TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 3 RADIATION PROTECTION
PART 5 RADIATION SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHIC OPERATIONS

20.3.5.1 ISSUING AGENCY: Environmental Improvement Board.
[20.3.5.1 NMAC - N, 5/19/02]

20.3.5.2 SCOPE: The regulations in this part apply to all licensees or registrants who use sources of radiation for industrial radiography. Except for those regulations of this Part clearly applicable only to sealed radioactive sources, both radiation machine and sealed radioactive sources are covered by this part. The requirements of this part are in addition to, and not in substitution for, other applicable requirements of 20.3 NMAC.
[20.3.5.2 NMAC - Rp, 20 NMAC 3.1.5.501, 5/19/02]

20.3.5.3 STATUTORY AUTHORITY: Sections 74-1-8, 74-1-9, 74-3-5, and 74-3-9 NMSA 1978.
[20.3.5.3 NMAC - N, 5/19/02]

20.3.5.4 DURATION: Permanent.
[20.3.5.4 NMAC - N, 5/19/02]

20.3.5.5 EFFECTIVE DATE: May 19, 2002, unless a later date is cited at the end of a section.
[20.3.5.5 NMAC - N, 5/19/02]

20.3.5.6 OBJECTIVE: To establish radiation safety requirements for both radiation machines and sealed radioactive sources used for industrial radiography.
[20.3.5.6 NMAC - Rp, 20 NMAC 3.1.5.500, 5/19/02]

20.3.5.7 DEFINITIONS: As used in this Part, the following apply:

A. "ALARA" (acronym for "as low as is reasonably achievable") means making every reasonable effort to maintain exposures to radiation as far below the dose limits specified in Part 4 of 20.3 NMAC as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of radiation and licensed materials in the public interest;

B. "Annual refresher safety training" means a review conducted or provided by the licensee or registrant for its employees on radiation safety aspects of industrial radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, new or revised regulations, accidents or errors that have been observed, and should also provide opportunities for employees to ask safety questions;

C. "Associated equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides, or comes in contact with the source, (e.g., guide tube, control tube, control (drive) cable, removable source stop, "J" tube and collimator when it is used as an exposure head;

D. "Becquerel" (Bq) means one disintegration per second;

E. "Cabinet radiography" means industrial radiography conducted in an enclosure or cabinet shielded so that radiation levels at every location on the exterior meet the limitations specified in 20.3.4.406 NMAC;

F. "Cabinet x-ray system" means an x-ray system with the x-ray tube installed in an enclosure (hereinafter termed "Cabinet") which, independently of existing architectural structures except the floor on which it may be placed, is intended to contain at least that portion of a material thing irradiated, provide radiation attenuation, and exclude personnel from its interior during generation of x-radiation. Included are all x-ray systems designed primarily for the inspection of carry-on baggage at airline, railroad, and bus terminals, and in similar facilities. An x-ray tube used within a shielded part of a building, or x-ray equipment that may temporarily or occasionally incorporate portable shielding is not considered a cabinet x-ray system;

G. "Certified cabinet x-ray system" means an x-ray system which has been certified in accordance with 21 CFR 1010.2 as being manufactured and assembled pursuant to the provisions of 21 CFR 1020.40;

H. "Certifying Entity" means an independent certifying organization meeting the requirements in 20.3.5.12 NMAC or an Agreement State meeting the requirements in 20.3.5.12 NMAC;

I. “Collimator” means a radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure;

J. “Control (drive) cable” means the cable that is connected to the source assembly and used to drive the source to and from the exposure location;

K. “Control drive mechanism” means a device that enables the source assembly to be moved to and from the exposure device;

L. “Control tube” means a protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device;

M. “Exposure head” means a device that locates the gamma radiography sealed source in the selected working position. (an exposure head is also known as a source stop);

N. “Field station” means a facility where licensed material or registered machines may be stored or used, and from which equipment is dispatched;

O. “Gray” means the SI unit of absorbed dose; one gray is equal to an absorbed dose of 1 Joule/kilogram. It is also equal to 100 rads;

P. “Guide tube” (Projection sheath) means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the exposure device to the exposure head; the guide tube may also include the connections necessary for attachment to the exposure device and to the exposure head;

Q. “Hands-on experience” means experience in all of those areas considered to be directly involved in the radiography process;

R. “Independent certifying organization” means an independent organization that meets all of the criteria of 20.3.5.12 NMAC;

S. “Industrial radiography” means the examination of the macroscopic structure of materials by nondestructive methods using sources of ionizing radiation to produce radiographic images;

T. “Lixiscope” means a portable light-intensified imaging device using a sealed source;

U. “Permanent radiographic installation” means an enclosed shielded room, cell, or vault, not located at a temporary jobsite, in which radiography is performed;

V. “Personal supervision” means guidance and instruction to a radiographer trainee by a radiographer instructor who is present at the site, in visual contact with the trainee while the trainee is using sources of radiation, and in such proximity that immediate assistance can be given if required;

W. “Practical examination” means a documented demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures;

X. “Radiation safety officer” (RSO) for industrial radiography means an individual with the responsibility for the overall radiation safety program on behalf of the licensee or registrant and who meets the requirements as specified in Subsection C of 20.3.5.11 NMAC;

Y. “Radiographer” means any individual who performs, or in attendance personally supervises, industrial radiographic operations and who is responsible to the licensee or registrant for assuring compliance with the requirements of these regulations and all license and/or certificate of registration conditions; this individual must meet the training requirements as specified in Subsection B of 20.3.5.11 NMAC;

Z. “Radiographer certification” means written approval received from a certifying entity stating that an individual has satisfactorily met certain established radiation safety, testing, and experience criteria;

AA. “Radiographer instructor” means any radiographer who provides on-the-job training to radiographer trainees in accordance with Subsection D of 20.3.5.11 NMAC;

AB. “Radiographer trainee” means any individual who, under the personal supervision of a radiographer instructor, uses sources of radiation, related handling tools, or radiation survey instruments during the course of his instruction;

AC. “Radiographer's assistant” means any individual who under the direct supervision of a radiographer, uses radiographic exposure devices, sealed sources or related handling tools, or radiation survey instruments in industrial radiography;

AD. “Radiographic exposure device” means any instrument containing a sealed source fastened or contained therein, in which the sealed source or shielding thereof may be moved, or otherwise changed, from a shielded to unshielded position for purposes of making a radiographic exposure;

AE. “Radiographic operations” means all activities performed with a radiographic device, or with a radiation machine; these include however are not limited to activities associated with the use of the device or machine, or transport (except when being transported by a common or contract transport), including surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside restricted area boundaries;

AF. "Radiographic personnel" means any radiographer, radiographer's assistant, radiographer instructor, or radiographer trainee;

AG. "Residential location" means any area where structures in which people lodge or live are located, and the grounds on which structures are located including, but not limited to, houses, apartments, condominiums, and garages;

