

**PEER REVIEW
INDIANA CLASS II UIC PROGRAM**



APRIL 2005

Ground Water
GWPC
Protection Council

UNDERGROUND INJECTION CONTROL

General

The Division of Oil and Gas of the Indiana Department of Natural Resources (IDNR) has had primacy for the Indiana Class II program since 1991. EPA administered the UIC program under Direct Implementation (DI) from 1980-1991. This report constitutes the initial review of Indiana's UIC program and was conducted in conjunction with the STRONGER Review of Indiana's E&P waste management program. As is the case with other waste management program elements, IDNR derives its legislative authority from Indiana Code 14-37 and implements the administrative rules as promulgated by the Natural Resources Commission as published in the Indiana Administrative Code. The administration of the oil, gas and UIC regulatory programs is assigned to the Division of Oil and Gas.

FINDING UIC I: *The Review Team compliments IDNR on the organization of Article 16, which contains all the oil, gas and UIC regulations. Each subject (i.e. application filing, plugging and well testing) has a section(s) that apply to UIC wells where specific requirements are needed. This may be a handier reference method for the operator than where the UIC regulations are contained in a separate section.*

IDNR receives about \$116,000 from EPA to administer the UIC program. This constitutes about 35% of the actual amount to run the program. The two geologists in the Indianapolis office who administer the UIC application technical review are 100% UIC in terms of allocated time and funding. The Director for DOG indicated they have been unable to fill positions that have become vacant. Indiana has 1288 injection wells of which 200 are salt water disposal wells and the remaining 1,088 are for Enhanced Oil Recovery (EOR). Salt water is the principal E&P waste in Indiana, consequently, the UIC program is an important component of the DOG's E&P waste management regulatory activities.

FINDING UIC II: *The DOG Director indicated that the inability to fill vacant administrative positions has caused existing staff to assume the duties and activities normally performed by persons in those positions. This has limited staff time to address other technical projects and some critical tasks or possible increases in UIC activity caused by increased drilling in the state.*

RECOMMENDATION UIC II: *IDNR should allow DOG to continue supporting ongoing efforts by the Ground Water Protection Council (GWPC) to obtain additional support for state UIC primacy programs.*

Permitting

Permits are required before any well can be drilled, deepened, operated or converted to a Class II well by the authority of IC 14-37 and Regulation 312 IAC 16-3-1(b). An operator filing an application for a Class II well must first satisfy a set of general requirements

applicable to all drilling and well completion activities accompanied by a \$100 fee. In addition to the normal requirements for construction of Class II wells that will be protective of USDWs, the operators must show a plat of all oil and gas wells intersecting the proposed injection zone within ¼ mile of the proposed location as well as each water well within ¼ mile that is recorded with the department. Most of the required information is outlined in Section 2 (e) through (o). DOG assigns a number to the application at the time of filing, which is not reused if the application is denied or withdrawn.

The permitting process appears to be well conceived and the actual technical review is conducted by two persons who have a BA in geology and three or more years experience working in the UIC program.

FINDING UIC III: *The permitting/ file review portion of the Indiana UIC program meets all federal UIC primacy requirements. The IDNR technical review is carried out by petroleum geologists, one of whom is licensed by the State of Indiana.*

The DOG has developed a very dedicated file/compliance review of existing UIC permits. On the average, file reviews take 1.5 to 2 days to complete. Part of this focus was to fill in the missing pieces of information from existing permits (pre-IDNR primacy) and another motive was to obtain compliance from operators to modify permits having violations (exceeding pressure and volumes, etc.). DOG geologists estimated that 35-50 % of all file reviews show some sort of adverse deviation from permit conditions. Generally, operators are given thirty (30) days to correct paper violations. Injection is not halted in 90% of the cases as no threat to USDWs exists.

FINDING UIC IV: *The DOG UIC staff is complemented on the diligence in using the file review as a tool to effectively achieve UIC well operator compliance.*

Inspections

The DOG has divided the state into eight (8) inspection districts: two are supervised out of the Indianapolis office and six are supervised out of Evansville. In the Evansville office, a field inspection manager, a field geologist and five field inspectors are available to address UIC activities. For UIC inspections and testing activities, the latter office carries the majority of the load. The UIC workload for field inspectors is about 20-25% of their total inspection, compliance evaluation and enforcement effort. Most of the UIC effort is involved with scheduling and witnessing the states 1288 injection wells for mechanical integrity over the 5-year rotation. In addition, field inspectors make routine visits to all wells over a two- year period.

FINDING UIC V: *The DOG inspection program appears to be well organized and Class II UIC wells are visit on a sufficient basis to detect any trends toward deteriorating well conditions, poor lease management or threat of well abandonment.*

Mechanical Integrity Testing (MIT)

The only test allowed by the IDNR for establishing Part I MI is the Standard Annulus Pressure Test (SAPT). Regulation 312 IAC 16-5-15 requires that all Class II wells be pressure tested with liquid at least once every five years at a pressure of 300 psi. The well must not lose more than 3% of its pressure over a 30-minute test period. Part II MI is determined by the evaluation of existing cement records or cement bond logs. All logs are interpreted by DOG geologists. Section (d) of Section 15 of the above stated regulation does allow the use of temperature logs, radioactive tracer surveys (RATS) or sonic logs for Part II, however, staff indicated these were rarely used by Indiana operators. All MITs are scheduled through the field inspectors in the Evansville office and both original, and if necessary, follow-up tests are witnessed by IDNR inspectors. Work done to bring a well with a failed MIT up to standard for passage by retest is not always witnessed. The operator must provide documentary demonstration of the packer setting depth through use of a Wireline measurement or tubing tally and measure the amount of fluid return in order to pass the MIT. DOG staff indicated the annual failure rate to be about 11%.

