STATE OF UTAH

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS I NON-HAZARDOUS

INJECTION WELL

PERMIT APPLICATION PACKAGE

Last Revised January 2018

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GENERAL INSTRUCTIONS

The Utah Underground Injection Control (UIC) Administrative Rules (UAC R317-7) regulate the injection of fluids into the subsurface. The following instructions outline the procedures, documents, and information needed for a Class I Non Hazardous injection well permit application.

1. The applicant shall submit an original Permit Application and a Technical Report. Both documents are to be submitted in duplicate (one hard copy and one pdf format) to the:

Utah Department of Environmental Quality

Division of Water Quality

195 North 1950 West

P.O. Box 144870

Salt Lake City, Utah 84114-4870

ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (801) 536-4300

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Division of Water Quality (DWQ) to make informed decisions in setting permit conditions. However, if the submitted documents, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Utah Government Records and Management Act (Utah Code Annotated 63G-2) ("GRAMA"). According to GRAMA, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act,5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40 CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application and the accompanying technical report.
2. Signature on Application: The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a principal executive officer of at least the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee. The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (40 CFR Part 144.32).
3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.
4. An application which involves the injection of a fluid containing radioactive materials shall be accompanied by a letter or other instrument in writing from the Utah Division of Radiation Control, stating that either the applicant has a license from the Division of Radiation Control governing the disposal of radioactive materials; or that the applicant does not need a license. In the case of radioactive materials disposal, the Division of Waste Management & Radiation Control must receive a copy of the application for an injection permit. The copy should be mailed to:

Utah Department of Environmental Quality

Division of Waste Management & Radiation Control

P.O. Box 144880

168 North 1950 West

Salt Lake City, Utah 84114-4880

1. Included at the end of this application package are some of the federal regulations adopted by Utah that will also be considered in evaluating the permit application. The federal regulations included are only a portion of those applicable to underground injection activities, and are provided as reference to assist in the preparation of the permit application. The complete federal regulations covering underground injection can be found in the Code of Federal Regulations (CFR) Title 40 with updates available in the Federal Register.

PROCEDURAL INFORMATION

The staff will review the application for completeness. During the completeness review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, a notice that an application has been received may be given to other state agencies and local governmental entities interested in water quality control and industrial waste management. A preliminary draft permit will be prepared by the Division and transmitted to the applicant for review. Comments from the applicant may result in changes to the draft permit, after concurrence by the Division Director. The draft permit will be subjected to a 30-day public comment period. A public hearing may be requested. In either case, a notice will be provided to inform the public that a draft permit has been prepared.

Requirements for the public notice include:

1. That a public notice be published for each draft permit, major permit modification, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located and each county affected by the discharge.

2. The Division will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the applicant, or any affected person within thirty (30) days following newspaper publication.

DWQ may act upon a permit application, a draft permit, a major permit modification, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:

(a) notice of the application has been mailed to persons possibly affected by the proposed permit;

(b) notice has been published at least once in a newspaper, regularly published or circulated within each county where the proposed facility or discharge is located and in each county affected by the discharge; and

2. Within thirty (30) days following publication of the Board's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or

After resolution of any public comment the Division shall issue or deny the draft permit, major permit modification, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

Utah Department of Environmental Quality

Division of Water Quality

1422 Underground Injection Control (UIC) Program

CLASS I NON-HAZARDOUS INJECTION WELL PERMIT APPLICATION

(Reference to R317-7 and 40 CFR in parentheses indicates sections of Utah UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)

□ Initial Application

□ Permit Renewal, Original Permit No.

□ Permit Modification, Original Permit No.

2. Type of Permit (check one)

□ Individual (Single) Well Permit □ Area (Multiple Wells) Permit

3. Facility Operator (Applicant must be the operator if owner/operator are different)

(R317-7-9.1(B); R317-7-9.1(D)(4) and 40CFR144.31(b))

Name:

(Individual, Corporation or Other Legal Entity)

Address:

(Permanent Mailing Address)

City: State: Zip:

Telephone Number:

4. Facility Owner

(R317-7-9.1(D)(4) and 40CFR144.31(e)(4))

Name:

(Individual, Corporation or Other Legal Entity)

Address:

(Permanent Mailing Address)

City: State: Zip:

Telephone Number:

5. Facility status: Federal State

Private Public Other

(R317-7-9.1(D)(4) and 40CFR144.31(e)(4)) (Indicate)

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number.

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules or ordinances.

(R317-7-9.1(D)(1) and 40CFR144.31(e)(1))

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules or ordinances.

(R317-7-9.1(D)(6) and 40CFR144.31(e)(6))

9. Provide a brief description of the nature of the business at the facility including generation of the waste fluid to be injected (include appropriate North American Industry Classification System (NAICS) Codes).

(R317-7-9.1(D)(3) and (8) and 40CFR144.31(e)(3) and (8))

10. Location of Proposed Class I Injection Well Operation:

(R317-7-9.1(D)(2) and (40CFR144.31(e)(2))

Facility name:

Facility mailing address:

Facility location description:

Street address:

City:

County: Lease:

No. of Wells\* :

For each well provide the following:

Township; Range; Section; and 1/4, 1/4 Section:

UTM Northing (NAD 83 UTM 12, Meters):

UTM Easting (NAD 83 UTM 12, Meters):

\* Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

11. Are the proposed injection well(s) located on Indian land? □ Yes □ No

(R317-7-9.1(D)5) and 40CFR144.31(e)(5))

12. Submit the Technical Report with Application (R317-7-6.9).

13. Certification of information submitted on application form and in the Technical Report

(R317-7-9.3 and 40CFR144.32).

(Name of Company Official: Type or Print Legibly)

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:

Date:

SUBSCRIBED AND SWORN to before me this day of , 20 .

My commission expires on the day of , 20 .

