TDH
Texas Department of Health

Eduardo J. Sanchez, M D., M.P.H.
Commissioner of Health

1100 West 49th Street
Austin, Texas 78756-3189

Gary R. Bego
Chief Operating Officer

Charles E. Bell, M.D.
Executive Deputy Commissioner

Radiation Control
(512) 834-6688

October 29, 2002

Ms. Josephine Piccone
Deputy Director
Office of State and Tribal Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Ms. Piccone:

Enclosed is a copy of the proposed revisions to the Texas Regulations for Control of Radiation, 25 Texas Administrative Code, §289.253. The proposed revisions will be made available for public comment on December 6, 2002 with a request for comments by January 6, 2003. The proposed regulations are identified by underlining for new language and bold-faced and brackets for deleted language and correspond to the following equivalent amendments to NRC's regulations. (See next pages.)

We believe that adoption of these revisions satisfies the compatibility and health and safety categories established in the Office of State and Tribal Programs (STP) Procedure SA-200.

If you have any questions, please feel free to contact me at 512-834-6688 or Cindy.Cardwell@tdh.state.tx.us.

Sincerely,

Cynthia C. Cardwell, Deputy Director
Standards and Special Projects
Bureau of Radiation Control
Texas Department of Health

STP-06L Template
RIDS DIST. SP08

TDH
Texas Department of Health

Eduardo J. Sanchez, M.D., M P.H.
Commissioner of Health

1100 West 49th Street
Austin, Texas 78756-3189

Radiation Control
(512) 834-6688

Gary R. Bego
Chief Operating Officer

Charles E. Bell, M.D.
Executive Deputy Commissioner

October 28, 2002

Ms. Josephine Piccone
Deputy Director
Office of State and Tribal Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Ms. Piccone:

Enclosed is a copy of the proposed revisions to the Texas Regulations for Control of Radiation, 25 Texas Administrative Code, §289.201. The proposed revisions will be made available for public comment on December 6, 2002 with a request for comments by January 6, 2003. The proposed regulations are identified by underlining for new language and bold-faced and brackets for deleted language and correspond to the following equivalent amendments to NRC's regulations.

NRC Regulation	FR Notice (State Due Date)	RATS ID	Texas Regulation	Final Texas Regulation (Effective Date)
TNRCC changed name to Texas Commission on Environmental Quality (TCEQ)	Not a compatibility item	N/A	§289.201	May 2003
Records of receipt, transfer, and disposal of sources of radiation	Not a compatibility item	N/A	§289.201(d)	May 2003
Leak testing of sealed sources	65 FR 20337 (5-17-03)	2000-1	§289.201(g)(1)	May 2003

(b) Method of testing				
Leak testing of sealed sources (c) Test frequency	65 FR 20337 (5-17-03)	2000-1	§289.201(g)(1)(A)	May 2003
Leak testing of sealed sources (d) Removal of leaking source from service	65 FR 20337 (5-17-03)	2000-1	§289.201(g)(5) and (6)	May 2003
Leak testing of sealed sources	65 FR 20337 (5-17-03)	2000-1	§289.201(g)(2)(D)	May 2003
Leak testing of sealed sources	65 FR 20337 (5-17-03)	2000-1	§289.201(g)(2)(C)	May 2003

We believe that adoption of these revisions satisfies the compatibility and health and safety categories established in the Office of State and Tribal Programs (STP) Procedure SA-200.

If you have any questions, please feel free to contact me at 512-834-6688 or Cindy.Cardwell@tdh.state.tx.us.

Sincerely,

Cynthia C. Cardwell, Deputy Director
Standards and Special Projects
Bureau of Radiation Control
Texas Department of Health

NRC Regulation	FR Notice (State Due Date)	RATS ID	Texas Regulation	Final Texas Regulation (Effective Date)
Definitions for energy compensation source and tritium neutron generator target source (39.2)	65 FR 20337 (5-17-03)	2000-1	§289.253(c)(1) and (18)	May 2003
Leak testing of sealed sources 39.35(c)(1) Test frequency	65 FR 20337 (5-17-03)	2000-1	§289.253(i) and §289.201(g)(1)	May 2003
Leak testing of sealed sources 39.35(c)(2) Testing interval for ECSs	65 FR 20337 (5-17-03)	2000-1	§289.253(i)(2)	May 2003
Design and performance criteria for sources 39.41(b)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(1)(C)(*i*)	May 2003
" 39.41(c)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(1)(C)(*ii*)	May 2003
" 39.41(d)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(1)(C)(*iii*)	May 2003
" 39.41(d)(1)(*v*)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(1)(C)(*iii*)(V)	May 2003
" 39.41(e)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(2)	May 2003
" 39.41(f)	65 FR 20337 (5-17-03)	2000-1	§289.253(l)(3)	May 2003
Personnel monitoring 39.65	65 FR 63750 (1-8-04)	2000-2	§289.253(q)	May 2003
Uranium sinker bars 39.49	65 FR 20337 (5-17-03)	2000-1	§289.253(x)	May 2003
Energy compensation source 39.53	65 FR 20337 (5-17-03)	2000-1	§289.253(y)	May 2003
Tritium neutron generator source 39.55	65 FR 20337 (5-17-03)	2000-1	§289.253(z)	May 2003
Agreement with well owner or operator	65 FR 20337 (5-17-03)	2000-1	§289.253(cc)(4)(A)(*ii*)	May 2003

39.15(a)(5)(ii)				
Agreement with well owner or operator 39.15(a)(5)(iii)	65 FR 20337 (5-17-03)	2000-1	§289.253(cc)(5)(A)	May 2003
Notification of incidents and lost sources; abandonment procedures for irretrievable sources	65 FR 20337 (5-17-03)	2000-1	Texas will retain its requirement for the licensee to notify the agency when abandonment of sources is considered	May 2003

TITLE 25. HEALTH SERVICES
Part 1. Texas Department of Health
Chapter 289. Radiation Control
Subchapter F. License Regulations
Amendments §289.201

PROPOSED PREAMBLE

The Texas Department of Health (department) proposes an amendment to §289.201, concerning general provisions for radioactive material.

Government Code §2001.039 requires that each state agency review and consider for readoption each rule adopted by that agency pursuant to the Government Code, Chapter 2001 (Administrative Procedure Act). Section 289.201 has been reviewed and the department has determined that the reasons for adopting the section continue to exist; however, revisions to the rule are necessary.

The department published a Notice of Intention to Review for §289.201 in regards to Government Code, §2001.039 in the *Texas Register* (27 TexReg 7997) on August 23, 2002. No comments were received by the department on this section.