AH. "S-tube" means a tube through which the radioactive source travels when inside a radiographic exposure device;

AI. "Sealed source" means any byproduct material that is encased in a capsule designed to prevent leakage or escape of the byproduct material;

AJ. "Shielded position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement;

AK. "Shielded-room radiography" means industrial radiography conducted in an enclosed room, the interior of which is not occupied during radiographic operations, which is shielded so that radiation levels at every location on the exterior meet the limitations specified in 20.3.4.406 NMAC;

AL. "sievert" (Sv) means the SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rems);

AM. "Source assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable; the source assembly may also include a stop ball used to secure the source in the shielded position;

AN. "Source changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those source changers also used for transporting and storage of sealed sources;

AO. "Storage area" means any location, facility, or vehicle which is used to store, to transport, or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent accidental exposure, tampering with, or unauthorized removal of the device, container, or source;

AP. "Storage container" means a shielded device in which sealed sources are secured and stored;

AQ. "Temporary job site" means any location where industrial radiography is performed and where licensed material or X-ray machines may be stored other than the location(s) listed in a specific license or certificate of registration; and

AR. "Transport container" means a package that is designed to provide radiation safety and security when sealed sources are transported and which meets all applicable requirements of the U.S. department of transportation;

AS. "Underwater radiography" means industrial radiography performed when the radiographic exposure device and/or related equipment are beneath the surface of the water.

[20.3.5.7 NMAC - Rp, 20 NMAC 3.1.5.502, 5/19/02]

20.3.5.8 EXEMPTIONS:

A. Except for the requirements of Subsections B and C of 20.3.5.25 NMAC, certified x-ray systems designed to exclude individuals from the interior of the cabinet are exempt from the requirements of this part.

B. Industrial uses of lixiscopes are exempt from the requirements of this part.

[20.3.5.8 NMAC - Rp, 20 NMAC 3.1.5.503, 5/19/02]

20.3.5.9 PROHIBITIONS: Industrial radiography performed with a sealed source that is not fastened to or contained in a radiographic exposure device, known as fish pole radiography, is prohibited unless specifically authorized in a license issued by the department.

[20.3.5.9 NMAC - Rp, 20 NMAC 3.1.5.526, 5/19/02]

20.3.5.10 SPECIFIC LICENSE FOR INDUSTRIAL RADIOGRAPHY: An application for a specific license for the use of licensed material in industrial radiography will be approved if the applicant meets the following requirements:

A. The applicant satisfies the general requirements specified in Part 3 of 20.3 NMAC for byproduct material, as appropriate, and any special requirements contained in this part.

B. An application for a specific license of category 1 and category 2 quantities of radioactive material shall comply with 10 CFR 37. The licensee shall comply with 10 CFR 37 except as follows:

(1) any reference to the commission or NRC shall be deemed a reference to the department;

(2) 10 CFR 37.5 definitions of agreement state, byproduct material, commission and person shall not be applicable;

(3) 10 CFR 37.7, 10 CFR 37.9, 10 CFR 37.11(a) and (b), 10 CFR 37.13, 10 CFR 37.71, 10 CFR 37.105, and 10 CFR 37.107 shall not be applicable; and

(4) for any reporting or notification requirements that the licensee must follow in 10 CFR 37.45, 10 CFR 37.57, 10 CFR 37.77(a) through (d), and 10 CFR 37.81 the licensee shall use the following address: New Mexico Environment Department/RCB, P.O. Box 5469, Santa Fe, NM 87502-5469 address information.

C. The applicant submits an adequate program for training radiographers and radiographers' assistants that meets the requirements of Paragraph (1) of Subsection A of 20.3.5.11 NMAC. License applicants need not describe the initial training and examination program for radiographers in the subjects outlined in Paragraph (1) of Subsection A of 20.3.5.11 NMAC.

D. The applicant submits procedures for verifying and documenting the certification status of radiographers and for ensuring that the certification of individuals acting as radiographers remains valid.

E. The applicant submits written operating and emergency procedures as described in 20.3.5.29 NMAC.

F. The applicant submits a description of a program for inspections of the job performance of each radiographer and radiographers' assistant. The intervals for these performance inspections are not to exceed six months as described in Subsection B of 20.3.5.13 NMAC.

G. The applicant submits a description of the applicant's overall organizational structure as it applies to the radiation safety responsibilities in industrial radiography, including specified delegation of authority and responsibility.

H. The applicant identifies and lists the qualifications of the individual(s) designated as the RSO and potential designees responsible for ensuring that the licensee's radiation safety program is implemented in accordance with approved procedures. Refer to Subsection C of 20.3.5.11 NMAC for RSO qualification requirements.

I. If an applicant intends to perform leak testing of sealed sources or exposure devices containing depleted uranium (DU) shielding, the applicant must describe the procedures for performing and the qualifications of the person(s) authorized to do the leak testing. If the applicant intends to analyze its own wipe samples, the application must include a description of the procedures to be followed. The description must include the:

(1) instruments to be used;

(2) methods of performing the analysis; and

(3) pertinent experience of the person who will analyze the wipe samples.

J. If the applicant intends to perform "in-house" calibrations of survey instruments the applicant must describe methods to be used and the relevant experience of the person(s) who will perform the calibrations. All calibrations must be performed according to the procedures described and at the intervals prescribed in 20.3.5.16 NMAC.

K. The applicant identifies and describes the location(s) of all field stations and permanent radiographic installations.

L. The applicant identifies the location(s) where all records required by this part and other parts of 20.3 NMAC will be maintained. If a license is issued to the applicant, the licensee shall maintain copies of records required by this Part and other applicable Parts of 20.3 NMAC at the specified location(s).

[20.3.5.10 NMAC - N, 5/19/02; A, 06/13/2017]

20.3.5.11 TRAINING AND QUALIFICATION REQUIREMENTS:

A. Radiographer’s assistant. Licensees and registrants may not permit any individual to act as a radiographer's assistant until the requirements of this subsection have been completed. Until completion of these requirements the individual is considered to be a radiographer trainee. Licensees and registrants will have 120 days from the effective date of these regulations to comply with these requirements:

(1) Training shall be provided regarding the fundamentals of radiation safety including:

(a) Characteristics of gamma and X-ray radiation;

(b) Units of radiation dose and quantity of radioactivity;

(c) Hazards of exposure to radiation during radiographic operations, including case histories of accidents in radiography;

(d) Levels of radiation experienced during radiographic operations; and

(e) Methods of controlling radiation dose (time, distance, and shielding).

(f) Proper techniques for use and operation, and limitations of, the specific radiation survey instruments and personnel monitoring equipment used by the licensee or registrant.