# Notary Public in and for

# County, Utah

(SEAL)

TECHNICAL REPORT OUTLINE

FOR CLASS I NON-HAZARDOUS INJECTION WELL

PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a professional geologist or engineer, must accompany a permit application for a Class I Non-Hazardous injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Executive Secretary' in the outline below refers to the Executive Secretary of the Utah Water Quality Board or an appointed representative, i.e. the UIC staff reviewing the permit application. The UIC staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Utah UIC Administrative Rules (R317-7) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

**Part A – Determination of Area of Review (AOR)**

Submit details of the method and, if appropriate, the calculations used to determine the area of review. Refer to [40CFR146.6](#CFR40_146_6) for acceptable methods and calculations for determining the area of review. In Utah, a fixed radius area of review is 2 miles from the injection well for an individual well permit and 2 miles from the circumscribed area for an area permit will apply unless advanced approval by the Executive Secretary is obtained to use an equation.

Note: When referring to 40CFR146.6, disregard the references to 'under Sec. 122.38' and 'under Sec. 122.39'.

(R317-7-2.4; [40CFR146.6](#CFR40_146_6))

**Part B - Permit Application Maps**

**1. Map of Facility and Well (or Project Area)**

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the injection well (individual permit) or project area (area permit). The following items listed in public records or otherwise known to the applicant and occurring within a quarter mile of the facility property boundary must be included on the map:

* + 1. injection well (individual permit) or project area (area permit)
    2. the facility property boundary and each of its intake and discharge structures;
    3. each of its hazardous waste treatment, storage, or disposal facilities;
    4. each well where fluids from the facility are injected underground (injection wells other than those for which this permit application is being prepared);
    5. wells, springs, and other surface water bodies, and drinking water wells.

(R317-7-9.1(D)(7); [40CFR144.31](#CFR40_144_31)(e)(7))

**2. Map of Area of Review (AOR)**

Submit a map showing the injection well (individual permit) or project area (area permit) and the applicable area of review. Within the area of review, the map must include the following:

* + 1. the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells.
    2. surface bodies of waters, springs, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected.

Only pertinent information of public record or otherwise known to the applicant is required to be included on this map.

(R317-7-9.1(D)(9); [40CFR146.14](#CFR40_146_14)(a)(2))

**3. Maps and Cross Sections of USDWs**

Submit maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water (USDWs) within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:

A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system (a sustainable delivery of 1 gallon per minute); **and**

1. currently supplies drinking water for human consumption; **or**

2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**

B. is not an exempted aquifer. (See 40CFR146.4 for definition of ‘exempt aquifer’)

(R317-7-9.1(D)(11); [40CFR146.14](#CFR40_146_14)(a)(4))

**4. Maps and Cross Sections of Local Geologic Structure and Lithology**

Submit maps and cross sections detailing the geologic structure and lithology of the local area with particular emphasis on the injection and confining intervals.

(R317-7-9.1(D)(12); [40CFR146.14](#CFR40_146_14)(a)(5))

**5. Maps and Cross Sections of Regional Geologic and Hydrologic Setting**

Submit generalized map and cross sections illustrating the regional geologic and hydrologic setting.

(R317-7-9.1(D)(13); [40CFR146.14](#CFR40_146_14)(a)(6))

**Part C – Tabulation of Artificial Penetration Data**

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Executive Secretary may require.

(R317-7-9.1(D)(10); [40CFR146.14](#CFR40_146_14)(a)(3))

**Part D – Corrective Action Plan**

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial penetrations into the injection zone, identified on Part B, Map 2 and Part C, that are improperly sealed, completed, or abandoned.

(R317-7-9.1(D)(21); [40CFR144.55](#CFR40_144_55); [40CFR146.7](#CFR40_146_7); [40CFR146.14](#CFR40_146_14)(a)(14))

**Part E – Formation Testing Program**

Submit a proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation.

(R317-7-9.1(D)(15); [40CFR146.14](#CFR40_146_14)(a)(8))

**Part F – Well Stimulation Program**

Submit a proposed well stimulation program.

(R317-7-9.1(D)(16); [40CFR146.14](#CFR40_146_14)(a)(9))

**Part G – Injection Well Construction Plan**

Submit a well construction plan that includes details of the cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program that conform with the Class I well construction requirements in R317-7-10.1(A) and 40CFR146.12. Changes in construction plans during construction may be approved as minor modifications; however, no such changes may be physically incorporated into construction of the well prior to approval of the modification by the Executive Secretary.

(R317-7-6.1; R317-7-9.1(D)(22)(a); R317-7-10.1(A); [40CFR146.12](#CFR40_146_12))

**Part H – Injection Well Construction Details**

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well that meet the construction requirements of R317-7-10.1(A).

(R317-7-9.1(D)(18); [40CFR146.14](#CFR40_146_14)(a)(11))

**Part I – Injection Well Operation Plan and Procedures**

Submit a proposed injection operation plan that meets the operating requirements of R317-7-10.2 and the proposed operating data for each well including:

* + 1. average and maximum daily rate and volume of the fluid to be injected;
    2. average and maximum injection pressure;
    3. source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids

The permit shall establish injection operation requirements including any maximum injection volumes and/or maximum wellhead pressures necessary to assure that:

* + 1. fractures are not initiated in the confining zone,
    2. injected fluids do not migrate into any underground source of drinking water,
    3. formation fluids are not displaced into any underground source of drinking water, and
    4. injection between the outermost casing protecting USDWs and the well bore does not occur.

(R317-7-9.1(D)(14 and 17); R317-7-10.2; [40CFR144.52](#CFR40_144_52)(a)(3); [40CFR146.13](#CFR40_146_13)(a); [40CFR146.14](#CFR40_146_14)(a)(10))

**Part J – Monitoring, Recording, and Reporting Plan**

Submit a monitoring, recording, and reporting plan, including maps, for meeting the requirements of R317-7-10.3(A); R317-7-10.4(A); [40CFR146.13](#CFR40_146_13); and [40CFR146.8](#CFR40_146_8).

In the plan, the applicant must

* + 1. identify the types of tests, methods, and equipment used to generate the monitoring data,
    2. address the proper use, maintenance and installation, when appropriate, of monitoring equipment or methods, and
    3. propose type, intervals, and frequency sufficient to yield data that are representative of the monitored activity.