The proposed revision adds the word "Title" to references to the United States Nuclear Regulatory Commission (NRC) Code of Federal Regulations throughout the rule to properly cite the references. All references to the Texas Natural Resource Conservation Commission (TNRCC) are changed to reflect the name change to "Texas Commission on Environmental Quality (TCEQ)," that became effective September 1, 2002. The words "with license in good standing" are deleted from the definitions of "Pharmacist," "Physician," and "Veterinarian" because an individual is either licensed or not licensed. The subsection concerning records is reformatted for easier readability. Additional language is also added to that subsection to specify that the information maintained in the records of receipt, transfer, and disposal of licensed sources of radiation shall include as a minimum: a unique identification of the source of radiation, including manufacturer's name, isotope, activity, and source serial number; the dates of transfer or receipt; for the person transferring the source of radiation, the number of the transferee's radioactive material license and the regulatory agency issuing the license to the transferee; and for the person receiving the source of radiation, the number of the transferor's radioactive material license and the regulatory agency issuing the license to the transferor. Language is added to clarify that retention periods are specified in other sections of this chapter. The words "(becquerel(Bq))" are replaced by the symbol "(Bq)" because it was spelled out previously in the rule.

Several revisions are made because they are items of compatibility with NRC. As an agreement state, Texas must adopt these requirements to maintain compatibility with NRC rules. The compatibility items include the following revisions. A reference to §289.253(i) is added to specify that energy compensation sources that meet certain criteria do not have to be tested for leakage and/or contamination. The words "and at the nearest accessible point to the sealed source" are added to the description of where leak test samples should be taken in order to

further define the process of obtaining a test for leakage. Wording is added to require licensees to use leak test kits or methods to perform tests for leakage or contamination that have been approved by the agency, NRC, an agreement state, or a licensing state. Also, the word tritium is added in parentheses after "hydrogen-3" to clarify that the terms refer to the same radionuclide. Other minor clarifying changes are added to make grammatical corrections and to make the section consistent with other sections of this title. The graphic in §289.201(m)(2)(A)(*ii*) concerning open records was amended for clarification.

This amendment is part of the department's continuing effort to update, clarify, and simplify its rules regarding the control of radiation based upon technological advances, public concerns, legislative directives, or other factors.

Ruth E. McBurney, C.H.P., Director, Division of Licensing, Registration and Standards, Bureau of Radiation Control, has determined that for each year of the first five years the section will be in effect, there will be no fiscal implications for state or local government as a result of enforcing or administering the section as proposed.

Mrs. McBurney has also determined that for each year of the first five years the proposed section will be in effect, the public benefit anticipated as a result of enforcing the section will be to ensure continued protection of the public, workers, and the environment from unnecessary exposure to radiation by ensuring that rules are clear and specific. There will be no fiscal impact on applicants/licensees that are small businesses, micro-businesses or other persons required to comply with the rule. The information required to be included in receipt, transfer, and disposal records is readily available from shipping papers and from the transferor and transferee. No additional costs will be incurred because no additional research of the information is required. A licensee's use of leak test kits or other methods approved by the agency, NRC, an agreement state, or a licensing state is currently verified during the license review process. Therefore, the additional requirement is formalizing a current practice, so no new costs would be incurred. There is no anticipated impact on local employment.

Comments on the proposal may be presented to Ruth E. McBurney, C.H.P., Director, Division of Licensing, Registration and Standards, Bureau of Radiation Control, Texas Department of Health, 1100 West 49th Street, Austin, Texas 78756-3189, Telephone (512) 834-6688 or electronic mail at Ruth.McBurney@tdh.state.tx.us. Public comments will be accepted for 30 days following publication of this proposal in the *Texas Register*. In addition, a public meeting to accept oral comments will be held at 1:00 p.m., Wednesday, December 18, 2002, in Conference Room N218, Texas Department of Health, Bureau of Radiation Control, located at the Exchange Building, 8407 Wall Street, Austin, Texas.

The amendment is proposed under the Health and Safety Code, §401.051, which provides the Texas Board of Health (board) with authority to adopt rules and guidelines relating to the control of radiation; and §12.001, which provides the board with the authority to adopt rules for its

procedure and for the performance of each duty imposed by law on the board, the department, or the commissioner of health.

The amendment affects Health and Safety Code, Chapter 12, Chapter 401, and implements Government Code, §2001.039.

LEGEND: (Proposed Amendment)
Single Underline = Proposed new language
[Bold Print and Brackets] = Current language proposed for deletion
Regular Print = Current language
(No change.) = No changes are being considered for designated subdivisions

289.201. General Provisions for Radioactive Material.

(a) Scope. Except as otherwise specifically provided, this section applies to all persons who receive, possess, use, transfer, or acquire any radioactive material, provided, however, that nothing in this section shall apply to any person to the extent such person is subject to regulation by the United States Nuclear Regulatory Commission (NRC) or to radioactive material in the possession of federal agencies. Attention is directed to the fact that regulation by the state of source material, byproduct material, and special nuclear material in quantities not sufficient to form a critical mass is subject to the provisions of the agreement between the state and **[the]** NRC and to Part 150 of **[the]** NRC regulations (Title 10, **[10]** Code of Federal Regulations (CFR), Part 150). A person who receives, possesses, uses, owns, transfers, or acquires radioactive material prior to receiving a license is subject to the requirements of this chapter.

(b) Definitions. The following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise.

(1) - (6) (No change.)

(7) Agreement state - Any state with which **[the]** NRC has entered into an effective agreement under §274b **[Section 274 b]** of the Atomic Energy Act of 1954, as amended (73 Stat. 689).

(8) (No change.)

(9) Airborne radioactivity area - A room, enclosure, or area in which airborne radioactive materials exist in concentrations:

(A) in excess of the derived air concentrations (DACs) specified in Table I, Column 1 of §289.202(ggg)(2)(F) of this title (relating to Standards for Protection Against Radiation from Radioactive Material); or

(B) (No change.)

(10) - (48) (No change.)

(49) Ionizing radiation - Any electromagnetic or particulate radiation capable of producing ions, directly or indirectly, in its passage through matter. Ionizing radiation includes gamma rays and x rays, alpha and beta particles, high-speed **[high speed]** electrons, neutrons, and other nuclear particles.

(50) - (56) (No change.)

(57) Low-level radioactive waste (LLRW) - Radioactive material that meets the following criteria:

(A) LLRW is radioactive material that is:

(*i*) (No change.)

(*ii*) waste, as that term is defined in Title 10, CFR, **[10 CFR]** Part 61.2; and

(*iii*) subject to:

(*I*) concentration limits established in Title 10, CFR, **[10 CFR]** Part 61.55, or compatible rules adopted by the agency or the Texas Commission on Environmental Quality (TCEQ) **[Texas Natural Resource Conservation Commission (TNRCC)]**, as applicable; and

(*II*) disposal criteria established in Title 10, CFR, **[10 CFR,]** or established by the agency or TCEQ **[TNRCC]**, as applicable.

(B) LLRW does not include:

(*i*) high-level radioactive waste as defined by Title 10, CFR, Part 60.2 **[10 CFR 60.2]**;

(*ii*) spent nuclear fuel as defined by Title 10, CFR, Part 72.3 **[10 CFR 72.3]**;

(*iii*) - (*vi*) (No change.)