(2) The individual has been provided copies of and instruction in the requirements contained in this part, applicable sections of Parts 3, 4, and 10 of 20.3 NMAC, 10 CFR 71 of federal regulations, and conditions of the radioactive materials license or registration under which the radiographer will perform industrial radiography, and the licensee's or registrant's operating and emergency procedures;

(3) The individual has developed competence to use, under the personal supervision of the radiographer or radiographer instructor, the radiographic exposure devices, sealed sources, radiation machines, associated equipment, and radiation survey instruments that the assistant will use; and

(4) The individual has demonstrated understanding of the instructions provided under Paragraph (2) of Subsection A of 20.3.5.11 NMAC by successfully completing a written test on the subjects covered and has demonstrated competence in the use of hardware described in Paragraph (3) of Subsection A of 20.3.5.11 NMAC by successful completion of a practical examination on the use of such hardware.

B. Radiographer. Licensees may not permit any individual to act as a radiographer until the individual has completed the requirements of this subsection. With the exception of Paragraph (3) of Section B of 20.3.5.11 NMAC, licensees and registrants will have 120 days from the effective date of these regulations to comply with these requirements:

(1) The requirements of Subsection A of 20.3.5.11 NMAC; and,

(2) Two months minimum on-the-job training in addition to paragraph (1) of Subsection B of 20.3.5.11 NMAC; and,

(3) Certification through a radiographer certification program by a certifying entity in accordance with the criteria specified in 20.3.5.12 NMAC. Licensees or registrants will have one calendar year from the effective date of these regulations to comply with this requirement. Records of radiographer certification maintained in accordance with Subsection F of 20.3.5.11 NMAC provide appropriate affirmation of meeting this certification requirement; and,

(4) Has demonstrated understanding of the license or registration and the operating and emergency procedures by successful completion of a written or oral examination covering this material; and,

(5) Has received adequate training and has demonstrated understanding in the use of the licensee's or registrant's radiation survey instruments and associated equipment by successful completion of a practical examination covering the following material:

(a) Use, operation, calibration, and limitations of radiation survey instruments; and

(b) Survey techniques; and

(c) Use of personnel monitoring equipment; and

(6) Has received adequate training and has demonstrated understanding in the use of the licensee's or registrant's radiographic exposure devices, sources, radiation machines, and associated equipment by successful completion of a practical examination covering the following material:

(a) Operation and control of radiographic exposure equipment, radiation machines, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtails); and

(b) Storage, control, and disposal of licensed material; and

(c) Inspection and maintenance of equipment.

C. Radiation safety officer (RSO). The licensee may not permit any individual to act as an RSO until the requirements of this subsection have been satisfied. Licensees and registrants will have one year from the effective date of these regulations to comply with these requirements:

(1) The minimum qualifications, training, and experience for RSOs are as follows:

(a) Completion of the training and qualification requirements of Subsection B of 20.3.5.11 NMAC; and

(b) 2000 hours of hands-on experience as a qualified radiographer in industrial radiographic operations; and

(c) Formal training in the establishment and maintenance of a radiation protection program.

(2) The department will consider alternatives to these requirements when the RSO has appropriate training and/or experience in the field of ionizing radiation, and in addition, has adequate formal training with respect to the establishment and maintenance of a radiation safety protection program.

D. Radiographer instructor. No individual shall act as a radiographer instructor unless such individual:

(1) Has met the requirements of Subsection B of 20.3.5.11 NMAC; and

(2) Has 2000 hours of hands-on experience as a qualified radiographer in industrial radiographic operations; and

(3) Has been named as a radiographer instructor on the license or a registration certificate issued by the Department.

E. Annual refresher training. The licensee or registrant shall provide annual refresher training in radiation safety for each radiographer and radiographer's assistant at intervals not to exceed 12 months.

F. Records of training and certification. Each licensee or registrant shall maintain the following records (of training and certification) for 3 years after the record is made:

(1) Records of training of each radiographer and each radiographer's assistant. The record must include radiographer certification documents and verification of certification status, copies of written tests, dates of oral and practical examinations, and names of individuals conducting and receiving the oral and practical examinations; and

(2) Records of annual refresher safety training for each radiographer and each radiographer's assistant. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and names of the instructors and attendees. For inspections of job performance required by Subsection B of 20.3.5.13 NMAC, the records must also include a list showing the items checked and any non-compliances observed by the RSO.

[20.3.5.11 NMAC - Rp, 20 NMAC 3.1.5.515, 5/19/02]

20.3.5.12 REQUIREMENTS FOR AN INDEPENDENT CERTIFYING ORGANIZATION:

A. An independent certifying organization shall:

(1) be an organization such as a society or association, whose members participate in, or have an interest in, the fields of industrial radiography; and

(2) make its membership available to the general public nationwide that is not restricted because of race, color, religion, sex, age, national origin or disability; and

(3) have a certification program open to nonmembers, as well as members; and

(4) be an incorporated, nationally recognized organization, that is involved in setting national standards of practice within its fields of expertise; and

(5) have an adequate staff, a viable system for financing its operations, and a policy-and decision-making review board; and

(6) have a set of written organizational by-laws and policies that provide adequate assurance of lack of conflict of interest and a system for monitoring and enforcing those by-laws and policies; and

(7) have a committee, whose members can carry out their responsibilities impartially, to review and approve the certification guidelines and procedures, and to advise the organization's staff in implementing the certification program; and

(8) have a committee, whose members can carry out their responsibilities impartially, to review complaints against certified individuals and to determine appropriate sanctions; and

(9) have written procedures describing all aspects of its certification program, maintain records of the current status of each individual's certification and the administration of its certification program; and

(10) have procedures to ensure that certified individuals are provided due process with respect to the administration of its certification program, including the process of becoming certified and any sanctions imposed against certified individuals; and

(11) have procedures for proctoring examinations, including qualifications for proctors. These procedures must ensure that the individuals proctoring each examination are not employed by the same company or corporation (or a wholly-owned subsidiary of such company or corporation) as any of the examinees; and

(12) exchange information about certified individuals with other independent certifying organizations, the Department, the U.S. nuclear regulatory commission, and/or Agreement States and allow periodic review of its certification program and related records; and

(13) provide a description to the department of its procedures for choosing examination sites and for providing an appropriate examination environment.

B. Requirements for certification programs. All certification programs must:

(1) require applicants for certification to: a) receive training in the topics set forth in Subsection D of 20.3.5.12 NMAC or equivalent Agreement State regulations; and b) satisfactorily complete a written examination covering these topics; and

(2) require applicants for certification to provide documentation that demonstrates that the applicant has:

(a) received training in the topics set forth in Subsection D of 20.3.5.12 NMAC or equivalent Agreement State regulations;

(b) satisfactorily completed a minimum period of on-the-job training; and

(c) has received verification by an Agreement State or a NRC licensee that the applicant has demonstrated the capability of independently working as a radiographer; and

(3) include procedures to ensure that all examination questions are protected from disclosure; and

(4) include procedures for denying an application, revoking, suspending, and reinstating a certificate; and

(5) provide a certification period of not less than 3 years nor more than 5 years; and

(6) include procedures for renewing certifications and, if the procedures allow renewals without examination, require evidence of recent full-time employment and annual refresher training.