(R317-7-9.1(D)(20); R317-7-10.3(A); R317-7-10.4(A); [40CFR144.52](#CFR40_144_52); [40CFR144.54](#CFR40_144_54); [40CFR146.8](#CFR40_146_8); [40CFR146.13](#CFR40_146_13))

**Part K – Contingency Plan**

Submit a contingency plan to address well shut-ins or well failure that ensures that USDWs are protected during these events.

(R317-7-9.1(D)(19); [40CFR146.14](#CFR40_146_14)(a)(12))

**Part L – Plugging and Abandonment Plan**

Submit a plugging and abandonment plan that meets the requirements of R317-7-10.5 and [40CFR146.10](#CFR40_146_10) and is acceptable to the Director.

(R317-7-9.1(D)(23); R317-7-10.5; [40CFR146.10](#CFR40_146_10); [40CFR146.14](#CFR40_146_14)(c))

**Part M – Financial Responsibility**

Submit a Standby Trust Agreement with a Financial Guarantee Bond, or another financial mechanism approved by the Executive Secretary to demonstrate financial resources necessary to close, plug, and / or abandon the Class I injection well(s). The applicant must use the financial assurance mechanism template provided by the Executive Secretary.

(R317-7-9.1(D)(24); [40CFR144.52](#CFR40_144_52)(a)(7); [40CFR146.14](#CFR40_146_14)(a)(16))

#### Attachments

#### ARTIFICIAL PENETRATION REVIEW

Well (etc.) I.D.

Control: Status

Operator: State Forms:

Lease: Distance from Injection Well:

Plugging Details Well Diagram

POTENTIAL PROBLEM(S):

Applicable Federal Regulations

The Utah 1422 Underground Injection Control Administrative Rules (UAC R317-7) must meet the minimum requirements of the federal UIC regulations. Furthermore, the state rules incorporate-by-reference many of the federal regulations. Therefore, we have included the most relevant federal regulations governing UIC Class III in-situ copper recovery mining activities. This information is provided to assist the applicant in preparing the Permit Application and in developing the information required in the Technical Report. A complete set of regulations is available in Title 40 of the Code of Federal Regulations (CFR). The most recent electronic publication of the CFR can be found at the following web site:

[Electronic Code of Federal Regulations – Title 40 Protection of the Environment](http://www.ecfr.gov/cgi-bin/text-idx?SID=02e9fbd2b074df2c00c7374f70f8f069&mc=true&tpl=/ecfrbrowse/Title40/40tab_02.tpl)

More recent updates are published in the Federal Register available at this web site:

[Federal Register - 1994 to Present](http://www.gpo.gov/fdsys/browse/collection.action?collectionCode=FR)

Some of the federal regulations included here are not incorporated by reference in the Utah 1422 Underground Injection Control Administrative Rules (UAC R317-7). They are included here for reference and are designated by an asterisk (\*).

Code of Federal Regulations

Title 40, Volume 20

Revised as of January 1, 2008

TITLE 40--PROTECTION OF ENVIRONMENT

CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY

PART 144\_UNDERGROUND INJECTION CONTROL PROGRAM

**Subpart B\_General Program Requirements**

**Sec. 144.5 Confidentiality of information.**

1. In accordance with 40 CFR part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information'' on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR part 2 (Public Information).
2. Claims of confidentiality for the following information will be denied:
   1. The name and address of any permit applicant or permittee;
   2. Information which deals with the existence, absence, or level of contaminants in drinking water.

**Sec. 144.7 Identification of underground sources of drinking water and exempted aquifers.**

1. The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under paragraph (b) of this section, as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water'' in Sec. 144.3. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in Sec. 144.3.
   1. The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in 40 CFR 146.4.
   2. No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the Administrator as part of a UIC program.
   3. Subsequent to program approval or promulgation, the Director may, after notice and opportunity for a public hearing, identify additional exempted aquifers. For approved State programs exemption of aquifers identifed (i) under Sec. 146.04(b) shall be treated as a program revision under Sec. 145.32; (ii) under Sec. 146.04(c) shall become final if the State Director submits the exemption in writing to the Administrator and the Administrator has not disapproved the designation within 45 days. Any disapproval by the Administrator shall state the reasons and shall constitute final Agency action for purposes of judicial review.
   4. For Class III wells, the Director shall require an applicant for a permit which necessitates an aquifer exemption under Sec. 146.04(b)(1) to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone shall be considered by the Director in addition to the information required by Sec. 144.31(g).
   5. For Class II wells, a demonstration of commercial producibility shall be made as follows:
      1. For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Director upon a demonstration by the applicant of historical production having occurred in the project area or field.
      2. For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

**Sec. 144.16 Waiver of requirement by Director.**

1. When injection does not occur into, through or above an underground source of drinking water, the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in 40 CFR part 146 or Sec. 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.
2. When injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under Sec. 146.6(a) is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required in 40 CFR part 146 or Sec. 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.
3. When reducing requirements under paragraph (a) or (b) of this section, the Director shall prepare a fact sheet under Sec. 124.8 explaining the reasons for the action.

