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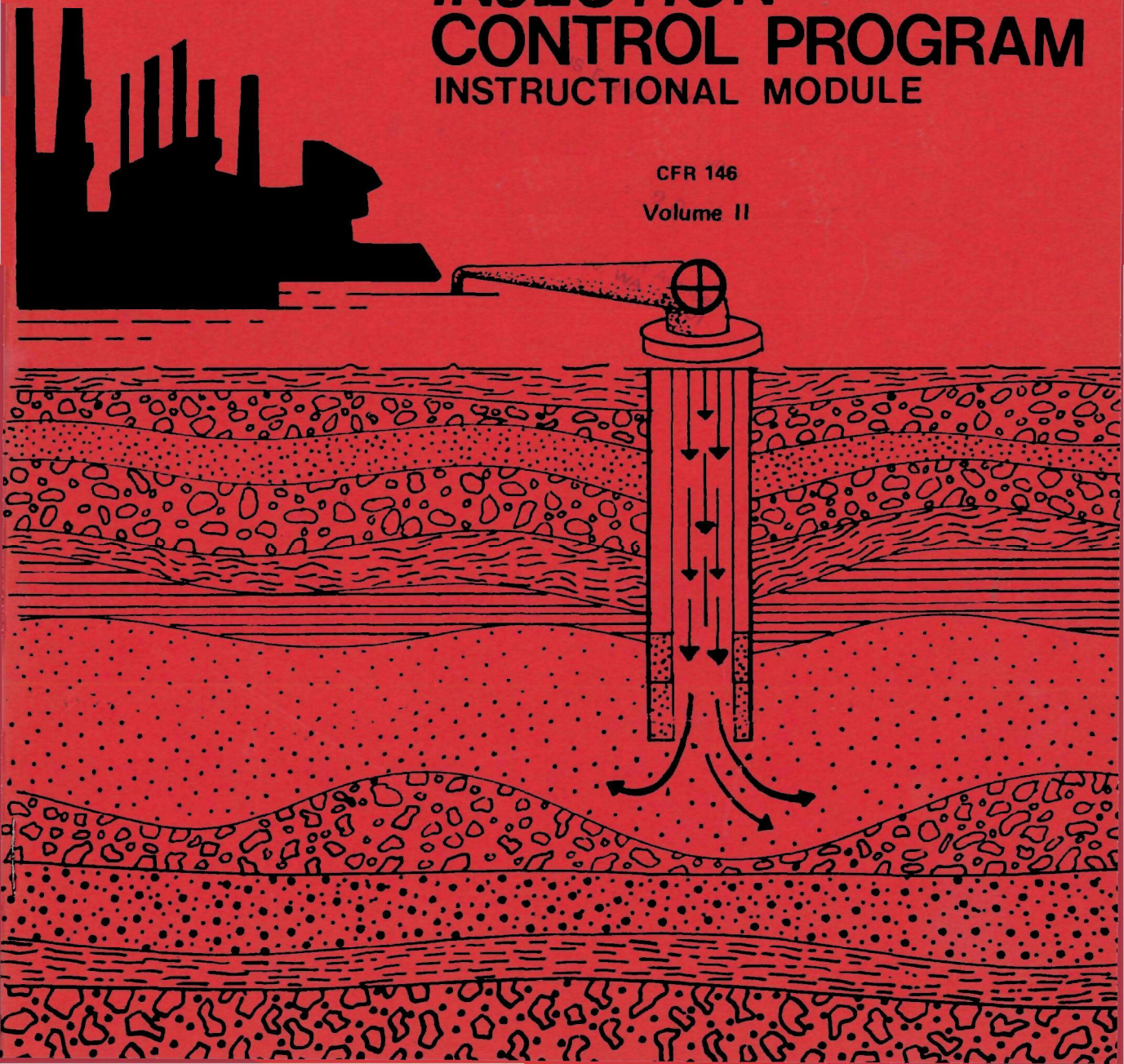
UNDERGROUND INJECTION CONTROL PROGRAM

INSTRUCTIONAL MODULE

CFR 146

Volume II



Introduction

CFR 146

These are the second and third of a series on the Underground Injection Control Regulations. The two booklets on CFR 146 have been written to help you read the regulations. We have cut and pasted, added the full text of some references, added some comments, and some questions. Please feel free to use this booklet any way that is helpful. The questions are not intended to be a test, but rather indicators of some important points. The questions and answers are not official guidance or policy.