(58) - (66) (No change.)

(67) Person - Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, local government, any other state or political subdivision or agency thereof, or any other legal entity, and any legal successor, representative, agent, or agency of the foregoing, other than **[the]** NRC, and other than federal government agencies licensed or exempted by **[the]** NRC.

(68) (No change.)

(69) Pharmacist - An individual licensed by the Texas State Board of Pharmacy**[, and with license in good standing,]** to compound and dispense drugs, prescriptions, and poisons.

(70) Physician - An individual licensed by the Texas State Board of Medical Examiners**[, with license in good standing]**.

(71) - (72) (No change.)

(73) Quality factor (Q) - The modifying factor listed in subsection (n)(1) and (2) **[(h)(3) and (4)]** of this section that is used to derive dose equivalent from absorbed dose.

(74) - (75) (No change.)

(76) Radiation - One or more of the following:

(A) (No change.)

(B) **[stimulated]** emission of radiation from any electronic device to such energy density levels as to reasonably cause bodily harm; or

(C) (No change.)

(77) - (80) (No change.)

(81) Radioactive waste - As used in §289.254 of this title (relating to Licensing of Radioactive Waste Processing and Storage Facilities) **[of this chapter]**, this term is equivalent to LLRW.

(82) - (85) (No change.)

(86) Regulations of the United States Department of Transportation (DOT) - The requirements in Title 49, CFR, Parts 100-189. **[49 CFR Parts 100-189]**.

(87) - (88) (No change.)

(89) Residual radioactivity - The radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site,

even if those burials were made in accordance with the provisions of Title 30, **[30]** Texas Administrative Code §336.334.

(90) - (93) (No change.)

(94) Shallow dose equivalent (H_s)**[(Hs),]** (that applies to the external exposure of the skin or an extremity) - The dose equivalent at a tissue depth of 0.007 **[0.0007]** cm (7 mg/cm^2) **[(7 mg/cm2)]** averaged over an area of 1 square centimeter (cm^2) **[(cm2)]**.

(95) - (99) (No change.)

(100) Special form radioactive material - Radioactive material that satisfies the following conditions.

(A) - (B) (No change.)

(C) It satisfies the requirements specified by **[the]** NRC. A special form encapsulation designed in accordance with **[the]** NRC requirements in effect on June 30, 1983, and constructed prior to July 1, 1985, may continue to be used. A special form encapsulation designed in accordance with **[the]** NRC requirements in effect on March 31, 1996, and constructed prior to April 1, 1998, may continue to be used. A special form encapsulation either designed or constructed after April 1, 1998, must meet the requirements of this definition applicable at the time of its design or construction.

(101) Special nuclear material - Special nuclear material is defined as:

(A) plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that **[the]** NRC, in accordance with the provisions of the Atomic Energy Act of 1954, §51 as amended, determines to be special nuclear material, but does not include source material; or

(B) (No change.)

(102) (No change.)

(103) Special units - The conventional units historically used by licensees, for example, **[and registrants, i.e.,]**curie (activity), rad (absorbed dose), and rem (dose equivalent).

(104) - (113) (No change.)

(114) Unrestricted area (uncontrolled area) - An area, or access to, which is neither limited nor controlled by the licensee. For purposes of this chapter, "uncontrolled area" is an equivalent term.

(115) (No change.)

(116) Veterinarian - An individual licensed by the Texas Board of Veterinary Medical Examiners **[, with license in good standing]**.

(117) - (122) (No change.)

(c) Exemptions.

(1) (No change.)

(2) United States Department of Energy (DOE) contractors and NRC contractors. Any DOE contractor or subcontractor and any NRC contractor or subcontractor of the following categories operating within Texas is exempt from this chapter, with the exception of §289.204 of this title (relating to Fees for Certificates of Registration, Radioactive Material[(s)] Licenses, Emergency Planning and Implementation, and Other Regulatory Services), to the extent that such contractor or subcontractor under that individual's contract receives, possesses, uses, transfers, or acquires sources of radiation:

(A) prime contractors performing work for **[the]** DOE at United States government-owned or controlled sites, including the transportation of sources of radiation to or from such sites and the performance of contract services during temporary interruptions of such transportation;

(B) prime contractors of **[the]** DOE performing research in, or development, manufacture, storage, testing, or transportation of, atomic weapons or components thereof;

(C) prime contractors of **[the]** DOE using or operating nuclear reactors or other nuclear devices in a United States government-owned vehicle or vessel; and

(D) any other prime contractor or subcontractor of **[the]** DOE or of **[the]** NRC when the state and **[the]**NRC jointly determine that:

(*i*) - (*ii*)(No change.)

(d) Records.

(1) Each licensee shall maintain records showing the receipt, transfer, and disposal of all sources of radiation.

(A) Records of receipt, transfer, and disposal of sources of radiation shall include as a minimum, the following information:

(*i*) a unique identification of each source of radiation, including;

(*I*) manufacturer's name;

(*II*) isotope;

(*III*) activity; and

(*IV*) sealed source serial number;

(*ii*) the date of receipt of each source of radiation;

(*iii*) for the person transferring the source of radiation, the name of the transferee, the number of the transferee's radioactive material license authorizing possession of the material, and the regulatory agency issuing the license to the transferee; and

(*iv*) for the person receiving the source of radiation, the name of the transferor, the number of the transferor's radioactive material license authorizing possession of the material, and the regulatory agency issuing the license to the transferor.

(B) Records of receipt, transfer, and disposal shall be maintained by the licensee until disposal is authorized by the agency.

[(1) Each licensee shall maintain records showing the receipt, transfer, and disposal of all licensed sources of radiation. These records shall be maintained by the licensee, until disposal is authorized by the agency. Additional record requirements are specified elsewhere in this chapter. All records required by this chapter shall be accurate and factual.]

(2) Additional record requirements and retention periods are specified elsewhere in this chapter.

(3) All records required by this chapter shall be accurate and factual.

(4)[**(2)**]Records are only valid if stamped, initialed, or signed and dated by authorized personnel or otherwise authenticated.

(5)[**(3)**]Each record required by this chapter must be legible throughout the retention period specified by the agency. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters,

drawings, or specifications, must include all pertinent information such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

(e) - (f)(No change.)

(g) Tests for leakage and/or contamination of sealed sources.