**Subpart D - Authorization by Permit**

**Sec. 144.31 Application for a permit; authorization by permit.**

1. Permit application. Unless an underground injection well is authorized by rule under subpart C of this part, all injection activities including construction of an injection well are prohibited until the owner or operator is authorized by permit. An owner or operator of a well currently authorized by rule must apply for a permit under this section unless well authorization by rule was for the life of the well or project. Authorization by rule for a well or project for which a permit application has been submitted terminates for the well or project upon the effective date of the permit. Procedures for applications, issuance and administration of emergency permits are found exclusively in Sec. 144.34. A RCRA permit applying the standards of part 264, subpart C of this chapter will constitute a UIC permit for hazardous waste injection wells for which the technical standards in part 146 of this chapter are not generally appropriate.
2. Who applies? When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.
3. Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the UIC program as follows:
   1. For existing wells, as expeditiously as practicable and in accordance with the schedule in any program description under Sec. 145.23(f) or (for EPA administered programs) on a schedule established by the Regional Administrator, but no later than 4 years from the approval or promulgation of the UIC program, or as required under Sec. 144.14(b) for wells injecting hazardous waste. For EPA administered programs the owner or operator of Class I or III wells shall submit a complete permit application no later than 1 year after the effective date of the program.
   2. For new injection wells, except new wells in projects authorized under Sec. 144.21(d) or authorized by an existing area permit under Sec. 144.33(c), a reasonable time before construction is expected to begin.
4. Completeness. The Director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity. For EPA-administered programs, an application which is reviewed under Sec. 124.3 is complete when the Director receives either a complete application or the information listed in a notice of deficiency.
5. Information requirements. All applicants for permits shall provide the following information to the Director, using the application form provided by the Director.
   1. The activities conducted by the applicant which require it to obtain permits under RCRA, UIC, the National Pollution Discharge Elimination system (NPDES) program under the Clean Water Act, or the Prevention of Significant Deterioration (PSD) program under the Clean Air Act.
   2. Name, mailing address, and location of the facility for which the application is submitted.
   3. Up to four SIC codes which best reflect the principal products or services provided by the facility.
   4. The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.
   5. Whether the facility is located on Indian lands.
   6. A listing of all permits or construction approvals received or applied for under any of the following programs:
      1. Hazardous Waste Management program under RCRA.
      2. UIC program under SDWA.
      3. NPDES program under CWA.
      4. Prevention of Significant Deterioration (PSD) program under the Clean Air Act.
      5. Nonattainment program under the Clean Air Act.
      6. National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.
      7. Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.
      8. Dredge and fill permits under section 404 of CWA.
      9. Other relevant environmental permits, including State permits.
   7. A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter mile of the facility property boundary.
   8. A brief description of the nature of the business.
   9. For EPA-administered programs, the applicant shall identify and submit on a list with the permit application the names and addresses of all owners of record of land within one-quarter mile of the facility boundary. This requirement may be waived by the Regional Administrator where the site is located in a populous area and the Regional Administrator determines that the requirement would be impracticable.
   10. A plugging and abandonment plan that meets the requirements of Sec. 146.10 of this chapter and is acceptable to the Director.
6. Recordkeeping. Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under Sec. 144.31 for a period of at least 3 years from the date the application is signed.
7. Information Requirements for Class I Hazardous Waste Injection Wells Permits.
   1. The following information is required for each active Class I hazardous waste injection well at a facility seeking a UIC permit:
      1. Dates well was operated.
      2. (ii) Specification of all wastes which have been injected in the well, if available.
   2. The owner or operator of any facility containing one or more active hazardous waste injection wells must submit all available information pertaining to any release of hazardous waste or constituents from any active hazardous waste injection well at the facility.
   3. The owner or operator of any facility containing one or more active Class I hazardous waste injection wells must conduct such preliminary site investigations as are necessary to determine whether a release is occurring, has occurred, or is likely to have occurred.

[48 FR 14189, Apr. 1, 1983, as amended at 49 FR 20185, May 11, 1984; 52

FR 45797, Dec. 1, 1987; 52 FR 46963, Dec. 10, 1987; 58 FR 63897, Dec. 3,

1993]

**Sec. 144.32 Signatories to permit applications and reports.**

1. Applications. All permit applications, except those submitted for Class II wells (see paragraph (b) of this section), shall be signed as follows:
   1. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means;
      1. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or
      2. the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in Sec. 144.32(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under Sec. 144.32(a)(1)(ii) rather than to specific individuals.

* 1. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
  2. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
     1. The chief executive officer of the agency, or
     2. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

1. Reports. All reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells under Sec. 144.31 shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   1. The authorization is made in writing by a person described in paragraph (a) of this section;
   2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
   3. The written authorization is submitted to the Director.
2. Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
3. Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(Clean Water Act (33 U.S.C. 1251 et seq.), Safe Drinking Water Act (42

U.S.C. 300f et seq.), Clean Air Act (42 U.S.C. 7401 et seq.),

Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.)

[48 FR 14189, Apr. 1, 1983, as amended at 48 FR 39621, Sept. 1, 1983]

**Sec. 144.33 Area permits.**

1. The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:
   1. Described and identified by location in permit application(s) if they are existing wells, except that the Director may accept a single description of wells with substantially the same characteristics;
   2. Within the same well field, facility site, reservoir, project, or similar unit in the same State;
   3. Operated by a single owner or operator; and
   4. Used to inject other than hazardous waste.
2. Area permits shall specify:
   1. The area within which underground injections are authorized, and
   2. The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.
3. The area permit may authorize the permittee to construct and operate, convert, or plug and abandon wells within the permit area provided:
   1. The permittee notifies the Director at such time as the permit requires;
   2. The additional well satisfies the criteria in paragraph (a) of this section and meets the requirements specified in the permit under paragraph (b) of this section; and
   3. The cumulative effects of drilling and operation of additional injection wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.
4. If the Director determines that any well constructed pursuant to paragraph (c) of this section does not satisfy any of the requirements of paragraphs (c) (1) and (2) of this section the Director may modify the permit under Sec. 144.39, terminate under Sec. 144.40, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under Sec. 144.39.

**Sec. 144.35 Effect of a permit.**

1. Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA. However, a permit may be modified, revoked and re-issued, or terminated during its term for cause as set forth in Sec. Sec. 144.39 and 144.40.
2. The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.
3. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

**Sec. 144.36 Duration of permits.**

1. Permits for Class I and Class V wells shall be effective for a fixed term not to exceed 10 years. UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility. The Director shall review each issued Class II or III well UIC permit at least once every 5 years to determine whether it should be modified, revoked and re-issued, terminated, or a minor modification made as provided in Sec. Sec. 144.39, 144.40, and 144.41.
2. Except as provided in Sec. 144.37, the term of a permit shall not be extended by modification beyond the maximum duration specified in this section.
3. The Director may issue any permit for a duration that is less than the full allowable term under this section.

**Sec. 144.37 Continuation of expiring permits.**

1. EPA permits. When EPA is the permit-issuing authority, the conditions of an expired permit continue in force under 5 U.S.C. 558(c) until the effective date of a new permit if:
   1. The permittee has submitted a timely application which is a complete application for a new permit; and
   2. The Regional Administrator, through no fault of the permittee does not issue a new permit with an effective date on or before the expiration date of the previous permit (for example, when issuance is impracticable due to time or resource constraints).
2. Effect. Permits continued under this section remain fully effective and enforceable.
3. Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit the Regional Administrator may choose to do any or all of the following:
   1. Initiate enforcement action based upon the permit which has been continued;
   2. Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;
   3. Issue a new permit under part 124 with appropriate conditions; or
   4. Take other actions authorized by these regulations.
4. State continuation. An EPA issued permit does not continue in force beyond its time expiration date under Federal law if at that time a State is the permitting authority. A State authorized to administer the UIC program may continue either EPA or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the State-issued new permit.