There will be many questions raised by reading CFR 146 that are not answered by this pamphlet. Guidance is being developed on many issues raised by the Regulations, and will be available in the future. This pamphlet is an attempt to assist with the first step, reading and digesting the Regulations as promulgated.

December 1980

NOTE: Class II may be affected by pending amendments

146 C

1. New Class II wells must inject into a formation which has confining zones that are free of known open faults or fractures within the area of review.

True _____ False _____

2. Any Class II well injection which results in the movement of fluids into a USDW is prohibited.

True ___ False _____

3. The Director need not apply the casing and cementing requirements of 146.22(b) if the State did not have regulatory controls prior to the submission of a State program.

True _____ False _____

4. Deviation checks are required on all Class II wells.

True _____ False _____

5. Enhanced recovery wells may be stimulated by initiating new fractures or propagating existing fractures in the injection zone.

True _____ False _____

6. Continuous monitoring devices are required for all Class II wells except for monthly enhanced recovery wells.

True _____ False _____

7. Mechanical integrity must be demonstrated for existing Class II wells at least once every five years.

True _____ False _____

8. Reporting on Class II wells need not be quarterly.

True _____ False _____

9. The Director need not consider an area of review for existing Class II injection wells.

True _____ False _____

10. The Director must report on each new Class II permit every six months for the first two years of the program.

True _____ False _____

146 C

11. The Director must report on all mechanical integrity tests conducted in the first two years.

True _____ False _____

12. The Director must require a temperature or noise log on a sample of Class II wells only when cementing records were submitted to establish mechanical integrity.

True _____ False _____

13. At least half of the wells tested must be existing.

True _____ False _____

146 D

14. All new Class III wells must be cased and cemented.

True _____ False _____

15. The diameter of all casing must be less than the diameter of the well bore.

True _____ False _____

16. When the injection zone is not a water bearing formation, it is not necessary to determine the chemical characteristics of the injection zone.

True _____ False _____

17. When injection is into a formation which does not contain water with less than 10,000 mg/l TDS, monitoring wells are required into any USDW above the injection zone which could be affected.

True _____ False _____

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42507

NOTE: CLASS II MAY BE AFFECTED BY AMENDMENTS

Subpart C—Criteria and Standards Applicable to Class II Wells

§ 146.21 Applicability.

This subpart establishes criteria and standards for underground injection control programs to regulate Class II wells.

§ 146.22 Construction requirements.

New

(a) All new Class II wells shall be sited in such a fashion that they inject into a formation which has confining zones that are free of known open faults or fractures within the area of review.

Faults - Area of Review

(b) All Class II injection wells shall be cased and cemented to prevent 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:

Cased and cemented

Life of Well

(1) Depth to the injection zone;

(2) Injection pressure, external pressure, internal pressure, and axial loading;

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

(5) Corrosiveness of injected fluid and formation fluids;

(6) Lithology of injection and confining zones; and

(7) Type and grade of cement.

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42507 (c) The requirements in paragraph (b) of this section need not apply to existing or newly converted Class II wells located in existing fields if:

Need not apply to existing or newly converted

(1) Regulatory controls for casing and cementing existed for those wells at the time of drilling and those wells are in compliance with those controls; and

Controls existed at time

(2) Well injection will not result in the movement of fluids into an underground

42508 source of drinking water so as to create a significant risk to the health of persons.

No risk to health of Persons

(d) The requirements in paragraph (b) of this section need not apply to newly drilled wells in existing fields if:

Newly drilled

(1) They meet the requirements of the State for casing and cementing applicable to that field at the time of submission of the State program to the Administrator; and

Meet State

(2) Well injection will not result in the movement of fluids into an underground source of drinking water so as to create a significant risk to the health of persons.