(7) Provide a timely response to inquiries, by telephone or letter, from members of the public, about an individual's certification status.

C. Requirements for written examinations. All examinations must be:

(1) designed to test an individual's knowledge and understanding of the topics listed in Subsection D of 20.3.5.12 NMAC or equivalent Agreement State requirements; and

(2) written in a multiple-choice format; and

(3) have test items drawn from a question bank containing psychometrically valid questions based on the material in Subsection D of 20.3.5.12 NMAC.

D. Required Training Topics. All certification programs shall include training in the following topics:

(1) fundamentals of radiation safety including:

(a) characteristics of gamma radiation; and

(b) units of radiation dose and quantity of radioactivity; and

(c) hazards of exposure to radiation; and

(d) levels of radiation from licensed material; and

(e) methods of controlling radiation dose (time, distance, and shielding); and

(2) radiation detection instruments including:

(a) use, operation, calibration, and limitations of radiation survey instruments; and

(b) survey techniques; and

(c) use of personnel monitoring equipment; and

(3) equipment to be used including:

(a) operation and control of radiographic exposure equipment, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtails); and

(b) storage, control, and disposal of licensed material; and

(c) inspection and maintenance of equipment; and

(4) the requirements of pertinent State and Federal regulations; and

(5) case histories of accidents in radiography.

[20.3.5.12 NMAC - N, 5/19/02]

20.3.5.13 REQUIREMENTS OF THE RADIATION SAFETY OFFICER (RSO):

A. The specific duties and authorities of the RSO include, but are not limited to:

(1) Ensuring that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the daily operation of the licensee's or registrant’s program; and

(2) Establish, document, and oversee all operating, emergency, and ALARA procedures required by Part 4 of 20.3 NMAC. The procedures shall be revised by the RSO whenever necessary to ensure procedural accuracy. The procedures shall be reviewed regularly by the RSO at intervals not to exceed one calendar year to ensure that they conform to Part 4, other pertinent regulations, and to the conditions of the license or registration; and

(3) Overseeing and approving all phases of the training program for radiographic personnel, ensuring that appropriate and effective radiation protection practices are taught; and

(4) Ensuring that required radiation surveys and leak tests are performed and documented in accordance with the regulations, including any corrective measures when levels of radiation exceed established limits; and

(5) Ensuring that personnel monitoring devices are calibrated and used properly by occupationally-exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by 20.3.4.453 NMAC; and

(6) Ensuring that operations are conducted safely and to assume control for instituting corrective actions including stopping of operations when necessary.

B. Inspections of Job Performance. Except as provided in paragraph (4) of Subsection B of 20.3.5.13 NMAC, the RSO or designee shall conduct an inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the Department's regulations, license or registration requirements, and the applicant's operating and emergency procedures are followed. The inspection program must:

(1) Include observation of the performance of each radiographer and radiographer's assistant during an actual industrial radiographic operation, at intervals not to exceed 6 months; and

(2) Provide that, if a radiographer or a radiographer's assistant has not participated in an industrial radiographic operation for more than 6 months since the last inspection, the radiographer must demonstrate knowledge of the training requirements of paragraph (5) of Subsection B of 20.3.5.11 NMAC and the radiographer's assistant must re-demonstrate knowledge of the training requirements of paragraph (3) of Subsection A of 20.3.5.11 NMAC by a practical examination before these individuals can next participate in a radiographic operation.

(3) The Department may consider alternatives requested in writing in those situations where the individual serves as both radiographer and RSO.

(4) Records of semi-annual inspections of job performance for each radiographer and each radiographer's assistant shall include a list showing the items checked and any non-compliances observed by the RSO.

[20.3.5.13 NMAC - N, 5/19/02]

20.3.5.14 SUPERVISION OF RADIOGRAPHER'S ASSISTANTS: Whenever a radiographer's assistant uses radiographic exposure devices, associated equipment, sealed sources, radiation machines, or conducts radiation surveys required by Subsection B of 20.3.5.17 NMAC to determine that the sealed source has returned to the shielded position after an exposure, the assistant shall be under the personal supervision of a radiographer. The personal supervision must include:

A. The radiographer's physical presence at the site where the sealed sources or radiation machines are being used;

B. The availability of the radiographer to give immediate assistance if required; and

C. The radiographer's direct observation of the assistant's performance of the operations referred to in this section.

[20.3.5.14 NMAC - Rp, 20 NMAC 3.1.5.518, 5/19/02]

20.3.5.15 PERSONNEL MONITORING:

A. The licensee or registrant may not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a combination of direct reading dosimeter, an operating alarm ratemeter, and a NVLAP certified dosimeter. At permanent radiography installations where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required.

(1) Pocket dosimeters must have a range from zero to 2 millisieverts (200 millirems) and must be recharged at the start of each shift. Electronic personal dosimeters may only be used in place of ion-chamber pocket dosimeters.

(2) Each NVLAP certified dosimeter must be assigned to and worn by only one individual.

(3) Film badges must be replaced at periods not to exceed one month. All other NVLAP certified dosimeters must be replaced at periods not to exceed three months.

(4) After replacement, each NVLAP certified dosimeter must be processed as soon as possible.

B. Direct reading dosimeters such as pocket dosimeters or electronic personal dosimeters must be read and the exposures recorded at the beginning and end of each shift. Records shall be maintained in accordance with paragraph (2) of Subsection H of 20.3.5.15 NMAC.

C. Pocket dosimeters, or electronic personal dosimeters, must be checked at periods not to exceed 12 months for correct response to radiation. Acceptable dosimeters must read within plus or minus 20 percent of the

true radiation exposure. Records shall be maintained in accordance with paragraph (1) of Subsection H of 20.3.5.15 NMAC.

D. If an individual's pocket dosimeter is found to be off-scale, or if his or her electronic personal dosimeter reads greater than 2 millisieverts (200 millirems), and the possibility of radiation exposure cannot be ruled out as the cause, the individual's NVLAP certified dosimeter must be sent for processing within 24 hours. In addition, the individual may not resume work associated with radiation use until a determination of the individual's radiation exposure has been made. This determination must be made by the RSO or the RSO's designee. The results of this determination shall be documented. The documents shall be maintained in accordance with paragraph (4) of Subsection H of 20.3.5.15 NMAC.

E. If a NVLAP certified dosimeter is lost or damaged, the worker shall cease work immediately until a replacement dosimeter is provided and the exposure is calculated for the time period from issuance to loss or damage of the dosimeter. The results of the calculated exposure and the time period for which the dosimeter was lost or damaged shall be documented. The documents shall be maintained in accordance with paragraph (4) of Subsection H of 20.3.5.15 NMAC.

F. Reports received from dosimetry processors shall be maintained in accordance with paragraph (3) of Subsection H of 20.3.5.15 NMAC.

