Approved by OMB[1]
No. 3150-0183
Expires 6/30/07

INTEGRATED MATERIALS PERFORMANCE EVALUATION PROGRAM

QUESTIONNAIRE

State of Iowa
Reporting Period: August 2, 2003 to September 14, 2007

Note: If there has been no change in the response to a specific question since the last IMPEP questionnaire, the State or Region may copy the previous answer if appropriate. Please note that previous IMPEP questionnaires responses can be found on the STP webpage.

A. COMMON PERFORMANCE INDICATORS

I. Technical Staffing and Training

1. Please provide the following organization charts, including names and positions:

   (a) A chart showing positions from Governor down to Radiation Control Program Director;

   Please visit the link below. This is a link to the Iowa Department of Public Health website and shows the current organization chart.

   http://intranet.idph.state.ia.us/common/pdf/documents/table_of_organization.pdf

   (b) A chart showing positions of current radiation control program including management; and

   See above

   (c) Equivalent charts for sealed source and device, low level radioactive waste and uranium recovery programs, if applicable

   Not Applicable

[1] Estimated burden per response to comply with this voluntary collection request: 53 hours. Forward comments regarding burden estimate to the Records Management Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0183), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

2. Please provide a staffing plan, or complete a listing using the suggested format below, of the professional (technical) person-years of effort applied to the agreement or radioactive material program by individual. Include the name, position, and, for Agreement States, the fraction of time spent in the following areas: administration, materials licensing & compliance, emergency response, LLW, U-mills, other. If these regulatory responsibilities are divided between offices, the table should be consolidated to include all personnel contributing to the radioactive materials program. Include all vacancies and identify all senior personnel assigned to monitor work of junior personnel. If consultants were used to carry out the program's radioactive materials responsibilities, include their efforts. The table heading should be:

NAME	POSITION	AREA OF EFFORT	FTE%	EXPERIENCE
Melanie Rasmusson	Chief	Administration	30%	6 months
Nancy Farrington	Health Physicist II	Materials Licensing & Compliance	80%	6 years
Nancy Farrington	Health Physicist II	Emergency Response	20%	6 years
Randal Dahlin	Health Physicist II	Materials Licensing & Compliance	80%	5 years
Randal Dahlin	Health Physicist II	Emergency Response	20%	5 years
Dan McGhee	Health Physicist III	Emergency Response	20%	17 years
Dan McGhee	Health Physicist III	Environmental Issues	10%	17 years
Charlene Craig	Health Physicist II	Emergency Response	5%	19 years
Dave Myers	Health Physicist II	Emergency Response	5%	28 years
Kellee Kemp	Health Physicist II	Emergency Response	5%	6 years
Ramona Ubaldo	Clerk Specialist II	Emergency Response	5%	11 years
Ramona Ubaldo	Clerk Specialist II	Licensing Assistant	95%	11 years
Renae Kleffman	Secretary II	Emergency Response	5%	8 years

3. Please provide a listing of all new professional personnel hired since the last review, indicate the degree(s) they received, if applicable, and additional training and years of experience in health physics, or other disciplines, if appropriate.

Melanie Rasmusson, Chief, Bureau of Radiological Health
Master of Business Administration, Iowa State University, 12/18/2004
Bachelor of Science in Radiologic Technology – Radiation Therapy, The University of Oklahoma, 7-21-1995

4. Please list all professional staff who have not yet met the qualification requirements of license reviewer/materials inspection staff (for NRC, Inspection Manual Chapter (IMC) 1246; for Agreement States, please enclose a copy of your qualification and training procedure. If you do not have a written procedure please describe your qualifications requirements for materials license reviewers and inspectors). For each, list the courses or equivalent training/experience they need to attend and a tentative schedule for completion of these requirements.

Not applicable – All license reviewer/materials inspection staff have completed the required "core courses". See attachment for the "Inspector Qualification Journal".

5. Please identify the technical staff who left the Agreement State/Regional DNMS program during this period.

Don Flater, PSE3, Chief, Bureau of Radiological Health, retired 11-30-2006
Dan McGhee, HP III, moved from Radioactive Materials to Radiation Machines 4-2-2007.

6. List the vacant positions in each program, the length of time each position has been vacant, and a brief summary of efforts to fill the vacancy.

Not applicable, no current vacancies exist.

7. Does the Agreement State program have an oversight board or committee which provides direction to the program and is composed of licensees and other members of the public? If so, please describe the procedures used to avoid a conflict of interest.

No

II. Status of Materials Inspection Program

8. Please identify individual licensees or categories of licensees the State/Region is inspecting more or less frequently than called for in IMC 2800 and state the reason for the difference.

License Category	State Inspection Frequency	IMC 2800 Inspection Frequency	Reason
Academic Type A Broad	1 year	3 years	Public Health & Safety
Medical Institution Broad	1 year	2 years	Public Health & Safety
Medical Institution – WD not required	4 years	5 years	Public Health & Safety
Mobile Medical Service – WD not required	2 years	3 years	Public Health & Safety
High Dose Rate Remote	1 year	2 years	Public Health & Safety

Afterloader			
Gamma Stereotactic Radiosurgery	1 year	2 years	Public Health & Safety
Veterinary – Nonhuman subjects	3 years	5 years	Public Health & Safety
Nuclear Pharmacies	1 year	2 years	Public Health & Safety
Measuring Systems – Gas Chromatographs	7 year face to face	5 year telephone call	Public Health & Safety
Manufacturing & Distribution - Other	3 years	5 years	Public Health & Safety
Other Sources – Source less than or equal to 100 Curies	3 years	5 years	Public Health & Safety
Industrial Radiography – Fixed Location	1 year	2 years	Public Health & Safety
Research & Development - Other	3 years	5 years	Public Health & Safety
Source Material Other Greater than 150 Kilograms	3 years	5 years	Public Health & Safety
Pacemaker – Byproduct and/or Special Nuclear Material – Medical Institution	7 year Face to Face	5 year telephone call	Public Health & Safety

9. Please provide for the review period, the number of Priority 1, 2, and 3 inspections as identified in IMC 2800 that were completed and the number of initial inspections that were completed.

Inspection Type	Number Completed
Priority 1	57
Priority 2	13
Priority 3	66
Initial	26

10. Please submit a table, or a computer printout, that identifies inspections of Priority 1, 2, and 3 licensees, and initial inspections that are presently overdue or which were conducted at intervals that exceed the IMC 2800 frequencies over the course of the entire review period. (See STP Procedure SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*, for detailed guidance in preparing this information).

Not applicable, the State does not have nor have we had any overdue inspections during this review period.

At a minimum, the list should include the following information for each inspection that is overdue or conducted overdue during the review period:

(1) Licensee Name

(2) License Number
(3) Priority
(4) Last inspection date or license issued date if initial inspection
(5) Date Due
(6) Date Performed
(7) Amount of Time Overdue
(8) Date inspection findings issued

11. If you have any overdue inspections, do you have an action plan for completing them? If so, please describe the plan or provide a written copy with your response to this questionnaire.

Not applicable

12. Please provide the number of reciprocity licensees that were candidates for inspection per year as described in NRC IMC 1220 and the number of candidate reciprocity inspections that were completed each year during the review period.

Year	Candidates for Inspection	Inspected
August 2003 to Year End	**21**	**4**
2004	**31**	**1**
2005	**37**	**8 (all completed after periodic review in July.)**
2006	**45**	**12**
2007 Year to Date	**29**	**9**

Note: It is the Bureau policy to attempt to inspect reciprocity radiographers on an annual basis and all other licensees during an initial inspection and then at the same frequency as State of Iowa licensees. As notifications arrive, Bureau staff evaluates if an inspection can be performed and if not, a note is placed in the license file as to why an inspection was not performed.

III. Technical Quality of Inspections

13. What, if any, changes were made to your written inspection procedures during the reporting period?

The Bureau developed a policy and inspection checklist for Increased Controls inspections.

14. Prepare a table showing the number and types of supervisory accompaniments made during the review period. Include:

Inspector	Supervisor	License Category	Date
Randal Dahlin	Don Flater	Mobile Nuclear Van	09-01-06
Nancy Farrington	Melanie Rasmusson	Industrial Radiographer	03-23-07

15. Describe internal procedures for conducting supervisory accompaniments of inspectors in the field.

It is Bureau policy that each inspector be accompanied by another qualified inspector twice each year. One of these accompaniments would include an increased controls inspection. Historically, the RAM Program Coordinator was to conduct these accompaniments.

16. Describe or provide an update on your instrumentation, methods of calibration and laboratory capabilities. Are all instruments properly calibrated at the present time? Were there sufficient calibrated instruments available through the review period?

Most survey instruments are sent to the calibration facility of Iowa Homeland Security/Emergency Management Division (License # 0141-1-77-CD) for calibration every six months. The Ludlum "REM Ball" is sent back to Ludlum Measurements for an annual calibration. In 2006, the Bureau purchased new Ludlum, model 2241-2 survey meters, Canberra model MRAD213 Ultra Radiac and an Inspector1000 identifier with a sodium iodide and H-3 neutron probe. All instruments are properly calibrated and the Bureau has had sufficient instruments throughout the review period.

IV. Technical Quality of Licensing Actions

17. How many specific radioactive material licenses does the Program regulate at this time?

We currently have 175 specific licensees.

18. Please identify any major, unusual, or complex licenses which were issued, received a major amendment, were terminated, decommissioned, submitted a bankruptcy notification or renewed in this period. Also identify any new or amended licenses that now require emergency plans.

0344-1-29-MD, Tjaden Biosciences, LLC, issued October 17, 2006.

19. Discuss any variances in licensing policies and procedures or exemptions from the regulations granted during the review period.

Not applicable.

20. What, if any, changes were made in your written licensing procedures (new procedures, updates, policy memoranda, etc.) during the reporting period?

The Bureau developed a policy for Increased Controls licensing and pre-licensing checklist procedures.

21. Identify by licensee name, license number and type, any renewal applications that have been pending for one year or more. Please indicate why these reviews have been delayed.

Not applicable.

V. Responses to Incidents and Allegations

22. For Agreement States, please provide a list of any reportable incidents not previously submitted to NRC (See STP Procedure SA-300, Reporting Material Events for additional guidance, OMB clearance number 3150-0178). The list should be in the following format:

All incidents during this reporting period were reported via NMED.

23. During this review period, did any incidents occur that involved equipment or source failure or approved operating procedures that were deficient? If so, how and when were other State/NRC licensees who might be affected notified? For States, was timely notification made to NRC? For Regions, was an appropriate and timely PN generated? For Agreement States, was information on the incident provided to the agency responsible for evaluation of the device for an assessment of possible generic design deficiency? Please provide details for each case.

NMED Item # 050701: Failure to retract an Ir-192 radiography source.

NMED Item # 060588: Irradiator source temporarily stuck in the exposed position.

24. Identify any changes to your procedures for handling allegations that occurred during the period of this review.

Not applicable, no changes have occurred.

VI. General

25. Please prepare a summary of the status of the State's or Region's actions taken in response to the comments and recommendations following the last review. Provide the results of any program audits (including self audits) completed during the review period.

Not applicable, the State did not receive any comments or recommendations from the last review. See attachments for program audits conducted during this review period.

26. Provide a brief description of your program's strengths and weaknesses. These strengths and weaknesses should be supported by examples of successes, new initiatives, problems or difficulties which occurred during this review period.

The strength of the program is high level of management support which provides for a continued high level of program performance.

B. NON-COMMON PERFORMANCE INDICATORS

I. Legislation and Program Elements Required for Compatibility

27. Please list all currently effective legislation that affects the radiation control program.

Iowa Code chapters 17A, 136B, 136C and 136D

28. Are your regulations subject to a "Sunset" or equivalent law? If so, explain and include the next expiration date for your regulations.

No

29. Please review and verify that the information in the enclosed State Regulation Status sheet is correct. For those regulations that have not been adopted by the State, explain why they were not adopted, and discuss actions being taken to adopt them.

All required regulations have been adopted.

If legally binding requirements were used in lieu of regulations, please describe their use.

The State used license amendments to require our licensees to implement the requirements of the Increased Controls (IC's). The IC's became rule in Iowa in May of 2006.

30. If you have not adopted all amendments within three years from the date of NRC rule promulgation, briefly describe your State's procedures for amending regulations in order to maintain compatibility with the NRC, showing the normal length of time anticipated to complete each step.

Not applicable.

II. Sealed Source and Device Program

31. Prepare a table listing new and amended (including transfers to inactive status) SS&D registrations of sealed sources and devices issued during the review period. The table heading should be:

This section is not applicable in Iowa.

SS&D Registry Number	Manufacturer, Distributor or Custom User	Product Type or Use	Date Issued	Type of Action

32. What guides, standards and procedures are used to evaluate registry applications?

33. Please include information on the following questions in Section A, as they apply to the Sealed Source and Device Program:

Technical Staffing and Training - Questions 1-7
Technical Quality of Licensing Actions - Questions 17-21
Responses to Incidents and Allegations - Questions 22-24

III. Low-Level Radioactive Waste Disposal Program

34. Please include information on the following questions in Section A, as they apply to the Low-Level Radioactive Waste Disposal Program:

This section is not applicable in Iowa.

Technical Staffing and Training - Questions 1-7
Status of Materials Inspection Program - Questions 8-11
Technical Quality of Inspections - Questions 13-16
Technical Quality of Licensing Actions - Questions 17-21
Responses to Incidents and Allegations - Questions 22-24

IV. Uranium Recovery Program

35. Please include information on the following questions in Section A, as they apply to the Uranium Recovery Program:

This section is not applicable in Iowa.

Technical Staffing and Training - Questions 1-7
Status of Materials Inspection Program - Questions 8-11
Technical Quality of Inspections - Questions 13-16
Technical Quality of Licensing Actions - Questions 17-21
Responses to Incidents and Allegations - Questions 22-24

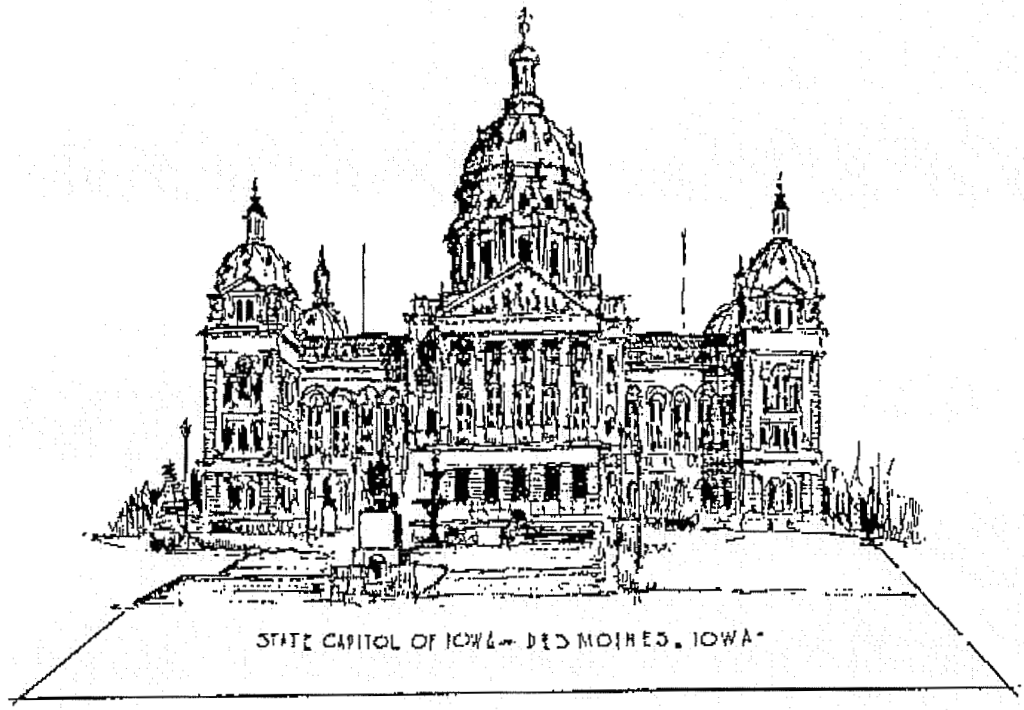
M2

IOWA DEPARTMENT OF PUBLIC HEALTH
DIVISION OF HEALTH PROTECTION AND ENVIRONMENTAL HEALTH

Audit 2005 =
M2
Audit 2006
M2

2003 ANNUAL AUDIT OF BUREAU OF RADIOLOGICAL HEALTH PROGRAMS

(January 1, 2003-December 31, 2003)



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ENVIRONMENTAL, TRAINING, AND TRANSPORTATION

I. Staffing

On July 1, 2003 the Environmental, Training and Transportation section was merged with the Radioactive Materials (RAM) Program. The staffing levels are indicated in the RAM Program section of this document.

II. Training

Iowa Bureau of Radiological Health (BRH) provided training to support First Responder operations in Iowa. The following table summarizes the training efforts.

DATE	ORGANIZATION/LOCATION	TRAINING TYPE	NUMBER OF ATTENDEES	PRESENTOR
01/08	Fire Department – HazMat, Newton	MERRTT Train the Trainer	23	Dan McGhee Randy Dahlin
03/26	Iowa State Patrol – District 5, Cherokee	Radiological Awareness	23	Randy Dahlin
04/21-23	Fire Department – HazMat, Des Moines	Radiological Response "Hands-on"	37	Dan McGhee Randy Dahlin
05/20-22	Fire Department – HazMat, Cedar Rapids	Radiological Response "Hands-on"	31	Dan McGhee
05/29	Iowa State Patrol – District 16, Des Moines	Radiological Awareness	40	Dan McGhee
05/27-29	Fire Department – HazMat, Sioux City	Radiological Response "Hands-on"	28	Randy Dahlin
06/30	Iowa State Patrol – District 2, Osceola	Radiological Awareness	21	Dan McGhee
07/01	Iowa State Patrol – District 9, Cedar Falls	Radiological Awareness	29	Randy Dahlin
07/07	Jefferson County Emergency Management, Fairfield	Radiological Awareness	05	Randy Dahlin
07/21	Iowa State Patrol – District 7, Fort Dodge	Radiological Awareness	18	Randy Dahlin Ramona Ubaldo-Mealey
09/03	Iowa State Patrol – District 10, Oelwein	Radiological Awareness	23	Randy Dahlin Ramona Ubaldo-Mealey
09/04	Iowa State Patrol – District 8, Mason City	Radiological Awareness	18	Randy Dahlin Ramona Ubaldo-Mealey
09/07-09	Fire Department – HazMat, Burlington	Radiological Response "Hands-on"	34	Dan McGhee
09/23	Iowa State Patrol – District 12, Stockton	Radiological Awareness	30	Dan McGhee

09/24	Iowa State Patrol – District 13, Mt Pleasant	Radiological Awareness	23	Randy Dahlin
12/05	Iowa State Patrol – District 1, Des Moines	Radiological Awareness	41	Randy Dahlin
12/12	Iowa State Patrol – District 11, Cedar Rapids	Radiological Awareness	36	Randy Dahlin
12/17-19	Fire Department – HazMat, Council Bluffs	Radiological Response "Hands-on"	27	Randy Dahlin

III. Environmental Investigations and Remediation

A. Fansteel/Wellman Dynamics Corporation

This is an ongoing project that involves the decommissioning of a former "304" burial site. The parent corporation, Fansteel, Inc., filed Chapter 11 bankruptcy in November 2001. At the end of 2003 it had not yet emerged from bankruptcy, although the final legal pleadings are in place.

The Site Characterization Report was submitted in October 2003. Currently, the company is waiting for the funds to have contractors evaluate the results of the characterization study and meet with the local Fansteel-Wellman Dynamics personnel and the State to determine the course of final action. The actual date is subject to the variabilities caused by the bankruptcy. The current target is the 3rd quarter 2004.

B. Iowa Army Ammunition Plant (IAAAP)

This is an active site, consisting of 19,000 acres, operated for the US Army by a contractor. Until 1975, the Energy Research and Development Administration and its progenitors, utilizing the predecessors of the current contractor, conducted various operations that involved nuclear weapons. In 1990, the Army, under Comprehensive Environmental Response Compensation and Liability Act, began a clean up of the entire site. The radiation issues did not surface until December 1999.

Little or no actual clean up actually occurred at IAAAP this year. The discovery of a possible non-radiation plume off-post became the highest priority for investigation. A proposed plan is scheduled for completion in mid-2004.

In December 2003 the State began participating in the negotiations for an additional Federal Facilities' Agreement (FFA) at IAAAP. The parties are the US Environmental Protection Agency, the Army Corps of Engineers, St. Louis District, and the State. The purpose of this FFA is to outline responsibilities for those areas of IAAAP at which the US Atomic Energy Commission conducted its operations.

IV. Rules

In July of 2002, Iowa Department of Public Health (IDPH) implemented a fee for transportation of radioactive waste shipments in Iowa. The fee was established to fund training for personnel who might respond to transportation accidents involving radioactive materials. The table in Section II summarizes the training accomplished in 2003.

Fee generated income from these waste shipments equaled $94,450 in calendar year 2003.

MAMMOGRAPHY PROGRAM

I. Staffing

The Mammography Program consists of four employees: a Health Physicist III, 2 Health Physicist II's, and an Administrative Assistant. (The Section Coordinator, Paul Koehn, has dual responsibility for the Mammography and Radiation Machines Programs.)

II. Training

Paul E. Koehn, B.S., R.T. (R) FDA Certified Mammography Inspector Certified: February 10, 1995			
Date	**Activity**	**Location**	**MEU**
12/5/03	Full Field Digital Mammography	Kodak Website	1 Digital
12/5/03	Mammo Digital Image Quality	Kodak Website	1 Digital
12/5/03	Optimizing the Mammo Image	Kodak Website	1. 5
11/15/03	Imaging Seminar Conference	Des Moines, IA	5
11/4/03	Digital Mammography	ASRT Journal	1 Digital
10/01/03	Digital Mammography on site	Storm Lake, IA	3 Digital
05/09/03	Mammography CEU-University of Iowa	Ames, IA	6
04/12/03	Mammography CEU- Mayo Health	La Crosse, WI	8 includes 2 Digital
01/07/03	Phantom Image Scoring	Des Moines, IA	1

Jeanie M. Hudson, R.T. (R)(M) FDA Certified Mammography Inspector Certified June 16, 1995			
May 3-4, 2003	CRCPD Mammo Con. Education 2003	Anaheim, CA	12 includes 4 Digital
04/25/03	Practicum in Digital Mammography	Iowa City, IA	8 Digital
01/08/03	Phantom Image Scoring	Des Moines, IA	1

Kellee J. Kemp, B.A., R.T. (R) (M) FDA Certified Mammography Inspector Certified: May 2, 2002			
10/01/03	Digital Mammography on site	Storm Lake, IA	6 Digital
08/15/03	Basic Health Physics	Oakridge, TN	11.5
May 3-4, 2003	CRCPD Mammo Con. Education 2003	Anaheim, CA	12 includes 4 Digital
04/25/03	Practicum in Digital Mammography	Iowa City, IA	8 Digital

III. Accredited Facilities

Due to the lack of a computerized system, the Mammography Program staff continues to track facilities manually. At year's end, the number of facilities was as follows:

ACCREDITED FACILITIES	
American College of Radiology (ACR) accredited	8
IDPH accredited	140
Stereotactic	21
TOTAL	**169**

In addition to the above facilities, there are two mobile facilities from South Dakota.

IV. Physician/Physicist Qualifications

IDPH manually maintains a list of qualified radiologists. The list, which currently consists of 354 physicians, is another function awaiting creation of a computer program.

IDPH staff also manually maintains a list of 22 surgeons qualified to conduct stereotactic breast biopsies and files on 19 physicists who conduct mammography surveys in Iowa

V. Technologist Qualifications

Technologists who perform mammography in the State of Iowa must possess a current permit to practice in Diagnostic Radiography. (See Operator Certification.) In addition to that certification requirement, the Mammography Program staff is directed by Iowa Law to monitor continuing education of all mammographic technologists, specific to mammography, to insure that these technologists maintain minimum requirements.

Absent a computer database, this continues to be a manual process. At year's end, the training for 702 mammography technologists was being manually tracked.

VI. Inspections

All accredited facilities are inspected annually. The breakdown in inspections is indicated in the following table.

Stereotactic During the reporting period 20 stereotactic inspections were

	completed
Film-screen	During the reporting period 148 inspections were completed
Re-visits	During the reporting period there were no charged re-visits
Digital	During the reporting period 2 digital inspections were completed.

The difference in number of facilities and the number of inspections is attributed to the fact that two facilities were inspected by South Dakota and to the fact that some were either provisionally accredited or ceased operations.

VII. Film Image Review

Random select	During the reporting period 65 random reviews were conducted
Self select	During the reporting period 81 self-selected reviews were conducted 68: re-accreditation, 9 new accreditation and 4 who switched from American College of Radiology (ACR) to Iowa.

VIII. FDA Visits/Program Reviews

A. States As Certifiers on-site visit was conducted by the US food and Drug Administration (FDA) on August 6 & 7, 2003. Personnel in attendance included Mike Devine, Joanne Choy, Scotty Hargrave, and Denise Robinson of the Food and Drug Administration (FDA), and Donald A. Flater, Jeanie Hudson and Janet Kent for the State of Iowa.

B. The FDA on-site review for Accreditation Bodies was conducted on January 14, 2003 with the following FDA personnel in attendance; Kathy Franke, Kaye Chesemore, and Vicki Jernigan. Representing the State of Iowa at this review were Donald A. Flater, Jeanie Hudson, Kellee Kemp, Janet Kent and Paul E. Koehn.

OPERATOR CERTIFICATION

I. Staffing

Charlene Craig oversees the certification process. Carol Trimble is the clerical support. Nancy Farrington, Paul Koehn, Jeanie Hudson and Kellee Kemp review continuing education training programs.

II. Permits to Practice

IDPH staff reviews training, testing, and continuing education requirements for personnel as part of the Permit to Practice process.

PERMITS ISSUED	
Diagnostic radiographers	3529
Radiation therapists	186
Nuclear medicine technologists	325
TOTAL	**4040**

In 2003, IDPH took action to revoke 2 permits.

II. Continuing Education Reviews

In this audit period, 1100 continuing education programs were reviewed and approved. Eighty-two requests were reviewed and denied. BRH staff audited 15 approved programs for appropriate content.

III. Training Program Reviews

IDPH staff review, interview, and approve new training programs. Approximately 150 individuals took the certification exams for limited diagnostic and nuclear medicine permits.

