VOID SHEET

TO: License Fee Management Branch

FROM: Region 4

SUBJECT: VOIDED APPLICATION

Control Number: 465255

Applicant: FMC Corporation (11-27071-01)

Date Voided: 6/21/94

Reason for Void: Fee was applied to MC # 465081, amendment request combined w/ amendment request ~~dated~~ received January 10, 1994 (MC # 465081). No review accomplished.

Jacqueline D. Burks 6/21/94
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

100051

Comments:

9409190151 940621
PDR ADOCK 03032191
C PDR

Log completed ☑

Processed by: Rm

ML40

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

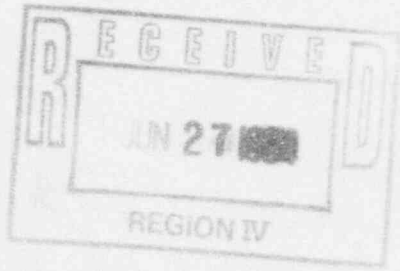
PROGRAM CODE: 03120
STATUS CODE: 0
FEE CATEGORY: 3P
EXP. DATE: 19951031
FEE COMMENTS: REPLACES IDA-01-1
DECOM FIN ASSUR REQD: N

1994 JUN 21 AM 11:38

LICENSE FEE TRANSMITTAL

A. REGION II

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: FMC CORPORATION
RECEIVED DATE: 940610
DOCKET NO: 3032191
CONTROL NO.: 465255
LICENSE NO.: 11-27071-01
ACTION TYPE: AMENDMENT



2. FEE ATTACHED
AMOUNT:
CHECK NO.: 4

3. COMMENTS

SIGNED Billie Gruszynski
DATE 6/17/94

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED N/A)

1. FEE CATEGORY AND AMOUNT: 3P Voided 6/21/94

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

3. OTHER

SIGNED Peter Mesler
DATE 6/20/94

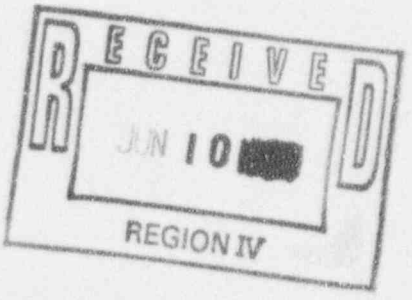
FMC Corporation

Phosphorus Chemicals Division
Box 4111
Pocatello, Idaho 83205
(208) 236-8200
FAX (208) 236-8396

FMC

June 2, 1994

U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011
Attn.: Ms. Billie Gruszynski



RE: Modification of FMC's NRC License
(NRC License No. 11-27071-01)

Dear Ms. Gruszynski:

As discussed in our phone conversation, I am requesting a modification to FMC's NRC license described above. Paragraph 11(b) of the NRC license states the Mr. Sam F. Guello is the radiation safety officer. I am requesting that you review the following information and approve my application to become the "responsible individual" (RSO) for the above referenced NRC license and amend FMC's NRC license to so reflect. Additionally, I have sent the amendment fee to Ms. Rita Messier U.S. NRC Washington, D.C. in the amount of $360.

A letter was sent to Mr. Jack E. Whitten U.S. NRC Region IV on March 1, 1993 containing my educational qualifications and past work experience as RSO for ASARCO, Inc. at their facility in El Paso, Texas. I have included with this letter a copy of the certificate of completion for the 40 hour RSO course that I attended and passed. I have also, as you requested, included a copy of the exam given at the conclusion of the course.

If I can provide you with any additional information or answer any questions you might have, please do not hesitate to contact me (ph. (208) 236-8685).

Voided 6/21/94

James E. Rice

James E. Rice
Clinic/Industrial Hygiene Supervisor

RECEIVED BY LFMS
Date 6/2/94
Log Jun 2
By KM
Date Completed 6/21/94

465255

This is to certify that

James E. Rice

has successfully completed the Technical Short Course entitled

Radiation Safety Officer

May 2 - 6 , 1994

Milton E. McLain

Milton E. McLain, Ph.D.
Course Instructor

Presented in Las Vegas, Nevada, the sixth day of May , 1994
By Nevada Nuclear Associates

TEXAS A&M UNIVERSITY

MILTON E. McLAIN, Ph.D., C.H.P.
DIRECTOR
OFFICE OF RADIOLOGICAL SAFETY

COLLEGE STATION, TEXAS 77843 409/845-1301
FAX 409/845-1348

Name: _____

FINAL EXAMINATION

RADIATION SAFETY OFFICER SHORT COURSE

Nevada Nuclear Associates
Las Vegas, Nevada
2 - 6 May 1994

Conditions: Closed Book
60 minutes allowed
Total points = 100
Each question = 2 points

Select the **BEST** answer or answers from the selection provided. Feel free to make explanatory comments in the margin, if you think it would help clarify your choice.