No risk to health of Persons

(e) Where a State did not have regulatory controls for casing and cementing prior to the time of the submission of the State program to the Administrator, the Director need not apply the casing and cementing requirements in paragraph (b) of this section if he submits as a part of his application for primacy, an appropriate plan for casing and cementing of existing, newly converted, and newly drilled wells in existing fields, and the Administrator approves the plan.

Plan

Administrator Approves

(f) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of these logs and tests shall be prepared by a qualified log analyst and

Logs

42508 submitted to the Director. At a minimum, these 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 movement in the form of diverging holes are not created during drilling.

Deviation

Pilot hole

(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 shall be considered by the Director in setting logging and testing requirements:

(i) For surface casing intended to protect underground sources of drinking water:

(A) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(B) A cement bond, temperature, or density log after the casing is set and cemented.

(ii) For intermediate and long strings of casing intended to facilitate injection:

(A) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(B) Fracture finder logs; and

(C) A cement bond, temperature, or density log after the casing is set and cemented.

(g) At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class II wells:

(1) Fluid pressure;

(2) Temperature;
(3) Fracture pressure;
(4) Other physical and chemical characteristics of the injection zone; and
(5) Physical and chemical characteristics of the formation fluids.

Fracture pressure

§ 146.23 Operating, monitoring, and reporting requirements.

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

(1) Except during well stimulation for enhanced recovery wells, 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 shall be prohibited.

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

(1) Monitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics;

(2) Monitoring of injection pressure, flow rate, and cumulative volume at least with the following frequencies:

(i) Weekly for produced fluid disposal operations;

(ii) Monthly for enhanced recovery operations;

(iii) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and

Well stimulation - Enhanced recovery

Initiate

Propagate

No movement into USDW

Outside casing

Injected Fluids

Sufficiently Frequent

Pressure, rate, volume

Weekly

Monthly

Daily

(iv) Daily during the injection phase of cyclic steam operations;

Daily

(3) A demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the injection well;

Mechanical Integrity

(4) Maintenance of the results of all monitoring until the next permit review (see 40 CFR 122.42(e)); and

(e) *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.

(5) Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

Manifold monitoring

(c) *Reporting Requirements.*

(1) Reporting requirements shall, at a minimum include an annual report to the Director summarizing the results of the monitoring required under paragraph (b) of this section. Previously submitted information may be included by reference.

Annual

(2) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

Field or project basis

§ 146.24 Information to be considered by the director.

This section sets forth the information which must be considered by the Director in authorizing Class II 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 is to be submitted to the Administrator.

Area of Review

(a) Prior to the issuance of a permit for an existing Class II well to operate or the construction or conversion of a new Class II well the Director shall consider the following:

(1) Information required in 40 CFR 122.4 and 122.38(c);

(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, injection wells, abandoned wells, dry holes and water wells. The map should also show faults, if known or suspected. Only wells of public record are required to be included on this map. This requirement does not apply to existing Class II wells; and

Faults

Not existing

(3) A tabulation of data on all wells within the area of review which 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, and any additional information the Director may require. This requirement does not apply to existing Class II wells.

Penetrate

Not existing

(4) Proposed operating data:

(i) Average and maximum daily rate and volume of fluids to be injected;

(ii) Average and maximum injection pressure; and

(iii) Source, and an analysis of the chemical, physical, radiological and biological characteristics of the injection fluid;

(5) Appropriate geological data on the injection zone and confining zones including lithologic description, geological name, thickness, depth and lateral extent;

(6) Geologic name, lateral extent and depth to top and bottom of all underground sources of drinking water which may be affected by the injection;

Which may be affected

(7) Engineering drawings of the surface and subsurface construction details of the system;

(8) Proposed formation testing program;

Stimulation program

(9) Proposed stimulation program;

(10) Proposed injection procedure;

(11) Contingency plans to cope with all shut-ins or well failures so as to prevent migration of contaminating fluids into any underground source of drinking water;

(12) Plans for meeting the monitoring requirements of § 146.23(b);

(13) In the case of new injection wells, the corrective action proposed to be taken by the applicant under 40 CFR 122.44;

Corrective action

(14) 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).

