



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

AUG 5 1970

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Eber R. Price, Director, Division of State and Licensee Relations
THRU: J. R. Mason, Assistant Director, L&LR *[Handwritten initials]*

EVALUATION OF THE NEBRASKA RADIATION CONTROL PROGRAM

Attached is the report of the seventh regulatory review meeting with Nebraska and evaluation of the Nebraska Radiation Control Program for the period November 21, 1969 through June 12, 1970.

The effects of limited personnel resources in the State of Nebraska are beginning to show in several areas of the State's radiation control program. Nebraska is in need of at least one additional professional on its Radiation Control staff. In view of this need I plan to schedule the next meeting with Nebraska in about six months.

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B. L. Barless, Chief
State Agreements Branch
Division of State and
Licensee Relations

cc: R. E. Engelkan, CO:HQ, w/att
D. I. Walker, CO:IV, w/att

EVALUATION OF THE NEBRASKA
RADIATION CONTROL PROGRAM
NOVEMBER 21, 1969 - JUNE 12, 1970

General Information

Mr. H. Ellis Simmons was accompanied by C. E. Noralius on June 9-10, 1970, during inspections of State licensees and this was followed by the seventh regulatory review meeting with Nebraska on June 11-12, 1970. The results of the inspection accompaniments are recorded in a separate memorandum.

The results of the meeting were discussed with Dr. Henry D. Smith, Director of Health, on the morning of June 11, 1970. The purpose and scope of regulatory review meetings with Agreement States were described to Dr. Smith. Since his employment with Nebraska began on June 8, 1970, he was still unfamiliar with the State's operation. However, he showed an understanding of the Agreement State program resulting from his previous experience in Arizona. The AEC representative summarized the activities and needs in the Nebraska program and emphasized the necessity for an additional professional in the State's radiation control program. While recognizing a need for additional personnel in the radiation control program, Dr. Smith was noncommittal as to what action could be taken at this time.

A more detailed summary of the review meeting was conducted with Mr. T. A. Filipi, Chief, Bureau of Environmental Health Services, on the afternoon of June 11, 1970. Again, however, the emphasis was placed on the need for at least one additional professional in the radiation control program. Filipi said he would see what could be done but made no further commitment.

Conclusion and Summary

Based on our evaluation of the licensing and inspection practices and the personnel in Nebraska, we conclude that the Nebraska program for control over agreement materials is adequate to protect the public health and safety and is compatible with the Commission's program for like materials.

Nebraska remains current with regard to its licensing activities. All licenses have been inspected as frequently as would be required under AEC's priority system, although the number of inspections conducted in the past year has been substantially reduced. This decrease in inspections shows the direction in which the Nebraska program will continue to go until such time as an additional professional is hired on the radiation control staff. The radiation control regulations are in need of updating but this will not be done without additional staff.

A review of the total radiation control program shows a need for additional work in finalizing the emergency response procedure, in the inspection of radium and x-ray units, in controlling non-ionizing radiation and in the

Division's environmental surveillance program. With regard to the latter item, Nebraska has signed a contract with the Atomic Energy Commission to collect and analyze environmental samples for the next five years near the deactivated Hallam reactor site.

Nebraska's Response to Previous AEC Suggestions

In our letter of December 31, 1969, to the Director of Health following the previous review meeting the items set forth below were suggested to the State. Following each item is the State's response as indicated during this review meeting.

1. It was pointed out that the keystone of an effective radiation control program is the adequacy of personnel in terms of numbers and qualifications which could only be obtained with adequate funding and salaries.

An X-ray technician has been hired by the State since the previous meeting and the salaries for staff members, other than that of the Director, have been increased since the previous meeting. The State is still in need of an additional professional on the staff.

2. We recommended that during inspections of licensed programs, independent surveys be made including the collection of smear samples.

Mr. Simmons stated that he does attempt to make smear samples during inspections and it was noted that he did so while being accompanied during an inspection prior to the review meeting.

3. We urged that priority be given to updating the State's radiation control regulations.

A change in the State's regulations to provide for the licensing rather than registration of non-medical radium use has been approved by the Radiation Advisory Council. No other work has been done to update the State's regulations to conform them with recent amendments to AEC regulations.