A. Inspections of Nuclear Medicine Technologist Training Programs

Members of the RAM became involved in the review of Licensee Nuclear Medicine Training Programs in September of 2002. Since that time, the review has consisted of at least two visits to each facility during each student's training. The initial visit is for the student to meet with BRH staff and to become familiar with who we are and how we play a part in their training. The final visit is for BRH staff to review the didactic portion of their training, observe the students in a clinical setting, and to orally question the student about various aspects of nuclear medicine. The BRH staff will then evaluate these aspects to either

recommend that the student appears to be prepared to sit for the examination or recommend for additional time to be spent in a particular area of training.

In 2003, IDPH has had three licensees that have had approved training programs. Nancy Farrington and Charlene Craig inspected the following programs.

Licensee	NUMBER OF STUDENTS	NUMBER OF VISITS BY IDPH	NUMBER OF FINAL VISITS BY IDPH	NUMBER PASS ON 1ST TRY	NUMBER THAT NEED TO TAKE EXAM 2ND TIME
0022-1-29-M1	1	3	1	1	
0124-1-77-M1	4	8	4	3	1
0220-1-23-M1**	2	2			

**This licensee is scheduled for the final visit of the students June 2004.

B. Inspection of Limited Radiographers Training Program

Four programs were reviewed and approved for training of limited radiographers. Two are formal school programs. The other two still have students in training.

IV. Rules

Effective May, 2003, new rules were implemented to clarify the training process and program requirements.

RADIOACTIVE MATERIALS PROGRAM

I. Staffing

Staffing consists of one Health Physicist III, two Health Physicist II's and one Clerk Specialist Advanced. When the Program Coordinator left the Bureau in April 2003, the Radioactive Materials, Transportation and Environmental Programs merged.

II. Inspector Evaluations

To ensure quality and consistency in inspections of licensees, the following inspector accompaniments were completed during this year:

DATE	INSPECTOR	REVIEWER	TYPE OF LICENSE
01/14	Ramona-Ubaldo-Mealey	Nancy A. Farrington	Portable Gauge
02/12	Ramona-Ubaldo-Mealey	Nancy A. Farrington	Fixed Gauge
02/12	Ramona-Ubaldo-Mealey	Nancy A. Farrington	Fixed Gauge
02/13	Ramona-Ubaldo-Mealey	Nancy A. Farrington	Portable Gauge
02/25	George F. Johns, Jr.	Nancy A. Farrington	Medical – Diagnostic & Therapeutic
02/26	Randal S. Dahlin	George F. Johns, Jr.	Medical – Diagnostic & Therapeutic
05/22	Randal S. Dahlin	Nancy A. Farrington	Industrial Radiography
06/18	Randal S. Dahlin	James Lynch (NRC)	Medical – No Written Directives
06/19	Nancy A. Farrington	James Lynch (NRC)	High Dose Rate Afterloader
07/25	Randal S. Dahlin	Nancy A. Farrington	Portable Gauge
07/28	Randal S. Dahlin	Nancy A. Farrington	Portable Gauge
08/26	Randal S. Dahlin	Nancy A. Farrington	Nuclear Pharmacy

III. Training

The following table summarizes the training efforts.

DATE	TRAINING	ATTENDEE	LOCATION	SPONSOR
January 29 – 31	MERRTT Train the Trainer	Randal S. Dahlin	Carlsbad, NM	DOE
January 30	***Hospital Emergency Department Management of Radiation Accidents***	**George F. Johns, Jr. & Nancy A. Farrington - Presenters**	**Sioux City**	**Mercy Medical Center**
March 17 – 21	Licensing Practices & Procedures	Randal S. Dahlin	Topeka, KS	NRC
April 7 – 11	Inspection Procedures	Ramona Ubaldo-Mealey Randal S. Dahlin	Chattanooga, TN	NRC
April 14 – 18	Instructor Development	Randal S. Dahlin	Johnston, IA	FBI
April 14 – 18	Root Cause Analysis	Nancy A. Farrington	Lisle, IL.	NRC
April 29 – 30	TRANSCOM	Nancy A. Farrington	Harrisburg, PA	DOE
April 28 – May 2	Transportation of Radioactive Materials	Randal S. Dahlin	Chattanooga, TN	NRC
May 9	***Hospital Emergency Department Management of Radiation Accidents***	**Nancy A. Farrington - Presenter**	**Davenport, IA**	**Genesis Medical Center**
May 12 - 16	Safety Aspects of Industrial Radiography	Randal S. Dahlin	New Orleans, LA	NRC
June 2 - 6	Air Sampling for Radioactive Materials	Nancy A. Farrington Randal S. Dahlin	Oak Ridge, TN	NRC
June 9 - 13	Environmental Monitoring for Radioactivity	Nancy A. Farrington Randal S. Dahlin	Oak Ridge, TN	NRC
June 16 – 18	Nuclear Materials Events Database (NMED)	Nancy A. Farrington	Lisle, IL	NRC
June 23 – 28	Radiological Emergency Response Operations (RERO)	Kellee Kemp	Mt. Weather, VA	FEMA
August 4 – 15	Basic Health Physics	Nancy A. Farrington Kellee Kemp	Oak Ridge, TN	NRC
August 11 –15	Diagnostic & Therapeutic Nuclear Medicine	Randal S. Dahlin	Houston, TX	NRC
August 18 - 22	Teletherapy and Brachytherapy	Randal S. Dahlin	Houston, TX	NRC
December 16	***Hospital Emergency Department Management of Radiation Accidents***	**Nancy A. Farrington - Presenter**	Des Moines, IA	**Des Moines University**

IV. Inspections

BRH staff conducted two team inspections in 2003. The team inspection of Iowa State University occurred in March and that of the University of Iowa in October. The following table summarizes the inspection activities:

INSPECTIONS			
	2001	2002	2003
IDPH Licenses	42	62	57
Reciprocity	2	4	4

V. Licenses

BRH responded to the Nuclear Regulatory Commission (NRC) request to identify licensees with radionuclides and quantities of concern. To readily identify those licensees, the file folders have been changed from green to red.

The RAM Program completed the following licensing actions:

	2001	2002	2003
New Licenses	4	4	10
Renewals	29	26	36
Terminations	4	6	2
Amendments	73	51	54

The RAM Program issued the following new licenses:

0315-1-00-NV1	Avera McKennan Hospital
0318-1-59-M2	Lucas County Health Center
0319-1-77-M1	Nuclear Sonics Associated, Inc.
0320-1-84-M2	Sioux Center Community Hospital
0321-1-52-PG	Hart-Frederick Consulting, PC
0322-1-07-PG	Earth Tech, Inc.
0323-1-50-M2	Skiff Medical Center
0324-1-07-M2	Cardiology Specialist PC
0325-1-07-XRF	Blackhawk County Health Department
0326-1-57-NV1	Midwest PET/CT Imaging, Inc.

BRH re-classified its medical licenses to better reflect the usage and to be consistent with the evolving rules concerning the two types of facilities. An M1 now is a medical institution that performs diagnostic and therapy procedures. An M2 is now defined as diagnostic only (no written directives). The following licenses were revised to reflect the re-classification:

FACILITY	LICENSE NUMBER	CHANGE
Buena Vista Regional Medical Center	0303-1-11-M2	M1 to M2
Ft. Madison Community Hospital	0074-1-56-M2	M1 to M2
Iowa Clinic	0215-1-77-M1	M2 to M1
Iowa Heart Center	0124-1-77-M1	M2 to M1
Knoxville Area Community Hospital	0277-1-63-M2	M1 to M2
Radiology Consultants of Iowa	0041-1-57-M1	M2 to M1

BRH staff also revised two licenses to address problems with the Sealed Source and Device Registry (SS&D).

1. WI-587-D-107-S is the SS&D for a Model C-200 Radium-226 gauge manufactured by Seaman. NR-587-D-104-S is a registry for the Seaman C-200 but with Cesium-137 and Americium-241 sources. The problem is that there is no model differentiation for the differently sourced devices.

2. NC-646-D-130-S is for the Troxler 3400 Series gauges. That implies that the Model 3411 and the 3450 are in the series. However, the 3400 series includes Models 3430, 3430-M, 3440, and 3440-M only.

In the first instance, a licensee requested transfer of a Model C-200 to another licensee. The transfer was to eliminate all radioactive material and subsequently terminate the license. BRH licensing staff was unaware of the difference in sources until they reviewed the SS&Ds.

In 2000, BRH identified the potential problem with using the "series" designation and changed the licensing practices to delete reference to the "3400 Series." (At least one license has inadvertently been issued with the imprecise information since then.) However, in this audit period, a licensee transferred a gauge to another licensee that was authorized the 3400 Series gauges. The license pre-dated that change.

The following licenses were revised to reflect the actual model numbers covered by the "3400 series" designation:

0033-1-31-PG	City of Dubuque
0084-1-77-PG	Geotechnical Services
0126-1-57-PG	Terracon
0168-1-31-PG	IIW Engineers and Surveyors, Inc.
0174-1-52-PG	Shive-Hattery, Inc.
0244-1-77-PG	TEAM Services
0266-1-28-PG	Gibbs Engineering & Surveying
0279-1-77-PG	Barker, Lemar & Associates, Inc.
0284-1-77-PG	Stork/Twin Cities Testing
0285-1-07-PG	Robinson Engineering Company

A. License

As a comparison to previous years, the following is a summary of the specific licenses at the end of 2003.

LICENSES			TYPE
2001	2002	2003	
2	2	2	Academic Broad Scope
--	1	1	Accelerator-Produced RAM (PET)
1	1	1	Civil Defense
3	3	3	Irradiators, Self –Shielding
5	5	5	Industrial Radiography
1	1	1	In-vitro Testing Lab
34	33	33	Fixed Gauges
52	47	47	Portable Gauges
2	2	2	Gas Chromatographs
1	1	1	Gamma Knife
2	2	2	High Dose Rate Afterloader
35	34	35	Medical Institutions-Diagnostic and Therapeutic
9	10	14	Medical Institutions–Diagnostic
4	3	3	Nuclear Pharmacy
4	6	8	Nuclear Medical Vans
2	2	2	Nuclear Medical Vans-Scan Only
1	1	1	Pacemaker Byproducts
13	12	12	Research & Development - Other
2	2	2	Source Material
2	2	2	Neutron Source in Device
2	2	2	Calibration and W/L Tests
4	4	4	Storage
2	2	3	X-Ray Fluorescent Analyzer
1	1	1	Veterinary Medicine Therapy
184	**179**	**187**	**TOTAL**

B. Revised Licenses

During the inspection of Iowa State University, BRH inspectors found that the license did not address training requirements for portable gauge users. That license was revised accordingly.

BRH staff revised a license to permit possession of a Troxler Model 3411B moisture density gauge. Garden and Associates transferred the gauge to Terracon. The licensees incorrectly assumed that the 3411B was one of the 3400 Series gauges authorized on Terracon's license. This issue has been addressed with the State and Tribal Programs staff.

VI. Standard License Conditions

After reviewing the license conditions associated with Liquid and Microsphere Brachytherapy, which were published by the NRC, several have been added to the IDPH Standard Licensing Conditions (refer to conditions 123 through 127).

VII. Generally Licensed Materials Program

IDPH began a General License (GL) inspection program in 1999. This program was initiated in anticipation of the NRC's change in handling Generally Licensed material. No additional actions regarding inspection of GL devices have been accomplished since the previous audit. The following is a summary of the GL licenses:

LICENSEES			CATEGORY
2001	2002	2003	
12	26	33	Portable Gauges
36	34	34	Fixed Gauges
28	28	37	X-Ray Fluorescent Analyzers
4	3	3	In-vitro Laboratories
7	5	4	Dew Point Analyzers
14	13	13	Electron Capture Devices
2	2	3	Liquid Scintillation Detectors
20	15	18	Static Eliminators
123	**126**	**141**	**TOTAL**

Three companies have reported missing, lost, or stolen static eliminators in 2003. These events have been documented in Nuclear Materials Events Database (NMED). Another general licensee reported that companies in another Agreement State had purchased their generally licensed radioactive devices in an auction. BRH required that the facility contact the appropriate regulatory authority.

VIII. Reported events

In June 2003, BRH staff received a report of a "lead-lined room" into which people were afraid to go. This room was in a physics laboratory at Drake University in Des Moines. It turned out that in this room, inside of which dose rates were 1.5 mr/hr, was a steel box containing button sources and a "pig," labeled "10mg-Radium." Other items in this room included a neutron howitzer, 10mg Ra:Be. Drake University was not licensed for these items.

Additionally, another "pig" containing a radium source was discovered in a storage area off-campus.

By December 2003, Drake University had properly transferred all radioactive material, including waste from the clean-up of loose surface contamination in the steel box. At no time, based on calculations, were any limits to the general public exceeded.

A complete report will be on file in the Bureau by mid-2004.

IX. Machines

The RAM Program has been tasked with inspecting accelerators and industrial X-ray machines. No inspections were accomplished in 2003 due to staff shortages.

REGISTRANTS			CATEGORY	INSPECTION FREQUENCY IN YEARS
2001	2002	2003		
35	35	64	Analytical X-Ray Machines	3
10	11	30	Cabinet X-Ray Systems	3
9	16	14	Industrial X-Ray Systems	1
20	11	22	Medical Accelerators	3
5	4	7	Non-Medical Accelerators	3
2	2	4	Self-Shielded Particle Accelerators	3
3	2	3	Walk-In X-Ray Cabinets	3
84	**81**	**144**	**TOTAL**	

X. Chemically Safe Schools and Radioactive Materials Collection

In 2000, Iowa Department of Natural Resources (IDNR) initiated a program to remove unwanted, hazardous chemicals from schools. The initiative lost funding and was abandoned by IDNR. "Chemically Safe Schools" became a partnership of private companies such as Metro Waste Management and county health agencies who inventory and catalog the chemicals in schools. They also arrange for the disposal of the unwanted chemicals. Radioactive materials, which were primarily purchased in the 1950's and 1960's as educational tools, are classified as mixed hazardous waste. As such, the disposal is costly. (The materials were mainly uranium acetate and thorium nitrate.)

The RAM Program has participated in the program by removing the identified radioactive material from high schools. These materials have been delivered to Iowa State University for disposal as part of a 28E Agreement. The following is a list of the schools that had material removed:

Clinton High School

In addition, material was removed from the following businesses throughout the state.

North Star Steel, Wilton
Midlands Clinic, PC, Sioux City
John Deere, Dubuque

XI. Department of Transportation Exemptions

IDPH issued one U.S. Department of Transportation exemption in 2003. Shipments of scrap metal that alarm detectors at processing plants or scrap yards in Iowa are required to have authorization for their return to the state of origin. Upon return, the responsible state radiological program must assist the shipper in identifying the cause of the alarm.

One shipment was returned to Iowa in the audit period. This item contained Radium-226, in scale, in sections of pipe. The pipe was transferred to Iowa State University for disposal as low-level solid waste.

XII. Industrial Radiography Certification Testing

Ramona Ubaldo-Mealey continues to provide outstanding administrative control of the industrial radiography certification program. The following table summarizes those efforts:

RADIOGRAPHY CERTIFICATION EXAMINATIONS			
	2001	2002	2003
Radioactive Materials	6	7	0
X-Ray	12	8	0
Both	21	20	20
Total	**39**	**35**	**20**

XIII. Rules

The BRH filed a Notice of Intended Action to address Compatibility A and B rules. The NRC has and several licensees have provided comments. With the exception of subpart J rules, implementation of those rules IDPH will not have any un-addressed Compatibility A or B items after February of 2003, which is the scheduled implementation date. IDPH will be in compliance with regard to the NRC required implementation requirements. In a second set of rules, the errors identified by the NRC review that had not been corrected were addressed. In addition, the verbiage concerning issuance of industrial radiography licenses was added.

The Transportation Security Authority claimed that they were not subject to regulation because the IDPH rules did not include federal agencies. A rule change was considered in 2002 to address this issue but no action was taken. This issue will be researched to determine if all federal agencies are exempt or if those specifically mentioned in our rules are the only ones exempted. The only other facilities that may be exempted are those under federal jurisdiction.

XIV. Revenues

Radioactive materials licenses are issued for five years. Inspection frequencies vary but are primarily between one and five years[1]. To grasp the ebbs and flows of the cycles, the specific license revenues for the past five years are listed in the table below.

	NEW	RENEWAL	AMENDMENT	RECIPROCITY	INSPECTION	TOTAL
1998	9000	28575	18805	31000	122805	210185
1999	13030	31565	22190	40400	122507	229692
2000[2]	14250	**67588**	26946	42400	142924	294108
2001	**24100**	42120	**47360**	43400	137122	294102
2002	10900	44550	31115	44800	**172162**	**303527**
2003	20060	43370	29725	**67900**	149907	310962
TOTAL	**91340**	**257768**	**176141**	**269900**	**847427**	**1,642,576**

XV. Integrated Materials Performance Evaluation Program (IMPEP)

From July 29 to August 1, 2003, a team, comprised of members from NRC's Office of State and Tribal Programs, NRC Region III States Agreement Officer, a staff member from NRC Region III and a radiation control program member from the State of New York, conducted an IMPEP review of the program.

With the recommendations of this team, the Management Review Board determined that this program was both adequate to protect public health and safety and compatible with similar NRC programs.

Additionally, there were no findings or recommendations. The IMPEP team also noted two areas of "Good Practice."

[1] Pacemaker By-Product and X-Ray Fluorescent Analyzers are on a seven-year cycle.
[2] Last fee change

TANNING PROGRAM

I. Staffing

Charlene Craig oversees the registration and inspection process and conducts inspections and inspector training. Carol Trimble is the clerical support.

II. Training

Charlene Craig conducted training of county inspectors. Three group update sessions were held and 4 individual county inspectors were trained.

III. Facility Registration

Approximately 1360 tanning facilities were registered in 2003. This includes new facilities and renewal of existing facilities. Each facility is billed and a receipt sent back. All owner/managers complete a monitored exam before the permit is issued. Exams are given by the county health departments and submitted as part of the registration process.

IV. Inspections

The county health departments through contracts with IDPH perform inspections of tanning facilities. Charlene Craig performed 26 inspections for counties without contracts. All inspections are annual and have been completed within the audit period.

V. Rules

Rules updating the health warnings and photosensitizing drug list for tanning, became effective May 2003. This change clarified the two items.

RADIATION MACHINES PROGRAM

I. Staffing

David Myers and Paul E. Koehn conduct X-ray inspections, investigations, and shielding evaluations. Charlene Craig reviews shielding evaluations and oversees the registration process. Carol Trimble is the clerical support.

II. X-ray Machine Registrations

Approximately 2600 facilities and 7200 x-ray units were registered in 2003. This includes new facilities and renewal of existing facilities. Each facility is billed and a receipt sent back upon collection of fees.

III. X-ray Machine Inspections

In 2003, David Myers inspected 165 X-ray units in 81 facilities and Paul E. Koehn inspected 8 tubes in 8 facilities. During this period, 66 percent of the inspections found a non-compliance.

IV. Compliance Testing

Approximately 20 Level II compliance tests were performed as part of Iowa's agreement with the FDA'S Southwest District. The FDA has agreed to calibrate IDPH equipment as compensation for the Level II compliance tests.

VI. Gas Delivery System Inspections

Under a 28E Agreement with the Iowa Dental Board, numerous gas delivery systems are inspected annually. The maximum yearly amount of reimbursement is $5000.00.

VII. Shielding Evaluations

Shielding evaluations were performed for facilities that have installed new-X-ray equipment or have remodeled existing spaces. The evaluation involved review and calculation of workload, distance, barrier composition, etc. Approximately 300 reviews were performed this year (90 percent by David Myers, 5 percent by Charlene Craig and 5 percent by Paul E. Koehn). The staff has committed to initiating a computerized tracking system to more accurately track and count evaluations.

VIII. Rules

IDPH rules were amended effective May 2003, to reflect changes in Suggested State Regulations for the Control of Radiation (SSRCR's), which are provided by the Conference of Radiation Control Program Directors (CRCPD).

_____ Date_____

Donald A. Flater, Chief

_____ Date_____

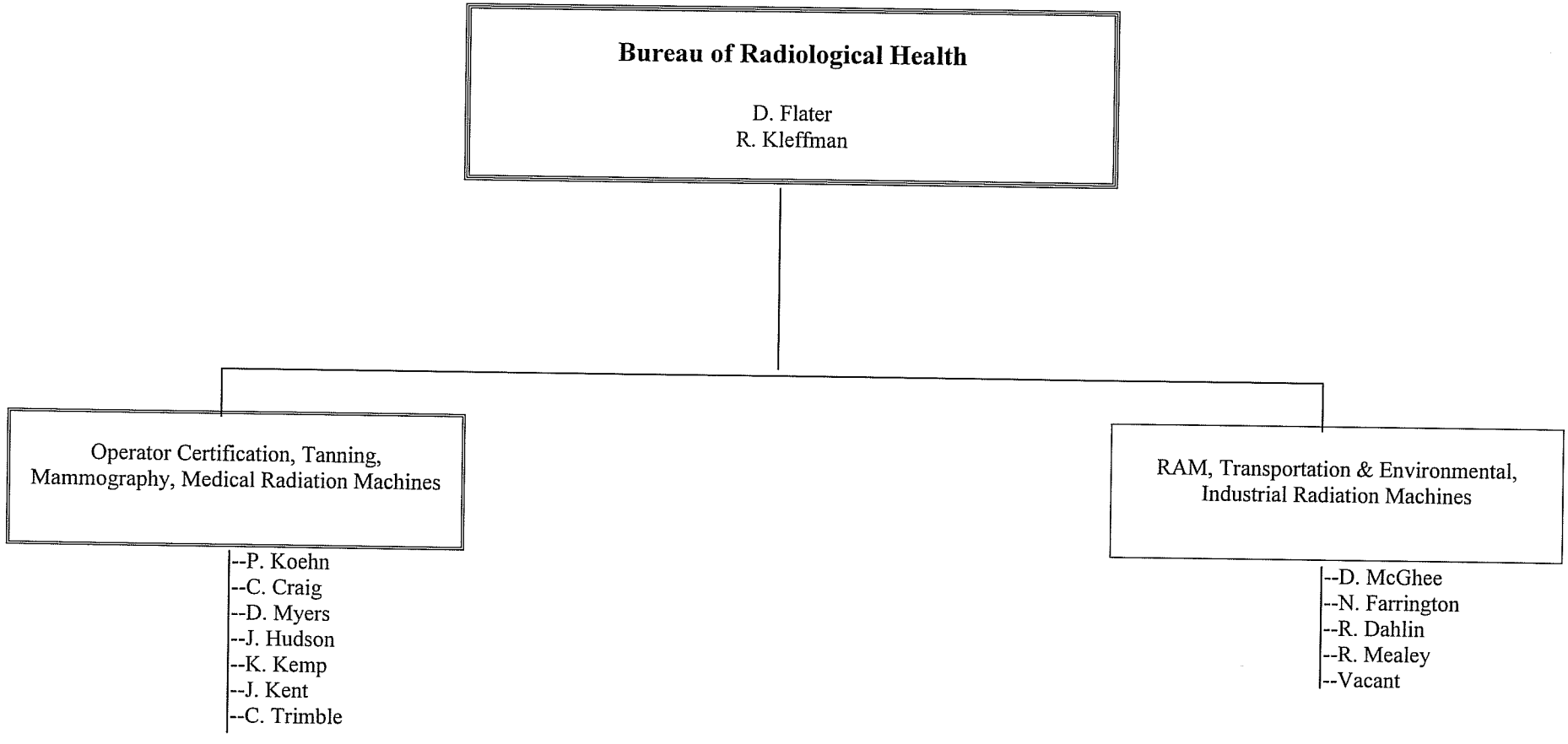
Daniel K. McGhee, Coordinator (RAM)

_____ Date_____

Paul E. Koehn, Coordinator (X-Ray)

Appendix A

BUREAU ORGANIZATIONAL CHART



***This organization table was modified after George F. Johns, Jr., coordinator of the RAM program, retired in April 2003.**

Appendix B

List of Acronyms

BRH	Iowa Bureau of Radiological Health
FFA	Federal Facilities Agreement
FDA	Food and Drug Administration
GL	General License
IAAAP	Iowa Army Ammunition Plant
IDNR	Iowa Department of Natural Resources
IDPH	Iowa Department of Public Health
IMPEP	Integrated Materials Performance Evaluation Program
NRC	Nuclear Regulatory Commission
RAM	Radioactive Materials

TRANSMITTAL MEMORANDUM

Date: September 14, 2007

To: Mary Hansen, Director, IDPH
Tom Newton, Division Director HP & EH
Kathy Franke, FDA
James Lynch, NRC
Lloyd Bolling, NRC
Scotty Hargrave, FDA
Robert Dye, EPA

FROM: Donald A. Flater, Chief
Iowa Bureau of Radiological Health
515-281-3478

RE: 2003 Bureau Self Audit

In order to be aware of the accomplishments of the Bureau for the past calendar year, staff has conducted a self-audit of all programs with the Iowa Bureau of Radiological Health. With encouragement from Federal Agencies, the Bureau's self-audit process started with the calendar year of 2002.

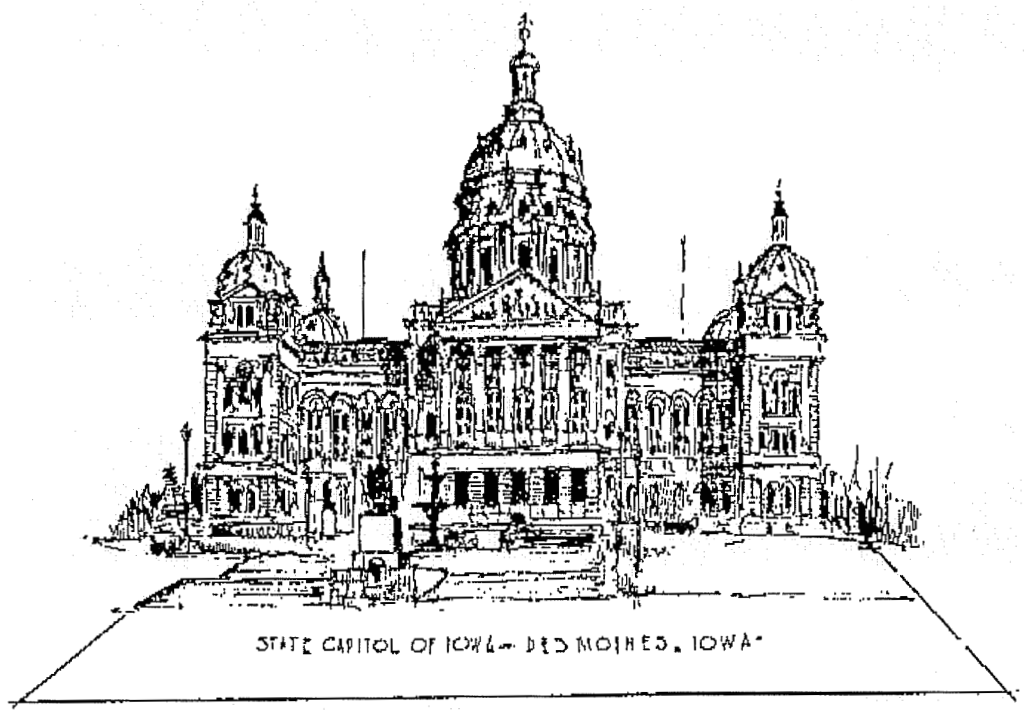
As a result of staff efforts we have just completed the 2003 audit and have provided a copy of the Audit Report for your perusal. Any comments you can provide to increase the usefulness of the document in future years would be welcomed.

