Underground Injection Control (UIC) Program

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Office of Oil and Gas
1974 Safe Drinking Water Act

- Requires EPA to promulgate regulations to protect drinking sources from contamination from underground injection
  - 40CFR Part 145/146
  - 47CSR13 / 35CSR4
Six UIC Well Classes

WVDEP/ OOG Does not regulate

- Class 1 Hazardous Waste (inject hazardous waste below USDWs).
- Class 4 Hazardous Waste/Banned Class Radioactive Waste (Inject waste into or above USDWs).
- Class 5 Injection wells not included in all other classes (Ex. Cesspools, Septic)
- Class 6 CO2 Sequestration (New)
WVDEP/OOG Regulates

- Class 2 Disposal Wells/Enhanced Recovery
- Class 3 Solution Mining Wells
Purpose of Class 2 UIC Disposal Wells

• Injection of fluids associated with oil and natural gas development/production which may be commingled with waste waters from gas plants into underground formation(s).

• Ensure fluids injected do not migrate into Underground Sources of Drinking Water.
• Injection preferred into deeper formation(s) than it originated.

• Good disposal method of oil and gas waste fluids.
Class 2/3 UIC Well Construction

• Must have tubing and packer arrangement.

• Must have surface casing with cement circulated to surface.

• Must have long string/production casing cemented at least 100 feet above top of injection formation.
Permit Requirements

• Must submit 2 complete permit packages (available on website).

• UIC permit application and Well Work Permit.

• Need a Well Work Permit whether drilling new well or converting to UIC.
Permit Requirements cont.’d

• Area of Review Investigation (1/4 mile radius around injection well or project)

• Records for all wells (active, plugged/abandoned) potential conduits within 1/4 mile radius

• Topo map all water wells/springs (drinking) within 1 mile radius

• Test all water wells/springs (drinking)
Permit Requirements cont.’d

• Structural Contour Map (Confining layer, Injection Formation)
• Isopach Map of injection formation.
• Wells logs (Cement bond, lithology, geophysical, etc.)
• Analyses of private water wells and injection fluids
• Listing of wells to be serviced by proposed UIC
Permit Requirements cont.’d

• Schematic of proposed well
• Fault investigation
• Plume prediction mode
• Description of confining layers (thickness, permeability, porosity, etc)
• Description of any additives to be injected
MECHANICAL INTEGRITY TESTING (MIT)

• INTERNAL TEST
  • Pressure Test
  • Annulus Monitoring

• EXTERNAL TEST
  • Temperature
  • Noise
  • Cement Bond Logs
Monitoring and Testing Requirements

- Daily monitoring for injection pressures, rates, volumes, etc. (Reported monthly on WR-40 Form)

- Integrity tested at least once every five years (MIT) testing casing, tubing, and packer.

- Some Commercial Class 2 Disposal well facilities required to sample fluids before disposal
WV UIC Class 2 and 3 Permits

• 54 Non-Commercial Disposal Well Permits
• 16 Commercial Disposal Well Permits
• 12 Enhanced Recovery (Waterflood) Permits
• 1 Solution Mining Permit
Commercial and Non-Commercial Disposal Wells

- Similar regulations
- Commercial (major difference)
  - Increased security
  - Fluid sampling if third party haulers used
Questions?