4. We suggested that some priority be given to the conduct of surveys of x-ray units.

A technician has been hired in the Nebraska program and has been conducting inspections of dental x-ray machines. An estimated 150 machines have been inspected by him.

5. We indicated our desire that the State's radiological emergency plan be formalized in the near future.

A general emergency response plan has been drafted for some time, but no additional work has been done in formalizing the plan. Since the previous review meeting, Mr. Simmons has met with other State agencies and with representatives of the Omaha Public Power District with regard to the emergency response plans at the Ft. Calhoun nuclear power plant.

6. We indicated our hope that the Department would assure adequate funding for the radiological health program.

It was determined during this review meeting that the funding for the radiation control program is unchanged. A plea was again made for additional funding for the program.

Organization

The State's Radiation Control Program continues to be administered by the Division of Radiological Health, Mr. E. Ellis Simmons, Director. Mr. Simmons reports to Mr. T. A. Filipi, Chief, Bureau of Environmental Health Services and Mr. Filipi reports to the State Health Director, Dr. Henry D. Smith. A nine-member Radiation Advisory Council appointed by the Governor is advisory to the State Health Director. A sub-committee of the Council acts as a medical advisory committee to assist the Division in matters of medical licensing. A chart setting forth the organization is attached as Appendix A.

Some organizational changes are being considered for the radiation control program. A meeting of the Radiation Advisory Council was held during May 1970, and the Council decided to suggest to the Board of Health that the Division of Radiological Health be placed directly under the Director of Health rather than being a part of the Bureau of Environmental Health Services. This problem was to be discussed at a State Board of Health meeting scheduled for June 15, 1970.

Since the previous review meeting, Mr. Dwayne Speer has been hired by the State in the radiation control program. Mr. Speer has an Associate Degree in radiation and nuclear technology from Oklahoma State University. Since joining the State program in March of 1970, Mr. Speer attended a two-week PHS course, "Medical X-ray Protection" and a three-day PHS course in procedures for the 1970 x-ray exposure study. Mr. Speer's work with the State has been limited to the inspection of dental x-ray units. Details regarding his training and experience have been recorded in the State Agreements Branch personnel card file.

There are no budgeted vacancies in the radiation control program. The program was budgeted for a Director, a Radiological Health Specialist and a Secretary. Dr. Reeve, the former Director of Health suggested that Simmons

hire a radiological health technician who was available and that additional funds would be provided for Simmons to hire a Radiological Health Specialist. However, subsequent to the hiring of the technician Dr. Reeve resigned from his position and some \$4,000 remaining in the budget for the current fiscal year for the purpose of salaries was used by the Bureau Chief in another program within the Bureau. Therefore, there are currently no funds available for the hiring of a Radiological Health Specialist.

Regulations

During 1969 the Nebraska Legislature amended the Radiation Control law to provide for the licensure rather than registration of naturally occurring and accelerator produced radioactive materials used for non-medical purposes. The regulation changes to implement this law have been approved by the Radiation Advisory Council and were to be brought before the State Board of Health on June 15, 1970, for their approval and the request for a public hearing. A copy of the proposed changes have been filed in the State Agreements Branch regulations file.

The State's radiation control regulations contain AEC amendments effective prior to May 1966. It was pointed out to Simmons, Filipi and Dr. Smith that the regulations should be updated to conform to AEC regulations. They agreed but all indicated that this would probably not be done until additional personnel were on the staff.

Licensing

Mr. Simmons evaluates all applications for licenses and signs all licenses. Medical licenses are cosigned by the State Director of Health. There are currently 61 active radioactive material licenses which include four new licenses issued since the previous review meeting. Amendments and new licenses are issued on a routine basis and there is no backlog. The files of the new licenses were reviewed and found to contain adequate information to support the authorized uses. Details of this file review are set forth in Appendix B.

