Dear Sir:

Proposed DOH Regulations,
Underground Injection Control

We appreciate the opportunity to review the draft regulations proposed by the DOH for underground injection control. The Water Resources Research Center, through its Director, L.S. Lau, has contributed to the formulation of the review comments below.

General Comments

The control of subsurface disposal proposed in the regulation is clearly intended to relate principally to disposal by underground injection of wastewaters containing substances that would be deleterious in groundwaters used for drinking water. Is it also intended to relate, or should it also relate, to:

a) underground disposals by other means that would similarly degrade the groundwater sources (i.e. disposals by surface spreading, irrigation excess)?

b) underground disposals of wastewaters containing substances that would degrade: (i) brackish groundwater that might be desalinized for drinking; (ii) groundwaters used for other purposes; (iii) surface waters used for any purpose that are fed by the groundwaters?

c) underground disposals of storm waters that might degrade groundwaters?

d) other disposals that could result in groundwater contamination?

The draft regulation applies to gas injections. What gases are in mind? Does it or should it apply to landfills from which groundwater contaminants might be leached? What about surface or subsurface emplacement of fertilizers, herbicides, pesticides, etc.?
We suggest that the regulation should cover:

1) Disposals that are known or may reasonably be supposed to result in significant problems and that are not covered by other regulations.

2) Such additional disposals as may be absolutely required by federal legislation (if any).

3) Such additional disposals as would be covered incidentally in making the regulations reasonably simple yet covering 1) and 2).

There is a significant risk otherwise that the regulations will cover disposals not necessary to cover and add unnecessarily to bureaucratic humbug and cost.

In the light of the above discussion, we wonder whether something like this pair of definitions might substitute for the proposed definitions (a), (n), (o), (p), and (q). (Brackets enclose pairs of alternative wordings)

(i) Waste water means disposal [of vs of waste waters and other] [liquid vs fluid] wastes through a well or any other [structure vs excavation] intended for such disposal.

(ii) [Fluid vs liquid] wastes materials in [gaseous, liquid vs liquid] sludge, semi-solid or other form capable of moving in the ground after injection.

Specific Comments

1 (b) The definition of "Wastes" would include non-wastes. Is the term actually used in the reg.?

1 (e) The definition of "underground drinking water source" would include aquifers with much higher TDS than is tolerable in drinking water in Hawaii. We suggest restriction to meeting drinking water standards.

1 (f) The definition of contaminant would include such natural solutes, as salts, silica, $O_2$, $CO_2$. Is the term actually needed in the reg.?

1 (k) It is certainly not true that any permit or equivalent document issued by the Director of Health is a UIC.

1 (n) Possibly substitute "disposal" for emplacement. Emplacement, although used in federal legislation, implies that the material will stay put when it has been emplaced. (See also general comments)

1 (o) "Fluid" means material that flows, whether in liquid, semi-solid, sludge, or any other form. (Omit "moves" unless in the form of "is capable
of flowing or moving in the ground." ) (See also general comments)

1 (p) In the definition of "well injection," isn't the principal function of "the subsurface disposal" (not emplacement) the prime criterion? What difference does it make whether the disposal is in a pit wider that it is deep or not? As a matter of fact, why is a definition of well injection needed at all? (See also general comments)

1 (q) Why is a definition of surface impoundment necessary? (See also general comments)

1 (u) Omit period in point (3).

1 (w) Is the term "annular injection" actually used or needed in the reg.?

3 (a)(z) Replace "is so deficient as not to have satisfied" by "does not satisfy."

3 (f) Designate minor subsections by (i), (ii), etc. to avoid confusion with major subsection.

3 (f)(b) Why is mineral ownership pertinent?

3 (f)(c) The pertinence of individual residences is questionable. Bedrock outcrops, etc. are pertinent, but these are only a part of the pertinent hydrogeologic information. Hydrogeologic information is already repeated in 3 (f)(e) and (f).

3 (f)(d) Replace "requested under (c) penetrating" by "mapped under (c) that penetrate."

3 (f)(e) "aquifer" (sp)

3 (f)(e) and (f) Combine.

10 The sole basis for denial of a UIC is that the injection will endanger an underground drinking water source. Provision should be made for denial if use of irrigation wells or other wells would be impaired, or if standards would be violated in surface water bodies fed by the aquifer into which injection will be made. (See also general comments)

17 (b) What is a minor discharge?

21 Section is headed "malfunction" but subsection (a) deals with scheduled maintenance, not malfunction.

Final question: What provision will be made for sealing a UI if its use is to be discontinued, and if sealing is necessary to prevent contamination of a drinking water source?

Doak C. Cox
Director

cc. L. S. Lau--WRRC