G. Each alarm ratemeter must--

(1) Be checked to ensure that the alarm functions properly (sounds) before using at the start of each shift;

(2) Be set to give an alarm signal at a preset dose rate of 5 mSv/hr (500 mrem/hr); with an accuracy of plus or minus 20 percent of the true radiation dose rate;

(3) Require special means to change the preset alarm function; and

(4) Be calibrated at periods not to exceed 12 months for correct response to radiation. The licensee or registrant shall maintain records of alarm ratemeter calibrations in accordance with paragraph (2) of Subsection H of 20.3.5.15 NMAC.

H. Personnel Monitoring Records. Each licensee and registrant shall maintain the following exposure records pursuant to 20.3.5.15 NMAC:

(1) Direct reading dosimeter readings and yearly operability checks required by Subsections B and C of 20.3.5.15 NMAC for 3 years after the record is made.

(2) Records of alarm ratemeter calibrations for 3 years after the record is made.

(3) Reports received from dosimetry processors shall be maintained until the Department terminates the license or registration.

(4) Records of estimates of exposures as a result of: off-scale personal direct reading dosimeters, or lost or damaged external dosimetric device, until the Department terminates the license or registration.

[20.3.5.15 NMAC - Rp, 20 NMAC 3.1.5.517, 5/19/02]

20.3.5.16 RADIATION SURVEY INSTRUMENTS:

A. Licensees and registrants shall keep sufficient calibrated and operable radiation survey instruments at each location to make the radiation surveys required by this Part and by 20.3.4.416 NMAC. Instrumentation required by this section must be capable of measuring a range from 0.02 millisieverts (2 millirems) per hour through 0.01 sievert (1 rem) per hour.

B. Each radiation survey instrument shall be calibrated:

(1) At energies appropriate for use and at intervals not to exceed 6 months and after each instrument servicing (except battery changes);

(2) Such that accuracy within plus or minus 20 percent can be demonstrated; and

(3) At 2 points located approximately 1/3 and 2/3 of full-scale on each scale for linear scale instruments; at mid-range of each decade, and at 2 points of at least 1 decade for logarithmic scale instruments; and at appropriate points for digital instruments.

C. Records of these calibrations shall be maintained for 3 years after the calibration date for inspection by the Department.

D. Each radiation survey instrument shall be checked with a radiation source at the beginning of each day of use and at the beginning of each work shift to ensure it is operating properly.

[20.3.5.16 NMAC - Rp, 20 NMAC 3.1.5.509, 5/19/02]

20.3.5.17 RADIATION SURVEYS AND SURVEY RECORDS:

A. No radiographic operation shall be conducted unless calibrated and operable radiation survey instrumentation, as described in 20.3.5.16 NMAC is available and used at each site where radiographic exposures are made.

B. Survey Requirements for Devices Containing Radioactive Materials.

(1) Using a survey instrument meeting the requirements of Subsection A of 20.3.5.17 NMAC, conduct a survey of the radiographic exposure device and the guide tube after each exposure when approaching the device or the guide tube. The survey must determine that the sealed source has returned to its shielded position before exchanging films, repositioning the exposure head, or dismantling equipment.

(2) Conduct a survey of the radiographic exposure device with a calibrated radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area (as defined in Subsection AO of 20.3.5.7 NMAC), to ensure that the sealed source is in its shielded position.

C. Survey Requirements for Radiation Machines. A physical radiation survey shall be made after each radiographic exposure using radiation machines to determine that the machine is "off".

D. Records shall be kept of the surveys required by Subsection B of 20.3.5.17 NMAC. Such records shall be maintained for inspection by the Department for 3 years after completion of the survey. If the survey was used to determine an individual's exposure, however, the records of the survey shall be maintained until the Department authorizes their disposition.

[20.3.5.17 NMAC - Rp, 20 NMAC 3.1.5.521, 5/19/02]

20.3.5.18 SPECIFIC REQUIREMENTS FOR RADIOGRAPHIC OPERATIONS:

A. Licensees and registrants shall supply the following items at each job site:

(1) At least one operable, calibrated survey instrument;

(2) A current whole body NVLAP certified dosimeter for each individual;

(3) An operable, calibrated pocket dosimeter with a range of 0 to 200 milliroentgens (2 milligrays) for each worker; and

(4) The appropriate barrier ropes and signs.

B. Industrial radiographic operations shall not be performed if any of the items in Subsection A of 20.3.5.18 NMAC are not available at the job site or are inoperable.

C. No individual other than a qualified radiographer, radiographer's assistant, radiographer instructor, or radiographer trainee (under the personal supervision of a radiographer instructor) shall manipulate controls or operate equipment used in industrial radiographer operations.

D. No individual shall act as radiographer instructor unless such individual possesses the qualifications required for radiographer instructors as listed in Subsection D of 20.3.5.11 NMAC.

E. During an inspection by the Department, the Department inspector may terminate an operation if any of the items in Subsection A of 20.3.5.18 NMAC are not available and operable or if the required number of radiographic personnel is not present. Operations shall not be resumed until such conditions are met.

F. All radiographic operations conducted at locations of use authorized on the license or registration must be conducted in a permanent radiographic installation, unless specifically authorized by the Department.

G. Whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or a radiographer's assistant who has at a minimum met the requirements specified within Subsections B or A of 20.3.5.11 NMAC as appropriate. The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present. Licensees will have one calendar year from the effective date of these regulations to meet the requirements for having two qualified individuals present at locations other than a permanent radiographic installation.

H. During each radiographic operation the radiographer, or the other individual present as required by Subsection G of 20.3.5.18 NMAC, shall maintain continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in Part 1 of 20.3 NMAC, except:

(1) Where the high radiation area is equipped with a control device or alarm system as described in Part 4 of 20.3 NMAC; or

(2) Where the high radiation area is locked to protect against unauthorized or accidental entry.

I. All areas in which industrial radiography is being performed must be conspicuously posted as required by Part 4 of 20.3 NMAC. Exceptions to posting requirements listed in Part 4 do not apply to industrial radiographic operations.

J. Utilization Logs. Each licensee or registrant shall maintain current logs which shall be kept available for inspection by the Department for 3 years from the date of the recorded event, showing for each source of radiation the following information:

(1) A description, including the make, model, and serial number of the radiographic exposure device or transport or storage container in which the sealed source is located;

(2) The identity and signature of the radiographer to whom assigned;

(3) Locations where used and dates of use; and

(4) The date(s) each source of radiation is removed from storage and returned to storage.

K. Locking of Sources of Radiation.

(1) Each radiographic exposure device must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device and/or its container must be kept locked (and if a keyed-lock, with the key removed at all times) when not under the direct surveillance of a radiographer or a radiographer's assistant except at permanent radiographic installations as stated in Subsection G of 20.3.5.18 NMAC. In addition, during radiographic operations the sealed source assembly must be secured in the shielded position each time the source is returned to that position.