**Sec. 144.38 Transfer of permits.**

1. Transfers by modification. Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and re-issued (under Sec. 144.39(b)(2)), or a minor modification made (under Sec. 144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.
2. Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new permittee if:
   1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date referred to in paragraph (b)(2) of this section;
   2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of Sec. 144.52(a)(7) will be met by the new permittee; and
   3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this paragraph may also be a minor modification under Sec. 144.41. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

**Sec. 144.39 Modification or revocation and re-issuance of permits.**

When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit (see Sec. 144.51 of this chapter), receives a request for modification or revocation and re-issuance under Sec. 124.5, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in paragraphs (a) and (b) of this section for modification or revocation and re-issuance or both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (c) of this section, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. See Sec. 124.5(c)(2) of this chapter. If cause does not exist under this section or Sec. 144.41 of this chapter, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in Sec. 144.41 for ''minor modifications'' the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in part 124 must be followed.

1. Causes for modification. The following are causes for modification. For Class I hazardous waste injection wells, Class II, or Class III wells the following may be causes for revocation and re-issuance as well as modification; and for all other wells the following may be cause for revocation or re-issuance as well as modification when the permittee requests or agrees.
   1. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
   2. Information. The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (Sec. 144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.
   3. New regulations. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class I hazardous waste injection wells, Class II, or Class III wells may be modified during their terms for this cause only as follows:
      1. For promulgation of amended standards or regulations, when:
         1. The permit condition requested to be modified was based on a promulgated part 146 regulation; and
         2. EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and
         3. A permittee requests modification in accordance with Sec. 124.5 within ninety (90) days after Federal Register notice of the action on which the request is based.
      2. For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with Sec. 124.5 within ninety (90) days of judicial remand.
   4. Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also Sec. 144.41(c) (minor modifications).
2. Causes for modification or revocation and re-issuance. The following are causes to modify or, alternatively, revoke and re-issue a permit:
   1. Cause exists for termination under Sec. 144.40, and the Director determines that modification or revocation and re-issuance is appropriate.
   2. The Director has received notification (as required in the permit, see Sec. 144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (Sec. 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.
   3. A determination that the waste being injected is a hazardous waste as defined in Sec. 261.3 either because the definition has been revised, or because a previous determination has been changed.
3. Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and re-issuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

[48 FR 14189, Apr. 1, 1983, as amended at 53 FR 28147, July 26, 1988]

**Sec. 144.40 Termination of permits.**

1. The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:
   1. Noncompliance by the permittee with any condition of the permit;
   2. The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or
   3. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;
2. The Director shall follow the applicable procedures in part 124 in terminating any permit under this section.

**Sec. 144.41 Minor modifications of permits.**

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with part 124 draft permit and public notice as required in Sec. 144.39. Minor modifications may only:

1. Correct typographical errors;
2. Require more frequent monitoring or reporting by the permittee;
3. Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or
4. Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.
5. Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.
6. Change construction requirements approved by the Director pursuant to Sec. 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and part 146.
7. Amend a plugging and abandonment plan which has been updated under Sec. 144.52(a)(6).

**Subpart E - Permit Conditions**

**Sec. 144.51 Conditions applicable to all permits.**

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.

1. Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under Sec. 144.34.
2. Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
3. Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
5. Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
6. Permit actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
7. Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.
8. Duty to provide information. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
9. Inspection and entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
   1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
   2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
   3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
   4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.
10. Monitoring and records.
    1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
    2. The permittee shall retain records of all monitoring information, including the following:
       1. Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and
       2. The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under Sec. 144.52(a)(6), or under part 146 subpart G as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. For EPA administered programs, the owner or operator shall continue to retain the records after the three year retention period unless he delivers the records to the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.
    3. Records of monitoring information shall include:
       1. The date, exact place, and time of sampling or measurements;
       2. The individual(s) who performed the sampling or measurements;
       3. The date(s) analyses were performed;
       4. The individual(s) who performed the analyses;
       5. The analytical techniques or methods used; and
       6. The results of such analyses.
11. Signatory requirement. All applications, reports, or information submitted to the Administrator shall be signed and certified. (See Sec. 144.32.)
12. Reporting requirements.
    1. Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
    2. Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
    3. Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and re-issuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act. (See Sec. 144.38; in some cases, modification or revocation and re-issuance is mandatory.)
    4. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
    5. Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.
    6. Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment, including:
       1. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or
       2. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

* 1. Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (l) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.
  2. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

1. Requirements prior to commencing injection. Except for all new wells authorized by an area permit under Sec. 144.33(c), a new injection well may not commence injection until construction is complete, and
   1. The permittee has submitted notice of completion of construction to the Director; and
      1. The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or
      2. The permittee has not received notice form the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.
2. The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.
3. A Class I, II or III permit shall include and a Class V permit may include, conditions which meet the applicable requirements of Sec. 146.10 of this chapter to insure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the plan meets the requirements of Sec. 146.10 of this chapter, the Director shall incorporate it into the permit as a permit condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the permit. For purposes of this paragraph, temporary or intermittent cessation of injection operations is not abandonment.
4. Plugging and abandonment report. For EPA-administered programs, within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the Regional Administrator. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:
   1. A statement that the well was plugged in accordance with the plan previously submitted to the Regional Administrator; or
   2. Where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the regional administrator, specifying the differences.
5. Duty to establish and maintain mechanical integrity.
   1. The owner or operator of a Class I, II or III well permitted under this part shall establish prior to commencing injection or on a schedule determined by the Director, and thereafter maintain mechanical integrity as defined in Sec. 146.8 of this chapter. For EPA-administered programs, the Regional Administrator may require by written notice that the owner or operator comply with a schedule describing when mechanical integrity demonstrations shall be made.
   2. When the Director determines that a Class I, II, or III well lacks mechanical integrity pursuant to Sec. 146.8 of this chapter, he shall give written notice of his determination to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the requirements of Sec. 146.10 of this chapter or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity pursuant to Sec. 146.8 of this chapter.
   3. The Director may allow the owner or operator of a well which lacks mechanical integrity pursuant to Sec. 146.8(a)(1) of this chapter to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs.