Circle all correct answers.

1. Since the 1960's, individual States which have not assumed the responsibility for licensing the use of radioactive materials from the USNRC are known as:
   a. Agreement States
   b. Compacs
   c. Surrogate Regulators
   d. Cooperating Entities
   e. Non-agreement States (NRC licenses activities)

2. Large organizations or institutions involved primarily in research and development applications of radiation and radioactive materials will normally be issued a Broad License for these activities. Under such a license, the licensee:
   a. sees little difference from responsibilities and functions under a Specific License
   b. assumes much of the responsibility for managing and administering the details of the license
   c. must make monthly reports of activities under the license to the regulatory agency
   d. has fewer details to worry about

3. Usually, a formal Radiation Safety Committee is only required when the licensed used of radioactive materials is conducted
   a. under a Specific License from the regulatory agency.
   b. under a Human Use License from the regulatory agency.
   c. under a Broad License from the regulatory agency.
   d. above the limits of exempt quantities of radioactive materials.

4. Which of the functions below is not expected as a direct function of the Radiation Safety Committee:
   a. review and audit the effectiveness of the radiation safety program.
   b. recommend salary ranges for radiation safety staff members.
   c. perform routine radiation surveys in facilities under their license.
   d. conduct training for radiation workers under their license.

5. According to NRC guidance, membership on the Radiation Safety Committee should not be strictly limited to technical experts in the use of radioactive materials.
   a. True
   b. False

6. A "radiation monitoring program" may consist of
   a. routine surveys of external radiation exposure rates in a laboratory
   b. routine surveys of surface contamination in a laboratory
   c. routine measurements of airborne radioactive contamination in laboratory air
   d. bioassay analyses for workers

7. Minimizing liability risks is an important function of an operating radiological safety program for the use of radioactive materials and radiation producing machines. Important factor(s) in promoting this objective is(are):
   a. preparation and retention of complete records.
   b. measuring and retaining radiation exposure histories for all radiation workers.
   c. conducting a thorough training program for all new radiation workers.
   d. having an active and effective ALARA program.
   e. thorough documentation of unusual events; e.g. spills, etc.

8. Retention of specific radiological safety records is
   a. required by regulations.
   b. at the option of the licensee.
   c. an essential action to counter possible future liability claims.
   d. dependent on the type of license at the facility.

9. Proper facility design is a most effective approach to reducing unnecessary occupational radiation exposure, minimizing operating difficulties, and may include
   a. establishment of traffic patterns to keep work areas with significant quantities of radioactive materials separate from those areas with little or no radioactivity.
   b. selection of "cool" interior paint colors to calm potentially anxious workers.
   c. placement of radioactive waste storage area near the center of the facility for ease of access.
   d. assurance of a positive air pressure in all radioactive materials areas relative to non-radioactive areas of the building.

10. A commonly used cost-saving factor in facility shielding design is
   a. the use of high-density concrete in all shielding walls.
   b. the exclusive use of lead for all shielding.
   c. locating areas likely to require extensive shielding below ground level.
   d. use of high-density gypsum wall board in all laboratory areas.

11. Design and operation of facilities using unsealed radioactive materials would not have to consider:
   a. necessary shielding.
   b. contamination control.
   c. ventilation.
   d. control of radioactivity in effluent air exhausted from the facility.
   e. routine leak testing of sources.

12. An easy oversight in the specification/design of radiation shielding requirements for X-ray and gamma-ray source facilities is
    a. failure to calculate the required shielding in accordance with Health Physics Society guidelines.
    b. not taking credit for decay of the sources.
    c. failure to consider 3 dimensional shielding requirements (ceiling/floor protection) for occupied areas above/below the facility.
    d. failure to allow for thermal expansion dimensional changes in shielding materials.

13. Area radiation monitoring units do not need to have the following feature(s):
    a. high reading alarm - audible and visible
    b. fail-safe indication (alarm)
    c. response to type(s) of radiation anticipated in the facility/area
    d. be self-calibrating

14. The **principal** function of the National Council on Radiation Protection and Measurements (NCRP) is to:
    a. review all published work in the field of radiation protection.
    b. provide recommendations and technical support in the area of radiation protection regulation development to Congress and U. S. government agencies, e.g. NRC and EPA.
    c. interact with international agencies with similar responsibilities.
    d. act as the "court of last resort" in appeal cases involving alleged violations of NRC regulations.