(1) The licensee in possession of any sealed source shall assure that:

(A) each sealed source, except as specified in paragraph (2) of this subsection and §289.253(i) of this title (relating to Radiation Safety Requirements for Well Logging Service Operations and Tracer Studies), is tested for leakage or contamination and the test results are received before the sealed source is put into use unless the licensee has a certificate from the transferor indicating that the sealed source was tested within six months before transfer to the licensee;

(B) each sealed source that is not designed to emit alpha particles is tested for leakage or contamination at intervals not to exceed six months or at alternative intervals approved by the agency, or by **[the]** NRC, an agreement state, or a licensing state after evaluation of information specified in §289.252(o)(3) and (4) **[§289.252(h)(7)(D) and (E)]** of this title (relating to Licensing of Radioactive Material);

(C) each sealed source that is designed to emit alpha particles is tested for leakage or contamination at intervals not to exceed three months or at alternative intervals approved by the agency, after evaluation of information specified in §289.252(o)(3) and (4) **[§289.252(h)(7)(D) and (E)]** of this title, or by **[the]** NRC, an agreement state, or a licensing state;

(D) (No change.)

(E) tests for leakage for all sealed sources, except brachytherapy sources manufactured to contain radium, shall be capable of detecting the presence of 0.005 μCi (185 Bq) of radioactive material on a test sample. Test samples shall be taken from the sealed source or from the surfaces of the container in which the sealed source is stored or mounted and at the nearest accessible point to the sealed source where contamination might accumulate. For a sealed source contained in a device, test samples are obtained when the source is in the "off" position;

(F) the test for leakage for brachytherapy sources manufactured to contain radium shall be capable of detecting an absolute leakage rate of 0.001 μCi **[micro;Ci]** (37 Bq) of radon-222 in a 24-hour period when the collection efficiency for radon-222 and its daughters has been determined with respect to collection method, volume, and time; **[and]**

(G) tests for contamination from radium daughters shall be taken on the interior surface of brachytherapy source storage containers and shall be capable of detecting the presence of 0.005 μCi **[micro;Ci]** (185 Bq) of a radium daughter that has a half-life greater than four days**[.]**; and

(H) tests for leakage or contamination shall be performed using a leak test kit or method approved by the agency, NRC, an agreement state, or a licensing state.

(2) A licensee need not perform tests for leakage or contamination on the following sealed sources:

(A) - (B) (No change.)

(C) sealed sources containing 100 μCi (3.7 megabecquerels (MBq)) or less of beta or gamma-emitting **[photon-emitting]** material or 10 μCi (370 kilobecquerels (kBq)) or less of alpha or neutron-emitting material **[alpha-emitting material]**;

(D) sealed sources containing only hydrogen-3 (tritium);

(E) - (F) (No change.)

(3) Analysis of tests for leakage or contamination from sealed sources shall be performed by persons specifically authorized by the agency, **[the]** NRC, an agreement state, or a licensing state, to perform such services.

(4) - (7) (No change.)

(h) - (l) (No change.)

(m) Open records.

(1) (No change.)

(2) Any person who submits written information or data to the agency and requests that the information be considered confidential, privileged, or otherwise not available to the public under the Texas Public Information Act, shall justify such request in writing, including statutes and cases where applicable, addressed to the agency.

(A) Documents containing information that is claimed to fall within an exception to the Texas Public Information Act shall be marked to indicate that fact. Markings shall be placed on the document on origination or submission.

(*i*) (No change.)

(*ii*) The following wording shall be placed at the bottom of the front cover and title page, or first page of text if there is no front cover or title page:

Figure: 25 TAC §289.201(m)(2)(A)(*ii*) **[Figure: 25 TAC §289.201(m)(2)(A)(*ii*)]**

(B) - (C) (No change.)

(3) - (4) (No change.)

(n) (No change.)

(o) Units of activity. For purposes of this chapter, activity is expressed in the special unit of curie (Ci) (Bq) **[(becquerel (Bq))]**, or its multiples, or disintegrations or transformations per second (dps or tps).

(1) - (2) (No change.)

TITLE 25. HEALTH SERVICES
Part 1. Texas Department of Health
Chapter 289. Radiation Control
Subchapter F. License Regulations
Amendments §289.253

PROPOSED PREAMBLE

The Texas Department of Health (department) proposes an amendment to §289.253, concerning radiation safety requirements for well logging service operations and tracer studies.

Government Code §2001.039 requires that each state agency review and consider for readoption each rule adopted by that agency pursuant to the Government Code, Chapter 2001 (Administrative Procedure Act). Section 289.253 has been reviewed and the department has determined that the reasons for adopting the section continue to exist; however, revisions to the rule are necessary.

The department published a Notice of Intention to Review for §289.253 in regards to Government Code, §2001.039 in the *Texas Register* (27 TexReg 1537) on March 1, 2002. No comments were received by the department on this section.

The proposed revision adds definitions for energy compensation source and tritium neutron generator target source. These definitions have been designated as items of compatibility by the United States Nuclear Regulatory Commission (NRC) and as an agreement state, Texas must adopt these items of compatibility in accordance with that agreement. The following revisions are also items of compatibility with NRC. The subsection on leak testing of sealed sources is reformatted and language is added to require leak testing of energy compensation sources at intervals not to exceed three years, if such sources are not exempt from the leak testing requirement. Language is added to the requirements concerning design and performance criteria for sealed sources used in well logging operations to allow sources manufactured prior to July 14, 1989, to meet United States of America Standards Institute (USASI) criteria, American National Standard Institute (ANSI) criteria, or specified prototype testing. Sealed sources manufactured after July 14, 1989, must comply with ANSI criteria or specified prototype testing. Wording is added to specify that the requirements concerning design and performance criteria do not apply to energy compensation devices. Language requiring sources that have not had prototype testing to be certified to meet specified prototype testing, and that the certification must be performed by persons authorized to do so, and that certification documentation be maintained, is deleted. The language is deleted because it is not applicable with the addition of the revised wording that allows sources to meet USASI criteria, ANSI criteria, or specified prototype testing. Wording requiring the use of specified individual monitoring devices is deleted and replaced with wording requiring use of individual monitoring devices that are processed and evaluated by an accredited National Laboratory Accreditation Program (NVLAP) processor. The revised language allows the flexibility to incorporate new monitoring technologies and maintains the standard established by requiring processing and evaluation by a NVLAP processor. Language is added to specify the requirements that energy compensation sources and tritium neutron generator target sources are subject to. Wording requiring the setting

of a whipstock or other deflection device when abandoning a source lost downhole is deleted and replaced with performance-based wording requiring a means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations. The revised requirement states the intent of the requirement, but does not limit the options for accomplishing that intent. Equivalent metric measurements are parenthetically added to the specified measurements of the plaque that is required to be posted on the well or wellbore containing an abandoned source. The revised and additional requirements concerning energy compensation sources are intended to recognize the use of the low activity sources. Without specified requirements for these sources, licensees would have to comply with overly burdensome requirements intended for higher activity sources, including those for leak testing, design and performance criteria for sealed sources, and well abandonment.

In addition to revisions that are compatibility items with NRC, language was added to clarify that a licensee must immediately notify the agency by telephone prior to beginning source recovery operations if the sealed source is separated from the logging tool and lost downhole. References to other subsections of this section are changed because of renumbering of the section. Other minor clarifying changes are added to make grammatical corrections and to make the section consistent with other sections of this title.

