UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

MEMORANDUM

SUBJECT: Casing and Cementing Requirements for Enhanced Recovery and Hydrocarbon Storage wells. Ground-Water Program Guidance No. 38

FROM: Victor J. Kimm, Director
Office of Drinking Water (WH-550)

TO: Water Division Directors
Water Supply Branch Chiefs
UIC Representatives
Regions I-X

Purpose: Questions have been raised by industry and EPA Regional staff concerning the casing and cementing requirements for enhanced recovery and hydrocarbon storage wells. These requirements are outlined in 40 CFR §144.28(e); §146.22; Alaska §147.104(b); Colorado §147.304(b); Indiana §147.754(b); Kentucky §147.904(b); Michigan §147.1154(b); Montana §147.1354(b); Nevada §147.1454(b); New York §147.1654(b); Pennsylvania §147.1954(b); and Tennessee §147.2154(b). This guidance is intended to address these inquiries.

Background:

All Class II wells are subject to contain a general performance standard that they must be cased and cemented so as to prevent the movement of fluids into and between underground sources of drinking water (USDWs). The regulations at 40 CFR 146.22 (c) and (d) provide alternative ways to meet this standard.

As part of Federally-administered Underground Injection Control programs, EPA promulgated rules for enhanced recovery and hydrocarbon storage wells in §144.28(e) and State-specific sections as listed above to implement the general performance standard. The casing and cementing requirements contained in the State-specific sections essentially assume that the construction of most existing Class II wells is acceptable. However, if the Regional Administrator has reason to believe that a particular well or a type of construction may not be in compliance with the performance standard, he may impose necessary remedial casing and cementing actions. This mechanism allows the Regional Administrator, when he deems appropriate, to require owners or operators to correct specific technical problems without imposing the administrative burdens of permitting on the owners or operators.

EPA received several comments on the 40 CFR Part 147 rules and regulations. These comments are addressed in the preamble of the final rule at 49 Federal Register 20153-54 (May 11, 1984).

Comments received argued that:

1) The Regional Administrator's discretion to impose requirements under State-specific sections in 40 CFR Part 147 should be exercised based upon evidence of fluid movement rather than concerns that the well's cementing (or cement record) fail to meet the provisions of §144.28(e)(1) and (2);

2) The difficulty of recementing existing wells and perforating the casing to do a squeeze job ultimately may create other problems in the wells;

3) The specific technical requirements, such as the volumes of cement and intervals of cement required are often difficult if not impossible to achieve; and

4) Allowing the Regional Administrator to specify other requirements to meet the standards in §144.28(e) and §146.22 is too open ended and broad.

Guidance:

Although EPA agrees with some of these comments, the Agency does not believe that these considerations require altering the promulgated regulations. The effective implementation of these rules however, requires a careful understanding of what the intent of those sections is, and how they are to be applied. Section 144.28(e)(1) requires that the owner or operator of enhanced recovery and hydrocarbon storage wells case and cement these wells to prevent movement of fluid into or between underground sources of drinking water. The Agency could have implemented this performance standard by specifying certain construction requirements to be followed by all owners or operators. Instead, the Agency chose, in keeping with the statutory mandate to minimize disruption of oil and gas production, to apply construction requirements to existing wells only when the Regional Administrator has reason to believe that a well or a type of construction may endanger underground sources of drinking water. Therefore, the regulations make clear that the specific casing and cementing requirements specified in §147.104 and the

following parallel sections apply only "(w)here the Regional Administrator determines that the owner or operator of an existing enhanced recovery or hydrocarbon storage well may not be in compliance with the requirements of §§ 144.28(e) and 146.22...."

The factors to be considered in determining and specifying casing and cementing requirements in §144.28(e)(1) allow the Regional Administrator the discretion to consider not only evidence of actual movement of fluids into or between underground sources of drinking water but also evidence of potential movement, for example, substandard casing and cementing which may endanger USDWs. The Agency believes it to be appropriate to include potential movement as a basis for action. Requiring the Regional Administrator to determine actual movement of fluids into or between underground sources of drinking water is inconsistent with the intent of the Safe Drinking Water Act to prevent endangerment rather than to clean contamination up, and to lay the burden on operators to demonstrate that their wells do not endanger. At the same time, the Regional Administrator should have good reason for determining that casing and cementing actions should be applied.

It should also be noted that the requirements of §144.28(e), §146.22 and the State-specific programs contained in Part 147 are performance standards. Therefore, the design and materials used in the construction of the well may vary considerably and still be in compliance with the standards.

This potential for variety in the construction characteristics of a well is important. Regional staff, when implementing this standard should be aware that in applying this requirement, the mere existence of an unusual or "non-standard" construction in a well or wells should not, by itself trigger the remedial action specified in the State-specific rules. See, e.g., §147.104. Rather, it is evidence of potential or actual fluid movement which should trigger such action.

As to the second and third comments concerning the difficulty of recementing existing wells and meeting specific technical requirements, EPA recognizes that it may be difficult to bring existing wells into compliance with the requirements of §§144.28(e), 146.22 and/or Part 147. In order to deal with this problem and the individual characteristics of a particular well, the

Regional Administrator has been given the flexibility to specify alternative requirements in order to bring existing wells into compliance. An example of this is 40 CFR §147.104(b) which provides that "(w)here the Regional Administrator determines that the owner or operator of an existing enhanced recovery or hydrocarbon storage well may not be in compliance with the requirements of §§144.28(e) and 146.22, the owner or operator shall comply with paragraphs (b)(1) through (4) of this section, when required by the Regional Administrator...." Paragraphs (1) through (3) of 40 CFR §147.104(b) contain a representative standard for the technical and construction requirements which the Regional Administrator may apply to owners or operators who are not in compliance with applicable performance standards. Obviously, where it is not feasible to apply these requirements, the Regional Administrator will not do so. Paragraph (4) of this same section states that "the Regional Administrator may specify other requirements in addition to or in lieu of the requirements set forth in paragraphs (b)(1)-(3) as needed to protect USDWs." Again, in implementing this section, Agency staff must carefully evaluate the appropriateness of the standards specified in paragraphs (b)(1)-(3). In particular cases, these requirements may not be compatible with the design, condition, or construction of the well or wells in question. In such cases, the Regional Administrator should not hesitate to apply appropriate alternatives.

The Agency believes that this approach provides the flexibility to tailor requirements necessary for specific wells through a mechanism that is short of the administratively burdensome process of applying for a permit.

However, in a case where the owner or operator believes that the application of these requirements to him is unreasonable, he may choose, to apply for a permit under 40 CFR §144.25. The permitting process would provide the owner or operator with an additional opportunity to propose appropriate remedial steps together with the procedural safeguards outlined in Part 124.

IMPLEMENTATION

Regional offices are instructed to use this guidance in administrating UIC programs where EPA has primary enforcement responsibility. They are further instructed to make this guidance available to States working towards primacy and to advise the State director that these interpretations represent EPA policy.

FILING INSTRUCTIONS

This guidance should be filed as Ground Water Program Guidance No. _____.

ACTION RESPONSIBILITY

For further information on this guidance contact:

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