(2) Each sealed source storage container and source changer must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers must be kept locked (and if a keyed-lock, with the key removed at all times) when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

L. A licensee may conduct underwater radiography only if procedures have been approved by the Department.

[20.3.5.18 NMAC - Rp, 20 NMAC 3.1.5.523, 5/19/02]

20.3.5.19 PERMANENT RADIOGRAPHIC INSTALLATIONS:

A. Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation must have either:

(1) An entrance control of the type described in Part 4 of 20.3 NMAC that reduces the radiation level upon entry into the area, or

(2) Both conspicuous visible and audible warning signals to warn of the presence of radiation. The visible signal must be actuated by radiation whenever the source is exposed. The audible signal must be actuated when an attempt is made to enter the installation while the source is exposed.

B. The alarm system must be tested for proper operation with a radiation source each day before the installation is used for radiographic operations. The test must include a check of both the visible and audible signals. Entrance control devices that reduce the radiation level upon entry (designated in Subsection A of 20.3.5.19 NMAC) must be tested monthly. If an entrance control device or an alarm is operating improperly, it must be immediately labeled as defective and repaired within 7 calendar days. The facility may continue to be used during this 7-day period, provided the licensee implements the continuous surveillance requirements of Subsection H of 20.3.5.18 NMAC and uses an alarming ratemeter.

C. Test records for entrance controls and audible and visual alarms must be maintained for 3 years after they are made.

[20.3.5.19 NMAC - Rp, 20 NMAC 3.1.5.514, 5/19/02]

20.3.5.20 LABELING, STORAGE, AND TRANSPORTATION:

A. The licensee may not use a source changer or a container to store licensed material unless the source changer or the storage container has securely attached to it a durable, legible, and clearly visible label bearing the standard trefoil radiation caution symbol conventional colors, i.e., magenta, puRp,le or black on a yellow background, having a minimum diameter of 25 mm, and the wording:

CAUTION (or "DANGER")
RADIOACTIVE MATERIAL
NOTIFY CIVIL AUTHORITIES (or "NAME OF COMPANY")

B. The licensee may not transport licensed radioactive material unless the material is packaged, and the package is labeled, marked, and accompanied with appropriate shipping papers in accordance with regulations set out in 10 CFR part 71.

C. Locked radiographic exposure devices, storage containers, and radiation machines shall be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.

D. The licensee shall lock and physically secure the transport package containing licensed material or radiation machine(s) in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

[20.3.5.20 NMAC - N, 5/19/02]

20.3.5.21 PERFORMANCE REQUIREMENTS FOR RADIOGRAPHY EQUIPMENT. Equipment used in industrial radiographic operations must meet the following minimum criteria:

A. Each radiographic exposure device and all associated equipment must meet the requirements specified in American national standard N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS handbook 136, issued January 1981). This publication has been approved for incorporation by reference by the director of the federal register in accordance with 5 U.S.C. 552(a). This publication may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 and from the American National Standards Institute, Inc., 25 West 43rd Street, New York, New York 10036, Telephone (212) 642-4900.

B. In addition to the requirements specified in Subsection A of 20.3.5.21 NMAC, the following requirements apply to radiographic exposure devices and associated equipment;

(1) Each radiographic exposure device utilizing radioactive material must have attached to it by the user, a durable, legible, clearly visible label bearing the:

(a) chemical symbol and mass number of the radionuclide in the device;

(b) activity and the date on which this activity was last measured;

(c) model number and serial number of the sealed source;

(d) manufacturer of the sealed sources; and

(e) licensee's name, address, and telephone number.

(2) Radiographic exposure devices intended for use as type B transport containers must meet the applicable requirements of 10 CFR part 71; and

(3) Modification of any exposure devices and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

C. In addition to the requirements specified in Subsections A and B of 20.3.5.21 NMAC, the following requirements apply to radiographic exposure devices and associated equipment that allow the source to be moved out of the device for routine operation.

(1) The coupling between the source assembly and the control cable must be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling must be such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions.

(2) The device must automatically secure the source assembly when it is cranked back into the fully shielded position within the device. This securing system may only be released by means of a deliberate operation on the exposure device.

(3) The outlet fittings, lock box, and drive cable fittings on each radiographic exposure device must be equipped with safety plugs or covers which must be installed during storage and transportation to protect the source assembly from water, mud, sand or other foreign matter.

(4) Each sealed source or source assembly must have attached to it or engraved in it, a durable, legible, visible label with the words "DANGER--RADIOACTIVE." The label must not interfere with the safe operation of the exposure device or associated equipment.

(5) The guide tube must be able to withstand a crushing test that closely approximates the crushing forces that are likely to be encountered during use, and be able to withstand a kinking resistance test that closely approximates the kinking forces that are likely to be encountered during use.

(6) Guide tubes must be used when moving the source out of the device.

(7) An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube must be attached to the outermost end of the guide tube during radiographic operations.

(8) The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432-1980.

(9) Source changers must provide a system for assuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the drive cable to or from a source assembly.

D. All radiographic exposure devices and associated equipment in use must comply with the requirements of this section.

E. Notwithstanding Subsection A of 20.3.5.21 NMAC, equipment used in industrial radiographic operations need not comply with §8.9.2(c) of the endurance test in American national standards institute N432-1980, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the radiography equipment can realistically exert on the lever or crankshaft of the drive mechanism.

[20.3.5.21 NMAC - Rp, 20 NMAC 3.1.5.506, 5/19/02; A, 06/13/2017]

20.3.5.22 LIMITS ON EXTERNAL RADIATION LEVELS FROM STORAGE CONTAINERS AND SOURCE CHANGERS: The maximum exposure rate limits for storage containers and source changers are 2 millisieverts (200 millirem) per hour at any exterior surface, and 0.1 millisieverts (10 millirem) per hour at 1 meter from any exterior surface with the sealed source in the shielded position.

[20.3.5.22 NMAC - Rp, 20 NMAC 3.1.5.504, 5/19/02]

20.3.5.23 INSPECTION AND MAINTENANCE:

A. The licensee or registrant shall perform visual and operability checks on survey meters, radiation machines, radiographic exposure devices, transport and storage containers, associated equipment and source changers before use on each day the equipment is to be used to ensure that the equipment is in good working condition, that the sources are adequately shielded, and that required labeling is present. Survey instrument operability must be performed using check sources or other appropriate means. If equipment problems are found, the equipment must be removed from service until repaired.

B. Each licensee or registrant shall perform, and have written procedures for, inspection and routine maintenance of radiation machines, radiographic exposure devices, source changers, associated equipment, transport and storage containers, and survey instruments at intervals not to exceed 3 months or before the first use thereafter to ensure the proper functioning of components important to safety. Replacement components shall meet design specifications. If equipment problems are found, the equipment must be removed from service until repaired.

C. The inspection and maintenance program must include procedures to assure that Type B packages are shipped and maintained in accordance with the certificate of compliance or other approval.

D. If any inspection conducted pursuant to Subsections A, B, or C of 20.3.5.23 NMAC reveals damage to components critical to radiation safety, the device shall be removed from service and labeled as defective until repairs have been made.