FINDING UIC VI: *The Indiana MIT program far exceeds the minimum standards of the Federal Program primacy commitment which requires that at least 25% of wells tested in any given year be witnessed by an inspector.*

FINDING UIC VII: *The 3% falloff pressure per 30-minute testing period used by IDNR is very strict and, in fact, is stricter than the 5-10% used by other Class II primacy states and the 5% commonly used by EPA for DI programs.*

RECOMMENDATION UIC VII: *Division staff indicated the 3% falloff pressure was negotiated with EPA Region V at the time Indiana received primacy in 1991. While any state program can invoke a stricter standard than required by EPA, 3% loss may actually be so low that some internal well conditions not associated with a loss of well integrity could indicate a failure when none exists. The Review Team believes IDNR should check other primacy and DI programs in Region V to provide standard consistency unless the 3% falloff standard was based on specific well completion programs or geologic conditions intrinsic to Indiana.*

Compliance and Enforcement

The DOG has several enforcement tools available to address non-compliance with regulations. Notices of Violation (NOVs) may be issued for any violation of IC 14-37 or Article 16. The procedures for issuing NOVs are contained in 312 IAC 16-5-21 as are the procedures for filing an appeal by an aggrieved party. This regulation applies to all oil and gas regulatory non-compliance including UIC. Most of the enforcement tools, such as the permanent permitting ban are discussed in other sections of this report and need not be reiterated in this section. They all apply to UIC program enforcement.

FINDING UIC VIII: *312 IAC 16-5-21 is positive because it allows flexibility wherein NOVs can be issued by the inspector most familiar with the non-compliance event or by the Director or Deputy Director of DOG.*

FINDING UIC IX: *The DOG staff has the authority to direct operators to shut down injection wells if their operation is as threat to USDWs.*

Plugging and Abandonment

The DOG administers an extensive plugging and abandonment program under Regulation 312 IAC 16-5-19 and provisions for temporary abandonment of wells under Regulation 312 IAC 16-5-20. These regulations apply to plugging and abandonment and temporary abandonment of all wells, including Class II injection wells. The rules governing the plugging and abandonment of wells, the temporary abandonment of wells and associated permitting and bonding requirements for wells in some abandonment mode were amended in 1998 and greatly strengthened. An owner or operator may defer plugging and abandonment for one year if he or she applies to DOG within 60 days of the intention to temporarily abandon the well. The operator must demonstrate that all USDWs will be protected during the temporary abandonment period by determining the fluid level in the well by wireline or acoustical measurement. Regulations detail procedures to be used in case the fluid level is 100 feet or less below the base of the USDW. Temporary abandonment may be permitted for up to five years, based on an annual renewal of the permit.

FINDING UIC X: *The DOG recognition of the short time span that often occurs during times of economic depression in the industry between operation of a well and its temporary abandonment or abandonment without plugging is farsighted. Frequently, the last wells to be plugged on a lease in abandonment mode are Class II injection wells, consequently DOG's efforts help protect USDWs. This tracking program should also help decrease the number of orphan wells.*

FINDING UIC XI: *A second strong aspect of the DOG plugging program is that DOG inspectors witness all pluggings.*

Public Outreach

With regard to permitting activities, the Indiana UIC program has an adequate program in place to be aware when UIC applications are filed and the opportunity to comment is possible. EPA is provided an opportunity to review and comment on proposed UIC regulations before they are promulgated. The DOG also uses the Environmental Advisory Board (EAB) of the Indiana Oil and Gas Association (INOGA) to discuss needed changes in UIC regulations. This Board, while primarily formed to assist the DOG in addressing orphan wells and remediating old oil and gas sites, has been used as a forum for regulatory development. The EAB represents the seven county area that is home to most of Indiana's oil production. IDNR nor DOG have an stakeholder advisory board established to allow for discussion of oil, gas and UIC issues. Citizens can request site

inspections online.

FINDING UIC XII: *The EAB and the Brine Coalition provide DOG a good opportunity for stimulating public interest, at least for the Southern part of the state where oil is produced.*

FINDING UIC XIII: *The informal hearing process is open to anyone who requests it on a particular issue. Most requests for hearing are from landowners who are generally satisfied once the matter is explained. It is DOG's experience that such hearings fail to draw much interest from parties other than landowners.*

APPENDIX A: GLOSSARY OF ACRONYMS

BCF	Billion cubic feet
DI	Direct Implementation
DOG	Indiana Division of Oil and Gas
E&P	Exploration and production
EAB	Environmental Advisory Board
EPA	United States Environmental Protection Agency
GIS	Geographic Information System
GPS	Global Positioning System
H ₂ S	Hydrogen sulfide
I.C.	Indiana Code
IAC	Indiana Administrative Code
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IOCC	Interstate Oil Compact Commission
IOGCC	Interstate Oil and Gas Compact Commission
IT	Information Technologies
MIT	Mechanical Integrity Testing
MOA	Memorandum of Agreement
NORM	Naturally Occurring Radioactive Material
NOV	Notice of Violation
NPDES	National Pollutant Discharge and Elimination System

NRC	Natural Resources Commission
OERB	Office of Emergency Response Board
PDA	Personal Digital Assistant
RBDMS	Risk Based Data Management System
RCRA	Resource Conservation and Recovery Act
STRONGER	State Review of Oil and Natural Gas Environmental Regulations
TDS	Total Dissolved Solids
UIC	Underground Injection Control