Certificate

(b) Prior to granting approval for the operation of a Class II well the Director shall consider the following information:

(1) All available logging and testing program data on the well;

42509

(2) A demonstration of mechanical integrity pursuant to § 146.08;

(3) The actual operating data;

(4) The results of the formation testing program;

(5) The actual injection procedure; and

(6) For new wells the status of corrective action on defective wells in the area of review.

New wells

(c) Prior to granting approval for the plugging and abandonment of a Class II 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 top and bottom;

(3) The type, grade, and quantity of cement to be used;

(4) The method of placement of the plugs; and

(5) The procedure to be used to meet the requirements of § 146.10(c).

Static equilibrium, etc.

§ 146.25 Mid-course evaluation requirements.

(a) In compliance with 40 CFR 122.18(c)(4)(C)(ii) the data to be submitted on each new Class II permit at six months intervals during the first two years of operation of the State program shall at a minimum include the following:

(1) The data required in § 146.24(a)(1);

(2) The data required in § 146.24(a)(3) including, under location, the distance and direction from the injection well;

(3) The depth to the top and bottom of any USDW;

(4) The distance to the nearest down-gradient water supply well;

(5) A description of the geology and hydrology of the area;

(6) The construction characteristics of the well;

(ii) In addition to complying with the requirements of paragraph (c)(4)(i) of this section the State Director shall provide the Administrator within 3 months of the completion of the second full year of State operation of the UIC program a supplemental report containing the information required in 40 CFR Part 146 on corrective actions taken by operators of new Class II wells based upon these regulations.

Water supply well

Page

42509 (7) The corrective action proposed as well as that performed; and

(8) Any reporting to the Director under § 122.41(d).

Corrective action

33440 (d) The following shall be included as information which must be reported within 24 hours under § 122.7(l)(5):

(1) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW.

(2) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

(e) The permittee shall notify the Director at least 180 days before conversion or abandonment of the well.

42509 (b) The Director shall also submit the type and results of all Mechanical Integrity tests reported on existing wells and new (conversion only) wells during the first two years of operation.

(c) The Director shall require a temperature log or noise log, on a sample of Class II wells in cases where operators submitted cementing records to meet the requirement of § 146.08(c). The wells to be tested shall be chosen by a formal random selection procedure. The sampling shall be done on a field or pool basis and be statistically representative of the wells in that field or pool. At a minimum, the sample size for each State shall be 100 wells or 5 percent of the number of Class II injection wells in the State whichever is smaller. At least half of the wells tested must be existing wells.

Logs

Sample

Cementing records

18. In an area subject to subsidence and catastrophic collapse, monitoring wells are not required in the USDW.

True _____ False _____

19. In determining monitoring requirements for Class III wells, the Director shall consider the distance to the points of withdrawal of drinking water.

True _____ False _____

(146.33)

20. Continuous recording devices to monitor injection pressure, flow rate, and volume are required for Class III wells.

True _____ False _____

21. A demonstration of mechanical integrity is required at least once every five years for Class III wells.

True _____ False _____

22. Quarterly monitoring of fluid level and water quality in the injection zone is required for Class III wells.

True _____ False _____

23. Separate monitoring systems for each well are not required when more than one well operates with a common manifold.

True _____ False _____

24. Quarterly reports must be submitted to the Director.

True ____ False _____

25. Reports on the results of mechanical integrity tests may be delayed until the next quarterly report.

True _____ False _____

26. A mechanical integrity test is required of all new Class III wells.

True _____ False _____

27. Corrective action may be required in connection with Class III wells.

True _____ False _____

146.35

28. The Director need not report on Class III wells authorized by rule as part of the mid-course evaluation reports.

True _____ False _____

29. Class V wells inject non-hazardous fluids.

True _____ False _____

30. Some wells which inject radioactive materials are Class V wells.

True _____ False _____

31. All Class V well owners or operators shall submit inventory information within one year.

True _____ False _____

32. Within three years the Director shall assess the contamination potential of Class V wells.

True _____ False _____

33. The Director has no responsibility to assess Class IV wells.

True _____ False _____

Subpart D—Criteria and Standards Applicable to Class III Wells

§ 146.31 Applicability.

