation, the University of Minnesota wishes to request an amendment to NRC Broadscope License No. 22-00187-46 to allow for the use of small quantities of C-14, and possibly P-33, in field studies of algae in various lakes in Minnesota. The use of radioactive materials under this amendment will involve no release of radioactive materials to the lakes. All radioactive materials are contained in sealed sample containers to prevent release to the surrounding water.

This amendment is requested by Dr. Joseph Shapiro, Professor, Limnological Research Center, University of Minnesota, Twin Cities Campus. Dr. Shapiro proposes to use small quantities (1 to 10 microcuries total activity per sample container) of ¹⁴C (and possibly ³³P in the future) to study the biological activity of algae in various Minnesota lakes. Extensive precautions will be taken in the design and preparation of the sample containers and in the handling and transfer of the samples to assure that there is no release to the lakes (see attached protocol and information on containers and materials handling precautions). All radioactive materials will be transported to and from the lake sites in sealed transport containers that are secured within the University vehicle used for transport. This vehicle and the boat used in the studies will be smear surveyed following each use. Dr. Shapiro or authorized members of his staff will be present to supervise the samples at each lake test site.

Thank you for your assistance in the review of this license amendment request, and please contact me if you require additional information.

Sincerely,

Jerome W. Staiger

Jerome W. Staiger
Radiation Protection Program

cc: Dr. Joseph Shapiro
Alice Dolezal-Hennigan, Director,
Radiation Control Sec., MN Dept. of Health

JS/acr

RECEIVED
MAY 14 1990
FEE EXEMPT
REGION III
MAY 4 1990
170.1120
5/1/90

CONTROL NO. 89329

Request for Use of Radioisotopes in Field Studies

by
Joseph Shapiro
Limnological Research Center
University of Minnesota, Minneapolis
Starting date August 1, 1990

Background

The Limnological Research Center at the University of Minnesota was founded in the early 1960's to investigate all aspects of the behavior of lakes and to use lake sediments to investigate their past and that of the region. In carrying out these functions we have frequently made use of isotopes -- ^{14}C , ^3H , ^{32}P , ^{210}Pb -- but all in our hot lab which is suitably equipped for the purpose. However, we now find it necessary to use isotopes in the field to more realistically investigate a phenomenon of basic importance -- the competition for CO_2 among different species of algae. Specifically, we wish to add radiocarbon to enclosed systems and determine by microautoradiography which species of algae take it up more rapidly. Much of the basic procedure is similar to that in the radiocarbon method for measuring rates of photosynthesis of algal communities, which is used widely throughout the world.

Procedures

On various dates during spring, summer and autumn two nearby lakes (yet to be chosen, but possibly Ryan Lake, Mpls. and Square Lake, Washington County) will be visited for experimentation. On each date routine sampling will be done and, in addition, 8 to 12-500 ml pyrex glass-stoppered bottles of lake water will be obtained. To each of these bottles will be added 1-10 microcuries of ^{14}C as sodium bicarbonate, depending on the algal density. The bottles will be placed in rectangular Plexiglas containers capable of being closed and locked and so constructed as to keep the bottle lids in place securely. Each container will then be attached by a short chain to a chain hanging from a surface buoy tethered to the lake bottom by an anchor. After several hours of incubation the bottles will be recovered. From each up to 25 ml will be removed by pipette and filtered gently

using a Millipore apparatus with 25 mm Millipore filters. The filters will then be frozen in liquid nitrogen and kept frozen until being returned to the laboratory. The bottles, containing the remaining water, will also be returned to the laboratory.