If you have questions regarding the 2003 audit report, please contact me.

IOWA DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

2005 ANNUAL AUDIT OF BUREAU OF RADIOLOGICAL HEALTH PROGRAMS

(January 1, 2004-June 30, 2005)



Iowa Bureau of Radiological Health
Lucas State Office Building, 5th Floor
321 East 12th Street
Des Moines, Iowa 50319
515-281-3478

TABLE OF CONTENTS

INTRODUCTION

Since the Bureau of Radiological Health instituted the practice of conducting annual audits, the staff has used the calendar year, January 1 to December 31, as the time period for review. Since all the efforts of the Bureau are based on Iowa's fiscal year, July 1 to June 30, the staff changed to the fiscal year as the period of interest.

To make this transition, the current audit will be entitled "2005 Annual Audit." The calendar period for this review is January 1, 2004 to June 30, 2005—eighteen months. In the chronology of events it will appear that the Bureau did not complete a review of "2004." This calendar year is completely contained in this audit as is the 2005 fiscal year of July 1, 2004 to June 30, 2005.

ENVIRONMENTAL, TRAINING, AND TRANSPORTATION

I. Staffing

Staffing levels remained the same and are indicated in the Radioactive Materials (RAM) Program section of this document.

II. Training

Iowa Bureau of Radiological Health (BRH) provided training to support first responder and law enforcement operations in Iowa. The following table summarizes the training efforts.

DATE	ORGANIZATION/LOCATION	TRAINING TYPE	NUMBER OF ATTENDEES	PRESENTOR
01/07/04	Hardin County First Responders Iowa Falls	Radiological Awareness	30	Randy Dahlin
01/08/05	Fire Department - HazMat, Iowa City	Radiological Response "Hands-on"	13	Randy Dahlin
01/26/04	Iowa State Patrol – District 14, Ottumwa	Radiological Awareness	23	Randy Dahlin
02/06/04	Iowa State Patrol – District 16, Des Moines	Radiological Awareness	4	Randy Dahlin
03/03-05/04	Fire Department – HazMat, Ottumwa	Radiological Classroom	25	Randy Dahlin
03/09-11/04	Fire Department – HazMat, Ottumwa	Radiological Response "Hands-on"	29	Randy Dahlin
07/13/04	Department of Natural Resources, Des Moines	Radiological Awareness	28	Randy Dahlin
09/08/04	Department of Natural Resources, Des Moines	Radiological Awareness	26	Randy Dahlin
01/11/05	Department of Natural Resources, DSM	Radiological Awareness	12	Randy Dahlin
03/08/05	Department of Natural Resources, DSM	Radiological Awareness	13	Randy Dahlin
04/20/05	Region 2 Bioterrorism Conference	Radiological Awareness	14	Randy Dahlin

III. Environmental Investigations and Remediation

A. Fansteel/Wellman Dynamics Corporation

This is an ongoing project that involves the decommissioning of a former "304" burial site. The parent corporation, Fansteel, Inc., filed Chapter 11 bankruptcy in November 2001. The company emerged from bankruptcy in January 2004.

The Site Characterization Report was submitted in October 2003. The parent company concluded that the former "304" burial site met the decommissioning standards. This Bureau agreed.

In July 2004, the company submitted a license renewal application which incorporated the results of the characterization. The Bureau contacted NRC to determine whether the requests in the application were consistent with the guidance to decommission "304 sites" and whether the proposed license conditions satisfied the "timeliness" rule.

In May 2005, the Bureau renewed Fansteel's license. There are conditions which indicate that this site meets the standards for unrestricted use and that Fansteel will remove the buried items when it decommissions its state permitted land fill. This land fill is adjacent, but not contiguous, to the burial site. (NOTE: The Iowa Department of Natural Resources, not this bureau, holds the permit for the land fill.)

B. Iowa Army Ammunition Plant (IAAAP)

This is an active site, consisting of 19,000 acres, operated for the US Army by a contractor. Until 1975, the Energy Research and Development Administration and its progenitors, utilizing the predecessors of the current contractor, conducted various operations that involved nuclear weapons. In 1990, the Army, under Comprehensive Environmental Response Compensation and Liability Act, began a clean up of the entire site. The radiation issues did not surface until December 1999.

Little or no actual clean up actually occurred at IAAAP this year. The discovery of a possible non-radiation plume off-post became the highest priority for investigation. A remedial action plan was published in July 2004. This plume contains no radioactive hazards.

In December 2003 the State began participating in the negotiations for an additional Federal Facilities' Agreement (FFA) at IAAAP. The parties are the US Environmental Protection Agency (EPA), the Army Corps of Engineers, St. Louis District (FUSRAP), and the State. The purpose of this FFA is to outline responsibilities for those areas of IAAAP at which the US Atomic Energy Commission conducted its operations.

These negotiations proceeded through 2003 and into 2004. Both the EPA and the State had hoped to have at least a draft "final" in place by mid-2004. This did not occur. These negotiations have continued and appeared to stall. In May 2005, the governor wrote a letter re-iterating his interest in the IAAAP and inquiring about the status of FFA negotiations. The letter created a flurry of conference calls between EPA, FUSRAP and the State. At the end of FY 05 there appeared to be only two sections of the FFA with which FUSRAP disagreed. There is still no target date for completion.

IV. Rules

In July of 2002, Iowa Department of Public Health (IDPH) implemented a fee for transportation of radioactive waste shipments in Iowa. The fee was established to fund training for personnel who might respond to transportation accidents involving radioactive materials. The table in Section II summarizes the training accomplished in 2004.

Fee generated income from these waste shipments equaled $94,450.00 in calendar year 2004 and in the first 6 months of 2005 was $28,304.99, for a total of $122,754.99

MAMMOGRAPHY PROGRAM

I. Staffing

The Mammography Program consists of four employees: a Health Physicist III, 2 Health Physicist II's, and an Administrative Assistant. (The Section Coordinator, Paul Koehn, has dual responsibility for the Mammography and Radiation Machines Programs.)

II. Training

Paul E. Koehn, B.S., R.T. (R) FDA Certified Mammography Inspector Certified: February 10, 1995			
Date	**Activity**	**Location**	**MEU**
01/23/04	Phantom Image Evaluation	Des Moines, IA	2
05/07/04	17th Annual Mammography Conference	Ames, IA	6
04/8,9/05	ISRT Spring Symposium	Des Moines, IA	9
04/22,23/05	Mammography Continuing Ed 2005 (CRCPD)	Kansas City, MO	15.5
04/24/05	Current Topics in Clinical Rad Protection	Kansas City, MO	9.5

Jeanie M. Hudson, R.T. (R)(M) FDA Certified Mammography Inspector Certified June 16, 1995			
01/23/04	Phantom Image Evaluation	Des Moines, IA	2
06/09/04	The Art of Positioning Level I	Ankeny, IA	1
12/30/04	Optimizing the Mammographic Image	Kodak-online	1.5
04/08/05	Part 1 Risk to Radiographers from Occupational Radiation Exposure	Des Moines, IA	1
04/08/05	Part 2 Risk to Radiographers from Occupational Radiation Exposure	Des Moines, IA	1
04/22/05	Day 1 Mammography Continuing Education 2005	Kansas City, MO	7.5 2D
04/23/05	Day 2 Mammography Continuing Education 2005	Kansas City, MO	8 1D
05/06/05	18th Annual Mammography Conference	Ames, IA	2
05/06/05	18th Annual Mammography Conference	Ames, IA	2
05/06/05	18th Annual Mammography Conference	Ames, IA	1
05/06/05	18th Annual Mammography Conference	Ames, IA	1

Kellee J. Kemp, B.A., R.T. (R) (M) FDA Certified Mammography Inspector Certified: May 2, 2002			
01/23/04	Phantom Image Evaluation	Des Moines, IA	2
02/28/04	Digital Mammo MTMI	Kansas City, MO	8 Digital
04/08/05	ISRT	Des Moines, IA	2
04/22,23/05	CRCPD	Kansas City, MO	15.5
06/11/05	Central Iowa Breast Imaging Symposium	Des Moines, IA	4

III. Accredited Facilities

Due to the lack of a computerized system, the Mammography Program staff continues to track facilities manually. As of June 30, 2005, the number of facilities was as follows:

ACCREDITED FACILITIES	
American College of Radiology (ACR) accredited	7
IDPH accredited	141
Stereotactic	22
TOTAL	**170**

In addition to the above facilities, there are two mobile facilities from South Dakota.

IV. Physician/Physicist Qualifications

IDPH manually maintains a list of qualified radiologists. The list, which currently consists of 367 physicians, is another function awaiting creation of a computer program.

IDPH staff also manually maintains a list of 25 surgeons qualified to conduct stereotactic breast biopsies and files on 19 physicists who conduct mammography surveys in Iowa

V. Technologist Qualifications

Technologists who perform mammography in the State of Iowa must possess a current permit to practice in Diagnostic Radiography. (See Operator Certification.) In addition to that certification requirement, the Mammography Program staff is directed by Iowa Law to monitor continuing education of all mammographic technologists, specific to mammography, to insure that these technologists maintain minimum requirements.

Absent a computer database, this continues to be a manual process. At year's end, the training for 711 mammography technologists was being manually tracked.

VI. Inspections

All accredited facilities are inspected annually. The breakdown in inspections is indicated in the following table.

Stereotactic	During the reporting period 42 stereotactic inspections were completed
Film-screen	During the reporting period 220 inspections were completed
Re-visits	During the reporting period there were 3 charged re-visits
Digital	During the reporting period 2 digital inspections were completed.

The difference in number of facilities and the number of inspections is attributed to the fact that two facilities were inspected by South Dakota and to the fact that some were either provisionally accredited or ceased operations.

VII. Film Image Review

Random select	During the reporting period 58 random reviews were conducted
Self select	During the reporting period 95 self-selected reviews were conducted, 90 re-accreditation, 5 new accreditation.
AMR	During the reporting period there were 2 AMR's conducted.

VIII. FDA Visits/Program Reviews

A. The FDA on-site review for Accreditation Bodies was conducted on January 13, 2004 with the following FDA personnel in attendance; Vicki Jernigan, Denise Robinson and Henry Chan. Representing the State of Iowa at this review were Donald A. Flater, Jeanie Hudson, Kellee Kemp, Janet Kent and Paul E. Koehn.

B. States As Certifiers on-site visit was conducted by the US Food and Drug Administration (FDA) on August 3 & 4, 2004. Personnel in attendance included Joanne Choy, Scotty Hargrave, Kaye Chesemore & Vicky Jernigan of the Food and Drug Administration (FDA), and Donald A. Flater, Jeanie Hudson and Janet Kent, Paul E. Koehn and Kellee Kemp for the State of Iowa.

OPERATOR CERTIFICATION

I. Staffing

Charlene Craig oversees the certification process. Nancy Farrington, Paul Koehn, Jeanie Hudson and Kellee Kemp review continuing education training programs.

II. Permits to Practice

IDPH staff reviews training, testing, and continuing education requirements for personnel as part of the Permit to Practice process.

PERMITS ISSUED		
	2004	**2005**
Diagnostic radiographers	3752	3864
Radiation therapists	154	155
Nuclear medicine technologists	333	340
TOTAL	6243	6364

In 2004-July, 2005, IDPH took action to revoke 2 permits.

II. Continuing Education Reviews

In 2004 approximately 1400 continuing education programs were reviewed and approved. Eighty-two requests were reviewed and denied. BRH staff audited 15 approved programs for appropriate content.

January 1 to June 30, 2005, approximately 600 continuing education programs were reviewed and approved. 51 requests were reviewed and denied.

III. Training Program Reviews

IDPH staff review, interview, and approve new training programs. Approximately 135 individuals took the certification exams for limited diagnostic and nuclear medicine permits in 2004. 64 individuals were enrolled to take the certification exam for limited diagnostic permit between January 1 and June 30, 2005.

A. Inspections of Nuclear Medicine Technologist Training Programs

Members of the RAM became involved in the review of Licensee Nuclear Medicine Training Programs in September of 2002. Since that time, the review has consisted of at least two visits to each facility during each student's training. The initial visit is for the student to meet with BRH staff and to become familiar with who we are and how we play a part in their training. The final visit is for BRH staff to review the didactic portion of their training, observe the students in

a clinical setting, and to orally question the student about various aspects of nuclear medicine. The BRH staff will then evaluate these aspects to either recommend that the student appears to be prepared to sit for the examination or recommend for additional time to be spent in a particular area of training.

In 2003, IDPH has had three licensees that have had approved training programs. Nancy Farrington and Charlene Craig inspected the following programs in 2004.

Licensee	Number of Students	Number of Visits By IDPH	Number of Final Visits by IDPH	Number of Pass on 1st Try	Number That Need To Take Exam 2nd Time
0220-1-23-M1	2	2	1	2	

B. Inspection of Limited Radiographers Training Program

One program was reviewed and approved for training of limited radiographers.

IV. Rules

Effective May, 2005, new rules were implemented to clarify the training process and program requirements and to add requirements for radiology assistants.

RADIOACTIVE MATERIALS PROGRAM

I. Staffing

Staffing consists of one Health Physicist III, two Health Physicist II's and one Clerk Specialist Advanced.

II. Inspector Evaluations

To ensure quality and consistency in inspections of licensees, the following inspector accompaniments were completed during this year:

DATE	INSPECTOR	REVIEWER	TYPE OF LICENSE
08/30	Ramona Ubaldo	Daniel McGhee	Medical Diagnostic
08/31	Ramona Ubaldo	Daniel McGhee	Gamma Knife
09/1-2	Ramona Ubaldo	Daniel McGhee	Cyclotron
09/03	Ramona Ubaldo	Daniel McGhee	Research & Development

III. Training

The following table summarizes the training efforts.

DATE	TRAINING	ATTENDEE	LOCATION	SPONSOR
February 18-20, 2004	National Symposium on Fusion Imaging and Multimodalities: Technical and Regulatory Considerations	Nancy A. Farrington	Kansas City, KS	CRCPD
February 23-24, 2004	Environmental Response Training	Nancy Farrington	Kansas City, KS	EPA
February 23-27, 2004	Health Physics in Radiation Accidents (REACTS/TS)	Randal S. Dahlin	Oak Ridge, TN	DOE
March 15-19, 2004	Radiological Emergency Response Operations (RERO)	Randal S. Dahlin	Anniston, AL	FEMA
May 26, 2004	SEOC Training	Nancy Farrington & Ramona Ubaldo	Johnston, Iowa	Iowa Homeland Security
June 21-22, 2004	Radiation Detection Training	Nancy A. Farrington	Kansas City, KS	EPA
August 2-5, 2004	Radiological Accident Assessment Concepts (RASCAL)	Nancy A. Farrington	Emmetsburg, MD	FEMA
August 9-13, 2004	Site Specific **RES**idual **RAD**ioactive material guidelines (RESRAD)	Nancy A. Farrington	Argonne, IL	DOE
November 15-19, 2004	Root Cause/Incident Workshop	Randal S. Dahlin	Lisle, IL	NRC
January 19 & 20, 2005	TRAGIS Web Training	Don Flater & Randal S. Dahlin	Oakridge, TN	DOE
April 11-15, 2005	Inspecting for Performance	Ramona Ubaldo	Chattanooga, TN	NRC
April 11-15, 2005	National Radiological Emergency Preparedness Conference	Randal S. Dahlin	Harrisburg, PA	National REP Committee
June 20-24, 2005	Advanced Radiological Incidents Operations	Nancy A. Farrington	Anniston, AL	FEMA

IV. Inspections

BRH staff conducted three team inspections in this reporting period. The team inspection of Iowa State University occurred in May 2004 and May 2005 and that of the University of Iowa in October 2004. The following table summarizes the inspection activities:

INSPECTIONS		
Year	**IDPH Licenses**	**Reciprocity**
2001	42	2
2002	62	4
2003	57	4
2004	56	1
2005	19	0

V. Licensing

The RAM Program completed the following licensing actions:

Year	New Licenses	Renewals	Terminations	Amendments
2001	4	29	4	73
2002	4	26	6	51
2003	10	36	2	54
2004	5	38	5	45
2005	4	26	0	20

The RAM Program issued the following new licenses:

0327-1-06-M2	Virginia Gay Hospital
0328-1-82-M2	Quad City Heart Center
0329-1-00-NV1	Medical Outsourcing Services
0330-1-78-XRF	Alloy Specialist
0331-1-52-M2	Iowa City Heart Center
0332-1-63-M2	Pella Regional Health Center
0333-1-77-PG	Geotech Engineering
0334-1-78-M1	Quality Inspection Services, Inc.
0335-1-07-M1	Advanced Diagnostic Imaging, LLC

As a comparison to previous years, the following is a summary of the specific licenses at the end of 2004.

LICENSES					CATEGORY
2001	**2002**	**2003**	**2004**	**2005**	
2	2	2	2	2	Academic Broad Scope
	1	1	1	1	Accelerator-Produced RAM (PET)
1	1	1	1	1	Civil Defense

3	3	3	3	3	Irradiators, Self –Shielding
5	5	5	6	7	Industrial Radiography
1	1	1	1	1	In-vitro Testing Lab
34	33	33	32	32	Fixed Gauges
52	47	47	41	42	Portable Gauges
2	2	2	1	1	Gas Chromatographs
1	1	1	1	1	Gamma Knife
2	2	2	2	2	High Dose Rate Afterloader
35	34	35	34	35	Medical Institutions-Diagnostic and Therapeutic
9	10	14	16	17	Medical Institutions–Diagnostic
4	3	3	3	3	Nuclear Pharmacy
4	6	8	8	8	Nuclear Medical Vans
2	2	2	0	0	Nuclear Medical Vans-Scan Only
1	1	1	1	1	Pacemaker Byproducts
13	12	12	12	12	Research & Development - Other
2	2	2	2	2	Source Material
2	2	2	2	2	Neutron Source in Device
2	2	2	1	1	Calibration and W/L Tests
4	4	4	0	0	Storage
2	2	3	3	3	X-Ray Fluorescent Analyzer
1	1	1	1	1	Veterinary Medicine Therapy
182	**179**	**187**	**174**	**178**	**TOTAL**

VI. Generally Licensed Materials Program

IDPH began a General License (GL) inspection program in 1999. This program was initiated in anticipation of the NRC's change in handling Generally Licensed material. No additional actions regarding inspection of GL devices have been accomplished since the previous audit. The following is a summary of the GL licenses:

LICENSEES					CATEGORY
2001	**2002**	**2003**	**2004**	**2005**	
12	26	33	35	34	Portable Gauges
36	34	34	35	36	Fixed Gauges
28	28	37	42	43	X-Ray Fluorescent Analyzers
4	3	3	1	1	In-vitro Laboratories
7	5	4	3	3	Dew Point Analyzers
14	13	13	10	10	Electron Capture Devices
2	2	3	3	3	Liquid Scintillation Detectors
20	15	18	18	18	Static Eliminators
2124	**126**	**141**	**147**	**148**	**TOTAL**

VII. Allegations

BRH responded to two allegations May 2004.

CANCER CLUSTER
Some individuals who worked in a hospital alleged that the higher than average cancer rate in their department was caused by accelerator operations at the hospital. Bureau staff conducted on scene interviews, performed surveys in unrestricted areas, placed area TLD's for three months and sponsored a radon test.

At the end of these activities BRH held sessions both at the hospital and for the general public on the results of the measurements and the conclusions that radiation levels in the unrestricted areas of the hospital did not exceed those due to background.

Since this allegation involved accelerator operations, it was not formally presented to the NRC.

LOSS OF CONTROL OF LICENSED MATERIAL/OPERATIONS OUTSIDE SCOPE OF PRACTICE

An individual alleged that a mobile nuclear service had an employee who injected licensed material into patients and was neither an authorized user nor operating under the supervision of an authorized user. Our investigation revealed that not only was this true, but that a used syringe was left in an uncontrolled area at a client hospital.

This bureau issued a Notice of Violation to both the mobile nuclear service and the individual involved. The service was cited for loss of control of licensed material, transportation violations, improper personnel monitoring and allowing an individual, neither an authorized user nor under the supervision of an authorized user. The individual was cited with performing the actions of a nuclear medicine technologist without holding an Iowa Permit to Practice Nuclear Medicine.

As a result of the number and severity of the violations both the company and the individual participated in escalated enforcement conferences. Because the company had promptly conducted an internal investigation, which identified the root cause(s) of the violations and because the company took immediate and corrective steps, no further action, by IDPH, was taken.

Because the individual willfully violated the Iowa Administrative Code, the Bureau suspended the individual's Permit to Practice as a Diagnostic Radiographer for 30 days and issued a $500 civil penalty.

The corrective actions will be reviewed during the next regularly scheduled inspection of the mobile nuclear service.

VIII. Reported events

In June 2003, BRH staff received a report of a "lead-lined room" into which people were afraid to go. This room was in a physics laboratory at Drake University in Des Moines. It turned out that in this room, inside of which dose rates were 1.5 mr/hr, was a steel box containing button sources and a "pig," labeled "10mg-Radium." Other items in this room included a neutron howitzer, 10mg Ra:Be. Drake University was not licensed for these items.

Additionally, another "pig" containing a radium source was discovered in a storage area off-campus.

By December 2003, Drake University had properly transferred all radioactive material, including waste from the clean-up of loose surface contamination in the steel box. At no time, based on calculations, were any limits to the general public exceeded.

In January 2004, representatives of Iowa State University conducted an MARSSIM type, Class III final status survey of all impacted areas at Drake University. This survey indicated that there was no residual contamination in any unrestricted areas. The final report was published in February 2004.

IX. Machines

The RAM Program has been tasked with inspecting accelerators and industrial X-ray machines.

REGISTRANTS					CATEGORY	INSPECTION FREQUENCY IN YEARS
2001	2002	2003	2004	2005		
35	35	64	45	44	Analytical X-Ray Machines	3
10	11	30	30	31	Cabinet X-Ray Systems	3
9	16	14	11	11	Industrial X-Ray Systems	1
20	11	22	22	22	Medical Accelerators	3
5	4	7	10	11	Non-Medical Accelerators	3
2	2	4	0	0	Self-Shielded Particle Accelerators	3
3	2	3	1	1	Walk-In X-Ray Cabinets	3
0	0	0	0	1	Electron Microscope	3
0	0	0	0	1	Sterilization	3
0	0	0	0	2	Baggage X-Ray	3
0	0	0	0	1	X-Ray Fluorescent	3
84	**81**	**144**	**119**	**125**	**TOTAL**	

XI. Department of Transportation Exemptions

IDPH issued four U.S. Department of Transportation exemptions in this reporting period. Shipments of scrap metal that alarm detectors at processing plants or scrap yards in Iowa are required to have authorization for their return to the state of origin. Upon return, the responsible state radiological program must assist the shipper in identifying the cause of the alarm.

There were no shipments returned to Iowa in the audit period.

XII. Industrial Radiography Certification Testing

Ramona Ubaldo continues to provide outstanding administrative control of the industrial radiography certification program. The following table summarizes those efforts:

RADIOGRAPHY CERTIFICATION EXAMINATIONS				
Year	**Radioactive Material**	**X-Ray**	**Both**	**Total**
2001	6	12	21	**39**
2002	7	8	20	**35**
2003	0	0	20	**20**
2004	10	15	25	**50**
2005	4	6	10	**20**

XIII. Rules

Amended administrative rules went into effect in May 2004. This change addressed Compatibility A and B regulations from the "Chronology of NRC Amendments" up to and including October 2004. With the exception of Part 35, Subpart J, Part 31.5(c)(13), and 31.6, IDPH does not have any un-addressed Compatibility A or B items as of the indicated "chronology."

In October 2005, as is its practice, the BRH initiated another rule amendment process. When completed, it will address changes in the chronology up to and including that of October 2005 and Part 35.

XIV. Revenues

Radioactive materials licenses are issued for five years. Inspection frequencies vary but are primarily between one and five years[1]. To grasp the ebbs and flows of the cycles, the specific license revenues for the past five years are listed in the table below.

	NEW	RENEWAL	AMENDMENT	RECIPROCITY	INSPECTION	TOTAL
1998	9,000	28,575	18,805	31,000	122,805	212,183
1999	13,030	31,565	22,190	40,400	122,507	229,692
2000[2]	14,250	**67,588**	26,946	42,400	142,924	294,108
2001	**24,100**	42,120	**47,360**	43,400	137,122	294,102
2002	10,900	44,550	31,115	44,800	**172,162**	303,527
2003	20,060	43,370	29,725	**67,900**	149,907	**310,962**
2004	10,260	52,470	21,275	62,400	151,548	297,953
2005	12,000	41,202	8,550	32,600	33,739	130,096
TOTAL	**113,600**	**351,440**	**205,966**	**364,900**	**1,032,714**	**2,072,623**

[1] Pacemaker By-Product and X-Ray Fluorescent Analyzers are on a seven-year cycle.
[2] Last fee change

TANNING PROGRAM

I. Staffing

Charlene Craig oversees the registration and inspection process and conducts inspections and inspector training.

II. Training

Charlene Craig conducted training of county inspectors. Three group update sessions were held and 4 individual county inspectors were trained in 2004. Between January 1 and June 30, 2005. 2 group sessions were held.

III. Facility Registration

Approximately 1380 tanning facilities were registered in 2004 and approximately 40 new facilities were registered between January 1 and June 30, 2005. This includes new facilities and renewal of existing facilities. Each facility is billed and a receipt sent back. All owner/managers complete a monitored exam before the permit is issued. Exams are given by the county health departments and submitted as part of the registration process.

IV. Inspections

The county health departments through contracts with IDPH perform inspections of tanning facilities. In 2004 Charlene Craig performed 24 inspections in counties without contracts. Charlene Craig performed 33 inspections for counties without contracts. All inspections are annual and have been completed within the audit period.

V. Rules

Rules setting a minimum age for operators and require review training every 5 years, became effective May 2004. No changes were made in May, 2005.

RADIATION MACHINES PROGRAM

I. Staffing

David Myers and Paul E. Koehn conduct X-ray inspections, investigations, and shielding evaluations. Charlene Craig reviews shielding evaluations and oversees the registration process.