Since the previous review meeting the State has received one request for a non-routine medical use. A research protocol was required and the application was sent to the State's Medical Advisory Committee for review and approval. The committee met recently on June 8, 1970, to discuss the qualifications of an applicant which Simmons felt were questionable. During this meeting the committee suggested that all new applications for medical uses be sent for committee approval. Simmons believes that this will slow down medical licensing and would not benefit the radiation safety aspects of the program. This suggestion has to be approved by the entire Radiation Advisory Council before it would take effect.

The membership of the Medical Advisory Committee is set forth in Appendix C. The membership of this committee does not necessarily reflect the best available expertise in the State pertaining to the non-routine medical uses of radioactive materials since members are selected from the parent Radiation Advisory Council, an appointed body, and this selection is not based on research experience. Two committee members are licensed isotope users, however.

Inspection and Enforcement

Since the previous review meeting four licensed programs have been inspected. The inspection reports for three of these had been completed and these files were reviewed during this meeting. (Appendix D shows the details of this review.) These inspection reports were adequate to describe the scope of the licensed program and the details regarding the State's inspection. Only one of these inspections involved more than minor non-compliance items. A review of the enforcement letter showed that it could have been written more clearly to identify the items of non-compliance, and comparison with the report showed that two items of non-compliance had been overlooked. One was mentioned in the letter as a suggestion while the second was not mentioned at all. These were brought to the attention of Simmons.

The planned inspection frequency for all licenses in Nebraska is on an annual basis. Simmons estimated that during the past year some 45 to 50 of the licensed programs have not been inspected. An examination of some specific inspection histories, however, showed that the longest time lapse since any specific licensee had been inspected was less than two years. This was the inspection of the University of Nebraska broad license last inspected in October of 1968. Although the time lapse between inspections is not serious at this point, the failure to maintain the planned inspection frequency of all programs is an indication of the decrease in effectiveness of the State's Radiation control program.

Environmental Surveillance

Nebraska has signed a contract with the Atomic Energy Commission under which the State will receive \$10,000 over the next five years to perform the sampling and analysis of 11 water samples twice each year on the site of the deactivated Hallam reactor. Nine of these samples will be well water and two will be surface water. Samples will be analyzed for alpha, beta and gamma activity.

The State continues to have a routine environmental program involving sampling stations at four locations throughout the State. Air and precipitation samples are analyzed for gross alpha and beta activity. Due to a breakdown in instrumentation, the State is currently not operating its milk sampling program.

Emergency Response Capabilities

The State has drafted an emergency response plan. The plan is coordinated through the State Civil Defense program. Civil Defense will provide the communications network and will provide fast transportation services, if needed. If State Police were first notified of an emergency, they would call Civil Defense who would in turn call the Health Department for a radiation emergency. Response from the Health Department would be made by Simmons. This draft plan has been discussed with the Omaha Public Power District in an attempt to develop State and power company coordination on specific plans for emergency procedures near the Ft. Calhoun power plant site. This draft plan has been sent to the State Planning Commission for its review.

Non-Agreement Materials

There are 32 facilities within the State authorized to use radium. A survey of these facilities was completed approximately one year ago, but no follow-up action has been taken since that time. The change in the State law mentioned previously which provides for the licensing of nonmedical radium users will result in the licensure of three industrial operations in the State. Among these will be the Motifier Corporation which manufactures and distributes fire detection devices containing radium. The distribution of these devices is currently authorized by a license issued by the State of Kansas although the company is located in Nebraska.

There are 2,049 registered x-ray machines in the State. Thus far about 150 dental x-ray units have been inspected. There are some 750 dental units remaining for which the only prior surveys were by the SURPAK procedure. Some 1100 medical x-ray machines have been inspected at least once with that survey ending during 1968. Resurveys of those units have been only on request and Simmons estimated that this has amounted to about 20 per year since 1968.

Budget

The Radiation Control budget for the current biennium from July 1969 through June 1971 is \$77,390. Of this \$54,030 is for salaries. For the current fiscal year \$20,900 is from the Public Health Service. Simmons stated that he was approaching the end of this fiscal year with about \$13,000 excess in his budget. However, \$9,000 of this was earmarked for equipment only. The other \$4,000 was removed from the budget by the Bureau Chief and applied to other programs.