The work will be done so as to ^{prevent} minimize releases to the environment. Specifically, the isotopes to be added will be taken to the field in premeasured ampoules, individually wrapped, and kept in a lidded Tupperware box, which will be kept in the same metal picnic cooler as the filtering apparatus. This apparatus, which will be made entirely of plastic, ^{the filtering} with a Nalgene reservoir with a screw cap, will be fitted to the inside of the cooler in such a manner that it cannot tip over. The battery-operated vacuum pump will be on the outside of the cooler with a plastic tube fitted into the cooler. The cooler will be lined with a close-fitting tray containing a replaceable absorbent pad. The cooler will also contain a holder for the pipettes to be used and a closeable waste container for such wastes as the remainder of the ampoules and the gloves used in the manipulations. The second cooler will be similarly outfitted with a tray and pad and with a rack to hold the bottles with their remaining water individually and to hold the liquid nitrogen storage container with the Millipore filters. All transfers of isotope or labelled samples will be carried out within the coolers. ^{which will be sealed and locked during transport.} All travel from one location to another will be done with locked containers.

The coolers will have combination locks and will be fitted inside and out with radioactivity labels showing isotope activity and date. They will also be fitted with lockable devices to prevent their being removed from either the boat or the truck, or from falling over in either case. The Plexiglas boxes used for incubating the samples, as well as the buoys, will have radioisotope tags and will give the phone numbers of the Limnological Research Center and the Radiation Protection Office. The same label will be on the outside of each cooler. (see attached sample tag Description - letter dated April 26, 1990)

A manifest listing the type and amount and form of radioactive material present will be kept in the locked van going to and from the lake. In addition, an instruction sheet providing directions in case of accident will be posted prominently on the dash of the

vehicle. A list will be kept of when and where isotopes were transported, and periodic swipes will be made of the truck interior and of the boat. No attempts to work with the isotope will be made unless conditions are conducive i.e. relatively calm.

Once the bottles and filters are returned to the laboratory all manipulations will be done in the hot lab and all wastes will be treated as in the guidelines published by the Radiation Protection Program.



UNIVERSITY OF MINNESOTA
TWIN CITIES

Limnological Research Center
220 Pillsbury Hall
310 Pillsbury Drive S.E.
Minneapolis, Minnesota 55455-0219
(612) 624-7005

April 26, 1990

Jerome W. Staiger
Public Health Specialist
W168 Boynton Health Service
CAMPUS MAIL

Dear Mr. Staiger:

Enclosed, as an addendum to my earlier letter, is a sketch of the type of box I propose to use to incubate my bottles in the lakes. The bottle lids will be held in individually by springs seated in wells in a bar of plexiglas and the bottles will be separated by partitions. The lid will be a sliding one held in place by a snap shackle and the apparatus will be suspended by a cable harness attached by shackles to eye bolts on the box. The box will carry a waterproof tag with the following message on it.

CAUTION

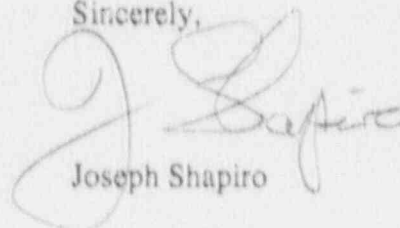
The bottles in this box contain low levels of radioactivity. If found, immediately contact Dr. Shapiro (624-0596) or Radiation Safety (626-6764) at the University of Minnesota. Do not open or break

Also shown is a sketch of the buoy and anchor system I plan to use. The type of plastic rope we use is extremely reliable and has never broken in years of use.

With regard to preventing the coolers from overturning, I plan to use rubber bungee cords attached to eyebolts attached to the truck walls and/or floor, and to the floorboards in the boat. In addition swabs for counting and documentation will be taken from the truck and boat after each field trip. Neither the truck nor boat are used by any group other than mine.

Each cooler will carry in it a manifest describing the nature and amounts of isotope on the way to and returning from the lake. The van will carry a description (bill of lading) of all isotopes present in it at a given time.