E. Records of equipment problems and of any maintenance performed pursuant to the requirements of this section shall be made in accordance with the following:

(1) Each licensee or registrant shall maintain records of equipment problems found in daily checks and quarterly inspections of radiation machines, radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments; and retain each record for 3 years after it is made.

(2) The record must include the date of check or inspection, name of inspector, equipment involved, any problems found, and what repair and/or maintenance, if any, was done.

[20.3.5.23 NMAC - Rp, 20 NMAC 3.1.5.513, 5/19/02]

20.3.5.24 LEAK TESTING, REPAIR, TAGGING, OPENING, MODIFICATION, AND REPLACEMENT OF SEALED SOURCES:

A. The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing, repair, tagging, opening, or any other modification of any sealed source shall be performed only by persons specifically authorized to do so by the Department.

B. Each sealed source shall be tested for leakage at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within the six-month period prior to the transfer, the sealed source shall not be put into use until tested.

C. The leak test shall be capable of detecting the presence of 185 becquerels (0.005 microcuries) of removable contamination on the sealed source. An acceptable leak test for sealed sources in the possession of a radiography licensee would be to test at the nearest accessible point to the sealed source storage position, or other appropriate measuring point, by a procedure to be approved pursuant to Part 3 of 20.3 NMAC. Records of leak test

results shall be kept in units of becquerels or microcuries and maintained for inspection by the Department for 3 years.

D. Any test conducted pursuant to Subsections B and C of 20.3.5.24 NMAC that reveals the presence of 185 becquerels (0.005 microcuries) or more of removable radioactive material shall be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with 20.3 NMAC. Within 5 days after obtaining results of the test, the licensee shall file a report with the Department describing the equipment involved, the test results, and the corrective action taken.

E. A sealed source which is not fastened to or contained in a radiographic exposure device shall have permanently attached to it a square durable tag at least 2.5 cm on each side bearing the prescribed radiation caution symbol in conventional colors, magenta or purple on a yellow background, and at least the instructions: “Danger - Radioactive Material - Do Not Handle - Notify Civil Authorities if Found.”

F. Each exposure device using depleted uranium (DU) shielding and an "S" tube configuration must be tested for DU contamination at intervals not to exceed 12 months. The analysis must be capable of detecting the presence of 185 Bq (0.005 microcuries) of radioactive material on the test sample and must be performed by a person specifically authorized by the Department to perform the analysis. Should such testing reveal the presence of 185 Bq (0.005 microcuries) or more of removable DU contamination, the exposure device must be removed from use until an evaluation of the wear on the S-tube has been made. Should the evaluation reveal that the S-tube is worn through, the device may not be used again. DU shielded devices do not have to be tested for DU contamination while in storage and not in use. Before using or transferring such a device however, the device must be tested for DU contamination if the interval of storage exceeded 12 months. Records of DU leak tests results shall be kept in units of microcuries (becquerels) and maintained for inspection by the department for 3 years.

[20.3.5.24 NMAC - Rp, 20 NMAC 3.1.5.510, 5/19/02]

20.3.5.25 SPECIAL REQUIREMENTS AND EXEMPTIONS FOR CABINET RADIOGRAPHY:

A. Systems for cabinet radiography designed to allow admittance of individuals shall:

(1) Comply with all applicable requirements of this Part, and Sections 405 to 412 of 20.3.4 NMAC. If such a system is a certified cabinet x-ray system, it shall comply with all applicable requirements of this Part and 21 CFR 1020.40; and

(2) Be evaluated at intervals not to exceed 1 year to assure compliance with the applicable requirements as specified in paragraph (1) of Subsection A of 20.3.5.25 NMAC. Records of these evaluations shall be maintained for inspection by the Department for a period of 3 years after the evaluation.

B. Certified cabinet x-ray systems designed to exclude individuals from the interior of the cabinet are exempt from the requirements of this Part except that:

(1) Operating personnel must be provided with a NVLAP certified dosimeter, and reports of the results shall be maintained for inspection by the Department;

(2) No registrant shall permit any individual to operate a cabinet x-ray system until such individual has received a copy of and instruction in the operating procedures for the unit and has demonstrated competence in its use. Records which demonstrate compliance with this section shall be maintained for inspection by the Department until disposition is authorized by the Department;

(3) Tests for proper operation of high radiation area control devices or alarm systems, where applicable, shall be conducted, recorded, and maintained in accordance with Subsection B of 20.3.5.19 NMAC; and

(4) The registrant shall perform an evaluation at intervals not to exceed 1 year, to determine conformance with Sections 405 to 412 of 20.3.4 NMAC. If such a system is a certified cabinet x-ray system, it shall be evaluated at intervals not to exceed 1 year to determine conformance with 21 CFR 1020.40. Records of these evaluations shall be maintained for inspection by the Department for a period of 3 years after the evaluation.

C. Certified cabinet x-ray systems shall be maintained in compliance with 21 CFR 1020.49 unless prior approval has been granted by the Department pursuant to Subsection A of 20.3.1.107 NMAC.

[20.3.5.25 NMAC - Rp, 20 NMAC 3.1.5.524, 5/19/02]

20.3.5.26 SPECIAL REQUIREMENTS FOR RADIOGRAPHY EMPLOYING RADIATION MACHINES:

A. Shielded room radiography. Shielded room radiography (as defined in Subsection AK of 20.3.5.7 NMAC) using radiation machines shall be exempt from other requirements of this Part; however:

(1) no registrant shall permit any individual to operate a radiation machine for shielded room radiography until such individual has received a copy of, and instruction in, and demonstrated an understanding of operating procedures of the unit, and has demonstrated competence in its use;

(2) each registrant shall supply appropriate personnel monitoring equipment to, and shall require the use of such equipment by, every individual who operates, makes "set-ups", or performs maintenance on a radiation machine for shielded room radiography; and

(3) a physical radiation survey shall be conducted to determine that the radiation machine is "off" prior to each entry into the shielded room. Such surveys shall be made with a radiation measuring instrument which is capable of measuring radiation of the energies and at the exposure rates to be encountered, which is in good working order, and which has been properly calibrated within the preceding three months or following the last instrument servicing, whichever is later.

B. Other radiography using radiation machines. Other radiography using machines shall be exempt from 20.3.5.17 NMAC, 20.3.5.21 NMAC, 20.3.5.22 NMAC, and 20.3.5.24 NMAC; however:

(1) A physical radiation survey shall be conducted to determine that the radiation machine is "off" prior to each entry into the radiographic exposure area. Such surveys shall be made with a radiation measuring instrument capable of measuring radiation of the energies and at the exposure rates to be encountered, which is in good working order, and which has been properly calibrated within the preceding three months or following the last instrument servicing, whichever is later. Survey results and records of boundary locations shall be maintained and kept available for inspection; and

(2) Mobile or portable radiation machines shall be physically secured to prevent removal by unauthorized personnel.