This amendment is part of the department's continuing effort to update, clarify, and simplify its rules regarding the control of radiation based upon technological advances, public concerns, legislative directives, or other factors.

Ruth E. McBurney, C.H.P., Director, Division of Licensing, Registration and Standards, Bureau of Radiation Control, has determined that for each year of the first five years the section will be in effect, there will be no fiscal implications for state or local government as a result of enforcing or administering the section as proposed.

Mrs. McBurney has also determined that for each year of the first five years the proposed section will be in effect, the public benefit anticipated as a result of enforcing the section will be to ensure continued protection of the public, workers, and the environment from unnecessary exposure to radiation by ensuring that requirements are appropriately updated to address new and changing technologies. There will be no fiscal impact on licensees or registrants that are small businesses, micro-businesses or other persons required to comply with the rule. There will be no fiscal impact because the addition of requirements to specifically address new or updated technologies allows for more performance-based compliance with requirements, rather than requiring compliance with more prescriptive rules. The proposed requirements reduce the regulatory burden for certain low activity sources. Also, many of the proposed revisions are clarifying and therefore result in no increased cost to licensees. There is no anticipated impact on local employment.

Comments on the proposal may be presented to Ruth E. McBurney, C.H.P., Director, Division of Licensing, Registration and Standards, Bureau of Radiation Control, Texas Department of Health, 1100 West 49th Street, Austin, Texas 78756-3189, Telephone (512) 834-6688 or electronic mail at Ruth.McBurney@tdh.state.tx.us. Public comments will be accepted for 30 days following publication of this proposal in the *Texas Register.* In addition, a public meeting

to accept oral comments will be held at 1:00 p.m., Wednesday, December 18, 2002, in Conference Room N218, Texas Department of Health, Bureau of Radiation Control, located at the Exchange Building, 8407 Wall Street, Austin, Texas.

The amendment is proposed under the Health and Safety Code, §401.051, which provides the Texas Board of Health (board) with authority to adopt rules and guidelines relating to the control of radiation; and §12.001, which provides the board with the authority to adopt rules for its procedure and for the performance of each duty imposed by law on the board, the department, or the commissioner of health.

The amendment affects Health and Safety Code, Chapter 12, Chapter 401, and implements Government Code, §2001.039.

LEGEND: (Proposed Amendment)
Single Underline = Proposed new language
[Bold Print and Brackets] = Current language proposed for deletion
Regular Print = Current language
(No change.) = No changes are being considered for designated subdivisions

§289.253. Radiation Safety Requirements for Well Logging Service Operations and Tracer Studies.

(a) - (b) (No change.)

(c) Definitions. The following words and terms when used in this section shall have the following meaning unless the context clearly indicates otherwise.

(1) Energy compensation source (ECS) - A small sealed source with an activity not exceeding 100 microcurie (μCi) (3.7 megabecquerel (MBq)), used within a logging tool or other tool components, to provide a reference standard to maintain the tools calibration when in use.

(2)[**(1)**] Field station (additional authorized use/storage location) - A facility where sources of radiation may be stored or used and from which equipment is dispatched to temporary job sites.

(3)[**(2)**] Injection tool - A device used for subsurface or downhole controlled injection of radioactive tracer material.

(4)[**(3)**] Logging assistant (equipment operator) - Any individual who, under the personal supervision of a logging supervisor, handles sealed sources or tracers that are not in logging tools or shipping containers or who performs surveys required by subsection (aa) [**(y)**] of this section.

(5)[**(4)**] Logging supervisor (field engineer) - The individual who provides personal supervision of the use of sources of radiation at temporary job sites.

(6)[**(5)**] Logging tool - A device used subsurface to perform well logging.

(7)[**(6)**] Mineral logging - Any logging performed for the purpose of mineral exploration other than oil or gas.

(8)[**(7)**] Personal supervision - Guidance and instruction by the supervisor, who is physically present at the job site and in such proximity that visual contact can be maintained and immediate assistance given as required.

(9)[**(8)**] Radiation safety officer - An individual named by the licensee or registrant and listed on the license or certificate of registration who has a knowledge of, responsibility for, and authority to enforce appropriate radiation protection rules, standards, and

practices on behalf of the licensee and/or registrant; and who meets the requirements of subsection (r) of this section.

(10)[(9)] Radioactive marker - Radioactive material placed subsurface or upon a structure intended for subsurface use for the purpose of depth determination or direction orientation.

(11)[(10)] Residential location - Any area where structures in which people lodge or live are located, and the grounds on which these structures are located including, but not limited to, houses, apartments, condominiums, and garages.

(12)[(11)] Service company - Any contracted or subcontracted company that is present at the temporary job site, specifically, that company to which the licensee's equipment is connected and that is exposed to radioactive material.

(13)[(12)] Source holder - A housing or assembly into which a radioactive source is placed for the purpose of facilitating the handling and use of the source.

(14)[(13)] Storage container - A container designed to provide radiation safety and security when sources of radiation are being stored.

(15)[(14)] Temporary job site - A location where well logging or tracer studies are performed other than the specific location(s) listed on a license or certificate of registration.

(16)[(15)] Tracer study - The release of a substance tagged with radioactive material for the purpose of tracing the movement or position of the tagged substance in the wellbore, at the wellhead, or adjacent formation.

(17)[(16)] Transport container - A container that meets the requirements of the United States Department of Transportation (DOT) and is designed to provide radiation safety and security when sources of radiation are being transported.

(18) Tritium neutron generator target source - A tritium source used within a neutron generator tube to produce neutrons for use in well logging applications.

(19)[(17)] Uranium sinker bar - A weight containing depleted uranium used to aid in the descent of a logging tool down toward the bottom of a wellbore.

(20)[(18)] Wellbore - A drilled hole in which wireline service operations are performed.

(21)[(19)] Well logging - All operations involving the lowering and raising of measuring devices or logging tools (that may or may not contain sources of radiation) into wellbores or cavities for the purpose of obtaining information about the well and/or adjacent formations.

(22)[(20)] Wireline - An armored steel cable containing one or more electrical conductors used to lower and raise logging tools in the wellbore.

(23)[(21)] Wireline service operation - Any mechanical service that is performed in the wellbore using devices that are lowered into the well on a wireline for purposes of evaluation.

(d) Prohibitions.

(1) No licensee shall perform well logging service operations with a sealed source(s) in any well or wellbore unless, prior to commencement of the operation, the licensee has a written agreement with the well operator, well owner, drilling contractor, or land owner that specifies who will be responsible for ensuring the following requirements are met:

(A) - (C) (No change.)

(D) the requirements of subsection (cc)(4)[(aa)(4)] of this section shall be met in the event a decision is made to abandon the sealed source downhole.

(2) (No change.)