This subpart establishes criteria and standards for underground injection control programs to regulate Class III wells.

§ 146.32 Construction requirements.

(a) All new Class III wells shall be cased and cemented to prevent the migration 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:

Cased and cemented

Life of well

(1) Depth to the injection zone;

(2) Injection pressure, external pressure, internal pressure, axial loading, etc.;

(3) Hole size;

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

(5) Corrosiveness of injected fluids and formation fluids;

Corrosiveness

(6) Lithology of injection and confining zones; and

(7) Type and grade of cement.

(b) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of

42509 the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

Deviation checks

Pilot hole

(c) Where the injection zone is a water bearing formation, the following information concerning the injection zone shall be determined or calculated for new Class III wells:

Water bearing formation

(1) Fluid pressure;
(2) Temperature;
(3) Fracture pressure;
(4) Other physical and chemical characteristics of the injection zone;
(5) Physical and chemical characteristics of the formation fluids; and
(6) Compatibility of injected fluids with formation fluids.

(d) Where the injection formation is not a water bearing formation, the information in paragraph (c)(3) of this section must be submitted.

Not water bearing

(e) Where injection is into a formation which contains water with less than 10,000 mg/l TDS monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining

Monitoring wells

USDWs

42510 operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or

Excursion

catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.

(f) Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

(g) Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

(h) In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

(1) The population relying on the USDW affected or potentially affected by the injection operation;

(2) The proximity of the injection operation to points of withdrawal of drinking water;

(3) The local geology and hydrology;

(4) The operating pressures and whether a negative pressure gradient is being maintained;

(5) The toxicity and volume of the injected fluid, the formation water, and the process by-products; and

(6) The injection well density.

§ 146.33 Operating, monitoring, and reporting requirements.

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

(1) Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the

Collapse

No monitoring in injection stratum

Penetrate USDW

Outside the influence

Population

Distance

Gradient

Fluids

Density

42510 pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water; and

Pressure

No fractures

No migration

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

No injection outside casing

(b) *Monitoring Requirements.* Monitoring requirements shall, at a minimum, specify:

(1) The analyses of the physical and chemical characteristics of the injected fluid with sufficient frequency to yield representative data on its characteristics;

Sufficient

(2) Installation and use of continuous recording devices to monitor the injection pressure, flow rate and volume;

Continuous recording

(3) Demonstration of mechanical integrity pursuant to § 146.08 at least once every five years during the life of the well for salt solution mining and geothermal wells only;

Mechanical Integrity

Salt & geothermal only

(4) Weekly monitoring of fluid level and the parameters chosen to measure water quality in the injection zone; and

Weekly

(5) Quarterly monitoring of wells adjacent to the injection site to detect any migration from the injection zone into an USDW.

Quarterly

(6) All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that

Field or Project

Manifold

42510 manifold monitoring is comparable to individual well monitoring.

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

(1) Quarterly reporting to the Director on required monitoring;

Quarterly

(2) Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test; and

Mechanical Integrity

(3) Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

Project or Field

§ 146.34 Information to be considered by the Director.

This section sets forth the information which must be considered by the Director in authorizing Class III 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.

(a) Prior to the issuance of a permit for an existing Class III well or area to operate or the construction of a new Class III well the Director shall consider the following:

(1) Information required in 40 CFR 122.4 and 122.38(c);

(2) A map showing the injection well(s) for which the 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, injection wells,

Area of Review

42510 abandoned wells, dry holes, surface bodies of water, mines (surface and subsurface), quarries, public water systems, 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 the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require;

Penetrate

(4) Maps and cross sections indicating the 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 every underground source of drinking water which may be affected by the proposed injection;

USDW - Area of Review

Gradient

(5) Maps and cross sections detailing the geologic structure of the local area;

(6) Generalized map and cross sections illustrating the regional geologic setting;

(7) Proposed operating data:

(i) Average and maximum daily rate and volume of fluid to be injected;

(ii) Average and maximum injection pressure; and

(iii) Source and an analysis of the chemical, physical, biological and radiological characteristics of the injection fluid.

