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O'BRIEN & ASSOCIATES, INC.
CONSULTING ENGINEERS

SOIL STUDIES
INSPECTION
TESTING
ENGINEERING

P.O. BOX 1231 · ARLINGTON HEIGHTS, ILLINOIS 60006 · (312) 398-1441

July 22, 1982

030-11223
12-16553-01

U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Rd
Glen Ellyn, IL. 60137

Applicant 2086
Check No. ..... #40132
Amount $ .....
Type of ..... Amendment
Date Check 8/16/82
Received by ..... Brown

Re: License Ammendment for License 12-16553-01

Gentlemen:

Due to the nature of our firm's work, it is often necassary for us to hire summer and part time help to conduct much of our field inspection. As such, it is often difficult for us to assign personnel and testing equipment due to the differences between our NRC and Illinois licenses. For this reason, we would appreciate if we could have our NRC license ammended so that we can train our own personnel to become certified for using our testing meters as we presently do under our Illinois license. Please find enclosed a copy of the procedure and test we presently use as approved by the State of Illinois Health Department.

If this is not possible, we would still like to have condition 12 ammended to include Mr. Conrad DeLatour as an approved user. Please find enclosed a copy of his training certificate from Seaman Nuclear Corporation.

If there are any questions or comments on this, please do not hesitate to contact us.

Very truly yours,

O'BRIEN & ASSOCIATES, INC.

Vernon P. Brown

Vernon P. Brown
Radiation Protection Officer

Enc.

VPB/ls

Reg III
RECEIVED BY LFMB
Date 7/28/82
Log JULY AG 17
By Brown
Date Compl. 8/18/82

8509110475 850827
REG3 LIC30
12-16553-01 PDR

Control No. 06661

JUL 23 1982

PROPOSED IN-HOUSE RADIATION TRAINING PROGRAM

I. Personal Familiarization

New personnel will be given a booklet supplied to us by Seaman Nuclear Corp. entitled "Radiation Manual" which they will be expected to spend several hours to a day reading so as to become familiar with the basics of radiation physics, the dangers of exposure, how to measure it, legal requirements to comply with State and Federal regulartions, etc.

II. In house Instruction

The Radiation Protection Officer would conduct a review session of that material learned in phase I and conduct a detailed instruction based upon the following outline:

A. Fundamentals of Radiation Safety
   1. Atomic Structure and radioactivity
   2. Characteristicsof gamma and neutron radiation
   3. Units of radiation dose and radioactivity
   4. Biologic effects of ionizing radiation

B. Methods of Controlling radiation dose
   1. Time: dose and dose rate
   2. Distance: Inverse square law
   3. Shielding

C. Radiation Instrumentation and safety checks
   1. Film badges and what they indicate
   2. Periodic leak tests
   3. Required papers, storage and transport requirements

During this instruction period, emphasis shall be placed on the potential health hazards of exposure, how to minimize the chance of exposure and what to do in the event of accident. It is anticipated that after this instruction the employee will have great respect for the potential dangers relating to radiation and how to handle emergency situations.

III. Field indoctrination

After phase II, new personnel would be taken into the field with an experienced field inspector, one who has passed an approved radiation training course, for a minimum of one working day to gain experience in the use of the testing meter and further instruction in the specifics for this machine regarding safety and legal requirements.

IV. Written Examination

Prior to being allowed to use the testing meter, it would be required to pass a written examintation. An example test could be as follows:

1. The permissible dose in an uncontrolled area is:

_____MR in any one _____
_____MR in any _____consequtive days
_____ MR in any _____year

2. A Film bade is used to:

a. measure the amount of radiation as seen by the badge
b. protect the individual wearing the bade from radiation
c. to record the amount of radiation a person has received.

3. The occupational dose limit is ____MR per _____

4. Because gamma radiation obeys the inverse square law, moving away from the source of radiation has what effect upon the intensity of the radiation?

a. increases it
b. has no effect upon it
c. decreases it
d. non of these

5. The areas of the body which are especially sensitive to radiation and radiation effects are the

a. skin
b. bone and other blood forming organs
c. gonads
d. all of these
e. eyes

6. The unit of absorbed dose is called the

a. REM
b. Roentgen
c. RAD
d. Ion
e. RAT
f. none of these

7. The unit of measurement of radioactivity is the

a. Roentgen
b. RAD
c. REM
d. Curie
e. RBE
f. ORD

8. The time required for the activity of a given radioactive species to decrease to half of its initial value to radioactive decay is called:

a. half-value layer
b. decay activity time
c. half - life
d. isotope disintigration time

9. The most penetrating type of nuclear radiation is

   a. x-radiation
   b. gamma radiation
   c. beta radiation
   d. alpha radiation
   e. infra -red radiation
   f. ultraviolet radiation

10. Avoid being within _____feet of the meter unnecessarily

11. The greater the length of continuous time of exposure to radiation, the :

   a. greater is the dose
   b. less the possible hazard
   c. greater the chance of becoming radioactive
   d. less chance of biological damage

12. The factors which must be taken into consideration when determining adequate protectionfrom any source of radiation are:

   a. time, distance, intensity of radiation
   b. distance, intensity, sheilding
   c. both of these

13. The gonadal area should always be protected from radiation whenever possible because:
   a. the inheritance mechanism is sensitive to radiation
   b. there is a possibilty that gene mutation may take place
   c. an impairment of fertility may take place with extreme cases of radiation
   d. all of the above
   e. none of the above

14. One can detect radiation by
   a. sight c. smell e. all of these
   b. touch d. taste f. none of these

15. radiation that is the result of ingestion is termed:
   a. Cosmic radiation c. Internal Radiation
   b. Background radiation d. External radiation

16. Two trucks are on the job. One of the trucks leaves. When you get ready to leave, your meter is missing. What do you do?

17. A compaction grader ran over your meter. What do you do?

18. Your dauthter asks you to demonstrate the meter to her physics class to show peaceful application of atomic energy. What do you do?

19. List all equipment and documents you should have in your possession when you leave your lab with a nuclear testing meter.

V. Post Exam Period

After successfully passing the written exam, passing grade requiring 100% correct, personnel would be allowed to use the testing meter unsupervised in the field, providing they continue to meet state and company regulations in the use of these meters. A permanent record will be maintained on those personnel and refresher sessions will be conducted annually for those employees who continue working here a long term basis. In those situations where a part time employee's job status changes to full time, attendance of an approved radiation training course would be anticipated in the near future.

SEAMAN NUCLEAR CORPORATION

HEREBY CERTIFIES THAT ON

18 APRIL 1970

CONRAD DeLATOUR

HAS SUCCESSFULLY COMPLETED THE FACTORY PROSCRIBED RADIOLOGICAL SAFETY TRAINING COURSE, THEORY, MAINTENANCE, AND OPERATION OF THE SEAMAN NUCLEAR MODEL "75" NUCLEAR DENSITY METER.

THIS FURTHER ATTESTS THAT THE ABOVE NAMED HAS MET ALL REQUIREMENTS OF ACCURACY IN TESTING SOILS, AGGREGATES, CONC. ES, AND ASPHALTIC CONCRETES.

IN TESTIMONY WHEREOF, THIS CERTIFICATE HAS BEEN ISSUED BY AUTHORITY OF THE CORPORATION.

Eric Seiler
CHIEF RADIOLOGIST

W. J. Seaman
PRESIDENT

Control No. 09901