(3) The licensee shall maintain, in accordance with subsection (dd)(5) [(bb)(5)] of this section, a copy of the written agreement specified in paragraphs (1) or (2) of this subsection.

(e) (No change.)

(f) Storage precautions.

(1) - (3)

(4) Sources of radiation may not be stored in residential locations. This section does not apply to storage of radioactive material in a vehicle in transit for use at temporary job sites, if the licensee complies with subsection (aa)(2)[(y)(2)] of this section.

(5) (No change.)

(g) (No change.)

(h) Radiation survey instruments.

(1) - (3) (No change.)

(4) The licensee or registrant shall maintain calibration records in accordance with subsection (dd)(5)[(bb)(5)] of this section.

(i) Leak testing of sealed sources.

(1) Testing and record keeping. Sealed sources shall be tested for leakage and contamination in accordance with this section and §289.201(g) of this title. The licensee shall maintain records of leak tests in accordance with subsection (dd)(5) of this section.

(2) Each energy compensation source that is not exempt from testing in accordance with §289.201(g)(2) of this title must be tested at intervals not to exceed three years. In the absence of a certificate from a transferor that a test has been made within the three years before the transfer, the energy compensation source may not be used until tested in accordance with §289.201(g) of this title.

[(i) Leak testing of sealed sources. Sealed sources shall be tested for leakage and contamination in accordance with §289.201(g) of this title. The licensee shall maintain records of leak tests in accordance with subsection (bb)(5) of this section.]

(j) Quarterly inventory. Each licensee or registrant shall conduct a physical inventory to account for all sources of radiation received or possessed at intervals not to exceed three months. The licensee or registrant shall make and maintain records of inventories in accordance with subsection (dd)(5)**[(bb)(5)]** of this section and shall include the following:

(1) - (5) (No change.)

(k) Utilization records. Utilization records shall be maintained by each licensee or registrant in accordance with subsection (dd)(5)**[(bb)(5)]** of this section and shall include the following information for each source of radiation:

(1) - (3) (No change.)

(l) Design and performance criteria for sealed sources used in well logging operations.

(1) Each sealed source used in well logging applications shall **[manufactured after August 1, 1992, (except those containing radioactive material in gaseous form) shall be certified at the time of manufacture to]** meet the following minimum criteria.

(A) - (B) (No change.)

(C) The sealed source meets one of the following requirements: **[source's prototype has been tested and found to maintain its integrity after each of the following tests.]**

(i) for a sealed source manufactured on or before July 14, 1989, the requirements from the United States of America Standards Institute (USASI) N5.10-1968, "Classification of Sealed Radioactive Sources," or the requirements in clause *(ii)* or *(iii)* of this subparagraph;

(*ii*) for a sealed source manufactured after July 14, 1989, the oil-well logging requirements from the American National Standard Institute/Health Physics Society (ANSI/HPS) N43.6-1997, "Sealed Radioactive Sources-Classification;" or

(*iii*) for a sealed source manufactured after July 14, 1989, the sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

(*I*)[(*i*)] Temperature. The test source shall be held at -40 degrees Celsius for 20 minutes, 600 degrees Celsius for one hour, and then be subjected to a thermal shock test with a temperature drop from 600 degrees Celsius to 20 degrees Celsius within 15 seconds.

(*II*)[(*ii*)] Impact. A 5 kilogram (kg) steel hammer, 2.5 centimeters (cm) in diameter, shall be dropped from a height of 1 meter (m) onto the test source.

(*III*)[(*iii*)] Vibration. The test source shall be subjected to a vibration from 25 Hertz (Hz) to 500 Hz with a peak amplitude of five times the acceleration of gravity for 30 minutes.

(*IV*)[(*iv*)] Puncture. A 1 gram (gm) hammer and pin, 0.3 cm pin diameter, shall be dropped from a height of 1 m onto the test source.

(*V*)[(*v*)] Pressure. The test source shall be subjected to an external pressure of 24,600 pounds per square inch absolute (1.695×10^7 pascals) without leakage.

(2) The requirements in paragraph (1) of this subsection do not apply to sealed sources that contain radioactive material in gaseous form.

(3) The requirements in this subsection do not apply to energy compensation sources.

[(2) In the absence of prototype testing required by paragraph (1)(C) of this subsection, sealed sources (except those containing radioactive material in gaseous form) used after January 1, 1993, shall be certified to meet the requirements of paragraph (1)(C) of this subsection.]

[(3) Certification of source criteria as required by paragraphs (1) and (2) of this subsection shall be performed only by persons specifically authorized to do so by the agency, another agreement or licensing state, or the NRC.]

[(4) Certification documents shall be maintained in accordance with subsection (bb)(5) of this section.]

(m) (No change.)

(n) Inspection and maintenance.

(1) Each licensee or registrant shall conduct, at intervals not to exceed six months, a program of visual inspection and maintenance of source holders (or sealed source, if there is no source holder), logging tools, source handling tools, storage containers, transport containers, and injection tools to assure proper labeling and physical condition. The inspection program may be performed concurrently with routine leak testing of sealed sources. Records of inspection and maintenance shall be made and maintained by the licensee or registrant in accordance with subsection (dd)(5) **[(bb)(5)]** of this section.

(2) (No change.)

(3) Any operation, such as drilling, cutting, or chiseling on a source holder containing a sealed source, shall be performed on the source holder only by persons specifically licensed to do so by the agency, another agreement or licensing state, or the NRC. The provisions of this paragraph do not apply to logging tool recovery (fishing) operations conducted in accordance with the provisions of subsection (cc)(3)**[(aa)(3)]** of this section.

(4) (No change.)

(o) Training requirements.

(1) No licensee or registrant shall permit any individual to act as a logging supervisor until such individual has met the following requirements:

(A) successfully completed an agency-accepted course or a course recognized by another agreement or licensing state, or the NRC, including at least 24 hours of formal training in the subjects outlined in subsection (dd)(1)**[(bb)(1)]** of this section;

(B) - (E) (No change.)

(2) – (3) (No change.)

(4) Each licensee or registrant shall maintain records that document that the requirements of paragraphs (1)-(3) of this subsection are met. Such records shall be maintained in accordance with subsection (dd)(5)**[(bb)(5)]** of this section.

(p) Operating, safety, and emergency procedures. The licensee or registrant shall maintain written operating, safety, and emergency procedures that include descriptions of and directions in at least the items listed in subsection (dd)(4)**[(bb)(4)]** of this section.

(q) Personnel monitoring.