II. X-ray Machine Registrations

Approximately 2700 facilities and 7230 x-ray units were registered in 2004. This includes new facilities and renewal of existing facilities. 42 new facilities were registered between January 1 and June 30, 2005. Each facility is billed and a receipt sent back upon collection of fees.

III. X-ray Machine Inspections

In 2004, David Myers inspected 234 X-ray units in 143 facilities and Paul E. Koehn inspected 11 tubes in 7 facilities. During this period, 40 percent of the inspections found a non-compliance. Based on current database information, 52 facilities were inspected between January 1 and June 30, 2005. 98% of these inspections found a non-compliance.

IV. Compliance Testing

Fifteen Level II compliance tests were performed as part of Iowa's agreement with the FDA'S Southwest District. The FDA has agreed to calibrate IDPH equipment as compensation for the Level II compliance tests.

VI. Gas Delivery System Inspections

Under a 28E Agreement with the Iowa Dental Board, numerous gas delivery systems are inspected annually. The maximum yearly amount of reimbursement is $5000.00.

VII. Shielding Evaluations

Shielding evaluations were performed for facilities that have installed new-X-ray equipment or have remodeled existing spaces. The evaluation involved review and calculation of workload, distance, barrier composition, etc. Approximately 285 reviews were performed in 2004 (90 percent by David Myers, 5 percent by Charlene Craig and 5 percent by Paul E. Koehn). 100 shielding evaluations were completed between January 1 and June 30, 2005.

VIII. Rules

IDPH rules were amended effective May 2004 and again in May, 2005, to reflect changes in Suggested State Regulations for the Control of Radiation (SSRCR's), which are provided by the Conference of Radiation Control Program Directors (CRCPD).

_____ Date_____

Donald A. Flater, Chief

_____ Date_____

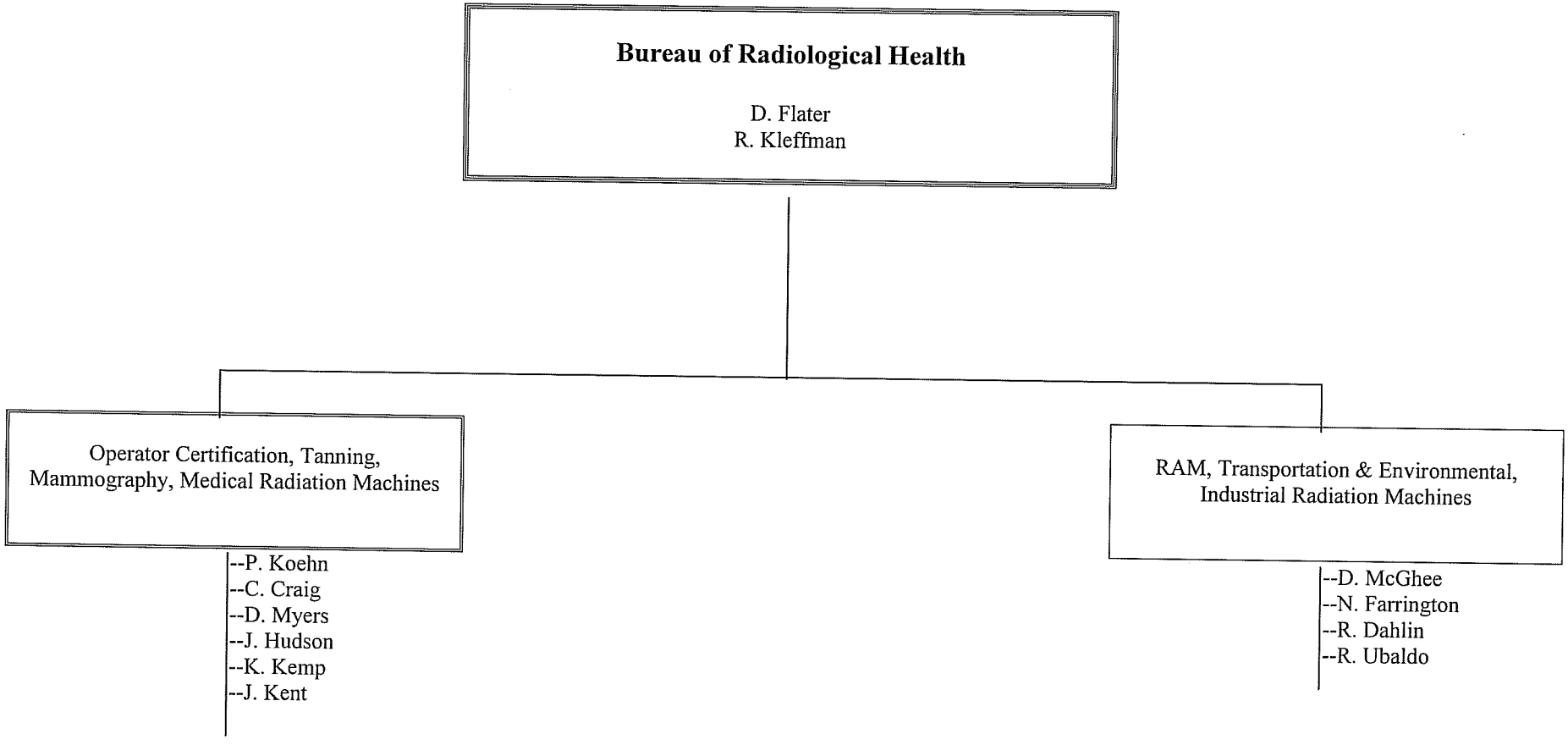
Daniel K. McGhee, Coordinator (RAM)

_____ Date_____

Paul E. Koehn, Coordinator (X-Ray)

Appendix A

BUREAU ORGANIZATIONAL CHART



Appendix B

List of Acronyms

BRH	Iowa Bureau of Radiological Health
FFA	Federal Facilities Agreement
FDA	Food and Drug Administration
GL	General License
IAAAP	Iowa Army Ammunition Plant
IDNR	Iowa Department of Natural Resources
IDPH	Iowa Department of Public Health
IMPEP	Integrated Materials Performance Evaluation Program
NRC	Nuclear Regulatory Commission
RAM	Radioactive Materials

TRANSMITTAL MEMORANDUM

Date: September 18, 2007

To: Mary Hansen, Director, IDPH
Tom Newton, Division Director HP & EH
Kathy Franke, FDA
James Lynch, NRC
Lloyd Bolling, NRC
Scotty Hargrave, FDA
Robert Dye, EPA
Lynn Patterson, IDPH
Lisa Sattler, CSG

FROM: Donald A. Flater, Chief
Iowa Bureau of Radiological Health
515-281-3478

RE: 2004 Bureau Self Audit

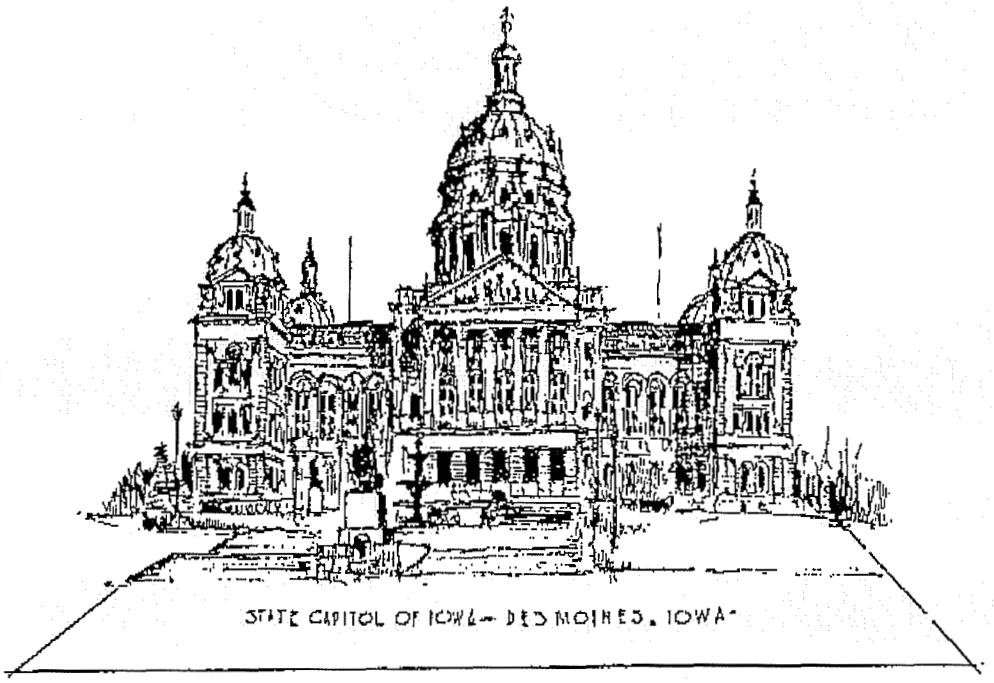
In order to be aware of the accomplishments of the Bureau for 2004 and the first 6 months of 2005, staff has conducted a self-audit of all programs with the Iowa Bureau of Radiological Health. With encouragement from Federal Agencies, the Bureau's self-audit process started with the calendar year of 2002. You will note that this audit covers January 1, 2004 through June 30, 2005. This change was instituted by BRH staff so that future audits would be synchronized with the state fiscal year of July to June.

As a result of staff efforts we have just completed the 2004 audit, which includes the first 6 months of 2005. We have provided a copy of the Audit Report for your perusal. Any comments you can provide to increase the usefulness of the document in future years would be welcomed.

If you have questions regarding the Audit Report, please contact me.

IOWA DEPARTMENT OF PUBLIC HEALTH
BUREAU OF RADIOLOGICAL HEALTH
RADIOACTIVE MATERIALS PROGRAM

INSPECTOR QUALIFICATION JOURNAL



Iowa Department of Public Health
Bureau of Radiological Health
Radioactive Materials Section
401 SW Seventh Street, Suite D
Des Moines, Iowa 50309-4611

Table of Contents

Radioactive Material Inspector
Qualification Journal

Employee:

Welcome. During your training, you will be participating in a structured program that will include both formal training courses at locations throughout the United States as well as on-the-job training at your office in Des Moines, IA and throughout the State of Iowa.

The scheduling of formal training courses is based on availability of resources and the number Agreement State inspectors throughout the United States needing this training. As a result, the dates of an individual's participation in these courses cannot be determined very far in advance.

The remainder of the training program, which will lead to your qualification as a radioactive materials inspector, involves activities, which are under your control. The rate at which you complete these tasks and have them documented in your qualification journal will determine how soon you will be certified as a qualified inspector. Once you have been certified you will be able to conduct full inspections of licensees throughout the State of Iowa.

Although completion of this program requires significant self-study and independent effort, be aware your supervisors are available to answer questions and provide guidance. This applies particularly to matters involving policy or interpretation of regulatory requirements.

The staff is looking forward to working closely with you and encourages you to call upon us for help at any time. We are also looking forward to your becoming a fully qualified radioactive materials inspector in the Iowa Department of Health, Bureau of Radiological Health.

_____ _____

Date

Donald A. Flater, Chief
Bureau of Radiological Health

I have received a copy of the Inspection Manual, the Enforcement Manual, and the Inspector Qualification Journal. I acknowledge that these are the property of the State of Iowa and will return them at the end of my employment. I agree not to copy or in any other way reproduce or disseminate the contents without the express permission of the Radioactive Materials Section Coordinator or the Chief of the Bureau of Radiological Health.

_____ _____

Date Signature

BUREAU OF RADIOLOGICAL HEALTH
IOWA DEPARTMENT OF PUBLIC HEALTH
LUCAS STATE OFFICE BUILDING
DES MOINES, IOWA 50319

POLICY: 93-0001 RAM

POLICY TITLE:

Use of Bureau of Radiological Health's Inspection Manual, Enforcement Manual and Inspector Qualification Journal

INTRODUCTION:

The combination of the Inspection Manual, Enforcement Manual and Qualification Journal form the nucleus of the Bureau's inspector qualification program and provide the basic information necessary to conduct inspections and implement any enforcement action resulting from these inspections. Chapter 641-38 contains the empowerment for both inspections and enforcement.

While the inspection and enforcement manuals present basic procedures for their respective functions and contain the appropriate forms, citations and letters for this Bureau to carry out its regulatory functions, the Qualification Journal is the tool by which management monitors each inspector's qualification progress and documents for evaluation and review the steps taken to certify individuals as inspectors in all but broadscope program categories. Broadscope certification is made on a case-by-case basis.

POLICY STATEMENT:

After each individual has signed a letter, which indicates receipt of these manuals and acknowledges the copyright protection, he/she will be issued a copy of each manual. The Inspection Manual will be used in training sessions and as a tool to prepare for and conduct an inspection. The Enforcement Manual will also be used in training and as a guide to document and follow to completion the actions of each completed inspection.

The Qualification Journal, because is forms part of an individual's personnel record, requires more specific instructions for its use. This journal contains an outline of the minimum activities expected by the Radioactive Materials Program Coordinator and the Bureau Chief. Additional activities may be assigned to an inspector to augment his/her professional development. These activities are classified in three sessions:

1. Formal training,
2. Self-study, and
3. Accompanied inspections.

With the concurrence of the Bureau Chief, the Radioactive Materials Section Coordinator will schedule attendance at the NRC sponsored training courses when he/she is advised of the training schedule for the next fiscal year. No person will be expected to attend all ten courses in a twelve-month period. But each inspector will have the opportunity to attend all courses. Based on availability and program workload, the Bureau Chief reserves the right to waive the requirement for attendance at any course.

Two US Nuclear Regulatory Commission documents govern the content of IDPH staff training. The current policy states: "although Agreement States need not follow NRC Inspection Manual, Chapter 1246, they should have an equivalent program for training and qualification of personnel, and it should be present and adhered to in Agreement State programs.[1]" Formal training consists of the "core courses" indicated in Sections I and II of the NRC Inspection Manual, Chapter 1246. These courses represent the minimum formal training requirements established for staff personnel who license and inspect radioactive materials programs.

In addition to the core courses, there are several "specialized training" courses that can be scheduled to expand the staff's technical knowledge. Attendance, which is normally scheduled after employees have completed the core courses and functioned as a health physicist for a significant period, will be based on the availability of funds; the previous experience of personnel; and on the anticipated requirements of assigned work. The Bureau Chief will make the determination on an individual basis. For example, if a staff member is assigned activities in one of the areas for which a formal training course is available, that inspector should attend the training or management should insure that the individual has had equivalent experience.

The self-study portion consists of a series of questions on each chapter of Iowa Department of Public Health rules pertaining to the use of licensed material. These questions examine not only the inspector's knowledge of the rules, but also the thought process needed by an inspector to effectively conduct inspections and enforce the rules. After the inspector has completed a self-study quiz, he/she will present the entire journal to the Program Coordinator for grading. If the inspector receives a less than passing grade (80%) the Program Coordinator will assign a remedial program. Once this program is completed the Program Coordinator will sign the appropriate block on page 12 of the journal with the original score and a note that remedial action has been taken. Once the signature is given, the original quiz and any documentation will become a part of the inspector's personnel record.

The accompanied inspections have been divided into eight categories as indicated in a later portion of this journal. AS A MINIMUM the inspector candidate must complete two accompanied inspections. During the first accompaniment, the candidate will observe a qualified inspector in all phases of the inspection. In the second, the candidate will conduct all phases of the inspection under the supervision of a qualified inspector. At the discretion of the Program Coordinator a candidate may be required to perform more than one of either type of accompaniment for any area. Once a candidate has received a signature, he or she will be able to conduct that type of inspection independently.

---

[1] *Integrated Materials Performance Evaluation Program (IMPEP) Directive 5.6, Common Performance Indicator 3 – Technical Staff and Training*

After a candidate has received all the signatures required in this journal, he or she will be certified to conduct inspections in all but broadscope program areas. The original of this page, along with a written certification, will become a part of an individual's personnel record.

_____
Date

_____
Donald A. Flater, Chief
Bureau of Radiological Health

Radioactive Material Inspector
Qualification Journal

INTRODUCTION:

The physical size and content of a qualification journal differs with each agency. Some resemble encyclopedias, are very poorly organized, and overwhelm a new inspector instead of providing structured guidance. Also, criteria for measuring an inspector's performance are often not defined.

Webster's Collegiate Dictionary defines "journal" as, "A record of current transactions and an account of day-to-day events." Clearly, a journal should not be a massive reference manual. The Qualification Journal used by the State of Iowa for its radioactive materials inspectors defines areas in which an inspector must demonstrate competence and provides a record to show how and when this competence was measured or demonstrated.

Although this Journal does not include reference material, it does, in some cases, describe various reference materials you should study to enable you, as a new inspector, to satisfactorily complete the Journal.

One might ask, "What are the minimum training requirements for a radioactive materials inspector in the State of Iowa and who decides these requirements?"

To answer this question, one needs to consider an agreement that was entered into between the State of Iowa and the U.S. Nuclear Regulatory Commission (commission) in accordance with the provisions of subsection 274b of the Atomic Energy Act of 1954, as amended.

Under the provisions of the Act, the Governor of Iowa certified the State has a program for the control of radiation hazards adequate to protect the public health and safety and the State desired to assume regulatory responsibility for those hazards.

The Act also provides the State's program must be compatible with the Commission's program for the regulation of such material and the State's program must be adequate to protect the public health and safety with respect to the materials covered by the agreement.

To implement the requirements of the Act, the Commission routinely interacts with each Agreement State and verifies compatibility is being maintained and the State's program is adequate to protect the public health and safety.

One of the important criteria reviewed by the Commission is the level of technical competence of each Agreement State radioactive material inspector. Since technology and the uses of radioactive material are not in a static state, it is necessary to continually evaluate the skills of Agreement State inspectors based on current perceived hazards that exist throughout the radioactive material industry.

Therefore, the qualifications of Agreement State inspectors are constantly being upgraded. Hazards exist now that did not exist 10 ears ago. To ensure adequate oversight and inspection skills of Agreement State inspectors, training has been constantly upgraded. As a result, the minimum qualifications of an inspector in the State of Iowa have also been constantly upgraded.

The State of Iowa has concluded that if an inspector satisfactorily completes this Qualification Journal, that individual will possess he qualifications to perform the entire spectrum of radioactive materials inspections, with the exception of broad medical broad academic, and major processor licenses.

PURPOSE:

This Qualification Journal establishes your minimum training requirements to perform radiological safety inspections at material license facilities in the State of Iowa. It also is a record, which documents that you have met these training requirements.

FORMAT:

The Journal documents that various administrative and technical tasks have been accomplished. It shows that:

1. The inspector received an administrative orientation that explains administrative actions of the agency.

2. The inspector received a copy of the Iowa Bureau of Radiological Health Inspection Manual.

3. The inspector received a copy of the Iowa Bureau of Radiological Health Enforcement Manual.

4. The inspector demonstrated a basic understanding of Information Notices issued by the U.S. Nuclear Regulatory Commission.

5. The inspector completed required formal training courses.

6. The inspector demonstrated by a series of self-study quizzes an understanding of Chapters 38, 39, 40, 41, and 45 of State of Iowa Regulations. Some of the questions pertain to the Enforcement policy that has been provided to each employee. In addition, answers to questions pertaining to transportation of radioactive material can be found in 49 CFR 172-184. NOTE: There are no questions relating to Chapter 42, "Operating Procedures And Standards For Use Of Radiation Emitting Equipment.

7. The inspector accompanied a qualified senior inspector during a series of inspections.

8. The inspector independently performed a series of radioactive materials inspections while being observed by a senior inspector.

9. The inspector was interviewed, evaluated and approved by the Radioactive Materials Program Coordinator and the Chief, Bureau of Radiological Health.

10. The individuals indicated in Item 9, above, certified in writing that the inspector has met all requirements.

EXPECTATIONS FOR AN IOWA RADIOACTIVE MATERIALS INSPECTOR:

An effective Radioactive Materials Inspector possesses many skills. Some can be learned but others seem to be innate and are difficult to quantify. In this training program, you will develop skills, which can be measured or objectively verified. The following list sets forth the more important basic skills that should be possessed by competent and effective radioactive materials inspectors.

1. Academically Qualified
2. Competent Technical Writer
3. Communicates Effectively
4. Objective
5. Aggressive
6. Persistent
7. Treats Others Fairly

ACADEMIC QUALIFICATIONS:

The usual criteria for evaluating technical personnel are academic qualifications. Most assume that more degrees equal greater ability to perform complex technical tasks. Unfortunately, most resumes and job interviewers focus almost entirely on academic qualifications. Little effort is made to evaluate the other areas listed above. This does not imply academic excellence is not important, it obviously is. However, academic excellence without collateral skills will never result in a competent and effective radioactive materials inspector.

TECHNICAL WRITING SKILLS:

The ability to accurately document inspection findings in a report cannot be emphasized too strongly. Each inspection report provides the legal basis for enforcement sanctions that may result after an inspection. It also helps the inspector review a licensee's past inspection and enforcement history before embarking on the next inspection.

Each organization has its own criteria for formatting an inspection report. Therefore, you should discuss with your supervisor what kind of documentation is required for each inspection activity you perform.

As an inspector, you will create three principals of written documents. The one prepared most frequently is the handwritten Field Note Inspection Report. In this format, the inspector fills in blanks and when problems are identified expands comments to include justification for concluding a licensee has violated a particular regulatory requirement. In a Field Note Inspection Report grammar, complete sentences, and precise format are not important. It is only necessary that the facts are correct.

The second kind of document is the formal Inspection Report. It is written less frequently and is prepared when a more complex inspection has been done (i.e., a university broad license program) or where significant violations of regulatory requirements have been identified and it is likely escalated enforcement action will be proposed by the agency.

The third kind of documentation is the Notice of Violation and transmittal letter, which are sent to a licensee following an inspection. It specifically describes the inspection findings as they relate to violations of agency requirements.

While you are completing this Qualification Journal, you will have many opportunities to prepare the first and third kinds of documentation and probably will have one or two opportunities to assist in the preparation of the second type of document, the formal Inspection Report.

It is important that you work closely with your supervisors to better understand what each of these documents looks like, why each is formatted a particular way, and why various legal requirements dictate how the final document should look.

Perhaps one of the greatest difficulties new inspectors have is keeping an inspection report short but complete. Never under any circumstances should your opinion be included in a report.

COMMUNICATION SKILLS:

Two sources of information are available during an inspection, records and interviews with licensee personnel. The interviewees may be in a management position or workers directly engaged in licensed activities. Most of the information you will use to evaluate the adequacy of licensee management is obtained by direct interview. In some instances, licensee personnel are reluctant to give information to an inspector. This is especially true if one might conclude that licensee management is not doing an adequate job.

It is essential you ask questions that cannot be answered by a simple "yes" or "no." Remember, you are trying to find out what management is doing to ensure the licensed radioactive materials program is being conducted in a safe manner. Let them explain how this is accomplished.

Licensee management personnel may try to intimidate you and ask you to justify why certain questions are being asked. Or, they might tell the truth but not the whole truth. If you perceive a question is not being answered truthfully or completely, ask the question again and wait f or an answer. If you need more information, persist until you get it.

A technique used by many licensees is asking an inspector questions about qualifications, experience on the job, and other things that might shake a person's confidence. If one is not aware of this ploy, an inspection can quickly deteriorate into an interview being conducted by the licensee.

Occasionally, an individual who is being interviewed will honestly not understand what is being asked and therefore might not respond in a meaningful way to your question. If this appears likely, rephrase the question and ask it again. Remember, your goal is to get information.

A principal source of information is a licensee's records. Some inspectors spend most of their inspection time reviewing page after page of records. Inspectors who conduct inspections in this manner apparently do not understand that much valuable information that belongs in a licensee's records may not have been documented. In other instances, the inspector should be asking a licensee to explain how certain information was obtained and why it was documented in a particular way. Just because a licensee commits something to writing does not mean it is valid information.

This does not imply a licensee is lying but it does suggest that if something is not correct it needs to be pursued further. It is your job, as an inspector, to evaluate each record as it is reviewed and ask yourself the question, "does this make sense?" If the answer is, "no," question licensee personnel and require that they explain what the records mean. If an individual is unable to explain why he recorded entries in a particular way, it may be a tip-off that something is seriously wrong and you may need to pursue it further before going on with the inspection.

OBJECTIVITY:

One often hears the statement, "If it ain't broken, don't fix it." A similar truism is, "If you don't have the facts, don't reach a conclusion." It should be understood that licensee's do not choose to interact with regulatory agencies and inspectors but are required to do so by State regulations. Licensee personnel may try to intimidate you in the hopes of heading off an in-depth inspection. They may try to convince you that the scope of your inspection is going beyond your authority. This could cause you to back off and not ask probing questions. As a result, insufficient information may be gathered and any conclusions resulting from the inspection may be flawed.

If you don't have sufficient information to support a conclusion based on the facts, you must either obtain additional information or do not attempt to reach a conclusion. In some instances, the only conclusion one can reach is that a conclusion cannot be reached.

AGGRESSIVENESS:

Aggressiveness is sometimes mistaken for arrogance. You need to convey, in a professional way, that this is your inspection. Licensee management may try to intimidate you, especially if they are aware you are a new inspector.

If this happens, immediately head off this kind of licensee behavior by restating the purpose and scope of the inspection. Such a statement, when made in a self-confident professional manner can do a great deal to get things back on course. Your job is to gather facts and reach conclusions and not to argue with licensee personnel.

PERSISTANCE:

Persistent means that you, as an inspector, are not finished until you have gotten all information needed to make a valid conclusion.

Sometimes, a planned inspection schedule cannot be completed because an inspection is taking longer than was anticipated. This requires a decision. Is it more important to minimize the inspection backlog or put the planned schedule on hold and then expand the current inspection until all necessary information is obtained?

Of course, when such decisions are to be made you should contact a supervisor. It is better to do fewer inspections and do them thoroughly than to do many superficial inspections. However, let your supervisor help with such decisions.

TREATING OTHERS FAIRLY:

As an Iowa radioactive materials inspector, your behavior will reflect directly on how a licensee perceives your agency. In most cases, you are the only personal contact a licensee has with the agency.

An inspection is a tool for evaluating the adequacy of a licensee's radiation safety program. The agency needs to know whether the program involves competent management, trained radiation workers, and adequate facilities. During an inspection, you may find some deterioration in one or more areas.

In most instances, the person that you are interviewing is not the individual who actually caused the breakdown in the program or the incident even though licensee management is ultimately responsible for anything that happened.

Your job as an inspector, in addition to gathering information, is to communicate effectively with licensee management. If licensee management acting in good faith doesn't agree there is a problem, take another look at your conclusions.

