**Section 730.168 Testing and Monitoring Requirements**

Testing and monitoring requirements must at a minimum include:

a) Monitoring of the injected wastes.

1) The owner or operator must develop and follow an approved written waste analysis plan that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the waste, including the quality assurance procedures used. At a minimum, the plan must specify all of the following:

A) The parameters for which the waste will be analyzed and the rationale for the selection of these parameters;

B) The test methods that will be used to test for these parameters; and

C) The sampling method that will be used to obtain a representative sample of the waste to be analyzed.

2) The owner or operator must repeat the analysis of the injected wastes as described in the waste analysis plan at frequencies specified in the waste analysis plan and when process or operating changes occur that may significantly alter the characteristics of the waste stream.

3) The owner or operator must conduct continuous or periodic monitoring of selected parameters as required by permit condition.

4) The owner or operator must assure that the plan remains accurate and the analyses remain representative.

b) Hydrogeologic compatibility determination. The owner or operator must submit information demonstrating that the wastestream and its anticipated reaction products will not alter the permeability, thickness, or other relevant characteristics of the confining or injection zones such that they would no longer meet the requirements specified in Section 730.162.

c) Compatibility of well materials.

1) The owner or operator must demonstrate that the waste stream will be compatible with the well materials with which the waste is expected to come into contact, and submit to the Agency a description of the methodology used to make that determination. Compatibility, for the purposes of this requirement, is established if contact with injected fluids will not cause the well materials to fail to satisfy any design requirement imposed pursuant to Section 730.165(b).

2) The Agency must require continuous corrosion monitoring of the construction materials used in the well for wells injecting corrosive waste, and may require such monitoring for other wastes, by any of the following means:

A) Placing coupons of the well construction materials in contact with the waste stream;

B) Routing the waste stream through a loop constructed with the material used in the well; or

C) Using an alternative method approved by permit condition.

3) If a corrosion monitoring program is required, both of the following must occur:

A) The test must use materials identical to those used in the construction of the well, and such materials must be continuously exposed to the operating pressures and temperatures (measured at the well head) and flow rates of the injection operation; and

B) The owner or operator must monitor the materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in Section 730.165(b).

d) Periodic mechanical integrity testing. In fulfilling the requirements of Section 730.108, the owner or operator of a Class I hazardous waste injection well must conduct the mechanical integrity testing as follows:

1) The long string casing, injection tube, and annular seal must be tested by means of an approved pressure test with a liquid or gas annually and whenever there has been a well workover;

2) The bottom-hole cement must be tested by means of an approved radioactive tracer survey annually;

3) An approved temperature, noise, or other approved log must be run at least once every five years to test for movement of fluid along the borehole. The Agency may require such tests whenever the well is worked over;

4) Running casing inspection logs.

A) Casing inspection logs must be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the Agency by permit allows otherwise for either of the following reasons:

i) Due to well construction or other factors that limit the test's reliability; or

ii) Based on the satisfactory results of a casing inspection log run within the previous five years.

B) The Agency may require by permit that the owner or operator run a casing inspection log if it determines in writing that it has reason to believe that the integrity of the long string casing of the well may be adversely affected by naturally-occurring or man-made events; and

5) Any other test specified by permit condition in accordance with the procedures set forth in Section 730.108(d) may also be used.

e) 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 Agency must require the owner or operator to develop a monitoring program. At a minimum, the Agency must 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.

2) When prescribing a monitoring system the Agency may also require any of the following actions that it determines in writing is necessary:

A) Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator must, on a quarterly basis, sample the aquifer, and analyze for constituents specified by permit condition;

B) The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by permit condition, or to provide other site-specific data;

C) Periodic monitoring of the groundwater quality in the first aquifer overlying the injection zone;

D) Periodic monitoring of the ground water quality in the lowermost USDW;

E) Any additional monitoring necessary to determine whether fluids are moving into or between USDWs; or

F) Seismicity monitoring, when the Agency has reason to believe that the injection activity may have the capacity to cause seismic disturbances.

BOARD NOTE: Derived from 40 CFR 146.68 (2005).

(Source: Amended at 31 Ill. Reg. 1281, effective December 20, 2006)