[48 FR 14189, Apr. 1, 1983, as amended at 49 FR 20185, May 11, 1984; 53

FR 28147, July 26, 1988; 58 FR 63898, Dec. 3, 1993]

**Sec. 144.52 Establishing permit conditions.**

1. In addition to conditions required in Sec. 144.51, the Director shall establish conditions, as required on a case-by-case basis under Sec. 144.36 (duration of permits), Sec. 144.53(a) (schedules of compliance), Sec. 144.54 (monitoring), and for EPA permits only Sec. 144.53(b) (alternate schedules of compliance), and Sec. 144.4 (considerations under Federal law). Permits for owners or operators of hazardous waste injection wells shall include conditions meeting the requirements of Sec. 144.14 (requirements for wells injecting hazardous waste), Sec. 144.52 (a)(7) and (a)(9), and subpart G of part 146. Permits for other wells shall contain the following requirements, when applicable.
   1. Construction requirements as set forth in part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements (see Sec. 144.11). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (Sec. 144.41). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.
   2. Corrective action as set forth in Sec. Sec. 144.55 and 146.7
   3. Operation requirements as set forth in 40 CFR part 146; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the part 146 operating requirements.
   4. Requirements for wells managing hazardous waste, as set forth in Sec. 144.14.
   5. Monitoring and reporting requirements as set forth in 40 CFR part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data. For EPA administered programs, monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in table I of 40 CFR 136.3 or in appendix III of 40 CFR part 261 or in certain circumstances by other methods that have been approved by the Regional Administrator.
   6. After a cessation of operations of two years the owner or operator shall plug and abandon the well in accordance with the plan unless he:
      1. Provides notice to the Regional Administrator;
      2. Describes actions or procedures, satisfactory to the Regional Administrator, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Regional Administrator.
   7. Financial responsibility.
      1. The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:
         1. The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to Sec. Sec. 144.51(o) and 146.10 of this chapter, and submitted a plugging and abandonment report pursuant to Sec. 144.51(p); or
         2. The well has been converted in compliance with the requirements of Sec. 144.51(n); or
         3. The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new permittee, has demonstrated financial responsibility for the well.
      2. The permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Director. For EPA administered programs, the Regional Administrator may on a periodic basis require the holder of a lifetime permit to submit an estimate of the resources needed to plug and abandon the well revised to reflect inflation of such costs, and a revised demonstration of financial responsibility, if necessary. The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of subpart F of this part.
   8. Mechanical integrity. A permit for any Class I, II or III well or injection project which lacks mechanical integrity **shall** include, and for any Class V well **may** include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under Sec. 146.8 that the well has mechanical integrity.
   9. Additional conditions. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.
   10. In addition to conditions required in all permits the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and parts 144, 145, 146 and 124.
   11. For a State issued permit, an applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. For a permit issued by EPA, an applicable requirement is a statutory or regulatory requirement (including any interim final regulation) which takes effect prior to the issuance of the permit. Section 124.14 (reopening of comment period) provides a means for reopening EPA permit proceedings at the discretion of the Director where new requirements become effective during the permitting process and are of sufficient magnitude to make additional proceedings desirable. For State and EPA administered programs, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and re-issuance of a permit, to the extent allowed in Sec. 144.39.
   12. New or reissued permits, and to the extent allowed under Sec. 144.39 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in Sec. 144.52.
2. Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

[48 FR 14189, Apr. 1, 1983, as amended at 49 FR 20185, May 11, 1984; 53

FR 28147, July 26, 1988; 58 FR 63898; Dec. 3, 1993; 65 FR 30913, May 15, 2000]

**Sec. 144.53 Schedule of compliance.**

1. General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and parts 144, 145, 146, and 124.
   1. Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in no case later than 3 years after the effective date of the permit.
   2. Interim dates. Except as provided in paragraph (b)(1)(ii) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.
      1. The time between interim dates shall not exceed 1 year.
      2. If the time necessary for completion of any interim requirement is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.
   3. Reporting. The permit shall be written to require that if paragraph (a)(1) of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.
2. Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:
   1. If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:
      1. The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or
      2. The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.
   2. If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.
   3. If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:
      1. Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;
      2. One schedule shall lead to timely compliance with applicable requirements;
      3. The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;
      4. Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under paragraph (b)(3)(i) of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.
   4. The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.

**Sec. 144.54 Requirements for recording and reporting of monitoring results.**

All permits shall specify:

1. Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);
2. Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;
3. Applicable reporting requirements based upon the impact of the regulated activity and as specified in part 146. Reporting shall be no less frequent than specified in the above regulations.

**Sec. 144.55 Corrective action.**

1. Coverage. Applicants for Class I, II, (other than existing), or III injection well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone, or in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water (``corrective action''). Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate (based on the factors in Sec. 146.07), the Director shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under paragraph (b) of this section, or deny the application. The Director may disregard the provisions of Sec. 146.06 (Area of Review) and Sec. 146.07 (Corrective Action) when reviewing an application to permit an existing Class II well.
2. Requirements—
   1. Existing injection wells. Any permit issued for an existing injection well (other than Class II) requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under paragraph (a) of this section to be completed as soon as possible.
   2. New injection wells. No owner or operator of a new injection well may begin injection until all required corrective action has been taken.
   3. Injection pressure limitation. The Director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.
   4. Class III wells only. When setting corrective action requirements the Director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDWs, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program required in Sec. 146.33(b) shall be designed to verify the validity of such determinations.

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TITLE 40--PROTECTION OF ENVIRONMENT

CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY

PART 146\_UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS

**Subpart A\_General Provisions**

**Sec. 146.6 Area of review.**

The area of review for each injection well or each field, project or area of the State shall be determined according to either paragraph (a) or (b) of this section. The Director may solicit input from the owners or operators of injection wells within the State as to which method is most appropriate for each geographic area or field.