It is essential that licensees understand all the problems you have identified and that these problems must be corrected or resolved quickly. If possible, and before leaving a licensee's facility, ask the licensee to explain what it plans to do to correct the identified deficiencies. Also, when will this corrective action be taken? In some cases, a licensee might need to think things over before committing to a specific corrective action. This is acceptable since regulations provide a licensee has 30 days after the date a written Notice of Violation is issued before a response is required.

Rarely will a licensee mention the 30-day delay and you should encourage a licensee to take appropriate corrective action as soon as possible.

INFORMATION NOTICES

In order to keep licensees as well as NRC and Agreement State inspectors informed about various concerns involving radioactive material that were identified throughout the country, the NRC began issuing Information Notices. Then, in 1993, Iowa began revising each NRC Information Notice to more closely reflect Iowa policy and rules. Each Notice describes a problem or concern that relates to equipment failure, design problems, loss of control over radioactive material, etc.

More importantly, the Notices describe various solutions and corrective actions that were taken or can be taken to resolve identified problems.

During your training, you may need to refer to some of these Notices. You are not expected to review every Notice. However, you should, as a minimum, review the titles of the Notices and know where to look if a question or concern should arise. In addition to the binder that contains copies of the information notices, the notices can be accessed via the Internet at www.idph.state.ia.us/pa/rh/ram.htm.

Radioactive Material Inspector
Qualification Journal

MASTER LOG SHEET

Employee:

The following log verifies you have received various documents and have completed required learning objectives in a satisfactory manner.

		Signature When Issued Or Completed	Date
1.	Administrative orientation and Agency Policy Explained	_____ (Program Coord.)	_____
2.	Inspection Manual	_____ (Program Coord.)	_____
3.	Enforcement Manual	_____ (Program Coord.)	_____
4.	Information Notices	_____ (Program Coord.)	_____
5.	Required Formal Training Courses	_____ (Program Coord.)	_____
6.	Self-Study Quizzes	_____ (Program Coord.)	_____
7.	Accompanied A Qualified Senior Inspector	_____ (Program Coord.)	_____
8.	Accompaniment By A Qualified Senior Inspector	_____ (Program Coord.)	_____
9.	Inspector Has Been Interviewed, Evaluated and Approved	_____ (Bureau Chief)	_____
10.	Written Certification Prepared	_____ (Bureau Chief)	_____

Radioactive Material Inspector Qualification Journal

CORE COURSE TRAINING LOG

This log verifies that you have satisfactorily completed the following "core courses."

		Signature When Completed	Date
1.	Inspection Procedures (G-108)		
	Date: _____	_____ (Program Coordinator)	_____
2.	Licensing Practicing and Procedures (G-109)		
	Date: _____	_____ (Program Coordinator)	_____
3.	Applied Health Physics (H-122)		
	Date: _____	_____ (Program Coordinator)	_____
4.	Root Cause/Incident Workshop (G-205)		
	Date: _____	_____ (Program Coordinator)	_____
5.	Inspecting for Performance – Materials Version (G-304)		
	Date: _____	_____ (Program Coordinator)	_____
6.	Diagnostic and Therapeutic Nuclear Medicine (H-304)		
	Date: _____	_____ (Program Coordinator)	_____
7.	Safety Aspects of Industrial Radiography (H-305)		
	Date: _____	_____ (Program Coordinator)	_____
8.	Transportation of Radioactive Material (H-308)		
	Date: _____	_____ (Program Coordinator)	_____
9.	Teletherapy and Brachytherapy (H-313)		
	Date: _____	_____ (Program Coordinator)	_____
10.	Radiological Emergency Response Operations (RERO)		
	Date: _____	_____ (Program Coordinator)	_____
11.	Health Physics in Radiation Accidents (REAC/TS)		
	Date: _____	_____ (Program Coordinator)	_____

Radioactive Material Inspector Qualification Journal

SPECIALIZED TRAINING COURSES LOG

This log verifies that you have satisfactorily completed the following specialized training courses.

		Signature When Completed	Date
1.	Environmental Monitoring for Radioactivity (H-111)		
	Date: _____	_____ (Program Coordinator)	_____
2.	Air Sampling for Radioactive Material (H-119)		
	Date: _____	_____ (Program Coordinator)	_____
3.	Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (H-121)		
	Date: _____	_____ (Program Coordinator)	_____
4.	Internal Dosimetry (H-312)		
	Date: _____	_____ (Program Coordinator)	_____
5.	Safety Aspects of Well Logging (H-314)		
	Date: _____	_____ (Program Coordinator)	_____
6.	Advanced Radiological Incident Operations (ARIO)		
	Date: _____	_____ (Program Coordinator)	_____
7.	Health Physics Technology (H-201)		
	Date: _____	_____ (Program Coordinator)	_____

RADIOACTIVE MATERIAL INSPECTOR
QUALIFICATION JOURNAL

RADIOLOGICAL SAFETY INSPECTION ACCOMPANIMENTS

As part of your on-the-job training you will accompany other inspectors and observe how they conduct inspections. You will probably have an opportunity to accompany more than one inspector. In this way you will be able to learn those techniques and methods, which best suit your personality and technical skills.

After you have participated in inspections, principally as an observer, you will have an opportunity to prepare for, perform, and document the results of actual inspections while being observed by a qualified inspector. If it is determined that you are capable of performing a quality inspection for a particular type of licensed program, you will be granted approval for performing that type of inspection without accompaniment.

As you demonstrate the ability to perform additional types of inspections these will be added to the types of inspections you can perform without accompaniment. The following kinds of inspections are included in this qualification program:

1. Measuring Systems - Fixed and Portable Gauges
2. Medical Institution - Diagnostic Only
3. Medical Institution - Diagnostic & Therapy
4. Research and Development
5. Broadscope
6. Industrial Radiography

RADIOACTIVE MATERIAL INSPECTOR QUALIFICATION JOURNAL

RADIOLOGICAL SAFETY INSPECTION ACCOMPANIMENTS WITH PARTICIPATION

This log verifies that you have accompanied a qualified inspector on a series of inspections principally as an observer, with some participation. This accompaniment included at least one of each type of licensed program described on page 13 of this Qualification Journal.

Licensee	License No.	Inspection Date	Qualified Inspector
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

RADIOACTIVE MATERIAL INSPECTOR
QUALIFICATION JOURNAL

OBSERVED RADIOLOGICAL SAFETY INSPECTIONS

This log verifies that you have performed a series of inspections while being observed and evaluated by a qualified inspector. Your effort included a review of the license files while preparing for the inspection, the conduct of the inspection (while being observed by a qualified inspector), written documentation of the inspection findings, and any enforcement correspondence that resulted from your inspection of findings. This accompaniment included at least one of each type of licensed program described on page 13 of this Qualification Journal.

Licensee	License No.	Inspection Date	Qualified Inspector
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Radioactive Material Inspector
Qualification Journal

SELF-STUDY QUIZZES – FINAL SCORES

This log verifies that you have satisfactorily completed the following self-study quizzes. A grade of 80% is required to pass each quiz. In some instances you are required to explain how you arrived at your answer. This requires that you analyze a situation that might be identified during an inspection before you are able to determine what, if any, regulatory requirement has been violated.

		Final Score	Date
1.	Regulatory Requirements, Chapter 38	_____	_____
2.	Regulatory Requirements, Chapter 39	_____	_____
3.	Regulatory Requirements, Chapter 40	_____	_____
4.	Regulatory Requirements, Chapter 41	_____	_____
5.	Regulatory Requirements, Chapter 45	_____	_____

SELF-STUDY QUIZ
CHAPTER 38
GENERAL PROVISIONS

Name:_____ **SCORE:**_____

Date Submitted:_____

38-1. If a person is subject to the regulations of the State of Iowa for a licensed byproduct material program, that person is also subject to the regulations of the U.S. Nuclear Regulatory Commission for the same program.

A. True
B. False

38-2. Most byproduct material is produced by:

A. A particle accelerator.
B. A nuclear reactor.
C. Chemical separation and processing of uranium ore.

38-3. To meet regulatory requirements, a restricted area must, as a minimum, be provided with and controlled by access doors that are locked when the area is not in use.

A. True
B. False

38-4. When comparing the dose equivalents of various kinds of radiation, one can assume that an absorbed dose of 1.0 rad of x or gamma radiation is equivalent to an absorbed dose of:

A. 1 rad due to neutrons or high-energy protons.
B. 0.1 rad due to neutrons or high-energy protons.
C. 10 rads due to neutrons or high-energy protons.

38-5. A restricted area can be created and can exist in a residential building.

A. True
B. False

38-6. Special form radioactive material is either a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule.

A. True
B. False

38-7. A small single solid sphere of radioactive material has a diameter of 4.25 millimeters. This radioactive source meets the definition for a special form radioactive material.

A. True
B. False

38-8. All users of radioactive material in the State of Iowa are subject to the regulatory requirements set forth in Chapters 38, 39, 40, and in some cases Chapters 41 & 45. Explain your answer.

A. True
B. False

Explanation: _____

_____

_____

_____

_____

_____

_____

38.9 A person filed a request to institute a proceeding pursuant to 38.9(3) to suspend a licensee's authorization to conduct licensed activities in the State of Iowa. After making a thorough review of the request, the Chief, Bureau of Radiological Health, determined the request had no merit and dismissed the request. At this point the requester can:

A. Demand that the Chief, Bureau of Radiological Health review the matter again.

B. Do nothing because the matter is not subject to review.

C. Request the decision be overturned by the Director, Iowa Department of Public Health.

38-10. If a licensee refuses to submit to an unannounced inspection by a State of Iowa inspector the inspector can order an immediate suspension of all licensed activities. Explain your answer.

A. True
B. False

Explanation: _____

_____

_____

_____

_____

38-11. The agency is authorized to assess fees for inspecting licensed users of radioactive material in the State of Iowa. These fees are set forth in a schedule and each user in a particular category always pays exactly the same fee for an inspection. No deviations from this schedule are permitted.

A. True
B. False

38-12. When violations of regulatory requirements are identified during an inspection, the licensee is notified in writing by the agency. The written notification is called a:

A. Stipulation of violations.
B. Notice of violation.
C. Allegation of violations.

38-13. In extremely egregious cases or where it has been determined that violations of regulatory requirements were willful, a civil penalty may be assessed before a notice of violation is issued.

A. True
B. False

38-14. The Radiological Health Section of the Bureau of Radiological Health draws its enforcement jurisdiction from the:

A. Iowa Code chapter 17A.
B. Public Law 95-91.
C. Iowa Code chapter 136C.

38-15. If a licensee has been issued a Notice of Violation and informed that one or more significant violations exist and the licensee refuses to correct the violations, it is a basis for:

A. Amending the license.
B. Considering a Civil Penalty.
C. Revocation of the license.
D. Temporary suspension of all licensed activities.

38-16. In most instances the agency issues a Notice of Violation for Severity Level IV violations that are identified during an inspection. However, in certain situations a civil penalty may be issued for such violations if:

A. The violation(s) should have been identified by the licensee.
B. The violations is/are similar to previous Severity Level IV violations that occurred within the past two years.
C. The violations is/are willful.
D. All of the above.
E. B or C.

Note: This issue is also discussed in the Inspection Manual.

38-17. The maximum civil penalty for any one violation cannot exceed:

A. $5,000.
B. $5,000 per day.
C. $1,000 per day.
D. None of the above.
E. A and C.

38-18. During an inspection, an inspector learns a licensee employee falsified significant records that are required by agency regulations. Also this was done at the request of licensee management. As a result of these findings, the agency decided to initiate escalated enforcement action. Based on this scenario, enforcement action would most likely be taken against:

A. Licensee management.
B. The Employee.
C. A and B
D. None of the above.

38-19. If an employee had willfully cause numerous significant violations of agency regulations, but licensee management claimed it was not aware of the situation, the agency would not take escalated enforcement action against the licensee provided licensee management agreed to terminate the involved employee. Explain your answer.

A. True
B. False

Explanation: _____

_____

_____

_____

_____

38-20. Occasionally a licensee reaches an agreement with the agency to take certain actions to remove significant concerns about health and safety, safeguards, or the environment. In most instances, the agency will document this agreement in a letter to the licensee. This letter is called:

A. A Letter of Intent.
B. A Letter of Agreement.
C. A Confirmatory Action Letter.
D. A Confirmation of Concerns.

38-21. When a civil penalty or an order is issued to a licensee, the document, because of significant legal implications, must be signed by:

A. The Attorney General of the State of Iowa.
B. The Chief, Bureau of Radiological Health.
C. The Director, Iowa Department of Public Health.

38-22. Regulatory requirements have varying degrees of safety, safeguards, or environmental significance. Therefore, its Severity Level identifies the relative importance of each violation. The most significant violation is:

A. Severity Level V.
B. Severity Level I.
C. Depends on whether violation is willful.

Note: This issue is also discussed in the Inspection Manual.

38-23. A process machine at a licensee's facility contained a significant amount of radioactive material. One day the machine malfunctioned and released radioactive material into an unrestricted area. The agency concluded the licensee had done everything possible to maintain the equipment in accordance with the manufacturer's specifications, including periodic maintenance and testing. The licensees measurements showed radioactive material released to an unrestricted area was slightly greater than the limit specified in 641-40.4(3). Based on this information the agency would most likely: Explain your answer.

A. Issue an order immediately suspending all licensed activities.
B. Propose the issuance of a Severity Level I civil penalty.
C. Take no enforcement action.
D. Reduce the proposed civil penalty to Severity Level III because of the licensee's efforts to comply.
E. Issue a Confirmatory Action Letter.
F. C and E.

Explanation: _____

_____

_____

_____

_____

38-24. Which of the following are considered to be "major processors?"

A. Nuclear medicine programs.
B. Universities.
C. Industrial radiographers.
D. Small industrial programs.
E. None of the above.

38-25. A misadministration means that an individual who was not authorized used radioactive material in a nuclear medicine program.

A. True
B. False

38-26 The agency may grant exemptions or exceptions to regulatory requirements if it will not result in undue hazard to public health and safety and property.

A. True
B. False

38-27. If a licensee receives a Notice of Violation and does not wish to challenge any of the findings set forth in the Notice, the licensee is not required to respond to the Notice.

A. True
B. False

38-28. If a licensee makes a persuasive argument why alleged violations in a Notice of Violation are not valid, a proposed civil penalty may be withdrawn.

A. True
B. False

38-29. If a civil penalty is imposed after an inspection in which the agency alleges that significant safety related violations were identified, the licensee has one or more legal options to resolve the matter. Specifically:

A. The licensee can refuse to pay the civil penalty.
B. The licensee can pay the civil penalty.
C. The licensee can withhold payment of the civil penalty and ask for a hearing.
D. The licensee can request termination of its license.
E. A and/or D.
F. B or C.

38-30. If a licensee fails to report an event, as required by regulations, the agency must be able to show the licensee knew of the event that it failed to report.

A. True
B. False

SELF-STUDY QUIZ
CHAPTER 39
LICENSURE AND TRANSPORTATION OF RADIOACTIVE MATERIALS

Name:_____ **SCORE:**_____

Date Submitted:_____

39-1. An individual purchased 50,000 welding rods at a U.S. Government auction and, after having them analyzed by a metallurgist, found the welding rods contained 5.2 percent by weight of thorium. Since this is in excess of the 0.05 percent by weight exempt quantity of thorium, the individual is required to obtain a specific license to possess, use, or transfer the welding rods.

A. True
B. False

39-2. A scrap dealer calls the Agency and says he bought scrap material from a company in St. Louis. Among the items purchased were 500 heavy metal objects, which someone said were aircraft counterweights. He said there were no markings of any kind on the counterweights. He also said someone thought he might need a license to possess, use, or sell these items because they were made of depleted uranium. He is calling you to find out if he does, in fact, need a license. What would you tell him?
Explain your answer.

A. A license is needed.
B. A license is not needed.

Explanation: _____

_____

_____

_____

39-3 A manufacturer has a specific license to fabricate and distribute depleted uranium shields that are used in the manufacture of radiographic exposure devices. As part of the manufacturing process, about 50 pounds of uranium shavings are generated each year. A consultant from Chicago told the manufacturer it could save lots of money by not treating the shavings as radioactive waste but instead as material possessed under a general license. In that way the manufacturer could dispose of up to 15 pounds at one time, up to 150 pounds per year, and not even have to keep records of any of the transfers or disposals. Is this acceptable?
Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

39-4. A small university wants to use radioactive material f or teaching and research and to obtain a specific license of broad scope but can't afford to hire a radiation safety officer. Therefore, the only type license they can qualify for is a:

A. Type A specific license of broad scope.
B. Type B specific license of broad scope.
C. Type C specific license of broad scope.

39-5. What are the characteristics of a general license?

A. It must be renewed every three years.
B. A written application is not submitted.
C. There is a "one-time" licensing fee.
D. No license document is issued.
E. A and C.
F. B and D.

39-6. An Iowa materials inspector inspected an R& D facility and concluded the license possessed far more radioactive material than was really needed to run the program. During the inspection management personnel were mostly uncooperative, often made the inspector wait to talk to workers, and frequently challenged statements made by the inspector. By the time the exit meeting was held, the inspector was really irritated and told the licensee management that, although he did not find any violations of regulatory requirements, he was concerned about their poor attitude and was worried something could go wrong because the license possessed too much material. The inspector told licensee management he was going to modify the license and significantly reduce the possession limits specified in the license. The licensee requested that no changes be made. Can the inspector or the Agency modify the license under the circumstances described above? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

39-7. Six months after an industrial radiography license was issued, the licensee filed for bankruptcy then decided to go out of business and liquidate everything. In response to this decision the licensee should:

A. Request a rebate on the unused part of the license fee.
B. Immediately notify the agency in writing of its plans to terminate all licensed activities.
C. Try to sell the licensed material to another radiographer and save future inspection costs.

39-8. A radiography company in a Dallas, Texas entered in to a contract with the Iowa Highway Commission to perform industrial radiography on a new series of bridges that were to be built in Iowa during 2001. This would require about 9-10 months of continuous work by the radiography company during 2001. In order to carry out this contract the company in Dallas would have to:

A. Pay a reciprocity fee of $1200.00 for the year 1994.
B. Open a permanent of f ice in Iowa where appropriate records would be kept.
C. Employ only radiographers who are licensed in the State of Iowa.
D. Obtain an Iowa radioactive material license.
E. A and C.
F. B and D.

39-9. An individual purchased about 10,000 obsolete smoke detectors, containing americium-241, as salvage from the K-Mart Corporation and planned to repackage each one in a classy new package and then sell them to Ace hardware stores. The individual checked and found that K-Mart didn't have a specific license and assumed he didn't need one either. Was the individual's assumption correct? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

39-10. A clockmaker repairs expensive grandfather clocks for individual clients and frequently needs to repaint the entire clock dials, hands, and numerals. He makes these repairs with tritium luminous paint. It is estimated the use of tritium luminous paint is about 450-500 millicuries per year. Is a license required to perform this activity? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

39-11. All persons in the State of Iowa who possess radioactive material are subject to the requirements of 641 Chapters 38, 39, 40, and 41.

A. True
B. False

39-12. An individual purchased 1,000 pounds of a very expensive magnesium thorium alloy, which contained 0.08 percent of thorium by weight. The seller informed the individual that a license from the State of Iowa was needed to possess or use this material; however, if the buyer promised to apply for a license as soon as possible, the transfer would be made immediately. After the transfer was made someone suggested to the buyer that instead of applying for a license, the buyer could dilute the magnesium thorium alloy with another 1,000 pounds of magnesium and reduce the concentration of thorium to 0.04 percent by weight. This would then eliminate the need for a license. The buyer thought this was an excellent suggestion, reduced the concentration and did not apply for a license. Did the seller of the alloy violate any regulatory requirements? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

39-13. Refer to Question 12 above. If one assumes the same scenario, did the buyer of the magnesium thorium alloy violate any regulatory requirements? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

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39-14. A high school student from Davenport, Iowa wanted to conduct a research project in which 8 microcuries of phosphorus-32 were injected into an animal. The student contacted the Bureau of Radiological Health in Des Moines and was told this quantity of phosphorus-32 was exempt from any requirement for a license. Did the Bureau of Radiological Health give the student the right answer?

A. Yes
B. No

39-15. The high school student in Question 39-14 visited the nuclear medicine lab of Davenport Hospital and asked the radiation safety officer (RSO) if he could purchase 8 microcuries of phosphorus-32 for his experiment. The RSO said it would involve too much paper work but he would give it to him without charge. The RSO offered the student 10 microcuries so there would be a little extra to allow for decay. A nuclear medicine technician removed 10 microcuries of phosphorus-32 from a 5-millicurie vial and gave it to the student. The student returned to his high school and completed the research project. Did the high school student violate any regulatory requirements? Explain your answer.

A. Yes
B. No

Explanation: _____

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39-16. A licensee decided not to renew its license that was due to expire in 60 days. It properly disposed of all remaining licensed material. It then made extensive radiation surveys of the area where the licensed radioactive was formerly used and stored. As a result of the survey, the licensee determined there was significant removable contamination in the area. What is the most likely thing that would happen when the license was due to expire?

A. The licensee would vacate the premises and release them for unrestricted use.
B. The agency would continue the license in effect with respect to residual radioactive material present as contamination.

39-17. If for any reason, the regulations of the U.S. Department of Transportation are not applicable to a shipment of licensed material, is the licensee required to conform to the standards and requirements of those regulations?

A. Yes
B. No

39-18. After successfully completing the research project described in the scenario in Question 39-14, the student decided to work with a larger animal but needed a larger amount of radioactive material. In fact, the student calculated that 50 microcuries of phosphorus-32 would be needed for the experiment. The high school science advisor suggested the student buy the radioactive material from Central Scientific in Cleveland, Ohio rather than bother the people at University Hospital. The student placed an order for five 10 microcurie Vials of phosphorus-32 with Central Scientific and received them about a week later. As soon as the phosphorus-32 arrived the student dumped the five vials into one beaker and then injected the entire 50 microcuries into the animal being used in the research project. Do Iowa regulations permit the student to purchase five exempt quantities of phosphorus-32 at one time?

A. Yes
B. No

39-19. Refer to the scenario is Question 39-18 above. Is it permissible for an individual to combine five exempt 10 microcurie quantities of phosphorus-32 into a single 50-microcurie quantity? Explain your answer.

A. Yes
B. No

Explanation: _____

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39-20. An industrial firm purchased a level gauge containing 500 millicuries of Cesium-137 as a sealed source under the provisions of a general license. Due to a change in plans, the gauge was not installed and has remained in storage in the original unopened shipping crate for more than 4 years. During this period, the firm did not perform any leak tests on the Cesium-137 sealed source. Are leak tests required under these circumstances?

A. Yes
B. No

39-21. An industrial firm purchased a thickness gauge containing 200 millicuries of krypton-85. In accordance with Iowa regulations:

A. Leak tests are required every 6 months.
B. Leak tests are not required.
C. Leak tests are required every 3 years.

39-22. An investment conglomerate owns a pool-type irradiator containing more than 500, 000 Curies of cobalt-60, but does not have a specific license. Is a specific license required to own this quantity of radioactive material?

A. Yes
B. No

39-23. In order or a physician or a clinical laboratory to use specified radioactive materials for in vitro or laboratory tests, the person must file an Agency Form "Certificate - In Vitro Testing with Radioactive Material Under General License."

A. True
B. False

39-24. Refer to Question 39-23 above. The person who intends to perform in vitro or laboratory tests can begin using the specified radioactive materials on the date the Form is sent to the agency.

A. True
B. False

39-25. Persons who use radioactive material under the provisions of a "Certificate - In Vitro Testing with Radioactive Material Under General License" can use this material only for:

A. Diagnostic administration to patients.
B. Therapy administration to patients.
C. Neither A nor B.
D. Both A and B.

39-26. The general licensee who uses radioactive material under a Certificate described in Question 39-25 shall not at any one time possess a total quantity of radioactive material in excess of:

A. 5 millicuries.
B. 200 microcuries.
C. 200 millicuries.
D. None of the above.

39-27. A general licensee who uses radioactive material under a Certificate described in Question 39-25 is permitted to use any radioactive material that has been approved for human use and has been manufactured in accordance with FDA requirements.

A. True
B. False

39-28. A licensee who applies for a specific license authorizing the use of up to 2 Curies of Iodine-131 for iodination studies is required, as part of the license application, to submit a decommissioning funding plan. Explain your answer.

A. True
B. False

Explanation: _____

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39-29. Each person licensed under Chapter 39 shall keep records of information important to the safe and effective decommissioning of the facility in an identified location until:

A. All radioactive material has been disposed or transferred to another specific licensee.
B. The license is terminated by the Agency.
C. A period of three years has elapsed.

39-30 A licensee submitted an application or renewal of its specific license 45 days before the license was due to expire. However, when the expiration date arrived the Agency had not yet renewed the license. Based on this scenario, the licensee:

A. Is required to put all licensed radioactive material in storage and discontinue all uses until the material can be transferred or disposed.
B. Can continue operating the program until the Agency renews its license.
C. Can request a 90-day exemption from licensing until the Agency can issue a renewal.

39-31. One kind of information that is required on packages of radioactive material during transport is the Transport Index. The Transport Index is determined by referring to tables in Appendix B of Chapter 39.

A. True
B. False

39-32. Who is responsible for determining the Transport Index?

A. The shipper.
B. The carrier

39-33. What is the purpose of placing the Transport Index on the shipping label of a package containing radioactive material?

A. To warn dock workers to stay as far away as possible while the packages are on loading docks.
B. To help the carrier exercise adequate control during transportation.

39-34. If, during transportation, a package containing radioactive material is involved in an incident the carrier is required to notify:

A. The U.S. Nuclear Regulatory Commission.
B. The Agency.
C. OSHA.

39-35. Prior to each shipment of licensed material, the licensee shall determine that the level of removable radioactive contamination when measured over an area of 300 square centimeters does not exceed ..... disintegrations per minute per square centimeter.

Note: Refer to 49 CFR Parts 170 through 189.

A. 2200
B. 22
C. 2.2

SELF-STUDY QUIZ
CHAPTER 40
STANDARDS FOR PROTECTION AGAINST RADIATION

Name:_____ **SCORE:**_____

Date Submitted:_____

40-1. A licensee is not required to report to the Agency the theft or loss of a sealed radioactive source unless the strength of the source exceeds 1.0 millicurie.

A. True
B. False

40-2. Chapter 40, "Standards For Protection Against Radiation," applies to all individuals and/or corporate entities that possess radioactive material.

A. True
B. False

40-3. A United Parcel Service (UPS) driver is permitted by a licensee to routinely enter its production facility, a restricted area where radioactive materials are used. Since the UPS driver is present for a relatively short time, no personnel monitoring is provided to him. The licensee stated that this is not a problem because the driver enters its facility with its permission therefore the dose limit for the UPS driver is 5.0 rem per year. Is the licensee's conclusion correct? Explain your answer.