(8) Proposed formation testing program to obtain an analysis of the physical, chemical and radiological characteristics of the receiving formation;

Formation Testing

42510 (9) Proposed stimulation program; Stimulation

(10) Proposed injection procedure;

(11) Engineering drawings of the surface and subsurface construction details of the system;

(12) Plans (including maps) for meeting the monitoring requirements of § 146.33(b); Monitoring

(13) Expected changes in pressure, native fluid displacement, direction of movement of injection fluid; Changes

(14) Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water;

42511 (15) 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(9); and

(16) The corrective action proposed to be taken under 40 CFR 122.44. Corrective action

(b) Prior to granting approval for the operation of a Class III well the Director shall consider the following information:

(1) All available logging and testing data on the well;

(2) A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution and geothermal wells pursuant to § 146.08. Mechanical integrity

(3) The actual operating data;

(4) The results of the formation testing program;

(5) The actual injection procedures; and

(6) The status of corrective action on defective wells in the area of review. Corrective action

(c) Prior to granting approval for the plugging and abandonment of a Class III 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, grade and quantity of cement to be used;

(4) The method of placement of the plugs, and

(5) The procedure to be used to meet the requirements of § 146.10(c).

§ 146.35 Mid-course evaluation requirements.

In compliance with 40 CFR 122.18(c)(4)(C)(ii) the data to be submitted on each Class III permit at six month intervals during the first two years of operation of the State program shall at a minimum include the following:

Permit
Six months
Two years

(a) The data required in § 146.14(a)(i);

(b) The data required in § 146.34(a)(3) including, under location, the distance and direction from the injection well;

(c) The depth to the top and bottom of any USDW;

(d) The distance to the nearest down-gradient water supply well;

(e) A description of the geology and hydrology of the area;

(f) The construction characteristics of the well;

(g) The type and results of all mechanical integrity tests reported to the Director during the first two years of the program; and

(h) Any reporting to the Director under § 122.41(d).

Subpart E—Criteria and Standards Applicable to Class IV Injection Wells [Reserved]

Subpart F—Criteria and Standards Applicable to Class V Injection Wells

§ 146.51 Applicability.

This subpart sets forth Criteria and Standards for underground injection control programs to regulate all injection not regulated in Subparts B, C, D, and E.

(a) Generally, wells covered by this Subpart inject non-hazardous fluids into or above formations that contain underground sources of drinking water. It includes all wells listed in § 146.05(e) but is not limited to those types of injection wells.

(b) It also includes wells not covered in Class IV that inject radioactive materials listed in 10 CFR Part 20, Appendix B, Table II, Column 2, and injection wells used to store hydrocarbons which are gases at standard temperature and pressure.

Note: Natural gas storage may be excluded by amendments

§ 146.52 Inventory and Assessment.

(a) The owner or operator of any Class V well shall, within one year of the effective date of an underground injection control program, notify the Director of the existence of any well meeting the definitions of Class V under his control, and submit the inventory information required in 40 CFR ~~122.37(c)(1)~~.

One year

Inventory

122.37(D)(1)

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(d) *Inventory requirements.* All injection wells covered by rule shall submit inventory information to the Director. Any rule under this section shall provide for the automatic termination of authorization for any well which fails to comply within the time specified in paragraph (c)(3) of this section.

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(1) *Contents.* The Director shall require at least the information listed in § 146.52 as part of the inventory.

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(b) Within three (3) years of approval of the State program the Director shall complete and submit to EPA a report containing:

(1) The information on the construction features of Class V wells, and the nature and volume of the injected fluids;

(2) An assessment of the contamination potential of the Class V wells using hydrogeological data available to the State;

(3) An assessment of the available corrective alternatives where appropriate and their environmental and economic consequences; and