15. The list of items investigated in a laboratory or facility radiological survey will depend largely on the type of facility inspected and the nature of the radiation source(s) used there. Commonly measured or evaluated in a radiological survey are :
    a. contamination on surfaces
    b. radiation levels in habitable areas
    c. radioactive fume hood linear flow rates
    d. presence of proper signs and labels as required by regulations
    e. radioactive materials inventory
    f. use of appropriate personnel dosimetry for workers
    g. determination of worker blood pressure elevation in presence of radiation

16. The most common causative factor or likely pathway for internal deposition of radioactive material in radiation workers is:
    a. eating lunch in contaminated areas
    b. smoking in contaminated areas
    c. accidental skin punctures with contaminated tools
    d. direct inhalation of airborne contamination

17. An essential component of a satisfactory radiation survey is:
    a. exclusive use of typewritten records
    b. recording granting of prior permission of facility administrator before conducting survey
    c. completion of survey in minimum elapsed time
    d. ensuring that complete, accurate, and verified records are generated

18. A facility in which only sealed radioactive sources are used would not be expected to routinely perform
    a. source and total activity inventories.
    b. regular (at least every 6 months) leak tests of each of the sources.
    c. laboratory contamination surveys.
    d. surveys of radiation field intensities.

19. Access control is an essential factor in the management of
    a. radiation worker stress.
    b. radiation dose to radiation workers.
    c. security against industrial espionage.
    d. occupancy limits for facility.

20. Nuclear reactor facilities offer a stimulating challenge to the practicing health physicist because they generate radiological hazards associated with:
    a. direct radiation
    b. contamination from fission products leaking from defective fuel cladding
    c. accumulation of radioactive activation products
    d. radon-222 accumulations

21. If the annual dose equivalent to a radiation worker can be shown not to likely exceed 1/4 of the maximum permissible dose,
    a. personnel monitoring may not be required.
    b. medical examination is not required on an annual basis.
    c. prior medical histories are not required before beginning work.
    d. psychological evaluation is not required.

22. It is common practice to provide personnel monitoring devices (dosimeters) to many radiation workers who are unlikely to receive significant or even measurable radiation exposure. Why?
    a. Liability protection
    b. Good employee relations
    c. Difficult to accurately predict probability for dose values in many cases
    d. Can reduce worker anxiety

23. Adequate training is an essential part of an effective radiation protection program and is:
    a. recommended by regulatory authorities
    b. required by regulatory authorities
    c. ignored by regulatory authorities
    d. none of the above

24. Radiation dose information must currently be reported to each monitored radiation worker
    a. monthly
    b. quarterly
    c. annually
    d. upon termination
    e. upon request by worker

25. Air monitors designed for sensitive measurement of airborne iodine radionuclides commonly use
    a. liquid nitrogen cold traps
    b. charcoal absorber cartridges
    c. carefully selected pore size filter paper
    d. sensitive indicator paper

26. A unique safety problem associated with the presence of large quantities of enriched uranium or plutonium-239 is
    a. chemical toxicity
    b. radiotoxicity
    c. possibility of severe, dangerous criticality accidents
    d. airborne contamination

27. In designing practical air flow patterns for a radiochemical processing facility, you would like to
    a. ensure that the building will have zero exhausted air.
    b. ensure that the general patterns of air flow were from areas of high radioactivity inventory to areas of low inventory.
    c. ensure that the general patterns of air flow were from areas of low radioactive materials inventory to areas of high inventory.
    d. equip all work areas with fume hoods, regardless of radioactivity quantity being handled.

28. In the establishment of an adequate, effective radiation safety program, essential factor(s) is(are)
    a. location of the radiation safety office in a low-background spot.
    b. provision for adequate funding of the radiation safety function.
    c. establishment of the management reporting point for the radiation safety function in the organization at a sufficiently high level so as to provide the authority needed to enforce an effective safety program.
    d. provide for adequate storage space for dosimetry and radiation safety records.

29. A "radiation monitoring program" does not normally involve:
    a. routine surveys of external radiation exposure rates in a laboratory
    b. routine surveys of surface contamination in a laboratory
    c. psychological evaluations of workers
    d. routine measurements of airborne radioactive contamination levels in laboratory air

30. The frequency of area radiation surveys should depend on:
    a. degree of hazard present.
    b. likelihood of changes that could cause increased opportunity for personnel exposure.
    c. regulatory requirements.
    d. available health physics staff time.

31. Smears or swipe samples are counted to detect and measure:
    a. fixed contamination
    b. removable contamination
    c. external radiation exposure rates
    d. internal exposure
    e. leaking sealed sources

32. A frequently encountered problem in the measurement of air concentrations of tritium is:
    a. particulate filters are ineffective in collecting tritium from air.
    b. inappropriate methods are employed for the chemical form of tritium present.
    c. collection of radioactive radon progeny on the filter.
    d. inherent natural radioactivity in the filter paper.

33. Radiation surveys of accelerator facilities may include measurements of:
    a. neutrons
    b. photons
    c. tritium
    d. neutrinos

34. Induced radioactivity is a concern around
    a. reactors.
    b. medical X-ray installations.
    c. high-energy particle accelerators.
    d. radiopharmaceutical manufacturing facilities.

