Natural Resources Committee

September 6, 2011

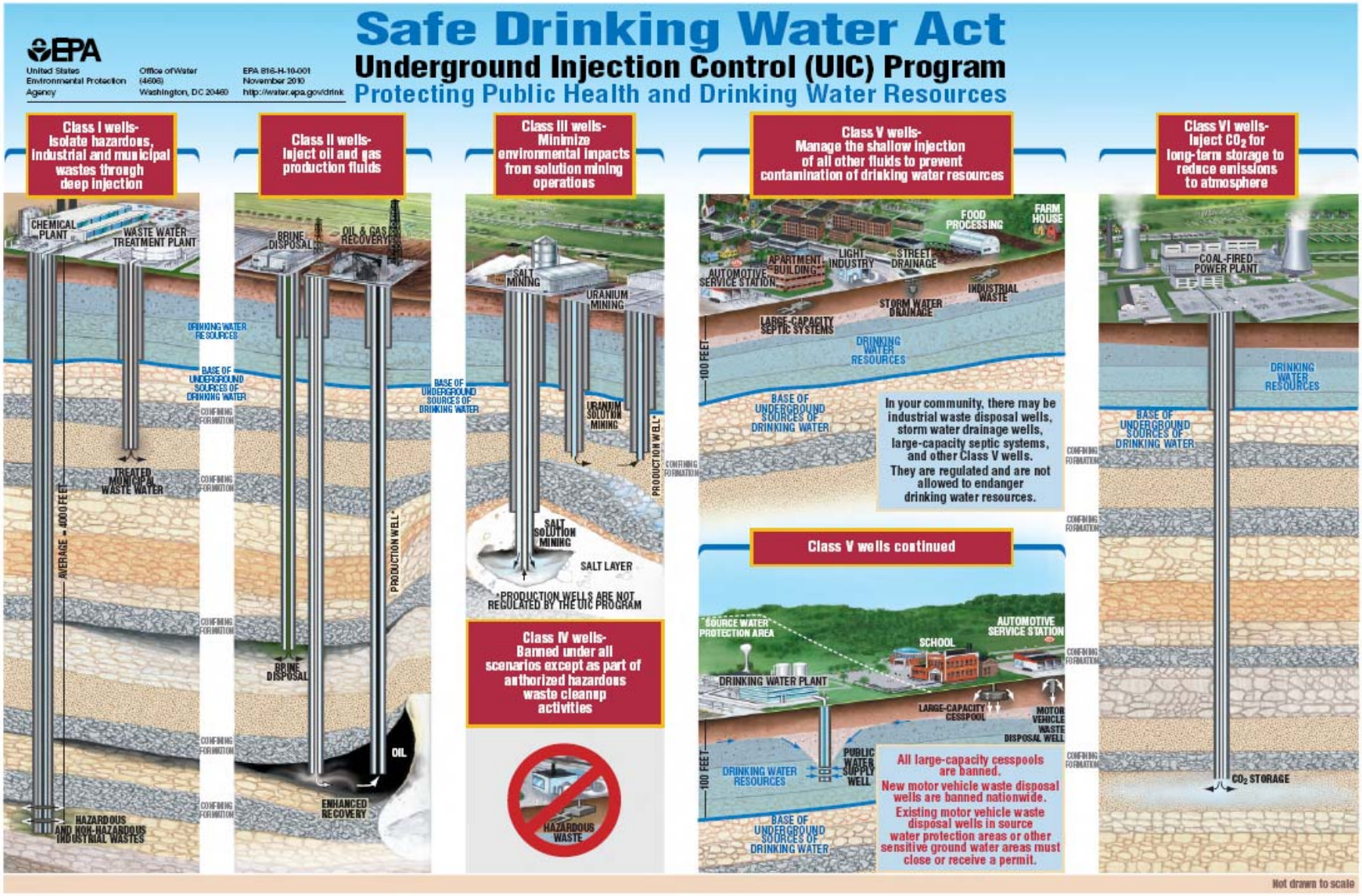
Lynn D. Helms, Director
Department of Mineral Resources
North Dakota Industrial Commission

North Dakota 1422 Program Description

- The state of North Dakota received program implementation primacy in 1984, and has since operated in an EPA-approved UIC program. Amendments to the Federal UIC program on December 10, 2010 have resulted in the revision of the state UIC rules and program description.

- **The North Dakota Geological Survey, a division of the Industrial Commission Department of Mineral Resources**, has authority to regulate Class III injection wells, as identified, under Chapter 38-12 of the North Dakota Century Code and *Chapter 43-02-02.1* of the North Dakota Administrative code.