(1) In addition to the requirements of §289.202(p)(3) and (q) of this title or §289.231(n) and (s)(3) of this title, as applicable, no licensee or registrant shall permit any

individual to act as a logging supervisor or logging assistant unless that individual wears an individual monitoring device that is processed and evaluated by an accredited National Laboratory Accreditation Program (NVLAP) processor, **[either a film badge, a thermoluminescent dosimeter (TLD), or an optically stimulated luminescence device (OSL)]** at all times during well logging service operations and/or tracer studies utilizing sources of radiation. Each individual monitoring device **[film badge, TLD, or OSL]** shall be assigned to and worn by only one individual. Film badges shall be replaced at least monthly. Other individual monitoring devices **[TLDs and OSLs]** shall be replaced at least quarterly. After replacement, each individual monitoring device **[film badge, TLD, or OSL]** shall be returned to the supplier for processing within 14 calendar days or as soon as practicable. In circumstances that make it impossible to return each individual monitoring device to the supplier for processing **[film badge, TLD, or OSL]** within 14 calendar days, such circumstances shall be documented and available for review by the agency.

(2) When necessary in order to aid in determining the extent of an individual's exposure to concentrations of radioactive material, the agency may require a licensee or registrant to make available to the individual appropriate bioassay services and to furnish a copy of the reports of such services to the agency.

(3) Personnel monitoring records shall be maintained by the licensee or registrant in accordance with subsection (dd)(5) **[(bb)(5)]** of this section.

(r) Radiation safety officer.

(1) - (2) (No change.)

(3) The duties of the RSO include, but are not limited to, the following:

(A) - (G) (No change.)

(H) maintaining records as required by this chapter (see subsection (dd)(5)**[(bb)(5)]** of this section);

(I) - (L) (No change.)

(s) - (w) (No change.)

(x) Uranium sinker bars. The licensee may use a depleted uranium sinker bar in well logging service operations only if it is legibly impressed with the wording "DANGER (or CAUTION), RADIOACTIVE-DEPLETED URANIUM, NOTIFY CIVIL AUTHORITIES (OR NAME OF COMPANY) IF FOUND".

(y) Energy compensation source. The licensee may use an energy compensation source that is contained within a logging tool or other tool components. Use of an energy compensation source is only subject to the requirements of subsections (i), (j), and (k) of this section.

(z) Tritium neutron generator target source.

(1) Use of a tritium neutron generator target source, containing quantities not exceeding 30 curie (Ci) (1,110 MBq) and in a well with a surface casing to protect fresh water aquifers, is subject to the requirements of this section, except subsections (d), (l), and (cc) of this section.

(2) Use of a tritium neutron generator target source, containing quantities exceeding 30 Ci (1,110 MBq) is subject to the requirements of this section, except subsection (l) of this section.

(aa)[(y)] Radiation surveys.

(1) Radiation surveys (and calculations for neutron sources) shall be made and recorded for each area where radioactive materials are stored.

(2) Radiation surveys (and calculations for neutron sources) of the radiation levels in occupied positions and on the exterior of each vehicle used to transport radioactive materials shall be made and recorded. Such surveys (and calculations for neutron sources) shall include all sources of radiation transported in the vehicle.

(3) If the sealed source assembly is removed from the logging tool before departing the job site, a survey of the tool **[shall be performed]** to verify that the logging tool is free of contamination shall be made and recorded.

(4) If the **[the licensee has reason to believe that]** encapsulation of the sealed source has been **[could be]** damaged by an operation or is likely to have been damaged by an operation, the licensee shall immediately conduct a radiation survey and make a record of that survey, including a contamination survey, during and after the operation.

(5) Radiation surveys shall be made and recorded at the job site and/or well head for each tracer operation except for those utilizing hydrogen-3, carbon-14, sulfur-35, or krypton-85. These surveys shall include measurements of radiation levels before and after the operation.

(6) Records required in accordance with paragraphs (1)-(5) of this subsection shall also include the dates, the identification of individual(s) making the survey, the unique identification of survey instrument(s) used, radiation measurements in milliroentgen per hour (mR/hr), calculations in millirem per hour (mrem/hr) (microsievert per hour (μSv/hr)), and an exact description of the location of the survey. Each licensee or registrant shall make and maintain records of these surveys in accordance with subsection (dd)(5)[**(bb)(5)**] of this section.

(bb)[**(z)**] Records/documents for inspection by the agency.

(1) Each licensee or registrant shall maintain the records/documents specified in subsection (dd)(5)[**(bb)(5)**] of this section for inspection by the agency.

(2) Each licensee or registrant maintaining additional authorized use/storage locations from which well logging service operations are conducted shall have copies of the records/documents specified in subsection (dd)(5)(B)-(E)[**(bb)(5)(B)-(E)**] and (G)-(O) of this section that are specific to the site available at each site for inspection by the agency.

(3) Records/documents required in accordance with paragraph (2) of this subsection shall be maintained in accordance with subsection (dd)(5)[**(bb)(5)**] of this section.

(4) Each licensee or registrant conducting well logging service operations at a temporary job site shall have copies of the records/documents specified in subsection (dd)(5)(B), (C), (I), (K), (L), and (N)[**(bb)(5)(B), (C), (I), (K), (L), and (N)**] of this section available at that site for inspection by the agency.

(5) Records/documents required by paragraph (4) of this subsection shall be maintained at the temporary job site for the period of operation at that site for inspection by the agency.

(cc)[**(aa)**] Notification of incidents and lost sources; abandonment procedures for irretrievable sources.

(1) Notification of incidents and sources lost in other than downhole well logging operations shall be made in accordance with appropriate provisions of §289.202 of this title, or §289.231 of this title, as applicable.

(2) Whenever **[there is reason to believe that]** a sealed source or a device containing radioactive material has been ruptured or is likely to have been ruptured, the licensee shall notify the agency immediately by telephone and submit written notification within 30 days. The written notification shall designate the following:

(A) the well or other location;

(B) a description of the magnitude and extent of the escape of radioactive material;

(C) an assessment of the consequences of the rupture; and

(D) an explanation of the efforts planned or being taken to mitigate these consequences.

(3) Whenever a sealed source is separated from the logging tool and is lost downhole, the licensee shall notify the agency immediately by telephone prior to beginning source recovery operations.

(4)[(3)]Whenever a sealed source or device containing radioactive material is lost downhole, the licensee shall do the following:

(A) consult with the well operator, well owner, drilling contractor, or land owner regarding methods to retrieve the source or device that may reduce the likelihood that the source or device will be damaged or ruptured during the logging tool recovery (fishing) operations;

(B) monitor with a radiation survey instrument (or logging tool adjusted to detect gamma emissions from source(s) lost downhole), at the surface for the presence of radioactive contamination during logging tool recovery (fishing) operations; and

(C) notify the agency immediately by telephone and submit written notification within 30 days if radioactive contamination is detected at the surface or if the source appears to be damaged.

