**Section 730.190 Testing and Monitoring Requirements**

The owner or operator of a Class VI injection well must prepare, maintain, and comply with a testing and monitoring plan which will verify that the geologic sequestration project is operating as permitted, and that the project is not endangering USDWs. The requirement to maintain and implement an approved testing and monitoring plan is directly enforceable, regardless of whether the requirement is a condition of the permit. The owner or operator must submit the testing and monitoring plan to the Agency with the permit application, and the owner or operator must include a description of how it will meet the requirements of this Section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include the following parameters and devices:

a) Analyses of the carbon dioxide stream with sufficient frequency to yield data representative of the chemical and physical characteristics of the stream;

b) Installation and use of continuous recording devices to monitor injection pressure, rate, and volume, except during well workovers, as such are defined in Section 730.188(d); the pressure on the annulus between the tubing and the long-string casing; and the annulus fluid volume added;

c) Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components fulfill the Agency-approved minimum standards for material strength and performance, as provided in Section 730.186(b), by performing one of the following tests:

1) Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream;

2) Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or

3) Using an alternative method approved by the Agency;

d) Periodic monitoring of the groundwater quality and geochemical changes above the confining zones that may be a result of carbon dioxide movement through the confining zones or additional identified zones, including the following information:

1) The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and

2) The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected pursuant to Section 730.182(a)(6) and on any modeling results in the area of review evaluation required by Section 730.184(c).

e) The annual demonstration of external mechanical integrity required by Section 730.189(c) at least once per year until the injection well is plugged; and, if required by the Agency, a casing inspection log undertaken pursuant to Section 730.189(d), at a frequency established in the testing and monitoring plan;

f) A pressure fall-off test at least once every five years, unless the Agency has required more frequent testing based on site-specific information;

g) Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (i.e., the pressure front) by using the following types of methods:

1) Direct methods in the injection zones; and

2) Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys or down-hole carbon dioxide detection tools), unless the Agency has determined, based on site-specific geology, that these methods are not appropriate;

h) The Agency must require surface air monitoring or soil gas monitoring if the Agency determines that this monitoring is needed to detect movement of carbon dioxide that could endanger a USDW.

1) The design of Class VI injection well surface air or soil gas monitoring must be based on potential risks to USDWs within the area of review;

2) The monitoring frequency and spatial distribution of surface air monitoring or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation or compliance with the prohibition against movement of fluid into a USDW set forth in 35 Ill. Adm. Code 704.122;

3) If the Agency requires surface air or soil gas monitoring, the Agency has determined that monitoring undertaken to comply with subpart RR of 40 CFR 98 accomplishes the goals of subsections (h)(1) and (h)(2), and the owner or operator fulfills the carbon dioxide release reporting requirements set forth in Section 730.191(c)(5), the Agency must approve the use of monitoring undertaken to comply with subpart RR of 40 CFR 98. After approval by the Agency, compliance with subpart RR of 40 CFR 98 pursuant to this subsection (h)(3) is deemed a condition of the Class VI injection well permit;

i) Any additional monitoring that the Agency has determined is necessary to support, upgrade, and improve the computational modeling of the area of review evaluation that is required by Section 730.184(c) and to determine compliance with the prohibition against movement of fluid into a USDW set forth in 35 Ill. Adm. Code 704.122;

j) The owner or operator must periodically review the testing and monitoring plan to incorporate monitoring data collected under this Subpart H, operational data collected pursuant to Section 730.188, and the most recent area of review reevaluation performed pursuant to Section 730.184(e). The owner or operator must review the testing and monitoring plan at least once in every five-year period. Based on this review, the owner or operator must submit an amended testing and monitoring plan or demonstrate to the Agency that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Agency, must be incorporated into the permit, and are subject to the permit modification requirements set forth in 35 Ill. Adm. Code 704.261 or 704.264, as appropriate. The owner or operator must submit amended plans or demonstrations to the Agency as follows:

1) Within one year after an area of review reevaluation;

2) Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Agency; or

3) When required by the Agency.

k) A quality assurance and surveillance plan for all testing and monitoring requirements.

BOARD NOTE: This Section corresponds with 40 CFR 146.90 (2017).

(Source: Amended at 42 Ill. Reg. 24145, effective November 19, 2018)