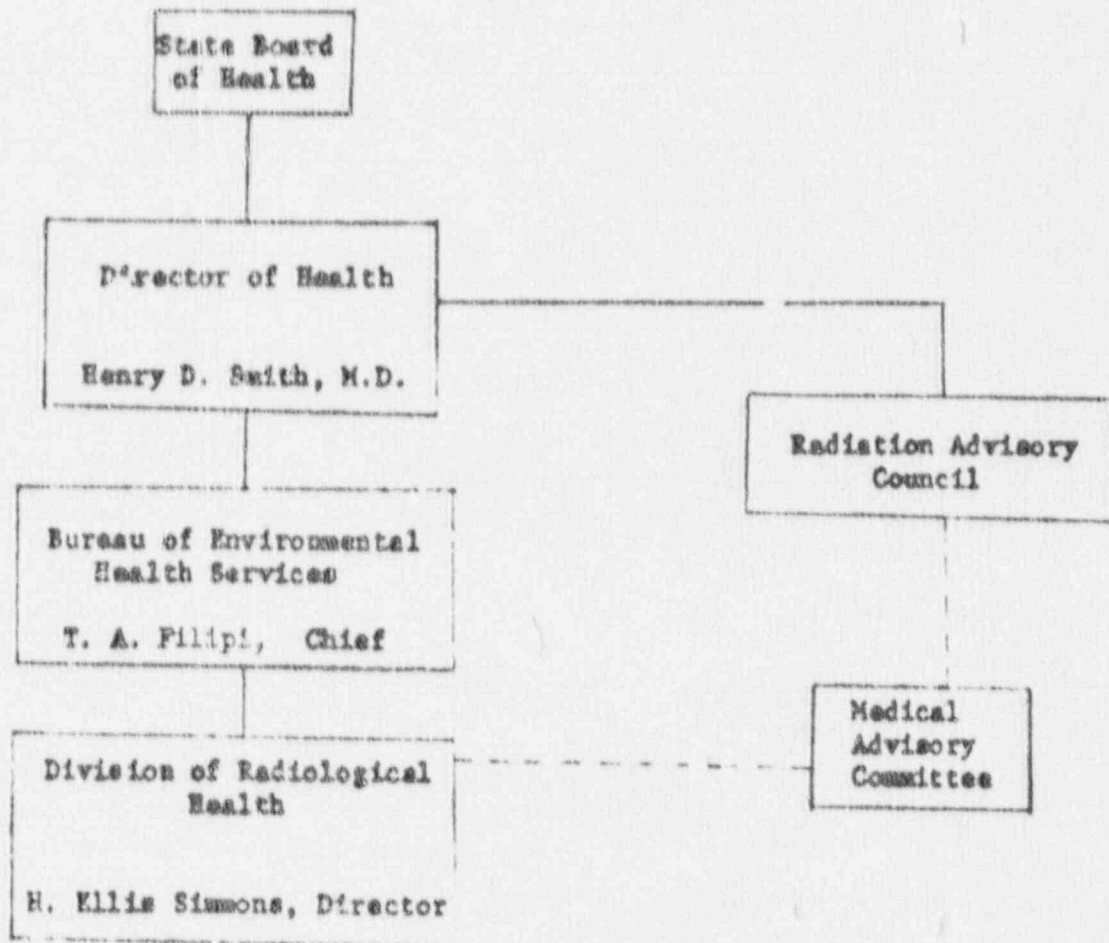
Miscellaneous

Attached as Appendix E to this report are the questions and answers pertaining to the State's licensing and inspection practices and the salary ranges for State positions.

APPENDICES

A	Organization Chart
B	License File Review
C	Medical Advisory Committee
D	Inspection File Review
E	Questions and Answer

ORGANIZATION CHART



APPENDIX B

LICENSE FILE REVIEW

Instrument Specialties Company
4700 Superior Street
Lincoln, Nebraska
License No. Q2-15-01

In an application dated May 12, 1970, the licensee requested authorization to use 100 microcuries of carbon 14 as a liquid organic for development and calibration of instruments. Backup information included experience of the user with low energy beta emitters. A letter dated May 25, 1970, from Simmons stated that the work could be done under a general license but that he would issue a specific license if the licensee so requested. The licensee did request such issuance and the license was issued on June 8, 1970. The backup information was adequate to support the license.