A. True
B. False

Explanation: _____

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40-4. During normal business hours, a licensee received a package that contained 25 millicuries of Iodine-131 in liquid form. To comply with procedures for receiving and opening packages, the licensee is required to monitor the external surface of the package for radioactive contamination within:

A. 1 hour
B. 3 hours
C. 24 hours
D. No survey is required.

40-5 A room in which 100 millicuries of Hydrogen-3 is used and stored is required to be posted with a sign that has:

A. A radiation caution symbol and the words "Caution (or Danger) Radioactive Material"
B. A radiation caution symbol and the words "Caution (or Danger) Radiation Area"
C. No posting is required

40-6. If an individual receives a whole body occupational dose in excess of the limits specified in 40.26(1)"a," the licensee has 10 days in which to satisfy the requirements of 40.26(3) and demonstrate that the exception applies.

A. True
B. False

40-7. Members of the public are not permitted by Agency regulations to receive a dose to the whole body in excess of 0.5 rem per year. Explain your answer.

A. True
B. False

Explanation: _____

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40-8. Individuals who are under 18 years of age and who work in or frequent a restricted area are not permitted to receive a dose to the whole body in excess of:

A. 1.25 rem
B. 300 millirems
C. 500 millirems
D. 125 millirems

40-9. A licensee calibrates survey instruments with a cobalt-60 sealed source during an 8-hour period each day. The sources are never exposed more than 12 minutes in any one-hour. While making a radiation survey, the radiation safety officer determined that, while the source was exposed, the receptionist who worked in an unrestricted area was in a radiation field of 7 mR/hr. The radiation safety officer concluded this exceeded the permissible radiation level for an unrestricted area. Is this a valid conclusion? Explain your answer.

A. Yes
B. No

Explanation: _____

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40-10. Refer to Question 40-9. After the radiation safety officer concluded the licensee had exceeded the radiation level limits for an unrestricted area, he wondered if he was required to report this matter to the Agency. Is reporting required in this situation?

A. Yes
B. No

40-11. Due to increased demand, the licensee in Question 40-9 purchased a new 2000-Curie Cobalt-60 calibration source. The radiation safety officer again made a detailed survey of the licensee's facilities and determined that the unrestricted area where the desk of the receptionist was located was in a continuous radiation field of 0.8 mR/hr while the source was in a stored or shielded configuration. The radiation safety officer concluded this radiation level was well within the limits specified in the regulations and no further action was taken. Did the radiation safety officer make the correct conclusion? Explain your answer.

A. Yes
B. No

Explanation: _____

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40-12. If the radiation safety officer in Question 40-11 came to the wrong conclusion after surveying the new calibration source housing and all surrounding areas, is there any way he could resolve this matter without modifying the equipment or the facilities? Explain your answer.

A. Yes
B. No

Explanation: _____

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40-13. Because young persons are more susceptible to biological damage from exposure to radiation, every person under 18 years of age who works in or frequents any portion of a restricted area must be assigned personnel monitoring equipment.

A. True
B. False

40-14. If a licensee takes advantage of all exceptions allowed for doses received by individuals who work in or frequent any portion of a restricted area, which of the following is the maximum whole body dose an individual may receive in a year? Explain your answer.

A. 5 rem
B. 7.5 rem
C. 6.75 rem
D. 2 rem

Explanation: _____

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40-15. Agency regulations provide that every reasonable effort should be made to maintain radiation exposures and releases of radioactive material in effluents to unrestricted areas:

A. As low as is physically possible.
B. As low as is reasonably achievable.
C. As low as state of the art techniques allow.

40-16 When respiratory protective equipment is used to limit the inhalation of airborne radioactive material pursuant to 40.49, the licensee may make allowance for such use in estimating exposures to individuals provided that:

A. All equipment was purchased new.
B. The protective equipment has been tested and certified or had certification extended by NIOSH and MSHA.
C. The equipment is used as stipulated in U.S. Nuclear Regulatory Commission Reg. Guide 8.15.
D. The licensee or the manufacturer has tested and can demonstrate with test data that the protective equipment has the required efficiency.

40-17. All personnel dosimeters that require processing and are used to measure the dose to extremities must be processed and evaluated by a dosimetry processor currently accredited by:

A. Oak Ridge National Laboratory.
B. National Bureau of Standards.
C. American Association of Medical Physicists.
D. NVLAP.
E. None of the above.

40-18. Each licensee shall supply appropriate personnel monitoring equipment to and require its use by each individual who enters a restricted area under such circumstances that the individual receives, or is likely to receive, an annual dose in excess of ..... percent of the applicable value specified in 40.15(1).

A. 5 percent
B. 10 percent
C. 25 percent
D. None of the above

40-19. Radiation caution symbols which are used on caution signs, labels, and signals shall use the conventional radiation caution colors. These colors are:

A. Red on a white background.
B. Black on a yellow background.
C. Magenta or purple on a yellow background.
D. B and C.
E. None of the above.

40-20 The steel entrance door to a fixed radiography cell, a high radiation area, is provided with a conventional steel hasp and padlock so that the door can only be opened from the outside. This door is kept securely padlocked during overnight radiography exposures and also during the day when radiographic exposure are being conducted. This is an approved method of securing the entrance to a high radiation area. Explain your answer.

A. True
B. False

Explanation: _____

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40-21. A facility that is used for instrument calibration contains a one Curie Cobalt-60 sealed source that is in the exposed position for 13 minutes out of each hour. While the source is exposed the radiation level in the room is 350 mR/hr. Based on this information, one can conclude the calibration facility is what type of area? Explain your answer.

A. Restricted area.
B. Radiation Area.
C. High Radiation Area.

Explanation: _____

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40-22. The licensee has a 1.0-Curie Cesium-137 sealed source locked inside a storage container inside the calibration laboratory. The radiation level at six inches from the surface of the source storage container was 21.5 mR/hr. Based on this information, one can conclude that:

A. The entrance shall be posted with the conventional radiation caution symbol and the words CAUTION (or DANGER) RADIOACTIVE MATERIAL.
B. The entrance shall be posted with the conventional radiation caution symbol and the words CAUTION (or DANGER) RADIATION AREA.
C. No posting of the room is required.

40-23 Before a licensee can dispose, to an unrestricted area, empty uncontaminated containers that previously held radioactive material the licensee shall:

A. Hold all containers 10 additional half-lives.
B. Delete all applicable entries from receipt records.
C. Remove or deface radioactive material labels or otherwise indicate that the container no longer contains radioactive material.

40-24. When calculating concentrations of radioactivity in effluents to unrestricted areas, the concentration limits are specified in:

A. Appendix B, Table II, Chapter 40.
B. Appendix B, Table I, Chapter 40.

40-25. A radiography camera which had its 100 Curie Iridium-192 sealed source locked in a secure position was placed on the ground next to the security guard shack while the radiographer went into town for film. This constitutes adequate security for a source of radiation that is in an unrestricted area.

A. True
B. False

40-26. The licensee received a package of radioactive material, which contained a 100-Curie Iridium-192 sealed source in a radiographic exposure device. However, the licensee did not perform a survey on the external surface of the package for radioactive contamination. This violates the regulation that relates to the procedure for receiving packages containing radioactive material.

A. True
B. False

40-27. The licensee received during normal working hours a package containing 25 millicuries of Iodine-131 in liquid form. In order to comply with the procedures for picking up, receiving, and opening packages, the licensee is required to monitor the external surface of the package for radiation within:

A. 1 hour
B. 3 hours
C. 18 hours
D. Survey not required

40-28. The licensee received a package containing ten 50-millicurie vials of Iodine-131 in liquid form and upon receipt monitored the package surface for radioactive contamination. This radiation survey showed removable contamination of 0.04 microcuries per 100 square centimeters of the package surface. Based on these measurements, the licensee is required to immediately notify:

A. The shipper
B. The Department of Transportation
C. The Nuclear Regulatory Commission
D. The final delivering carrier
E. The Agency
F. B and D
G. D and E

40-29. The licensee, a large university, routinely disposes of large amounts of Iodine-131 to the sanitary sewage system. At the end of the year, the licensee's waste disposal records showed that a total of 3.2 Curies of Iodine-131 had been disposed to the sanitary sewage system. The radiation safety officer calculated that the concentration of the Iodine-131 in the water released by the licensee was well within the concentration limits specified in Appendix B, Table I, Column 2 of Chapter 40. Therefore, this disposal meets regulatory requirements. Explain your answer.

A. True
B. False

Explanation: _____

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40-30 The licensee routinely buries millicurie quantities of short half-life radioactive materials in a landfill at the edge of its property. The landfill area is surrounded by a barbed wire fence and a locked gate and the licensee makes a monthly analysis of water in a nearby river to demonstrate that none of the radioactive material is leaving the licensee's property. Since the licensee is controlling the radioactive material, this is an acceptable method of disposal.

A. True
B. False

40-31. When calculating the concentration of radioactivity in effluents to unrestricted areas, the concentrations may be averaged over a period not greater than:

A. 24 hours
B. 1 year
C. 13 weeks

40-32. All licensees who routinely release airborne radioactive material into restricted areas where employees are required to work are required to provide bioassay services to those employees.

A. True
B. False

40-33. A licensee monitors personnel for exposures. Annually, the supervisors personally tell the employees results of the measurements. Does this meet regulatory requirements?

A. Yes.
B. No.

Explanation: _____

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40-34. A room in which a sealed source container that measures 5.0 mR/hr at one foot is used and stored is required to be posted with the radiation caution symbol and the words:

A. Caution (or Danger) Radioactive Material.
B. Caution (or Danger) Radiation Area.
C. No posting is required.

40-35. Sources of radiation in an unrestricted area and not in storage shall be:

A. Secured in a locked container.
B. Maintained under constant surveillance and immediate control.

40-36. The discharge of radioactive material into an individual sewage disposal system such as a septic tank is:

A. Limited to 10 percent of that which may be released to a community sewage disposal system.
B. Is not permitted.

40-37. In a one-year period a licensee disposed 1.2 Curies of mixed isotopes, 750 millicuries of Carbon-14, and 6.3 Curies of Hydrogen-3 to the sanitary sewage system. This disposal is well within regulatory limits.

A. True
B. False

40-38. If your answer to question 40-37 was false, which isotope(s) were in excess of regulatory limits?

A. The mixed isotopes.
B. The mixed isotopes and Carbon-14.
C. The mixed isotopes and Hydrogen-3.
D. All disposals exceeded regulatory limits.

40-39 A licensee employee working in a restricted area receives a whole body radiation dose of 35 rem. As a result, the licensee is required to notify the Agency:

A. Within 24 hours.
B. Immediately.
C. Within 30 days.

40-40. When a licensee has facilities located in a restricted area in a building that is mostly unrestricted (e.g., an instrument calibration lab located in an office complex) the entrance to the licensed facility should be kept locked at all times; however, radiation caution signs should not be posted at the entrance to the licensed facility to prevent causing unnecessary alarm to other building residents.

A. True
B. False

SELF-STUDY QUIZ
CHAPTER 41
STANDARDS FOR PROTECTION AGAINST RADIATION

Name:_____ SCORE:_____

Date Submitted:_____

41-1. Whenever an authorized user under a medical license permanently discontinues performance of duties under the license, the licensee must:

A. Replace the individual within 90 calendar days.
B. Notify the Agency in writing within 30 days.
C. Notify the Agency by telephone within 7 days.
D. Immediately discontinue scheduling patients.

41-2. One individual is responsible for keeping a copy of all records and reports required by the agency rules, a copy of these rules, a copy of each licensing request and license and amendments, and the written policy and procedures required by the rules. That individual is:

A. The corporate attorney.
B. The chief executive officer or president.
C. The radiation safety officer.
D. The personnel director.

41-3. A door is not required at the entrance to a teletherapy room provided the entrance is a maze entrance and the facility is provided with appropriate radiation alarms.

A. True
B. False

41-4 If the radiation monitor in a teletherapy facility becomes inoperable, the licensee is required to:

A. Notify the Agency within 15 days.
B. Promptly repair or replace the monitor.
C. Discontinue treatments with the teletherapy unit until the monitor has been repaired.
D. B and C.

41-5. A licensee authorized to use a teletherapy unit for medical use is required to perform full calibration measurements on the unit at intervals not exceeding one year. However, the licensee has a grace period of 90 days for performing the calibration if the licensee plans to install a new source within the 90-day grace period.

A. True
B. False

41-6. An authorized medical user who supervises the use of licensed material by another individual who is not an authorized user is permitted to do so provided he:

A. Has written authorization from the Agency.
B. Stated in writing a willingness to take full responsibility in the event of a misadministration.
C. Is immediately available to communicate with the supervised individual.
D. Has submitted a written request to the radiation safety officer to have the license amended.

41-7. A visiting authorized user must work under the direct supervision of an individual who is named on a license as an authorized user.

A. True
B. False

41-8 Within 15 days a therapy misadministration, the licensee must submit a written report to the agency. This report must include the name of the patient to ensure a full investigation by the agency.

A. True
B. False

41-9. A mobile nuclear medicine service shall not have radioactive material delivered directly from the manufacturer or the distributor to the client's address of use.

A. True
B. False

41-10. A licensee is required to determine the amount of activity administered to each patient. This is accomplished by:

A. Referring to the shipping papers.
B. Using a well counter.
C. Using a dose calibrator.

41-11. A dose calibrator shall be checked for constancy with a dedicated check source at the beginning of each day of use. If the licensee is using a Cesium-137 check source it must have an activity of at least:

A. 50 microcuries.
B. 10 microcuries.
C. The maximum dose that will be measured.

41-12. A licensee is required to assay radiopharmaceutical dosages. If a dosage contains 20 millicuries of technetium-99m, the assay is required to be performed:

A. Only by the pharmacy prior to shipment.
B. By the licensee within 1 hour before medical use.
C. By the licensee before medical use.
D. By the licensee within 30 minutes before medical use.

41-13. A licensee routinely uses a 50-millicurie krypton-85 source for various applications. This source is required to be leak tested at intervals not to exceed six months.

A. True
B. False

41-14. A licensee uses a molybdenum-99/technetium-99m generator to prepare technetium-99m radiopharmaceuticals. If the licensee elutes the generator three times each day, it is required to measure the molybdenum-99 concentration in the eluate:

A. Once each day - It must be the first elution.
B. Three times each day.
C. Once on the first day of use.

41-15. A dedicated check source is used:

A. To ensure constant operation of a survey meter.
B. Only with one specific survey meter.
C. To reduce the frequency of instrument calibration.

41-16 Although a licensee may app y or an amendment to its specific radioactive material license, the amendment is not effective until:

A. The agency verifies that any applicable amendment fee has been paid.
B. The amendment request is approved by the Agency.
C. The licensee has received the amendment.

41-17. If the licensee is a medical institution, its ALARA program is required to have an annual review by:

A. The radiation safety officer.
B. The radiation safety committee.
C. The Agency.

41-18. A medical institution's radiation safety committee is required to meet:

A. At least once each calendar quarter.
B. At least once each calendar year.
C. Within 24 hours after a major incident occurs.

41-19. The Agency must issue a written authorization to a mobile nuclear medicine service for each institution that is served by the mobile service and the authorization must be received before the first use of licensed radioactive material at each medical facility.

A. True
B. False

41-20 When a misadministration involves a diagnostic procedure, the radiation safety officer is required to promptly investigate its cause. One criteria f or determining whether a diagnostic misadministration occurred is to determine whether the patient is likely to receive an organ dose greater than 2 rems or a whole body dose greater than 500 millirems. One of the easiest ways to determine this is to:

A. Perform hourly bioassays on the patient for no less than 24 hours. Then, have a medical physicist calculate the organ and whole body doses to the patient.
B. Use dosimetry tables in package inserts.
C. Review the medical literature and compare the patient's body weight and dosage with other patients who had experienced a diagnostic misadministration.

41-21. A mobile nuclear medicine service decided to reduce the possibility of having a transportation accident involving radioactive material in one of their vehicles. They accomplished this by having all radioactive materials delivered directly to the client hospitals. Is this practice acceptable?

A. Yes
B. No

41-22. Which record(s) is/are required to be signed by the radiation safety officer?

A. Instrument calibration records.
B. Sealed source leak test records.
C. Dose calibrator accuracy tests.
D. Assay of radiopharmaceutical dosages.
E. A and C.
F. B and C.
G. All of the above.

41-23 A licensee who uses a multidose container of a volatile radioactive material is required to store this material in:

A. A shielded container in the hot lab.
B. A locked shielded container in the hot lab.
C. A fume hood.
D. Any location provided it is in a restricted area.

41-24. All radioactive material licenses issued to medical institutions grant authorization to use radioactive gases and aerosols.

A. True
B. False

41-25. A licensee authorized to use radioactive material for imaging studies is required to possess a minimum of operable and calibrated survey instruments.

A. No limit is specified.
B. One
C. Two

41-26. A patient received a therapy dose of 250 millicuries of Iodine-131 for thyroid carcinoma. Immediately after the dose was administered, radiation surveys showed the dose rate at one meter from the patient was 18 millirems per hour. Approximately three hours after the dose was administered, the patient expired and when the funeral director arrived at the hospital one hour after the patient expired, the hospital refused to release the body. The family was very concerned and called your agency to request help. Was the hospital justified in their action? Explain your answer.

A. Yes
B. No

Explanation: _____

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41-27 A licensee elutes its molybdenum-99 technetium-99m m generator and after checking the eluate for molybdenum-99 concentration discovers it is 0.30 microcuries per millicurie of technetium-99m. The licensee tries to resolve this problem and finally concludes that the best thing to do is: Explain your answer.

A. Hold the eluate for at least 36 hours until the molybdenum-99 concentration has decayed to below 0.15 microcuries per millicurie of technetium-99m.
B. Dispose of the eluate and the generator as radioactive waste.
C. Order another generator and dilute the eluate from the problem generator with new eluate until the molybdenum-99 concentration is less than 0.15 microcuries per millicurie of technetium-99m.

Explanation: _____

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41-28. If a licensee elutes a molybdenum-99/technetium-99m generator and finds the eluate exceed permissible concentration limits, the licensee is required to:

A. Immediately notify the Agency.
B. Immediately notify the generator manufacturer.
C. Notify the U.S. Food and Drug Administration within 30 days from the date of elution.
D. All of the above.

41-29. If a patient who has received radiopharmaceutical therapy dies, the licensee is required to immediately:

A. Notify the Agency.
B. Notify the Radiation Safety Officer.
C. Notify the authorized user.
D. B or C.
E. All of the above.

41-30 If a patient as receive radiopharmaceutical therapy an is hospitalized because the activity in the patient is greater than 30 millicuries, the licensee:

A. Shall provide a private room for the patient.
B. May place two therapy patients in the same room provided they are separated by at least 8 feet.
C. Has no restrictions on patient room occupancy as long as the radiation level in unrestricted areas is within regulatory limits.

41-31. Immediately after removing temporary implant sources from a patient, the licensee carefully counted the removed sources and concluded all sources had been removed and returned to the storage facility. However, several days later, after the patient had returned home, it was found that one therapy source still remained in the patient. The licensee claimed it had done everything possible to prevent such an occurrence. Did the licensee do anything improperly? Explain your answer.

A. Yes
B. No

Explanation: _____

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41-32 Agency regulations provide, among other things, that only a person who is specifically licensed by the agency, the U.S. Nuclear Regulatory Commission, or an agreement state to perform teletherapy unit maintenance and repair shall install, relocate, or remove a teletherapy sealed source. You contracted with the Picker Company to replace the cobalt-60 sealed source in your Picker Model C-12 unit. However, after the new source was installed, you learned that the Picker Company employee who performed the source installation was a new technician and was not qualified to perform a source installation. Based on this scenario, the hospital that owned the teletherapy unit violated regulatory requirements because it permitted an unqualified person to install the cobalt-60 sealed source. Explain your answer.

A. True
B. False

Explanation: _____

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41-33. A hospital constructed a new teletherapy room and because of the configuration of the walls, it was not able to provide a viewing window that could be observed by the technologist who was operating the teletherapy unit. As an alternative, the licensee installed a television camera and monitor system, which would make it possible for the patient to be observed from the operating console. Is this observation system acceptable?

A. Yes
B. No

41-34. A licensee authorized to use a teletherapy unit for medical use is required to perform full calibration measurements on each teletherapy unit:

A. Before the first medical use of the unit.
B. Following replacement of the source.
C. At intervals not exceeding three years.
D. A and B.
E. B and C.
F. All of the above.

41-35 University hospital in Iowa City had its license for the use of radioactive material renewed in its entirety on January 15, 1992. The individual who acts as radiation safety officer for all uses of licensed material under this program is the same individual who fulfilled those duties since December 12, 1984. During an inspection of the program, the inspector noted the radiation safety officer did not comply with many of the requirements set forth in 641-41.2(65) "a" or "b". Is it permissible for this individual to continue acting as the radiation safety officer? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

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41-36. As part of the full calibration measurements on its cobalt-60 teletherapy unit, a licensee is required to measure the output within 3 percent for the range of field sizes and for the distance or range of distances used for medical use. Also, a licensee is required to correct these outputs for physical decay at intervals not to exceed:

A. One month.
B. 90 days
C. One year

41-37 The licensee's teletherapy physicist measured the maximum and average radiation levels at 1 meter from the teletherapy source and found radiation levels of 20 and 4 millirems per hour, respectively. Based on these measurements, the licensee is required to:

A. Lock the control in the "off" position until certain corrective actions have been taken.
B. Reduce the patient load and total treatment time by 50 percent.
C. Have the radiation safety officer maintain continuous surveillance while treatments are in progress.

41-38 A licensee of a mobile nuclear medicine service has a lead lined trash dispenser that the service uses for gloves, vial, etc. at each location of service and collects on a monthly basis. Is this an acceptable practice?

A. Yes
B. No

41-39 A licensee authorized to use radioactive material for imaging and localization studies has a survey instrument capable of measuring dose rates over the range of 1mr/hr (10uSv/hr) to 1000 mR/hr (10mSv/hr). Is this adequate for their authorized practice?

A. Yes
B. No

41-40 A licensee provided oral and written radiation safety instruction to all personnel caring for a patient receiving implant therapy. As long as there is no change in personnel, the licensee does not need to do any follow-up radiation safety instruction.

A. True
B. False

41.41 A licensee requests an amendment to add an authorized user to their license. The physician wants privileges specified in 41.2 (31), (33), and (37). Where would the licensee look to verify if the physician's training is adequate?

A. 41.2(67) and (68).
B. 41.2(68) and (69).
C. 41.2 (67), (68), and (69).
D. 41.2(67), (68), (69), and (76).

SELF-STUDY QUIZ
CHAPTER 45
RADIATION SAFETY REQUIREMENTS FOR
INDUSTRIAL RADIOGRAPHIC OPERATIONS

Name:_____ SCORE:_____

Date Submitted:_____

45-1. A collimator is a small cone-shaped shield, usually of lead, which significantly increases the intensity of the radiation beam and thereby reduces the duration of the radiographic exposure.

A. True
B. False

45-2. A source changer is a device that is used for removing an old sealed source from a radiographic exposure device and replacing it with a new source, which is contained inside the source changer.

A. True
B. False

45-3. Each licensee shall maintain records showing the receipt, transfer, and disposal of sources of radiation. The licensee is permitted to dispose of these records when:

A. The sources of radiation have been returned to the supplier or disposed as radioactive waste.
B. The sources have been held in storage for at least 10 half-lives.
C. Disposal of the records is authorized by the Agency.
D. The sources have been sold and transferred to another licensed radiographer.

45-4 A radiation survey instruments considered to be operable if it has been calibrated by a qualified calibration facility within the past six months. Explain your answer.

A. True
B. False

Explanation: _____

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45-5. If an individual is a certified health physicist, that individual is automatically qualified and authorized to calibrate radiation survey instruments that are used by industrial radiographers.

A. True
B. False

45-6. Each radiation survey instrument shall be checked with a radiation source:

A. Immediately after it is returned from the calibration facility.
B. At the beginning of each day of use.
C. At the beginning of each work shift.
D. As part of a weekly inspection and maintenance program.
E. A and B
F. B and C

45-7. Each licensee is required to conduct a physical inventory at intervals not to exceed three months to account for sealed sources and radiography exposure devices received and possessed by the licensee.

A. True
B. False

45-8. A licensee is not required to include in the physical inventory any sources that have decayed to the point where they are not usable for industrial radiography and have been placed in permanent storage.

A. True
B. False

45-9. Areas in which radiography is being performed shall be conspicuously posted with the conventional radiation symbol and the words:

A. Caution (or Danger) Radioactive Material.
B. Caution (or Danger) Radiation Area.
C. Caution (or Danger) High Radiation Area.
D. A and C.
E. B and C.
F. A, B, and C.

45-10. The licensee purchased a new 100-Curie Iridium-192 sealed radiography but the leak test certificate was apparently lost in shipment. Since the source was received directly from the manufacturer, the licensee put the source into use. This is permissible because the source was new.

A. True
B. False

45-11. Where will the licensee find information regarding the procedure for notifying proper personnel in the event of an accident?

A. License application.
B. Licensee's operating and emergency procedures.
C. Chapter 45 of the regulations.

45-12. Personal supervision of a radiographer trainee a radiographer instructor means:

A. The radiographer instructor must be available by telephone in the event of an emergency.
B. The radiographer instructor must be available at the field site where radiography is being performed and must be available if needed within 10 minutes.
C. The radiographer instructor must be in visual contact with the radiographer trainee while the trainee is using sources of radiation.

45-13. While conducting an inspection and maintenance review of its radiography equipment, the radiation safety officer noted that one of the exposure devices that were currently being used at a field site had a defective lock and the sealed source could not be locked in the stored position. The radiation safety officer immediately notified all radiography personnel in writing of the problem and urged them to take special precautions whenever they used the defective exposure device. Is this an adequate handling of this matter? Explain your answer.

A. Yes
B. No

Explanation: _____

_____

_____

_____

_____

45-14. After installing a new sealed source into a radiographic exposure device from a source changer, the licensee is required to:

A. Measure the clearance tolerance on the source pigtail to ensure that it meets specifications.
B. Replace the radiation caution labels to ensure that they are clearly visible.
C. Perform a radiation survey to ensure that the sealed source is in a shielded position.

45-15 A "lock-out survey is performed to ensure that:

A. A sealed source is in a shielded position.
B. The locking mechanism functions properly.
C. The sealed source remains fully exposed without any movement during the entire radiographic exposure.

45-16. The radiation safety officer for an industrial radiography program is required to have:

A. A degree from an accredited 4-year college.
B. At least 40 hours of active participation in industrial radiographic operations.
C. A and B.

45-17. A transport container, which is used to provide radiation safety and security when sealed sources are transported, must meet all applicable requirements of:

A. OSHA.
B. The Nuclear Regulatory Commission.
C. The Iowa Department of Public Health.
D. The Department of Transportation.