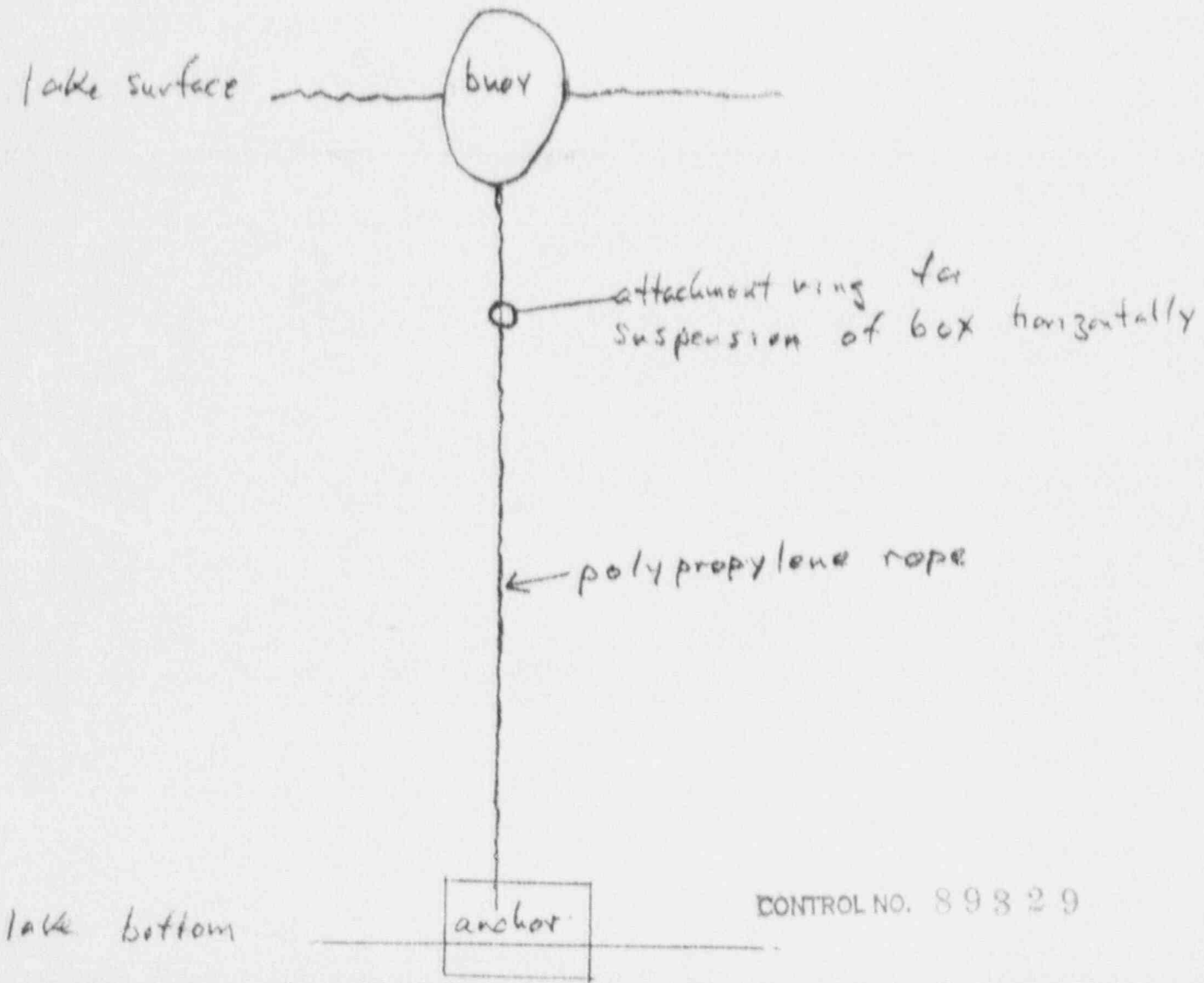
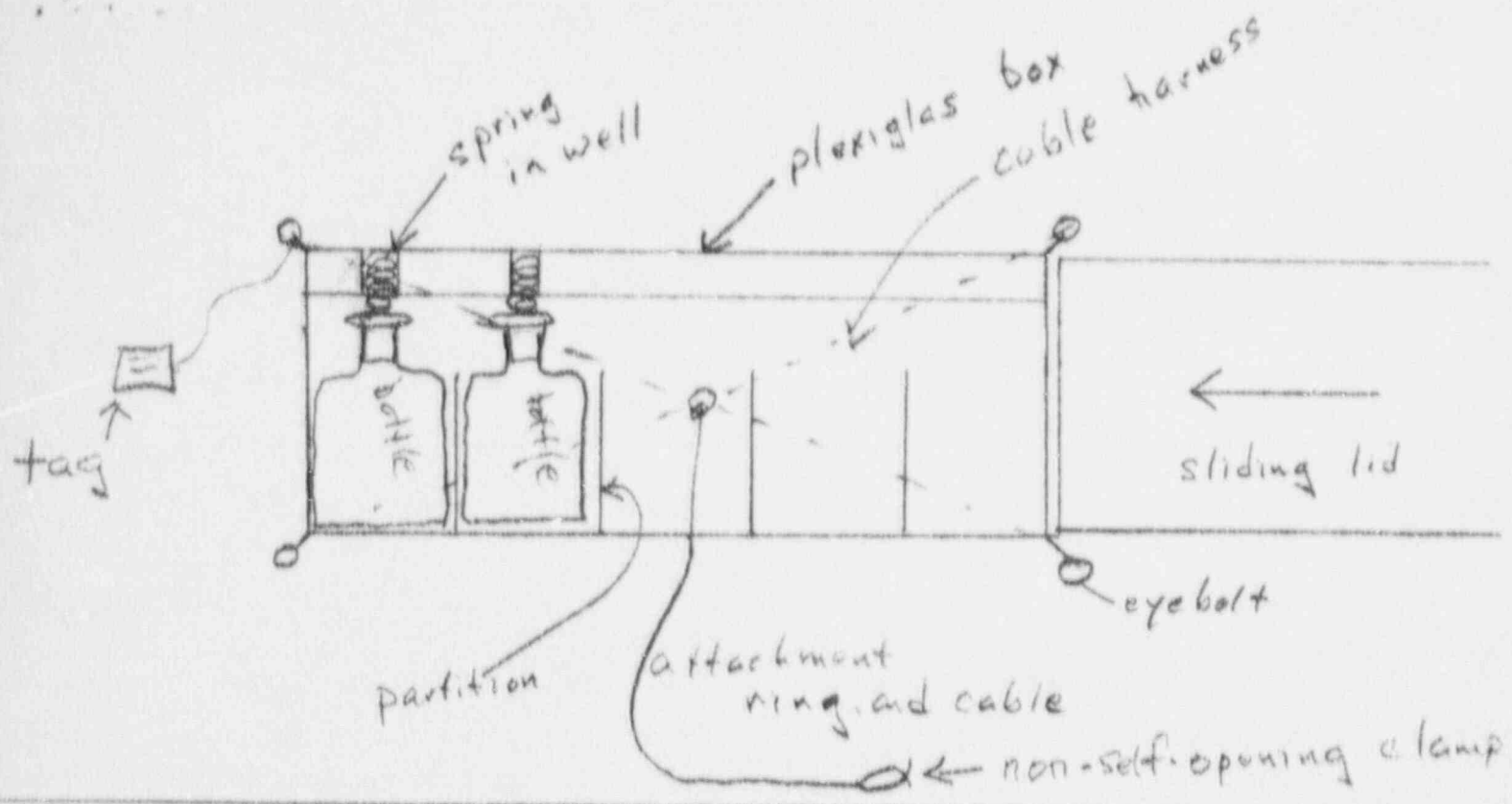
Sincerely,



Joseph Shapiro

j
enc.

CONTROL NO. 89329



CONTROL NO. 89829