1. Zone of endangering influence.
   1. The zone of endangering influence shall be:
      1. In the case of application(s) for well permit(s) under Sec. 122.38 that area the radius of which is the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water; or
      2. In the case of an application for an area permit under Sec. 122.39, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.
   2. Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.



where:



r = Radius of endangering influence from injection well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

hbo = Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water

hw = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water

Sp Gb = Specific gravity of fluid in the injection zone (dimensionless)

π = 3.142 (dimensionless)

The above equation is based on the following assumptions:

(i) The injection zone is homogenous and isotropic;

(ii) The injection zone has infinite area extent;

(iii) The injection well penetrates the entire thickness of the injection zone;

(iv) The well diameter is infinitesimal compared to "r'' when injection time is longer than a few minutes; and

(v) The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

1. Fixed radius.
   1. In the case of application(s) for well permit(s) under Sec. 122.38 a fixed radius around the well of not less than one-fourth (\1/4\) mile may be used.
   2. In the case of an application for an area permit under Sec. 122.39 a fixed width of not less than one-fourth (\1/4\) mile for the circumscribing area may be used.

In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

1. If the area of review is determined by a mathematical model pursuant to paragraph (a) of this section, the permissible radius is the result of such calculation even if it is less than one-fourth (\1/4\) mile.

[45 FR 42500, June 24, 1980, as amended at 46 FR 43161, Aug. 27, 1981;

47 FR 4999, Feb. 3, 1982]

**Sec. 146.7 Corrective action.**

In determining the adequacy of corrective action proposed by the applicant under 40 CFR 144.55 and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors shall be considered by the Director:

1. Nature and volume of injected fluid;
2. Nature of native fluids or by-products of injection;
3. Potentially affected population;
4. Geology;
5. Hydrology;
6. History of the injection operation;
7. Completion and plugging records;
8. Abandonment procedures in effect at the time the well was abandoned; and
9. Hydraulic connections with underground sources of drinking water.

(Clean Water Act, Safe Drinking Water Act, Clean Air Act, Resource

Conservation and Recovery Act: 42 U.S.C. 6905, 6912, 6925, 6927, 6974)

[45 FR 42500, June 24, 1980, as amended at 46 FR 43162, Aug. 27, 1981;

48 FR 14293, Apr. 1, 1983]

**Sec. 146.8 Mechanical integrity.**

1. An injection well has mechanical integrity if:
   1. There is no significant leak in the casing, tubing or packer; and
   2. There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.
2. One of the following methods must be used to evaluate the absence of significant leaks under paragraph (a)(1) of this section:
   1. Following an initial pressure test, monitoring of the tubing-casing annulus pressure with sufficient frequency to be representative, as determined by the Director, while maintaining an annulus pressure different from atmospheric pressure measured at the surface;
   2. Pressure test with liquid or gas; or
   3. Records of monitoring showing the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery wells:
      1. Existing wells completed without a packer provided that a pressure test has been performed and the data is available and provided further that one pressure test shall be performed at a time when the well is shut down and if the running of such a test will not cause further loss of significant amounts of oil or gas; or
      2. Existing wells constructed without a long string casing, but with surface casing which terminates at the base of fresh water provided that local geological and hydrological features allow such construction and provided further that the annular space shall be visually inspected. For these wells, the Director shall prescribe a monitoring program which will verify the absence of significant fluid movement from the injection zone into an USDW.
3. One of the following methods must be used to determine the absence of significant fluid movement under paragraph (a)(2) of this section:
   1. The results of a temperature or noise log; or
   2. For Class II only, cementing records demonstrating the presence of adequate cement to prevent such migration; or
   3. For Class III wells where the nature of the casing precludes the use of the logging techniques prescribed at paragraph (c)(1) of this section, cementing records demonstrating the presence of adequate cement to prevent such migration;
   4. For Class III wells where the Director elects to rely on cementing records to demonstrate the absence of significant fluid movement, the monitoring program prescribed by Sec. 146.33(b) shall be designed to verify the absence of significant fluid movement.
4. The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs (b) and (c)(2) of this section with the written approval of the Administrator. To obtain approval, the Director shall submit a written request to the Administrator, which shall set forth the proposed test and all technical data supporting its use. The Administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator shall be published in the Federal Register and may be used in all States unless its use is restricted at the time of approval by the Administrator.
5. In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.
6. The Director may require additional or alternative tests if the results presented by the owner or operator under Sec. 146.8(e) are not satisfactory to the Director to demonstrate that there is no movement of fluid into or between USDWs resulting from the injection activity.

[45 FR 42500, June 24, 1980, as amended at 46 FR 43162, Aug. 27, 1981;

47 FR 4999, Feb. 3, 1982; 58 FR 63898, Dec. 3, 1993]

**Sec. 146.10 Plugging and abandoning Class I, II, III, IV, and V wells.**

1. Requirements for Class I, II and III wells.
   1. Prior to abandoning Class I, II and III wells, the well shall be plugged with cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water. The Director may allow Class III wells to use other plugging materials if the Director is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.
   2. Placement of the cement plugs shall be accomplished by one of the following:
      1. The Balance method;
      2. The Dump Bailer method;
      3. The Two-Plug method; or
      4. An alternative method approved by the Director, which will reliably provide a comparable level of protection to underground sources of drinking water.
   3. The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the Director, prior to the placement of the cement plug(s).
   4. The plugging and abandonment plan required in 40 CFR 144.51(o) and 144.52(a)(6) shall, in the case of a Class III project which underlies or is in an aquifer which has been exempted under Sec. 146.04, also demonstrate adequate protection of USDWs. The Director shall prescribe aquifer cleanup and monitoring where he deems it necessary and feasible to insure adequate protection of USDWs.
2. Requirements for Class IV wells. Prior to abandoning a Class IV well, the owner or operator shall close the well in accordance with 40 CFR 144.23(b).
3. Requirements for Class V wells.
   1. Prior to abandoning a Class V well, the owner or operator shall close the well in a manner that prevents the movement of fluid containing any contaminant into an underground source of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 141 or may otherwise adversely affect the health of persons. Closure requirements for motor vehicle waste disposal wells and large-capacity cesspools are reiterated at Sec. 144.89.
   2. The owner or operator shall dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.