Jalco, Incorporated
1919 West North Temple
Salt Lake City, Utah
License No. 99-16-01

The initial application for this license was dated December 24, 1969, and requested the use of up to 100 curies each of cobalt 60 and iridium 192. The application was quite extensive and covered most points in a Radiation Control Program for industrial radiography, but in very general terms.

Simmons, by letter dated February 2, 1970, set forth three pages of additional specific information needed. This included information on the organization, the use of a leak test kit, specific sources and devices by model number, certificates of training of radiographers, frequency of film badge exchange and of instrument calibration, identification of dosimeters, emergency procedures, description of the storage facility, handling procedures, special radiation safety precautions for the use of 100 curies of cobalt 60, the method for securing devices during transportation and more detail on the training program. He suggested in his letter that this be a limited radiography program rather than one where the licensee provided its own training program.

The applicant replied on February 6, 1970 with a resubmittal and supplied the information which Simmons had requested. A manual of operating and emergency procedures and a radiographer training program were included. However, the request for cobalt 60 was dropped from the license application. The application appeared to be complete and adequate to support the use requested. The license was issued on February 25, 1970 allowing industrial radiography at the Cooper Nuclear Power Station in Brownville, Nebraska.

Nuclear Containment Systems, Incorporated
850 North Cassidy Avenue
Columbus, Ohio
License No. 99-17-01

On March 27, 1970 the applicant requested the use of tritium in a gas chromatographic unit. The applicant stated that they had an AEC license for the same materials, named the users authorized on that license, and provided a very generalized statement on the remaining aspects of the program.

By letter dated March 31, 1970, Simmons replied and sent an application form and asked that this be completed. The application was completed and submitted on April 29, 1970. The request was for the use of a tritium detector cell in a gas chromatography unit for testing carbon filters at reactors and hot cells at temporary job sites. The experience of the users was given. The application also indicated that film badges would be used and that the licensee possessed a survey meter, neither of which appear applicable for the use of tritium. The application stated that disposal would be by return of the sources to the supplier. A copy of the AEC license which the licensee possessed was also enclosed. This license was issued on May 5, 1970 but it was returned to the State of Nebraska stamped with "Moved - Address Unknown."

Buckeye Pipeline Company
North American X-Ray Division
Radiographic Department
2101 - 28th Street, S. W.
Allentown, Pennsylvania
License No. 99-18-01

The State received an application dated February 12, 1970 from the above licensee for the use of sealed sources of cobalt and iridium for industrial radiographic purposes. A copy of the licensee's AEC license was attached. In a letter dated March 9, 1970 Simmons replied noting some differences between the application and the information on the AEC license which was attached. He explained that in order to continue review of the license he needed (1) special radiation safety precautions to be followed for the field use of up to 100 curies of cobalt 60, (2) clarification on the source assembly to be used, (3) clarification on the model numbers for the cameras and the capsules that fit in specified devices and (4) a narrative description of the initial and on-the-job training of radiographers.

The licensee replied on April 23, 1970 stating that the reason for the difference between the application and the AEC license is that they would use different devices in the field than they would in their home shop.

They requested the deletion of several uses including the cobalt 60 which was limited to shop use. The other items regarding model numbers were typographical errors that were corrected. They also adequately described the training program. A complete set of operating and emergency procedures and training manual was included. The application contained adequate information to support the issuance of the license. The license was issued on May 6, 1970.