[20.3.5.26 NMAC - Rp, 20 NMAC 3.1.5.525, 5/19/02]

20.3.5.27 REPORTING REQUIREMENTS:

A. In addition to the reporting requirements specified in Part 3 and under other sections of 20.3 NMAC, each licensee or registrant (as appropriate) shall provide a written report to the department within 30 days of the occurrence of any of the following incidents involving radiographic equipment:

(1) Unintentional disconnection of the source assembly from the control cable;

(2) Inability to retract the source assembly to its fully shielded position and secure it in this position; and/or

(3) Failure of any component (critical to safe operation of the device) to properly perform its intended function.

B. The licensee or registrant shall include the following information in each report submitted under Subsection A of 20.3.5.27 NMAC:

(1) A description of the equipment problem;

(2) Cause of each incident, if known;

(3) Manufacturer and model number of equipment involved in the incident;

(4) Place, time and date of the incident;

(5) Actions taken to establish normal operations;

(6) Corrective actions taken or planned to prevent recurrence; and

(7) Qualifications of personnel involved in the incident.

C. Any licensee or registrant conducting radiographic operations, or storing radioactive material or radiation machine(s), at any location not listed on the license for a period in excess of 180 days in a calendar year, shall notify the Department in writing prior to exceeding the 180 days.

[20.3.5.27 NMAC - Rp, 20 NMAC 3.1.5.507, 5/19/02]

20.3.5.28 INVENTORY ACCOUNTING REQUIREMENTS:

A. Receipt and Transfer of Sealed Sources.

(1) Each licensee shall maintain records showing the receipts and transfers of sealed sources, radiation machines, and devices using DU for shielding and retain each record for 3 years after it is made.

(2) These records must include the date, the name of the individual making the record, radionuclide, number of becquerels (curies) or mass (for DU), and manufacturer, model, and serial number of each sealed source, radiation machine, and/or device, as appropriate.

B. Quarterly Inventories.

(1) Quarterly physical inventories shall be conducted by licensees and registrants to account for all sealed sources, radiography exposure devices, radiation machines, and devices containing depleted uranium

received or in their possession. Inventory records shall be maintained for 3 years from the date of the inventory for inspection by the Department.

(2) Each record must include the date of the inventory, name of the individual conducting the inventory, quantities of radiation machines, radionuclide, number of becquerels (curies) or mass (for DU) in each device, location of sealed source and/or devices, and manufacturer, model, and serial number of each sealed source, radiation machines, and/or device, as appropriate.

[20.3.5.28 NMAC - Rp, 20 NMAC 3.1.5.511, 5/19/02]

20.3.5.29 OPERATING AND EMERGENCY PROCEDURES:

A. Operating and emergency procedures must include, as a minimum, instructions in the following:

(1) Appropriate handling and use of licensed sealed sources and radiographic exposure devices so that no person is likely to be exposed to radiation doses in excess of the limits established in Part 4 of 20.3 NMAC;

(2) Methods and occasions for conducting radiation surveys;

(3) Methods for controlling access to radiographic areas;

(4) Methods and occasions for locking and securing radiographic exposure devices, transport and storage containers and sealed sources;

(5) Personnel monitoring and the use of personnel monitoring equipment;

(6) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicles, placarding of vehicles when needed, and control of the sealed sources during transportation (refer to 49 CFR parts 171-173);

(7) The inspection, maintenance, and operability checks of radiographic exposure devices, survey instruments, transport containers, and storage containers;

(8) Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale or an alarm ratemeter alarms unexpectedly;

(9) The procedure for notifying proper persons in the event of an accident;

(10) Minimizing exposure of persons in the event of an accident;

(11) Source recovery procedure if licensee will perform source recovery;

(12) Maintenance of records.

B. Each licensee or registrant shall maintain a copy of current operating and emergency procedures until the Department terminates the license or registration. Superseded material must be retained for 3 years after the change is made.

[20.3.5.29 NMAC - Rp, 20 NMAC 3.1.5.516, 5/19/02]

20.3.5.30 DOCUMENTS AND RECORDS REQUIRED AT TEMPORARY JOB SITES: Each licensee or registrant shall also maintain copies of the following documents and records sufficient to demonstrate compliance at each applicable field station and each temporary jobsite:

A. Appropriate license or certificate of registration or equivalent document;

B. Operating and emergency procedures;

C. A copy of Parts 4, 5, and 10 of 20.3 NMAC;

D. Survey records required pursuant to 20.3.5.17 NMAC and area survey records required pursuant to Part 4 of 20.3 NMAC for the period of operation at the site;

E. Daily pocket dosimeter records for the period of operation at the site;

F. The latest instrument calibration and leak test records for specific devices and sealed sources in use at the site. Acceptable records include tags or labels which are affixed to the device or survey meter;

G. Utilization records for each radiographic exposure device dispatched from that location as required by Subsection J of 20.3.5.18 NMAC;

H. Records of equipment problems identified in daily checks of equipment as required by Subsection A of 20.3.5.23 NMAC;

I. Records of alarm system and entrance control checks required by Subsection B of 20.3.5.19 NMAC, if applicable;

J. Evidence of the latest calibrations of alarm ratemeters and operability checks of pocket dosimeters and/or electronic personal dosimeters as required by Subsection H of 20.3.5.15 NMAC; and,

K. The shipping papers for the transportation of radioactive materials required by 10 CFR 71.5.

L. When operating under reciprocity pursuant to Part 3 of 20.3 NMAC, a copy of the Agreement State license authorizing the use of licensed materials.

[20.3.5.30 NMAC - Rp, 20 NMAC 3.1.5.522, 5/19/02]

HISTORY OF 20.3.5 NMAC:
Pre-NMAC History:
Material in this part was derived from that previously filed with the commission of public records - state records center and archives:
EIB 73-2, Regulations For Governing The Health And Environment Aspects Of Radiation, filed 7-9-73;
EIB RP,R-1, Radiation Protection Regulations, filed 4-21-80;
EIB RP,R 1, Radiation Protection Regulations, filed 3-10-89.

History of Repealed Material: 20 NMAC 3.1, Subpart 5, Radiation Safety Requirements For Industrial Radiographic Operations, repealed effective 5/19/02.

Other History:
EIB RP,R 1, Radiation Protection Regulations, filed 3-10-89 was **renumbered** into first version of the New Mexico Administrative Code as 20 NMAC 3.1, Radioactive Materials And Radiation Machines, filed 7-3-95;
20 NMAC 3.1, Radioactive Materials And Radiation Machines, filed 7-3-95 was **replaced** by 20 NMAC 3.1, Radioactive Materials And Radiation Machines, filed 6-17-99;
20 NMAC 3.1, Subpart 5, Radiation Safety Requirements For Industrial Radiographic Operations, filed 6-17-99 **replaced by** 20.3.5 NMAC, Radiation Safety Requirements For Industrial Radiographic Operations, effective 5/19/02.