[64 FR 68573, Dec. 7, 1999]

**Subpart B - Criteria and Standards Applicable to Class I Wells**

**Sec. 146.12 Construction requirements.**

1. All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.
2. All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:
   * + - 1. Depth to the injection zone;
         2. Injection pressure, external pressure, internal pressure, and axial loading;
         3. Hole size;
   1. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);
   2. Corrosiveness of injected fluid, formation fluids, and temperatures;
   3. Lithology of injection and confining intervals; and
   4. Type or grade of cement.
3. All Class I injection wells, except those municipal wells injecting non-corrosive wastes, shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.
   * + - 1. The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall set forth the proposed alternative and all technical data supporting its use. The Director shall approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Director may approve an alternative method solely for an individual well or for general use.
         2. In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:
     1. Depth of setting;
     2. Characteristics of injection fluid (chemical content, corrosiveness, and density);
     3. Injection pressure;
     4. Annular pressure;
     5. Rate, temperature and volume of injected fluid; and
     6. Size of casing.
4. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, such logs and tests shall include:
   * + - 1. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.
         2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information, that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:
     1. For surface casing intended to protect underground sources of drinking water:
        1. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and
        2. A cement bond, temperature, or density log after the casing is set and cemented.
     2. For intermediate and long strings of casing intended to facilitate injection:
        1. Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;
        2. Fracture finder logs; and
        3. A cement bond, temperature, or density log after the casing is set and cemented.
5. At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:
   * + - 1. Fluid pressure;
         2. Temperature;
         3. Fracture pressure;
   1. Other physical and chemical characteristics of the injection matrix; and
   2. Physical and chemical characteristics of the formation fluids.

[45 FR 42500, June 24, 1980, as amended at 46 FR 43162, Aug. 27, 1981]

**Sec. 146.13 Operating, monitoring and reporting requirements.**

(a) Operating requirements. Operating requirements shall at a minimum, specify that:

* + - * 1. Except during stimulation injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.
        2. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.
        3. Unless an alternative to a packer has been approved under Sec. 146.12(c), the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director and a pressure, also approved by the Director, shall be maintained on the annulus.

(b) Monitoring requirements. Monitoring requirements shall, at a minimum, include:

* + - * 1. The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;
        2. Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;
        3. A demonstration of mechanical integrity pursuant to Sec. 146.8 at least once every five years during the life of the well; and
  1. The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring.

(c) Reporting requirements. Reporting requirements shall, at a minimum, include:

* + - * 1. Quarterly reports to the Director on:
    1. The physical, chemical and other relevant characteristics of injection fluids;
    2. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and
    3. The results of monitoring prescribed under paragraph (b)(4) of this section.
       - 1. Reporting the results, with the first quarterly report after the completion, of:
    4. Periodic tests of mechanical integrity;
    5. Any other test of the injection well conducted by the permittee if required by the Director; and
    6. Any well work over.

(d) Ambient monitoring.

* + - * 1. Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Director shall require the owner or operator to develop a monitoring program. At a minimum, the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.
  1. When prescribing a monitoring system the Director may also require:
     1. Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the Director;
     2. The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Director, or to provide other site specific data;
     3. Periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;
     4. Periodic monitoring of the ground water quality in the lowermost USDW; and
     5. Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

[45 FR 42500, June 24, 1980, as amended at 46 FR 43162, Aug. 27, 1981; 47 FR 32129, July 26, 1982; 53 FR 28148, July 26, 1988]

**Sec. 146.14 Information to be considered by the Director.**

This section sets forth the information which must be considered by the Director in authorizing Class I wells. For an existing or converted new Class I well the Director may rely on the existing permit file for those items of information listed below which are current and accurate in the file. For a newly drilled Class I well, the Director shall require the submission of all the information listed below. For both existing and new Class I wells certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director (for example, in the permitting agency's files) and sufficiently identified to be retrieved. In cases where EPA issues the permit all the information in this section must be submitted to the Administrator.

1. Prior to the issuance of a permit for an existing Class I well to operate or the construction or conversion of a new Class I well the Director shall consider the following:
   * + - 1. Information required in 40 CFR 144.31 and 144.31(g);
         2. A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;
         3. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;
   1. Maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;
   2. Maps and cross sections detailing the geologic structure of the local area;
   3. Generalized maps and cross sections illustrating the regional geologic setting;
   4. Proposed operating data:
      1. Average and maximum daily rate and volume of the fluid to be injected;
      2. Average and maximum injection pressure; and
      3. Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;
   5. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;
   6. Proposed stimulation program;
   7. Proposed injection procedure;
   8. Schematic or other appropriate drawings of the surface and subsurface construction details of the well.
   9. Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;
   10. Plans (including maps) for meeting the monitoring requirements in Sec. 146.13(b);
   11. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under 40 CFR 144.55;
   12. Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program; and
   13. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by 40 CFR 122.42(g).
2. Prior to granting approval for the operation of a Class I well the Director shall consider the following information:
   * + - 1. All available logging and testing program data on the well;
         2. A demonstration of mechanical integrity pursuant to Sec. 146.8;
         3. The anticipated maximum pressure and flow rate at which the permittee will operate;
         4. The results of the formation testing program;
         5. The actual injection procedure;
         6. The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and
         7. The status of corrective action on defective wells in the area of review.
3. Prior to granting approval for the plugging and abandonment of a Class I well the Director shall consider the following information:
   * + - 1. The type and number of plugs to be used;
         2. The placement of each plug including the elevation of the top and bottom;
         3. The type and grade and quantity of cement to be used;
   1. The method for placement of the plugs; and
   2. The procedure to be used to meet the requirement of Sec. 146.10(c).

(Clean Water Act, Safe Drinking Water Act, Clean Air Act, Resource Conservation and Recovery Act: 42 U.S.C. 6905, 6912, 6925, 6927, 6974)

[45 FR 42500, June 24, 1980, as amended at 46 FR 43162, Aug. 27, 1981; 48 FR 14293, Apr. 1, 1983]