(5)[(4)]When **[it becomes apparent that]** efforts to recover the radioactive source are not **[will not be]** successful, the licensee shall do the following:

(A) advise the well operator of the Texas Railroad Commission requirements regarding abandonment and an appropriate method of abandonment, that shall include the following:

(*i*) the immobilization and sealing in place of the radioactive source with a cement plug; **[,]**

(*ii*) a means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations; and **[the setting of a whipstock or other deflection device; and]**

(*iii*) the mounting of a permanent identification plaque, containing information required by paragraph (5) of this subsection, at the surface of the well;

(B) notify the agency by telephone giving the circumstances of the loss; and

(C) file a written report with the agency within 30 days of the abandonment, providing the following information:

(*i*) date of occurrence;

(*ii*) a description of the radioactive source involved, including radionuclide, activity, chemical and physical form, and serial number;

(*iii*) surface location and identification of well;

(*iv*) results of efforts to immobilize and seal the source in place;

(*v*) depth of the radioactive source;

(*vi*) depth of the top of the cement plug;

(*vii*) depth of the well; and

(*viii*) information contained on the permanent identification plaque.

(6)[**(5)**]Whenever a sealed source containing radioactive material is abandoned downhole, the licensee shall provide a permanent plaque (an example of a suggested plaque is shown in subsection (dd)(3)[**(bb)(3)**] of this section) for posting on the well or wellbore. This plaque shall meet the following requirements:

(A) be constructed of long-lasting material such as stainless steel, brass, bronze, or monel. The size of the plaque should be convenient for use on active or inactive wells; for example, a 7-inch (17 cm) square. Letter size of the word "CAUTION" should be approximately twice the letter size of the rest of the information; for example, 1/2 inch (1.27 cm) and 1/4 inch (0.63 cm) letter size, respectively; and

(B) contain the following engraved information on its face:

(*i*) the word "CAUTION;"

(*ii*) the radiation symbol (color not required);

(*iii*) the date of abandonment;

(*iv*) the name of the well operator or well owner;

(*v*) the well name and well identification number(s) or other designation;

(*vi*) radionuclide(s) and activity(ies) of the source(s);

(*vii*) the source depth and the plug back depth (depth to the top of the plug); and

(*viii*) an appropriate warning, depending on the specific circumstances of each abandonment, such as the following:

(*I*) "Do not drill below plug back depth;"

(*II*) "Do not enlarge casing;" or

(*III*) "Do not re-enter hole before contacting Bureau of Radiation Control, Texas Department of Health."

(7)[**(6)**]The licensee shall immediately notify the agency by telephone and confirming letter if the licensee knows or has reason to believe that radioactive material has been lost in or to an underground potable water source. Such notice shall designate well location and describe the magnitude and extent of loss of radioactive material, consequences of such loss and efforts taken or planned to mitigate these consequences.

(8)[**(7)**]In the event of an uncontrolled release of radioactive tracer material to the environment, the licensee shall notify the agency by telephone within 24 hours and submit written notification within 30 days.

(dd)[**(bb)**] Appendices.

(1) Subjects to be included in training courses for well logging service operations and/or tracer studies are as follows:

(A) fundamentals of radiation safety that include:

(*i*) characteristics of radiation;

(*ii*) units of radiation dose (rem) and activity;

(*iii*) significance of radiation dose specifying radiation protection standards and biological effects of radiation;

(*iv*) levels of radiation from sources of radiation;

(*v*) methods of controlling radiation dose specifying time, distance, and shielding;

(*vi*) radiation safety practices, specifying prevention of contamination and methods of decontamination; and

(*vii*) discussion of ingestion, inhalation pathways.

(B) radiation detection instrumentation to be used that includes:

(*i*) use of radiation survey instruments specifying operation, calibration, and limitations;

(*ii*) survey techniques; and

(*iii*) use of individual monitoring devices**[, including film badges, TLDs, OSLs, and pocket dosimeters]**;

(C) equipment to be used that specifies;

(*i*) handling equipment and remote handling tools;

(*ii*) sources of radiation;

(*iii*) storage control, disposal, and transport of equipment and sources of radiation;

(*iv*) operation and control of equipment; and

(*v*) maintenance of equipment.

(D) pertinent federal and state requirements;

(E) the licensee's or registrant's written operating, safety, and emergency procedures;

(F) the licensee's or registrant's record keeping procedures; and

(G) case histories and potential consequences of accidents in well logging service operations and tracer studies.

(2) In addition to the subjects for training courses required in paragraph (1) of this subsection, individuals performing tracer studies must also complete training in the following subjects:

(A) sources of contamination;

(B) contamination detection and control;

(C) decontamination techniques and limits;

(D) survey techniques for tracer materials; and

(E) packaging requirements for transportation of radioactive materials, especially residual materials from tracer studies.

(3) The following is an example of a plaque for identifying wells containing sealed sources of radioactive material abandoned downhole:

Figure: 25 TAC §289.253(dd)(3) **[Figure: 25 TAC §289.253(bb)(3)]**

(4) The licensee's or registrant's operating, safety, and emergency procedures shall include descriptions of and instructions in at least the following:

(A) the handling and use of sources of radiation in wells without surface casing for protecting fresh water aquifers, if appropriate;

(B) the handling and use of sources of radiation to be employed so that no individual is likely to be exposed to radiation doses in excess of the limits established in §289.202 of this title, or §289.231 of this title, as applicable. Every reasonable effort shall be made to keep radiation exposures and releases of radioactive material in soils and effluents to unrestricted areas as low as is reasonably achievable;

(C) methods and occasions for conducting radiation surveys;

(D) methods and occasions for locking and securing sources of radiation;

(E) personnel monitoring, including bioassays, and the use of individual monitoring devices[**personnel monitoring equipment, including bioassays,**];

(F) removal of radioactive material from storage, transportation of radioactive material to field locations and temporary job sites, including packaging of sources of radiation in the vehicles, placarding of vehicles, securing sources of radiation during transportation, and return to storage;

(G) minimizing exposure of individuals during routine use and in the event of an accident;

(H) procedures for notifying proper personnel in the event of an accident or well excursion;

(I) maintenance of records;

(J) use, inspection, and maintenance of source holders, logging tools, source handling tools, storage containers, transport containers, and injection tools;

(K) procedures to be followed in the event a sealed source is lost or lodged downhole;

(L) procedures to be used for picking up, receiving, handling, and opening packages containing radioactive material;

(M) procedures to be used for surveys of temporary job sites and equipment, and decontamination of vehicles, associated equipment, and clothing following tracer studies;

(N) storage and disposal of radioactive waste;

(O) procedures for laundering contaminated clothing, if applicable;

(P) licensee's or registrant's management structure;

(Q) posting of radiation areas and labeling radioactive material containers;

(R) procedures to be followed in the event of an uncontrolled release of radioactive tracer material to the environment; and

(S) actions to be taken if a sealed source is ruptured, including actions to prevent the spread of contamination and minimize inhalation and ingestion of radioactive material, and actions to obtain suitable radiation survey instruments as required by subsection (h) of this section.

(5) The following records/documents shall be maintained by the licensee or registrant for inspection by the agency.

Figure: 25 TAC §289.253(dd)(5) **[Figure: 25 TAC §289.253(bb)(5)]**