APPENDIX C

MEDICAL ADVISORY COMMITTEE

H. L. Papenfuss, M.D., (Committee Chairman)
Pathologist
Bryan Memorial Hospital
Lincoln, Nebraska

H. W. Knoche, Ph.D.
(Chairman of Radiation Advisory Council)
Professor of Biochemistry
University of Nebraska
Lincoln, Nebraska

M. D. Fraser, M.D.
Radiologist
Private Practice
Lincoln, Nebraska

H. J. Wegener, D.D.S.
Omaha County Health Department
Omaha, Nebraska

APPENDIX D

INSPECTION FILE REVIEW

Drs. Neely, McGreer, Bradley, Kroester, and McGreer
Department of Radiology
Lincoln General Hospital
2300 South 16th Street
Lincoln, Nebraska
License No. 02-14-01

This medical license authorizing the use of two teletherapy units was inspected by Simmons accompanied by Speer on April 23 and May 6, 1970. Dr. McGreer and one of the technicians were interviewed during the inspection. One unit had been installed during June of 1969, a survey had been conducted by a radiological physicist during August 1969 and submitted to the State on August 7. The report consisted of a two-page narrative description of the program with the State's inspection form for teletherapy units attached. The report gave adequate information describing the scope of the licensed program, the licensee's procedures for radiation safety and a description of the facility. A review of records showed that leak test and interlock checks on the two teletherapy units had been conducted at longer than six-month intervals. Also an independent survey conducted by the inspectors showed radiation levels up to 100 mR/hour in an adjacent teletherapy room when the beam from the unit was pointing in a horizontal position toward the wall.

In a letter dated May 14, 1970, Simmons identified two items of noncompliance in that leak tests were conducted in excess of six-month intervals and that interlock checks on the teletherapy room doors were conducted in excess of six-month intervals. He further noted in a subsequent paragraph that the physicist's survey report indicated the intent of limiting the beam to the floor since none of the walls were considered to be primary barriers. Yet the inspection revealed that the unit could be directed toward an adjacent treatment room wall and the survey indicated levels up to 100 mR/hour in the adjacent room with the beam pointing toward that wall. The letter went on to state that although the beam apparently was seldom directed toward that wall, the license should be amended to show that the adjacent room would be locked and unoccupied during treatment with the unit pointing in that direction, or electrical or mechanical stops should be installed to limit beam direction. The letter did not mention that the survey of the unit was conducted more than two months after installation of the source in violation of the license condition which requires such a survey to be conducted within 30 days after installation and prior to any treatment with the source.

The letter could have been written much more clearly. For example, the first sentence started out noting that the recent inspection showed noncompliance with Conditions 13A and 16A. Due to the arrangement of the following sentence, it was not easy to clearly identify which condition pertained to leak tests and which pertained to door interlock checks. Also in referring to the teletherapy units the letter referred to radioactive material 6A or radioactive material 6B rather than identifying the specific units that were being discussed. It was pointed out to Simmons that letters should clearly identify not only references to the items being discussed but a clear description to assure that there is no mistake as to the items being pointed out.

On May 19, 1970 the licensee answered that in the future tests would be performed as required at six-month intervals and also that stops were being placed on the teletherapy unit to prevent its use in any position other than pointing at the floor. Simmons replied on May 25, 1970, acknowledging the adequate reply from the licensee.

Lutheran Medical Center
415 South 26th Street
Omaha, Nebraska
License No. 01-19-01

This program was inspected by Simmons on May 26, 1970. Although the license authorized various diagnostic tests, the only tests being conducted at the time of the inspection were shilling tests using cobalt 57. The report described the scope of the program and the inspection that was conducted and probably contained excessive detail considering the magnitude of the program being conducted. As a result of the inspection, three items of noncompliance were noted: (1) No records were being maintained of disposals of radioactive material, (2) the State's "Notice to Employees" form was not posted; and (3) the storage room for the radioactive material was not adequately posted. A check-off form NRH-10 identifying these items of non-compliance was written out and signed by the licensee acknowledging his correction within 30 days. A copy was left with the user at the time of the inspection.

Omaha Testing Laboratories
511 South 20th Street
Omaha, Nebraska
License No. 01-08-01

This license authorizes the use of cobalt 60 and iridium 192 sources for industrial radiography at temporary job sites throughout the State. An inspection of the program was conducted at the licensee's home office by Simmons on May 26, 1970. The report included a narrative description with

attached handwritten notes on the State's form for inspection of industrial radiographers. The report identified the licensee's organization and the users under the license. It summarized the records which were reviewed and identified the material which was on hand. Film badge records showed one exposure in excess of 1.25 rem per quarter. This had been reported by the licensee along with the information on the cause of the exposure.