Note: Refer to 10 CFR Part 71 or 49 CFR Parts 170 through 189.

45-18. A "temporary job site" is one in which:

A. The licensee performs industrial radiography less than 5 days out of each month.
B. The industrial radiography is performed at other than the location listed in a specific license.
C. The licensee rents a facility which is used only occasionally for industrial radiography.

45-19 A radiation survey instrument shall be calibrated:

A. Prior to receiving a new radiography source.
B. At intervals not to exceed six months.
C. After each instrument servicing.
D. B and C.
E. A, B, and C.

45-20. Each radiography licensee shall maintain utilization logs showing the use of each source of radiation. According to Agency regulations, these records must be:

A. Stored inside the radiography camera shipping case.
B. Available inside the transport vehicle if work is being performed at a field site.
C. At a location specified by the license.
D. At the licensee's corporate headquarters.

45-21. A control device or alarm system of a permanent radiographic installation shall be tested:

A. At the beginning of each day, except Saturdays and Sundays.
B. At the beginning of each day of equipment use.
C. As part of the quarterly inspection and maintenance program.

45-22. If a control device or alarm system of a permanent radiographic installation is operating improperly, the licensee may use the radiography facility provided a qualified radiographer with an operable and calibrated survey meter is in constant attendance.

A. True
B. False

45-23 Radiography personnel require various kinds of experience in the use of radiographic exposure devices. These personnel include: (A) Radiographer Trainees, (B) Radiation Safety Officers, (C) Radiographer Trainers, and (D) Radiographers. List these personnel in order of increasing experience required in the use of radiographic exposure devices.

A. D, B, C, and A
B. B, C, D, and A
C. A, B, D, and C
D. A, D, B, and C

45-24. An individual who completes a written examination to become an industrial radiographer can request and be granted permission to have the name and test score withheld from public disclosure under the Privacy Act.

A. True
B. False

45-25. The main purpose of an internal audit is to ensure that all radiographic equipment is functioning properly.

A. True
B. False

45-26. An internal audit shall be performed at least:

A. Quarterly.
B. Every six months.
C. Annually.

45-27. A radiographer is permitted to conduct industrial radiography without wearing an alarm ratemeter under certain conditions. This is permissible when:

A. Radiography is performed by a radiographer trainer.
B. Two radiographers are working together at the same location.
C. Radiography is being conducted in a permanent radiography installation.7

45-28. A pocket dosimeter must be recharged:

A Whenever the reading exceeds 100 milliroentgens.
B. At the start of each work shift.
C. Whenever it is assigned to more than one person.

45-29. A radiographer trainee is permitted to work without supervision only when:

A. Radiography is performed in a permanent facility.
B. No other radiographer is available.
C. Neither of the above.

45-30. A radiography source shall be secured in its shielded position by locking the exposure device:

A. Each time the sealed source is returned to its shielded position.
B. Whenever radiography is being performed in an unrestricted area.

41-31. An Inspector, while inspecting a well-logging licensee, noted the licensee had the same sealed sources that were in use at the time of the previous inspection 3 years earlier. While reviewing records of the leak tests on these sealed well-logging sources, the inspector noted the leak test records only extended back 14 months. The inspector said this was a violation of regulations because the leak test records should at least go back to the date of the last inspection, 3 years ago. Is the inspector correct? Explain your answer.

A. Yes
B. No

Explanation: _____

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_____

41-32. While inspecting a well-logging licensee in the field, the inspector asked one of the qualified well loggers at the site, "does the licensee have any written procedure for notifying proper personnel if there is an accident?" The well logger didn't know the answer to that question. Where should the well logger be able to look in order to find this information?

A. In the license conditions.
B. In the operating and emergency procedures.
C. In the license application.

41-33. A licensee wants to upgrade the training of its logging supervisors but doesn't know where to look for a list of appropriate subjects to be included in the course. What would be the best way to find this information?

A. Contact a manufacturer of well-logging sources.
B. Look in 641 - Chapter 45.
C. Contact another well-logging licensee.

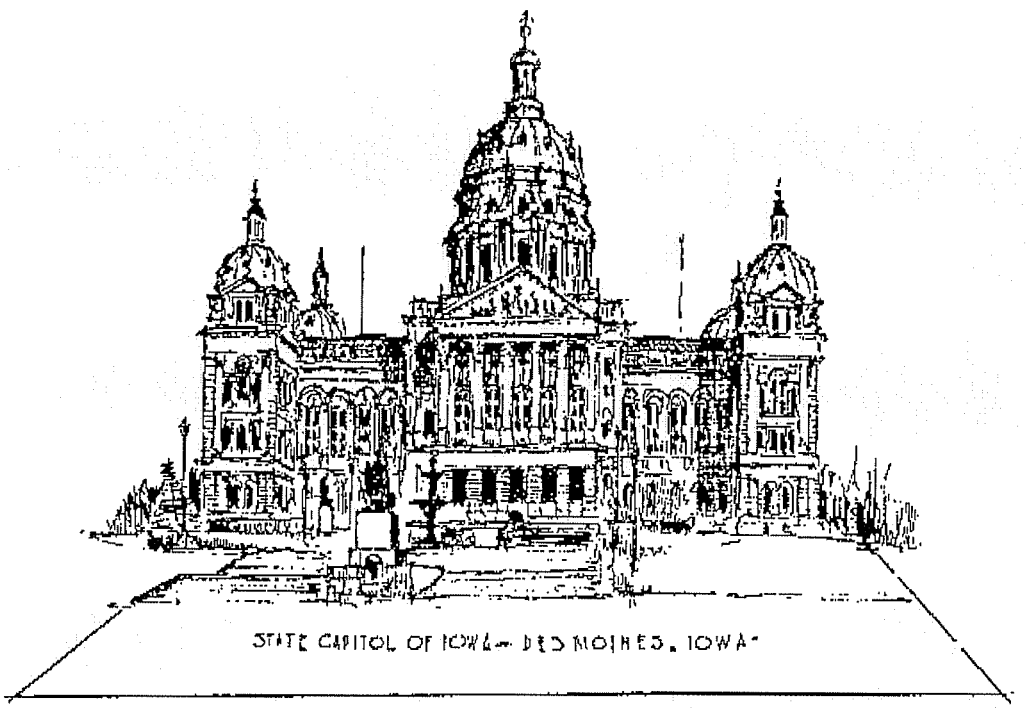
Revisions

REVISION	SECTION	DESCRIPTION
10/01	ALL	Revised text and updated quizzes.
07/02/02	Policy Statement	Added discussion of core and specialized training. Updated training log for core courses and added log for supplemental training courses.

IOWA DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

2006 ANNUAL AUDIT OF BUREAU OF RADIOLOGICAL HEALTH PROGRAMS

(July 1, 2005-June 30, 2006)



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Des Moines, Iowa 50319
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TABLE OF CONTENTS

INTRODUCTION

This is our first Annual Audit that covers a fiscal year. This Audit covers fiscal year 2006.

ENVIRONMENTAL, TRAINING, AND TRANSPORTATION

I. Staffing

Staffing levels remained the same and are indicated in the Radioactive Materials (RAM) Program section of this document.

II. Training

Iowa Bureau of Radiological Health (BRH) provided training to support first responder and law enforcement operations in Iowa. The following table summarizes the training efforts.

Date	Organization/Location	Training Type	Number of Attendees	Instructor
10-03-05	Department of Transportation – Des Moines	Survey Meter Operation/Radiological Awareness	15	Randy Dahlin
11-14-05	County Emergency Managers	Spent Fuel Shipments	50	Randy Dahlin
02-15-06	Department of Transportation – Jasper County	Survey Meter Operation/Radiological Awareness	16	Randy Dahlin

III. Environmental Investigations and Remediation

Iowa Army Ammunition Plant (IAAAP)

This is an active site, consisting of 19,000 acres, operated for the US Army by a contractor. Until 1975, the Energy Research and Development Administration and its progenitors, utilizing the predecessors of the current contractor, conducted various operations that involved nuclear weapons. In 1990, the Army, under Comprehensive Environmental Response Compensation and Liability Act, began a clean up of the entire site. The radiation issues did not surface until December 1999.

Little or no actual clean up actually occurred at IAAAP this year. The discovery of a possible non-radiation plume off-post became the highest priority for investigation. A remedial action plan was published in July 2004. This plume contains no radioactive hazards.

In December 2003 the State began participating in the negotiations for an additional Federal Facilities' Agreement (FFA) at IAAAP. The parties are the US Environmental Protection Agency (EPA), the Army Corps of Engineers, St. Louis District (FUSRAP), and the State. The purpose of this FFA is to outline responsibilities for those areas of IAAAP at which the US Atomic Energy Commission conducted its operations.

These negotiations proceeded through 2003 and into 2004. Both the EPA and the State had hoped to have at least a draft "final" in place by mid-2004. This did not occur. These negotiations have continued and appeared to stall. In May 2005, the governor wrote a letter re-iterating his interest in the IAAAP and inquiring about the status of FFA negotiations. The letter created a flurry of conference calls between EPA, FUSRAP and the State. At the end of FY 05 there appeared to be only two sections of the FFA with which FUSRAP disagreed.

Negotiations continued through FY 2006. As of June 30, 2006 all parties had agreed to the content and the document was awaiting final signature.

IV. Rules

In July of 2002, Iowa Department of Public Health (IDPH) implemented a fee for transportation of radioactive waste shipments in Iowa. The fee was established to fund training for personnel who might respond to transportation accidents involving radioactive materials. The table in Section II summarizes the training accomplished in 2006.

Fee generated income from these waste shipments equaled $156,075 in fiscal year 2006.

MAMMOGRAPHY PROGRAM

I. Staffing

The Mammography Program consists of three employees: a Health Physicist III, Health Physicist II, and an Administrative Assistant. (The Section Coordinator, Paul Koehn, has dual responsibility for the Mammography and Radiation Machines Programs.) Jeanie Hudson retired as of May 24, 2006 after 12 years with the Iowa Department of Public Health. She was a great asset to the mammography program and was instrumental in helping Iowa become a national leader in women's breast health activities. She will be missed. We are actively seeking a qualified replacement for her position.

II. Training

Paul E. Koehn, B.S., R.T. (R) FDA Certified Mammography Inspector **Certified: February 10, 1995**			
Date	**Activity**	**Location**	**MEU**
05/06 & 07/06	Mammography Continuing Ed 2006 (CRCPD)	Detroit, MI	12.0
05/05/06	QA/QC Programs for Medical Modalities	Detroit, MI	7.5

III. Accredited Facilities

Due to the lack of a computerized system, the Mammography Program staff continues to track facilities manually. As of June 30, 2006, the number of facilities was as follows:

ACCREDITED FACILITIES	
American College of Radiology (ACR) accredited	7
IDPH accredited	140
Stereotactic	20
TOTAL	**167**

In addition to the above facilities, there are two mobile facilities from South Dakota that operate in the State of Iowa.

IV. Physician/Physicist Qualifications

IDPH manually maintains a list of qualified radiologists. The list, which currently consists of 394 physicians, is another function awaiting creation of a computer program.

IDPH staff also manually maintains a list of 24 surgeons qualified to conduct stereotactic breast biopsies and files on 22 physicists who conduct mammography surveys in Iowa

V. Technologist Qualifications

Technologists who perform mammography in the State of Iowa must possess a current permit to practice in Diagnostic Radiography. (See Operator Certification.) In addition to that certification requirement, the Mammography Program staff is directed by Iowa Law to monitor continuing education of all mammographic technologists, specific to mammography, to insure that these technologists maintain minimum requirements. At present that requirement is a minimum of 15 hours specific to mammography within any three-year period.

Absent a computer database, this continues to be a manual process. At year's end, the training for 682 mammography technologists was being manually tracked.

VI. Inspections

All accredited facilities are inspected annually. The breakdown in inspections is indicated in the following table.

Stereotactic	During the reporting period 20 stereotactic inspections were completed
Film-screen	During the reporting period 133 inspections were completed
Re-visits	During the reporting period there were 0 charged re-visits
Digital	During the reporting period 4 digital inspections were completed.

The difference in number of facilities and the number of inspections is attributed to the fact that two facilities were inspected by South Dakota and to the fact that some were either provisionally accredited or ceased operations.

VII. Film Image Review

Random select	During the reporting period 63 random reviews were conducted
Self select	During the reporting period 77 self-selected reviews were conducted (70 re-accreditation, 7 new accreditation).
AMR	During the reporting period there were 2 AMR's conducted.

VIII. FDA Visits/Program Reviews

A. On August 16, 2005 an AB on-site meeting was held at the Lucas Building in Des Moines, Iowa to discuss the Iowa role as an Accrediting Body within the

FDA MQSA framework. Those attending who represented the FDA were Denise Robinson, Vickie Jernigan and Kathy Franke. Representing the State of Iowa was Donald A. Flater, Kellee Kemp, Jeanie Hudson, Paul E. Koehn and Janet Kent. Tom Newton, Division Director, Iowa Department of Public Health, was present briefly for an update on state-federal cooperative activities as they pertain to Iowa as an Accrediting Body for the FDA MQSA program.

B. The 2005 Iowa clinical review in service was held on September 16, 2005 at Iowa Radiology in Clive, Iowa.

This meeting is to coordinate the image review standards among all of our clinical image review radiologists and to discuss any problems that we have come across throughout the previous year. Those in attendance from the State of Iowa Mammography Program were Donald A. Flater, Kellee Kemp, Jeanie Hudson, Janet Kent and Paul E. Koehn. Drs. R. Faulk, W. Heggen, R. Hartung, F. Qalbani, R. Schamel, and J. Tentinger were also present for discussions and review of mammography images. Dr. A. Honick had an excused absence and did not attend.

Also attending was Dr. Charles Finder of the FDA MQSA program who presented new information and clarified some areas based on FDA guidelines

A number of mammography technologists were present to observe and/or introduce areas of concern as they relate to image quality or image evaluation. These technologists were as follows: Kristie Thomson, (RT), Michelle Owens, (RT), Peggy Loots, (RT) and DeAnn Weuve, (RT).

IX. Rules

Effective May 2006, new rules were implemented to assure compatibility of Iowa requirements with those of MQSA. Specifically, a requirement for additional continuing education hours in digital mammography was eliminated both agencies rules. Also, effective May 2006 there were some increases in specific mammography program fees to offset rising costs.

OPERATOR CERTIFICATION

I. Staffing

Charlene Craig oversees the certification process. Technical assistance is provided by Nancy Farrington, Paul Koehn and Kellee Kemp.

II. Permits to Practice

IDPH staff reviews training, testing, and continuing education requirements for personnel as part of the Permit to Practice process.

PERMITS ISSUED			
	2004	**2005**	**2006**
Diagnostic radiographers	3752	3864	3635
Radiation therapists	154	155	171
Nuclear medicine technologists	333	340	330
TOTAL	**4239**	**4359**	**4136**

July, 2005 to July, 2006, IDPH took action to revoke 1 permit.

III. Continuing Education Reviews

In 2005 approximately 1400 continuing education programs were reviewed and approved. Eighty requests were reviewed and denied. BRH staff audited several approved programs for appropriate content.

IV. Training Program Reviews

IDPH staff review, interview, and approve new training programs. Approximately 160 certification exams for limited diagnostic and nuclear medicine permits were taken.

A. Inspections of Nuclear Medicine Technologist Training Programs

Charlene Craig and Nancy Farrington began reviewing Nuclear Medicine Training Programs in September of 2002. Since that time, the review has consisted of at least two visits to each facility during each student's training. The initial visit is for the student to meet with BRH staff and to become familiar with who we are and how we play a part in their training. The final visit is for BRH staff to review the didactic portion of their training, observe the students in a clinical setting, and to orally question the student about various aspects of nuclear medicine. The BRH staff then evaluates these aspects to either

recommend that the student appears to be prepared to sit for the examination or recommend for additional time to be spent in a particular area of training.

In 2005, 2 individuals completed approved facility training programs. Nancy Farrington and Charlene Craig inspected the following programs in 2005.

Licensee	Number of Students	Number of Visits By IDPH	Number of Final Visits by IDPH	Number of Pass on 1st Try	Number That Need To Take Exam 2nd Time
0220-1-23-M1	1	2	NA	NA	0

B. Inspection of Limited Radiographers Training Program

One program was reviewed and approved for training of limited radiographers.

V. Rules

Effective May, 2006, new rules were implemented to clarify the training process and program requirements and to add requirements for radiology assistants.

RADIOACTIVE MATERIALS PROGRAM

I. Staffing

Staffing consists of one Health Physicist III, two Health Physicist II's and one Clerk Specialist Advanced.

II. Inspector Evaluations

No inspector accompaniments were completed during this year:

III. Training

The following table summarizes the training efforts.

DATE	TRAINING	ATTENDEE	LOCATION	SPONSOR
August 1-12, 2005	Basic Health Physics Technology	Randal S. Dahlin	Oak Ridge, TN	DOE
September 19-30, 2005	NRC Security Systems & Principles	Nancy Farrington Randal S. Dahlin	Albuquerque, NM	NRC/DOE
September, 2005	Introduction to the Incident Command System	Nancy Farrington Randal S. Dahlin Daniel K. McGhee	Online course	FEMA
September, 2005	Incident Command System for Federal Disaster Workers	Nancy Farrington Randal S. Dahlin Daniel K. McGhee	Online course	FEMA
October 24 – November 4, 2005	NRC Security Systems & Principles	Daniel K. McGhee	Albuquerque, NM	NRC/DOE
March 21-22, 2006	Radiological Accident Assessment Concepts (RASCAL)	Nancy A. Farrington Randal S. Dahlin	Lisle, IL	NRC

IV. Inspections

BRH staff conducted two team inspections in this reporting period. The team inspection of Iowa State University occurred in May 2006 and that of the University of Iowa in October 2005. The following table summarizes the inspection activities:

INSPECTIONS		
Year	**IDPH Licenses**	**Reciprocity**
2002	62	4
2003	57	4
2004	56	1
2005 (6 months)	19	0
2006	59	12

V. Licensing

The RAM Program completed the following licensing actions:

Year	New Licenses	Renewals	Terminations	Amendments
2002	4	26	6	51
2003	10	36	2	54
2004	5	38	5	45
2005 (6 months)	4	26	0	20
2006	7	34	9	45

The RAM Program issued the following new licenses:

0336-1-79-M2	Grinnell Regional Medical Center
0337-1-78-XRF	Environmental Restoration LLC
0338-1-97-PG	Olsson Associates
0339-1-57-HDR	Mercy Medical Center
0340-1-57-M2	Iowa Blood & Cancer Care, PLC
0341-1-56-IR2	Keokuk Steel Castings
0342-1-28-M2	Regional Medical Center

As a comparison to previous years, the following is a summary of the specific licenses at the end of fiscal year 2006.

LICENSES					CATEGORY
2002	**2003**	**2004**	**2005**	**2006**	
2	2	2	2	2	Academic Broad Scope
1	1	1	1	1	Accelerator-Produced RAM (PET)
0	0	0	0	1	Analytical Laboratory
1	1	1	1	1	Civil Defense

3	3	3	3	3	Irradiators, Self –Shielding
5	5	6	7	7	Industrial Radiography
1	1	1	1	1	In-vitro Testing Lab
33	33	32	32	31	Fixed Gauges
47	47	41	42	39	Portable Gauges
2	2	1	1	1	Gas Chromatographs
1	1	1	1	1	Gamma Knife
2	2	2	2	3	High Dose Rate Afterloader
34	35	34	35	34	Medical Institutions-Diagnostic and Therapeutic
10	14	16	17	19	Medical Institutions–Diagnostic
3	3	3	3	3	Nuclear Pharmacy
6	8	8	8	8	Nuclear Medical Vans
2	2	0	0	0	Nuclear Medical Vans-Scan Only
1	1	1	1	1	Pacemaker Byproducts
12	12	12	12	10	Research & Development - Other
2	2	2	2	2	Source Material
2	2	2	2	2	Neutron Source in Device
2	2	1	1	1	Calibration and W/L Tests
4	4	0	0	0	Storage
2	3	3	3	4	X-Ray Fluorescent Analyzer
1	1	1	1	1	Veterinary Medicine Therapy
179	**187**	**174**	**178**	**176**	**TOTAL**

VI. Generally Licensed Materials Program

IDPH began a General License (GL) inspection program in 1999. This program was initiated in anticipation of the NRC's change in handling Generally Licensed material. The following is a summary of the GL licenses:

LICENSEES					CATEGORY
2002	**2003**	**2004**	**2005**	**2006**	
26	33	35	34	37	Portable Gauges
34	34	35	36	39	Fixed Gauges
28	37	42	43	43	X-Ray Fluorescent Analyzers
3	3	1	1	0	In-vitro Laboratories
5	4	3	3	3	Dew Point Analyzers
13	13	10	10	9	Electron Capture Devices
2	3	3	3	2	Liquid Scintillation Detectors
15	18	18	18	15	Static Eliminators
0	0	0	0	1	Gas Chromatographs
126	**141**	**147**	**148**	**149**	**TOTAL**

VII. Allegations

There were no allegations in this audit period.

VIII. Reported Events

In November 2005 a user of generally licensed material reported the loss of a Ni-63 foil source. A manufacturers' representative removed the old source and the company's radiation safety officer sent it to a broker for disposal. On arrival at the broker's location it was discovered that the Ni-63 foil was missing. A thorough search of the user's offices and brokers site did not recover the source. This incident is closed.

IX. Machines

The RAM Program has been tasked with inspecting accelerators and industrial X-ray machines.

REGISTRANTS					CATEGORY	INSPECTION FREQUENCY IN YEARS
2002	**2003**	**2004**	**2005**	**2006**		
35	64	45	44	49	Analytical X-Ray Machines	3
11	30	30	31	31	Cabinet X-Ray Systems	3
16	14	11	11	11	Industrial X-Ray Systems	1
11	22	22	22	22	Medical Accelerators	3
4	7	10	11	10	Non-Medical Accelerators	3
2	4	0	0	0	Self-Shielded Particle Accelerators	3
2	3	1	1	0	Walk-In X-Ray Cabinets	3
0	0	0	1	2	Electron Microscope	3
0	0	0	1	2	Sterilization	3
0	0	0	2	4	Baggage X-Ray	3
0	0	0	1	8	X-Ray Fluorescent	3
81	**144**	**119**	**125**	**139**	**TOTAL**	

X. Department of Transportation Exemptions

IDPH issued one U.S. Department of Transportation exemption in this reporting period. Shipments of scrap metal that alarm detectors at processing plants or scrap yards in Iowa are required to have authorization for their return to the state of origin. Upon return, the responsible state radiological program must assist the shipper in identifying the cause of the alarm.

There were no shipments returned to Iowa in the audit period.

XI. Industrial Radiography Certification Testing

Ramona Ubaldo continues to provide outstanding administrative control of the industrial radiography certification program. The following table summarizes those efforts:

RADIOGRAPHY CERTIFICATION EXAMINATIONS				
Year	**Radioactive Material**	**X-Ray**	**Both**	**Total**
2002	7	8	20	**35**
2003	0	0	20	**20**
2004	10	15	25	**50**
2005	4	6	10	**20**
2006	10	15	39	**64**

XII. Rules

Amended administrative rules went into effect in May 2006. This change addressed 10 CFR Part 35, Subpart J changes.

In October 2006, as is its practice, the BRH will initiate another rule amendment process.

XIII. Revenues

Radioactive materials licenses are issued for five years. Inspection frequencies vary but are primarily between one and five years[1]. To grasp the ebbs and flows of the cycles, the specific license revenues for the past five years are listed in the table below. Records of previous year's data are maintained in hardcopy files located with the Bureau.

	NEW	RENEWAL	AMENDMENT	RECIPROCITY	INSPECTION	TOTAL
2002	10,900	44,550	31,115	44,800	172,162	303,527
2003	**20,060**	43,370	**29,725**	67,900	149,907	310,962
2004	10,260	**52,470**	21,275	62,400	151,548	297,953
2005 (6 MO)	12,000	41,202	8,550	32,600	33,739	130,096
2006	17,460	52,344	23,475	**72,100**	**193,593**	**358,972**
TOTAL	**70,680**	**233,936**	**114,140**	**279,800**	**700,949**	**1,401,810**

Radiation producing machines and radioactive material general license registrations are renewed annually. Inspection cycles vary based on the type of machine.

	MACHINE	GENERAL LICENSE	INSPECTION	TOTAL
2006	24,254	22,350	1,400	48,004
TOTAL	**24,254**	**22,350**	**1,400**	**48,004**

[1] Pacemaker By-Product and X-Ray Fluorescent Analyzers are on a seven-year cycle.

TANNING PROGRAM

I. Staffing

Charlene Craig oversees the registration and inspection process and conducts inspections and county inspector training.

II. Training

Charlene Craig conducted training of county inspectors. Two group update sessions were held and 2 individual county inspectors were trained.

III. Facility Registration

Approximately 1400 tanning facilities were registered in 2005 with approximately 155 of those new facilities. Each facility is billed and a receipt sent back. All owner/managers complete a monitored exam before the permit is issued. Exams are given by the county health departments and submitted as part of the registration process.

IV. Inspections

The county health departments through contracts with IDPH perform inspections of tanning facilities. In 2005 Charlene Craig performed 38 inspections in counties without contracts. All inspections are annual and have been completed within the audit period.

V. Rules

Rules setting a minimum age for operators and requiring review training every 5 years, became effective May 2004. No changes were made in May, 2005. Rules requiring posting of health warnings and the photosensitizing drug list went into effect in May, 2006.

RADIATION MACHINES PROGRAM

I. Staffing

David Myers and Paul E. Koehn conduct X-ray inspections, investigations, and shielding evaluations. Charlene Craig reviews shielding evaluations and oversees the registration process.

II. X-ray Machine Registrations

Approximately 2700 facilities and 7500 x-ray units were registered. This includes new facilities and renewal of existing facilities. 83 new facilities were registered. Each facility is billed and a receipt sent back upon collection of fees.

III. X-ray Machine Inspections

David Myers inspected 250 X-ray units in 62 facilities and Paul E. Koehn inspected 11 tubes in 7 facilities. During this period, approximately 40 percent of the inspections found a non-compliance.

IV. Gas Delivery System Inspections

Under a 28E Agreement with the Iowa Dental Board, numerous gas delivery systems are inspected annually. The maximum yearly amount of reimbursement is $5000.00.

V. Shielding Evaluations

Shielding evaluations were performed for facilities that have installed new-X-ray equipment or have remodeled existing spaces. The evaluation involved review and calculation of workload, distance, barrier composition, etc. Approximately 290 reviews were completed (90 percent by David Myers, 5 percent by Charlene Craig and 5 percent by Paul E. Koehn).