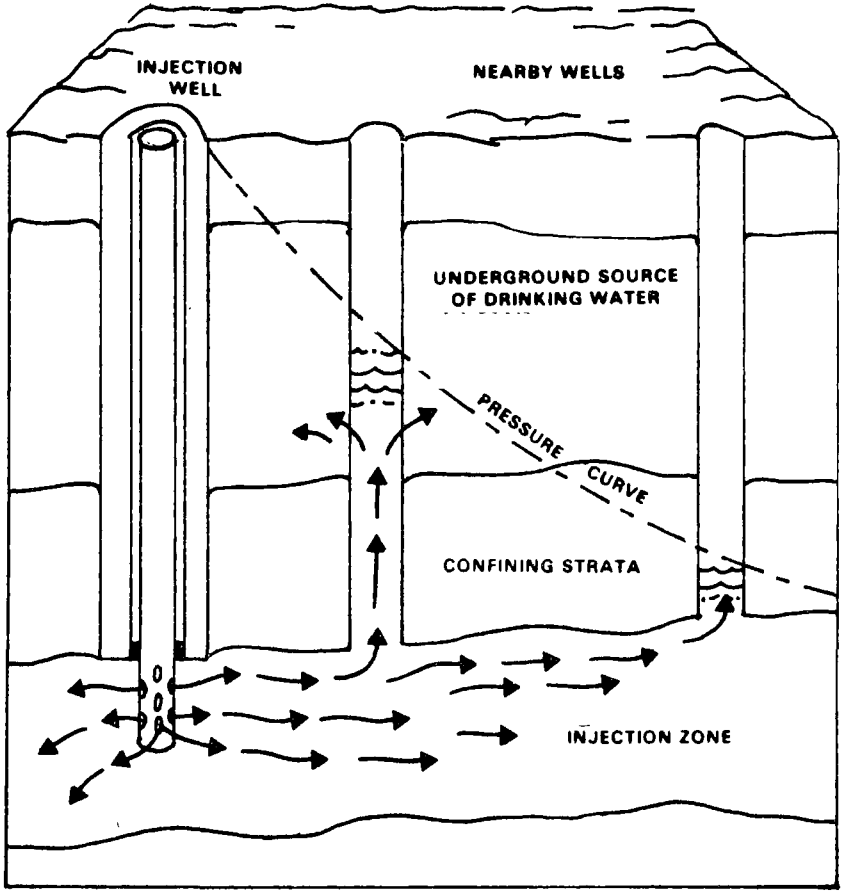
(4) Recommendations both for the most appropriate regulatory approaches and for remedial actions where appropriate.

Three years

Contamination potential

Alternatives

Recommendations



NEARBY WELLS

Scoring Guide

CFR 146 Subparts C,D,E,F,

Note: These questions and the answers given are <u>not</u> official guidance or policy

146 C

1.	True.	[146.22(a)]
2.	True.	[146.22(b)]
3.	True.	[146.22(e)] Needs an appropriate plan upon submission.
4.	False.	Only those involving a pilot hole
5.	True.	[146.23(a)(1)]
6.	False.	Weekly, monthly, daily. [146.23(b)(2)]
7.	True.	[146.23(b)(3)]
8.	True.	[146.23(c)]
9.	True.	[146.24(a)(2)]
10.	True.	[146.25(a)]
11.	False.	[146.25(b)] Existing and new conversions only
12.	True.	[146.25(c)]
13.	True.	Tests of non-existing wells are suspect.

146 D

14. True. [146.32(a)]

15. True. (Just to keep you awake)

16. True. [146.32(c)]

17. True. [146.32(e) & (f)]

18. False. [146.32(g)]

19. True [146.32(h)]

146.33

20. True. [146.33(b)(2)]

21. False. "salt solution mining and geothermal wells only" [146.33(b)(3)]

22. False. "Weekly monitoring ..." [146.33(b)(4)]

23. True. [146.33(b)(6)]

24. True. [146.33(c)(1)]

25. True. [146.33(c)(2)]

146.34

26. True. [146.34(b)(2)]

27. True. [146.34(a)(16)] and (b)(6)

146.35

28. True. [146.35]

146.357

29. True. [146.51(a)]

30. True. [146.51(b)]

31. True. [146.52(b)]

32. True. [146.52(b)(2)]

33. True. (Just wanted to see if you're still awake)