The inspection report was adequate to describe the scope of the program and the inspection conducted. No exposures were observed at the time of the inspection and the report did not indicate that Simmons had requested much information with regard to the procedures used by the licensee. Other than this item the report was adequate.

By letter dated June 3, 1970 Simmons identified that there was one item of noncompliance in that leak test results for one test were unavailable. He went on to suggest that better records could be kept showing quarterly inventories, camera model numbers, the amount and kind of material in each respective camera, the location of use and the radiographer to whom the material was assigned. He suggested that they keep a record of receipt and disposal of sources by serial number on a single sheet. These were not listed as items of non-compliance but were merely suggestions for keeping better records to provide for ease of inspection. No reply was requested to this letter.

APPENDIX E

A. Salary ranges for state personnel.

Position	Salary Per No.	Effective Date
Director Radiation Health	\$905-\$1150	October 1969
Specialist II	700- 905	Early 1970
Radiation Health Specialist I	630- 815	Early 1970
Radiation Health Technician	540- 700	Early 1970

B. Other Questions

I. Licensing

1. What is your system for notifying licensees of the impending expiration of their licenses?

The licensee is notified of the impending expiration 60 days prior to the expiration date of the license.

2. Are your license files, including license applications, available for public inspection? Can requests for withholding proprietary information be accommodated?

The State's public files are limited to copies of the licenses only. The State can withhold proprietary information.

3. Do you require reports of results of nonroutine medical uses?

Specifically licensed non-routine uses include a requirement that the user report results of the studies.

4. Do you require broad medical licensees to report new uses and results of these studies to you periodically?

This question was not asked.

II. Compliance

1. What is your policy regarding announced vs. unannounced inspections?

Most inspections are announced prior to the inspection time. Some of these announcements involve a call just prior to conducting the inspection, however, to assure that the appropriate users are available for discussion.

2. Does the inspector make specific suggestions for corrective action to be taken by the licensee?

Inspectors do make specific suggestions for action to be taken by the licensee.

3. Do you inspect out-of-state firms licensed by you or working under reciprocity in your state? Do you think you are being notified of such work?

The State may inspect out-of-state firms working under reciprocity in the State. No such inspections have been conducted since the previous meeting. The State believes they are receiving adequate notification of such work.

4. How do you handle oral and written discussion of poor practices (safety items) which are not specifically violations of the regulations or a license condition? Examples are poor calibration procedures, poor ventilation systems and need for bioassays.

Items which are suggestions rather than non-compliance items are discussed with licensees and are included in the letter. They are separated from non-compliance items, however.

5. Do you require a written response to letters of noncompliance within a specified time period? Do you have any problem in obtaining adequate responses to letters of noncompliance? Who determines whether the response is adequate? If the licensee's response is inadequate, what course of action do you follow? Do you acknowledge all replies to enforcement letters?

For significant non-compliance items the State does require a specific reply within a specified period of time. Simmons determines if the responses are adequate. All responses have been adequate for inspections conducted since the previous meeting. Adequate replies are acknowledged by the State.

6. What action is taken when a licensee fails to renew his license or request termination of his license?

In the event of the failure of a licensee to renew or request termination of his license Simmons said that he would normally contact the licensee either by telephone or in person to determine that all material had been safely transferred from the facility prior to the termination of the license.

7. Do you have a policy on requiring licensees to make a press release when an incident has occurred?

The State has no policy with regard to press releases during radiation incidents.

III. Miscellaneous

1. Do you have facilities for calibrating all types of instruments which you possess and use?

The State's radiation survey instruments are calibrated at the University of Nebraska using their facilities.

2. What is the status of the state's water quality standards or have there been any changes in these standards as they relate to radioactivity?

The State's Water Quality Standards include by reference "the limits.... in accordance with Radiological Health Regulations, State of Nebraska...." These standards have the approval of FWQA.