35. Radiation and radioactive materials are not the only hazard associated with some gamma radiation facilities. Also of significant concern for some high-level irradiation facilities is:
    a. toxicity of transformer cooling/insulating oils (PCB)
    b. ozone generation in air by high radiation intensities
    c. lead poisoning from shielding
    d. retina damage from intense Cerenkov radiation

36. Circle all the following that are true statement(s) of current regulatory requirements:
    a. Leak tests of sealed radioactive sources must be made by smearing the source capsule surface.
    b. All sealed sources, regardless of half-life, must be leak tested periodically.
    c. Satisfactory results of a leak test are finding < 1 microcurie of removable activity.
    d. Leak tests must be performed at six month intervals.

37. The wear period for a personnel dosimeter is determined by:
    a. stability of dosimeter with time
    b. anticipated rate of dose accumulation by worker
    c. expiration date of dosimetry vendor contract
    d. license renewal date

38. Internal dose estimates may be made by:
    a. in vivo bioassay (e.g. whole body counting).
    b. in vitro bioassay (e.g. urinalysis).
    c. air sampling and analysis coupled with occupancy data.
    d. reference to historical data for similar facilities.

39. Training programs are an important part of most radiation safety programs and:
    a. should cover appropriate subject matter for the specific facility.
    b. are required by regulations.
    c. should be periodically reviewed for adequacy.
    d. should generate records of individual participation and performance (test results)

40. Accelerator facilities may pose which of the following radiological hazards?
    a. High risk for airborne particulate radioactive contamination.
    b. Exposure to maintenance workers due to activation products.
    c. High energy alpha-emitting radionuclides.
    d. High energy neutron fields (which incur high quality factor).

41. Possible consideration(s) in selection of the materials used in facility gamma-ray shielding design is:
    a. available space *vs.* required thickness of shielding material.
    b. regulatory guidance in selection of shielding materials.
    c. the radiation dose-history of individual workers using facility.
    d. cost of shielding installation.

42. ALARA principles should be considered in the:
    a. design of shielded facilities.
    b. development of procedures for handling/processing of radioactive materials.
    c. planning of decontamination procedures.
    d. establishment of emergency procedures.

43. Area radiation monitoring systems normally have the readout unit located:
    a. in the facility manager's office.
    b. at the regional office of the regulatory agency.
    c. in the regional office of the State Police.
    d. in the control room or facility radiation safety office, as appropriate.

44. The NCRP report series, which address topical and generic radiation protection issues, are written by:
    a. permanent, full-time staff of NCRP.
    b. technical committees established by the NCRP for each specific study.
    c. Common Cause members and other Nader citizens groups.
    d. impartial membership with absolutely no affiliation with the NCRP.

45. What is(are) a common, essential factor(s) in all operational radiation safety programs?
    a. radiation dosimeter for absolutely everyone.
    b. annual physical examinations for all workers.
    c. preparation and retention of written records/documentation.
    d. the Radiological Safety Officer shall have a salary higher than the facility manager.

46. At intervals not to exceed 6 months, all sealed radioactive sources must be:
    a. inventoried
    b. measured for swelling and other dimensional changes
    c. checked for radiation output
    d. leak tested

47. Radiation protection surveys of fume hood facilities would include:
    a. measurement of air inlet velocity at hood face
    b. inspection for adequate filtration/absorber unit
    c. date of manufacture
    d. measurement of volumetric air flow, i.e. cubic feet per minute.

48. Early estimation of neutron dose received by a victim of a criticality accident may be accomplished by:
    a. measurement of the decrease in the eye pupil dilation reflex
    b. use of the TLD response of tooth enamel
    c. measurement of neutron-induced radionuclides in the victims blood.
    d. measurement of neutron-induced radionuclides excreted in the hair and nails
    e. reading of "nuclear accident" or "criticality" dosimeter packets which had been installed in the facility

49. Long-term retention (up to 30 years) of radiation safety records, e.g. personnel exposure records, records of laboratory radiation/contamination surveys, etc. can be very important due to
    a. potential for future need in defense of personnel injury liability litigation by former workers
    b. need for annual reports to stockholders
    c. Board of Directors routine review of radiation safety activities
    d. needed to demonstrate ALARA program annual effectiveness

50. As a first step in restoring regulatory compliance due to an uncooperative radioactive materials user under your license, you should
    a. go directly to the upper management for the "clout" needed to ensure compliance
    b. go directly to the problem individuals immediate supervisor with your complaints
    c. discuss the problem directly with the offending individual and ask for voluntary compliance
    d. go directly to the regulatory agency with this enforcement problem
    e. call information for "Guido's" phone number

DID YOU PUT YOUR NAME AT TOP OF PAGE 1?

END