VI. Rules

IDPH rules were amended effective May 2006, to reflect changes in Suggested State Regulations for the Control of Radiation (SSRCR's), which are provided by the Conference of Radiation Control Program Directors (CRCPD).

RADON PROGRAM

The Iowa Radon Program (IRP) program reviews and approves information from individuals or companies seeking certification as a radon measurement specialist or laboratory. It also reviews and approves information from individuals seeking credentials for radon mitigation installations or a license to correct indoor radon problems. It also consults and supplies information on radon to the public and approves training courses and exams from the private sector.

I. Staffing

The IRP is situated in the Bureau of Radiological Health within the Division of Environmental Health. Radon staffing consists of a Division Director, a Bureau Chief, a State Program Coordinator, and a Secretary I. Staffing consists of the following:

Position	SIRG FTE	MATCH FTE
Bureau Chief		0.10
Program Coordinator	0.50	0.50
Secretary I	0.50	.13
Total FTE's	**1.00**	**0.73**

II. State Indoor Radon Grant

The 2005-2006 State Indoor Radon Grant (SIRG) completed its sixteenth year and was designed to target specific radon issues in the state. The Work Plan Review Table located in the Program Review section summarizes and links the EPA Strategic Plan to EPA's specific goal, "Clean Air and Global Climate Change" with the objective for healthier indoor air. Iowa is unique in that the entire state is designated as Zone One and leads the nation in the number of homes with the potential for 72% of the homes to be above EPA's recommended action level of 4.0 pCi/l. Lung cancer statistics in Iowa show that approximately 1,700 patients are diagnosed with lung cancer each year. EPA estimates there are 21,500 lung cancers each year caused by radon. Since Iowa has approximately 1% of the U.S. population, it is estimated that at least 200 lung cancers in Iowa are caused by radon exposure each year. Therefore, an emphasis to educate the public about radon, getting buildings tested, and having radon reduction measures correctly understood and implemented are important components to the SIRG, the Iowa Radon Program, and the Iowa Air Coalition (IAC).

III. Funding

Funding for the Iowa Radon Program in 2005-2006 was generated from funds received by SIRG. Below is a budget summary for line items authorized to be received by IDPH and used as match under the 2005-2006 SIRG. From 2005-2006 the Iowa Department of Health

was authorized a total of $364,429. The Iowa Air Coalition (IAC) received 70% of the total funds and the Midwest Universities Radon Consortium received 3% under contract with IAC.

Line Item	SIRG	Match	Total
Personnel	$51,061	$47,016	$98,077
Fringe Benefits	13,276	12,224	25,500
Travel	4,000	-0-	4,000
Equipment	3,000	-0-	3,000
Supplies	5,000	-0-	5,000
Contractual Services	267,508	329,441	596,949
Other	4,500	-0-	4,500
Total Direct Costs	$348,345	$388,681	$737,026
Indirect Costs	16,084	14,810	30,894
Total Costs	**$364,429**	**$403,491**	**$767,920**

IV. Radon Laboratory Certification

Presently, there are ten Radon Measurement Laboratories certified or licensed in Iowa. Radon measurement laboratories are certified to perform analysis of radon testing devices sold to the public through retail and telephone sales and to professional radon testing specialists under rental and contractual agreements. Currently, out of the ten certified laboratories, there are six certifiable methods used for measuring radon in air. One laboratory also measures radon in water, but the method is not certifiable according to Iowa law. The six methods currently certified to be in use for measuring radon in air are as follows:

Radon Test Methods and Units in Which Units Are Reported

AT Alpha-Track Detection (pCi/L)
CC Activated Charcoal Absorption (pCi/L)
CR Continuous Radon Monitoring (pCi/L)
CW Continuous Working-Level Monitoring (WL)
EP Electret-Ion Chamber (pCi/L)
LS Charcoal Liquid Scintillation (pCi/L)

V. Radon Measurement Certification

Radon measurement is the fastest growing business for the entire radon industry in Iowa. Approximately two-three new licenses are issued each month. Many home inspection professionals and contractors have acquired a license to test for radon in Iowa. This is occurring since many home real-estate transactions are contingent upon the results of a radon measurement, even though no law exists that requires a radon test prior to a home's purchase. The primary method used for measuring indoor radon levels during real-estate

transactions is a continuous radon monitor. Continuous radon monitors are capable of producing an hour-by-hour printout of the radon level, and can also calculate the average.

Presently, there are 68 radon measurement specialists certified or licensed to perform radon measurements in Iowa. Radon measurement specialists perform radon testing by placing and retrieving testing devices approved by the department and the Environmental Protection Agency.
Radon measurement specialists in Iowa use the following methods for measuring radon in air:

CR Continuous Radon Monitoring (pCi/L)
CC Activated Charcoal Absorption (pCi/L)
AT Alpha-Track Detection (pCi/L)
EP Electret-Ion Chamber (pCi/L)
LS Charcoal Liquid Scintillation (pCi/L)

VI. Radon Mitigation Credentialing

Radon mitigation or the reduction of indoor radon levels is the largest contractual business for the Iowa radon industry. Approximately one new license is issued each month. Some radon mitigation specialists also obtain a license to measure radon. Professional radon mitigation contractors acquire a large degree of knowledge in the area of building sciences and home ventilation practices. Presently, there are 47 radon mitigation specialists credentialed or licensed to perform radon mitigations in Iowa. All Iowa radon mitigation specialists are credentialed or licensed by the department:

Radon mitigation occurs mostly when real-estate transactions take place and when homeowners decide they are in need of radon mitigation based upon the results of a radon measurement. The primary methods used for mitigating indoor radon levels are called sub-soil depressurization (SSD), and sub-membrane depressurization (or SMD). A large portion of radon mitigation is performed by rerouting radon underneath a basement floor, membrane, or wall, through a PVC pipe system to an outdoor area where it can easily dissipate. Safety for the home occupant and mitigation specialist is a primary concern and specific requirements for an acceptable installation is well documented in the EPA Radon Mitigation Standards document and in other EPA manuals. After a radon mitigation system is installed a follow-up radon measurement should be performed to verify the radon level and that radon has been reduced to an acceptable level below the EPA action level (< 4pCi/L). Continuous radon monitors are generally used for this purpose.

VII. Initial Training

MURC provided two combined "Radon Measurement Proficiency and Radon Mitigation Contractor Proficiency" training and/or a combination of continuing education courses during the grant year. Training provided by MURC is also available to IAC members at a

reduced cost. The number of private persons receiving training each year has dramatically increased. This is also leading to a substantial increase in persons applying for radon measurement certification and radon mitigation credentialing. During the measurement course, the IRP provides a discussion for what is involved in obtaining a license to measure in Iowa, and during the mitigation course the IRP provides a discussion for what is involved in obtaining a license to mitigate and also locates a home near the course location for a mitigation course diagnostics demonstration.

VIII. Continuing Education

Continuing Education (CE) was provided by MURC and the IRP during the initial training course. A CE course entitled "Inspecting Radon Mitigation Systems" was provided during the 04-05 grant year and initial training review segments were provided during the 05-06 grant period. CEU credits are also available online through the Western Regional Radon Training Center. CEU courses are now funded in whole by the course participants as SIRG funds for initial training and CEU credits is no longer available.

IX. Iowa Air Coalition

The Indoor Air Coalition (IAC) membership represents state, county, city, other government agencies, and one Tribal Organization. It has formal and informal contacts with other local organizations and officials to increase the effectiveness of radon awareness activities in Iowa.

The total number of counties in the IAC is now 60. This is an increase of seven counties from the previous year. In addition, four cities, one tribal organization, and four other agencies or non-funded organizations belong to the IAC. During the grant period, the IAC coordinator made personal visits to various coalition areas to discuss promotional items, logos and programs. Members of IAC also conducted radio interviews, placed newspaper advertisements and Public Service Announcements on radon. During the 05-06 SIRG period, they also provided free radon test kits, promotional items, carbon monoxide alarms, and educational brochures about radon and other IAQ issues to the public. IAC provides ongoing advertising for radon awareness and RRNC throughout the state through the LINK (an electronic service that transmits press releases directly into newsrooms, newspapers, wire services, radio, and TV stations).

The IAC also provided an exhibit at the Des Moines Home Show in January, and the Iowa Environmental Health Association/Iowa Public Health Association joint spring conference in March 2006. This was the seventh year in a row that IAC had an exhibit at this event. Other IAC public awareness activities included bike rides, radon presentations, parades, fair demonstrations, media campaigns, contactor meetings, and mini-grants. Mini-grant funds are provided to IAC members counties or cities for specific activities tailored to their localities. The grants have significantly expanded the overall effectiveness of the IAC's radon awareness activities. The coalition will also continue its day-to-day sale of radon test

kits through a toll-free number where the public can call to obtain low cost, short and long-term radon test kits.

Iowa Air Coalition public awareness activities for this year are also compiled as a yearly total into a Public Awareness Chart (below). Iowa Air Coalition activities included home shows, fairs, displays, radio and newspaper advertisements, presentations, television and radio interviews, and billboards. Over this grant period, greater than 3 million people were further educated concerning the health risk from being exposed to radon and educated in the various methods to reduce their exposures in existing homes and new construction.

Iowa Air Coalition
Public Activities Awareness Chart

Home Shows/Fairs/ Displays	**Count**	**Attendance**	**Evaluating Results**
	37	124,260	Thousands of handouts were picked up at the tables, thousands of people read the display without taking handouts.
Radio Advertisements	**Runs**	**Listener ship**	**Evaluating Results**
	812	735,000	Contributed to 9,000 test kits being distributed by the Iowa Air Coalition. Distribution of RRNC materials.
Newspaper Advertisements	**Ads**	**Circulation**	**Evaluating Results**
	343	2,078,230	Contributed to 9,000 test kits being distributed by the coalition. Distribution of RRNC materials.
Presentations	**Count**	**Attendance**	**Evaluating Results**
	33	1,018	Evaluations were used at most presentations and always showed an increase in knowledge about radon. RRNC materials distributed.
T.V. and radio Interviews	**Count**	**Viewers**	**Evaluating Results**
	3	400,000	Contributed to 9,000 test kits being distributed by the Iowa Air Coalition. General radon awareness. At least one Cedar Rapids high school added radon education to their curriculum.
Billboard	**Count**	**Viewers**	**Evaluating Results**
	2	Unknown	General radon awareness.

X. Measurement and Mitigation Data

Measurement data is obtained from certified radon measurement specialists, and radon measurement laboratories and incorporated into the radon database each month. Mitigation data is also obtained from credentialed radon mitigation specialists during their renewal and incorporated into the radon mitigation database. This information is also provided to EPA each quarter.

The total amount of radon tests conducted for 2005 was 15,999 and the total amount conducted from January-June 2006 is presently 11,860. All data received from 1989-2000 includes pre-mitigation and post-mitigation results and data received from 2001-to present can separate pre and post mitigation test results. However, some laboratories do not question individual consumers for this information, so data received from these laboratories still does not distinguish whether-or-not mitigation has been performed. An analysis of 52,312 pre-mitigation tests results received from 2001-2005 shows that approximately 52% of the results are < 4 pCi/L and 48 % of the results ≥ 4 pCi/L. A margin of error in reporting these percentages is certain, as some data still includes post-mitigation results. After compiling data with a margin of error for 2001-2005, the data shows approximately 50% of the tests results are < 4 pCi/L and 50 % of the results are ≥ 4 pCi/L. This is also being reported by measurement specialist in the field, as even greater than 50% of their radon test results are ≥ 4 pCi/L.

Radon measurement information is also available on the radon program website at http://www.idph.state.ia.us/eh/radon.asp. The information or data was obtained from certified radon measurement specialist and laboratories submitting data from 1990-2005. A map by zip code shows where radon levels greater than 4 pCi/L, 10 pCi/L, 20 pCi/L, 50 pCi/L, and 100 pCi/L were found. However, they do not give a reliable assessment of the average radon level or an accurate percentage of high and low radon levels that were found. The map is updated each year by Information Management in a request by the Iowa Radon Program.

The number of mitigation systems installed for the 2005-2006 grant period presently totals 1,439. The total active mitigation systems or subsoil depressurization systems installed has already increased by 38 percent from last year. Some credentialed mitigation specialists have not yet renewed, so the number of mitigation installations for this period will increase.

XI. Real Estate

The Iowa Real Estate Commission implemented a rule change that requires disclosure of radon test results during real estate transactions effective July 1, 1994. Although they may comply with the rules, many real estate professionals still do not accept the fact that Iowa leads the nation in the number of homes that could test above the EPA recommended action level. In 2001, the Board of Realtors in Cedar Rapids, Iowa, required all homes to have a radon test performed as part of the real estate transaction, and mandated that a radon test and home inspection paragraph be included in the purchase agreement.

The department continues to work with real estate professionals through continuing education workshops and by providing other types of IAQ technical assistance upon request. Most real estate workshops are coordinated by IAC, and are being provided based upon requests received from the real estate industry. The IAC and the IRP will continue its efforts to encourage this training. On April 26 a Cherokee County representative provided radon

information at a continuing education session attended by eighteen realtors from four counties in NW Iowa.

We are striving to get mortgage companies to require radon testing just as they do with termite inspections. The IDPH and the Iowa Air Coalition are positioning a strategy on educating individuals about radon in real estate transactions, and are extending their focus to include lending institutions or mortgage institutions along side reality companies and individual reality groups. Local realtors in Muscatine, Iowa added a radon test question to their purchase agreements that asks the buyer to test for radon prior to a purchase.

XII. Radon Resistant New Construction (RRNC)

The installation of RRNC features is desperately needed in all new residences in Iowa. The IAC and the IRP continues to work with building contractors, as the SIRG emphasizes RRNC practices in Zone 1 areas. An important component of setting goals for radon reduction is to ensure that building contractors have had the opportunity to be trained in the standards and requirements in Appendix F of the International Building Code for new construction. Appendix F outlines RRNC features to be installed during the construction of new residential buildings.

The IRP and IAC continue to educate homebuilders and new homebuyers on radon resistant new construction standards. The IRP is also working toward the goal for developing a method on how to acquire the proper radon resistant new home construction database for meeting an EPA (MMM) goal. The following counties gave presentations and helped educate the general public about radon testing and mitigation in new and existing homes. ADLM Counties held their annual contractors meeting where 78 people attended. Contractors were given information on radon tests results in the 4 county areas and how to install RRNC features. Chickasaw County held a RRNC workshop in May where 7 people attended. The City of Council Bluffs held a contractors meeting in June where RRNC was promoted and discussed. The City of Muscatine held a training session for builders, developers, realtors, and mechanical contractors concerning RRNC; where approximately 40 people attended. A Greene County representative indicates a developer is going to build 14 new homes with RRNC features. He also met with 9 contractors concerning RRNC. A Linn County representative spoke to two people building homes and 38 contactors concerning RRNC and attended the State Building Advisory Council meeting in June. Mills County combined with Pottawattamie County and held a contactors meeting in June where 27 people attended. Page County organized a workshop for 25 contractors and only two contractors attended.

The cities of Harlan, Muscatine, Iowa City, and North Liberty have all adopted radon resistant new construction standards for all homes and apartment complexes constructed within its' jurisdiction. The Counties of Johnson, Muscatine, and Shelby now require RRNC standards by adopting Appendix F of the International Building Code into their county ordinances. The department continues to work toward the implementation of radon-resistant new construction standards.

Presently, we are working toward incorporating Appendix F into the state building code and having local governments adopt Appendix F into their own ordinances. On June 6, 2006, the grant project director and two members of IAC gave a presentation to the State Building Code Advisory Council concerning the risk of exposure to radon, the proper RRNC techniques, and the costs associated with incorporating RRNC features. If RRNC features are adopted into the state building codes, it will provide a catalyst to have local governments adopt Appendix F into their local ordinances. It will also provide a legal precedence to the code and force builders to follow the proper techniques. Currently, a response has been drafted to the Iowa Home builders Association concerning their remarks and questions after the presentation was given to the

Building Advisory Council. The Iowa Department of Public Safety who is responsible for the State Building Code is currently surveying members on the council for their feedback and acceptance to adopt Appendix F. At this time, a final decision has not been made concerning the adoption of Appendix F.

Information from cities and counties that have adopted Appendix F of the International Building Code is categorized into single-family and double-family housing units. Available data for the amount of homes built with RRNC features in the fourth quarter is in Table 1 below. Available data for the amount of homes built with RRNC features in the 2005-2006 grant period is in the Table 1 below.

TABLE 1
(2005-2006)

Homes Built with RRNC Features According to Appendix F "International Building Code"			
July 2005 - June 2006			
City of	Single Family	Duplex or MF	Total
Coralville	96	4	100
Iowa City	139	18	157
North Liberty	180	145	325
Muscatine	29	14	43
Harlan	12	6	18
County*	Single Family	Duplex or MF	Total
Muscatine	50	2	52
Shelby	19	3	22
Johnson	15	0	15
Greene	2	NA	2
Totals	542	192	734

* Records are for unincorporated areas

IDPH continues to provide technical information in response to corporations, county and city health departments, homeowners, and building contractors. Upon request, the following written information was provided by IDPH to persons inquiring about radon in new construction for the 2005-2006 grant period:

169 – Building Radon Out: A Step by-Step Guide on How to Build Radon Resistant Homes
8 – EPA Model Stdrs. & Tech. Control/Radon New Residential Bldgs.
13 – Radon Resistant New Construction in Homes

XIII. Day Care Centers

The Iowa Department of Human Services implemented a rule change that requires day care centers to test for environmental pollutants before obtaining a license effective July 1, 1998. The specific component for radon requires testing every two years. If elevated radon levels are detected, the day care centers must work with the IDPH to develop and implement an approved plan of action. The department continues to work with the Iowa Department of Human Services and day care providers to make sure that appropriate action is taken. The IRP has also implemented a self-paced training module specific for day care providers so that training and information for day care providers can be more readily available.

XIV. Schools

The IAC works with school administrations individually and through the AEAs to train school personnel in radon. In addition to the coalition activities, the department works with MURC to develop and implement any radon testing and other IAQ information for schools.

IDPH also provides technical information to schools upon request. During this year no requests were made about measuring radon in schools or performing remedial work in school buildings. However, a plan to research the amount of past testing in schools and the amount of follow-up in schools is being discussed.

Future meetings with members of the IAC will involve further training seminars for schools and daycare providers located in Iowa. The coordination of this information will be discussed with EPA and the regional training centers to provide additional training to various schools and the development of a school radon testing and mitigation implementation programs throughout Iowa.

XV. Radon In Water

The department continues to monitor the EPA development and implementation of radon in water criteria for MMM related objectives and goals. In addition, IDPH is working with the

IDNR to provide technical assistance when necessary. If MMM mandates for radon in water are finalized, the IDNR will be required to seek further assistance from the IDPH radon program.

XVI. Radon Consultations and Brochures

During the 2005-2006 grant period, IDPH received 3,290 calls concerning radon and other IAQ questions. Radon calls totaled 2,299 and were received primarily for obtaining technical assistance about radon, general radon information packets, and special radon brochures or orders. There were 1,072 requests for general radon information packets, and 1,037 special orders for obtaining other radon and IAQ brochures. Fifty-three mold packets were also sent out to people seeking mold information, although mold packets are no longer being sent out to individual homeowners. The mold packets were sent out during the first through third quarters of the year.

XVII. EPA Performance Reports and Evaluations

IRP submits a quarterly report concerning IRP and IAC activities each quarter to the EPA regional office. The fourth quarter report also includes all quarters and is expanded to include an annual report. The IRP also participates with the EPA project officer in the mid-year and end-of-year reviews. These reviews serve as the performance evaluations for the grant period. Performance evaluations for the mid-year review conducted on January 25, 2006, and the end-of-year review conducted on July 12, 2006, were both deemed satisfactory by EPA.

XVIII. Rules

In 1988, the Code of Iowa Chapter 136B, "Radon Testing" was signed into law. *Iowa Administrative Code* 641—Chapter 43, "Minimum Requirements for Radon Testing and Analysis," was adopted. It established requirements for the certification of radon measurement specialists and radon measurement laboratories:

All persons performing measurements for radon or radon progeny in buildings, other than those which they own or occupy, and who provide the results of these measurements to the owner or occupant of these structures must be certified in accordance with the provisions of this chapter. IAC 641--43.1(136B)

Code of Iowa Chapter 136B was amended in 1989, and Iowa Administrative Code 641—Chapter 44 "Minimum Requirements for Radon Mitigation" was adopted and implemented to establish requirements for the credentialing of radon mitigation specialists. The administrative code includes the following statement:

All persons performing abatement for radon or radon progeny in buildings, other than those, which they occupy, or those they are constructing for their own occupancy, must be credentialed in accordance with the provisions of this chapter. Certified mitigation specialists are responsible for ensuring that all radon mitigation systems for which they are responsible are installed following acceptable guidelines. IAC 641-44.1(136B)

These provisions enable the IDPH to regulate the radon testing and mitigation industry as it relates to Iowa residents. Currently, the Iowa Radon Program licenses analytical radon laboratories, radon measurement specialists, and radon mitigation specialists.

Administrative rule changes for radon measurement and radon mitigation have been made and a public hearing was held on August 22, 2006. No inspection and fee changes were included as part of the intended rule changes. Inspection and fee changes are scheduled to be incorporated the following year. However, significant changes to the measurement and mitigation rules do address continuing education, certification or licensing procedures, and standard mitigation practices. Adoption of the rule changes will eliminate gray areas and allow the IRP to incorporate enforcement practices with unacceptable standard measurement and mitigation practices. Some changes will also allow IRP to more clearly define initial certification and renewal of certification procedures.

_____ Date_____

Donald A. Flater, Chief

_____ Date_____

Daniel K. McGhee, Coordinator (RAM)

_____ Date_____

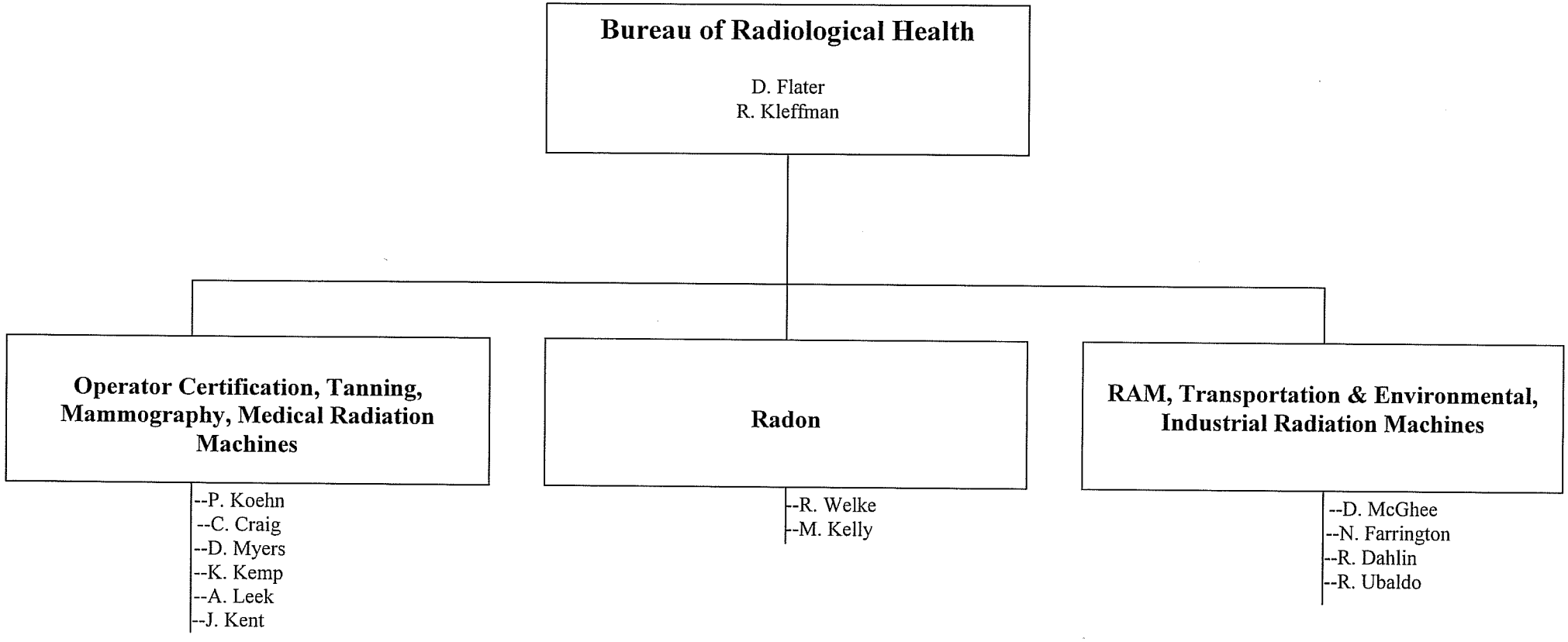
Paul E. Koehn, Coordinator (X-Ray)

_____ Date_____

Rick Welke, Coordinator (Radon)

Appendix A

BUREAU ORGANIZATION CHART



Appendix B

List of Acronyms

BRH	Iowa Bureau of Radiological Health
EPA	Environmental Protection Agency
FFA	Federal Facilities Agreement
FDA	Food and Drug Administration
GL	General License
IAAAP	Iowa Army Ammunition Plant
IAC	Iowa Air Coalition
IDNR	Iowa Department of Natural Resources
IDPH	Iowa Department of Public Health
IMPEP	Integrated Materials Performance Evaluation Program
IRP	Iowa Radon Program
MURC	Midwest Universities Radon Consortium
NRC	Nuclear Regulatory Commission
RAM	Radioactive Materials
SIRG	State Indoor Radon Grant

TRANSMITTAL MEMORANDUM

Date: September 18, 2007

To: Mary Hansen, Director, IDPH
Tom Newton, Division Director HP & EH
Kathy Franke, FDA
James Lynch, NRC
Lloyd Bolling, NRC
Scotty Hargrave, FDA
Robert Dye, EPA
Lynn Patterson, IDPH
Lisa Sattler, CSG

FROM: Donald A. Flater, Chief
Iowa Bureau of Radiological Health
515-281-3478

RE: 2006 Bureau Self Audit

In order to be aware of the accomplishments of the Bureau for 2006, staff has conducted a self-audit of all programs with the Iowa Bureau of Radiological Health. With encouragement from Federal Agencies, the Bureau's self-audit process started with the calendar year of 2002. You will note that this audit covers **July 1, 2005 through June 30, 2006**. This change was instituted by BRH staff so that future audits would be synchronized with the state fiscal year of July to June.

We have provided a copy of the Audit Report for your perusal. Any comments you can provide to increase the usefulness of the document in future years would be welcomed.

If you have questions regarding the Audit Report, please contact me.