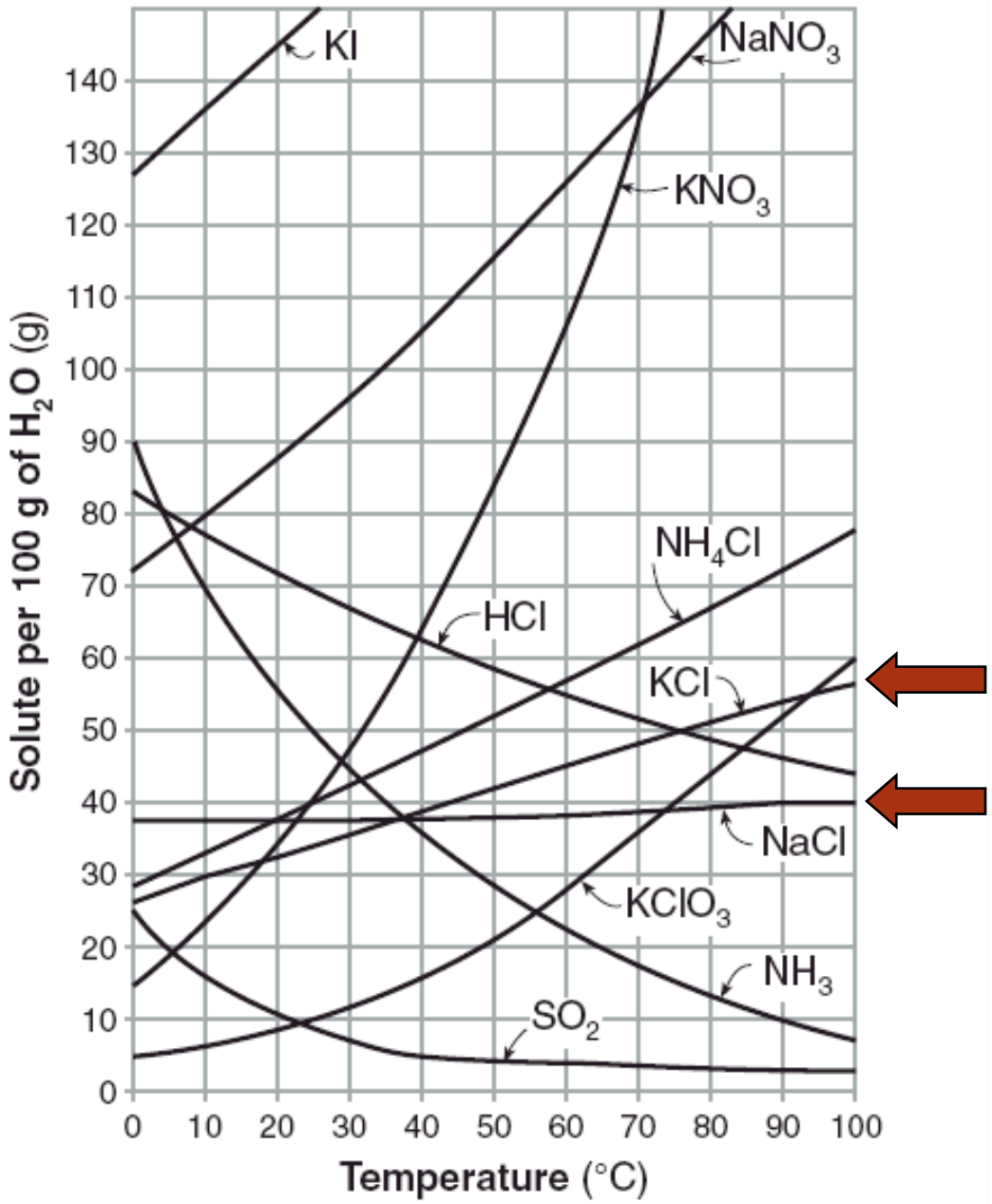
- **The North Dakota Geological Survey, a division of the Industrial Commission Department of Mineral Resources**, has authority to regulate subsurface mineral exploration, development, and production under Chapter 38-12 of the North Dakota Century Code and *Chapter 43-02-02* of the North Dakota Administrative code.


Safe Drinking Water Act
Underground Injection Control (UIC) Program
Protecting Public Health and Drinking Water Resources
EPA
United States Environmental Protection Agency
Office of Water (4606)
Washington, DC 20460
EPA 816-H-10-001
November 2010
http://water.epa.gov/drink
Class I wells- Isolate hazardous, industrial and municipal wastes through deep injection
CHEMICAL PLANT
WASTE WATER TREATMENT PLANT
DRINKING WATER RESOURCES
BASE OF UNDERGROUND SOURCES OF DRINKING WATER
CONFINING FORMATION
TREATED MUNICIPAL WASTE WATER
AVERAGE = 4000 FEET
HAZARDOUS AND NON-HAZARDOUS INDUSTRIAL WASTES
Class II wells- Inject oil and gas production fluids
BRINE DISPOSAL
OIL & GAS RECOVERY
PRODUCTION WELL
BRINE DISPOSAL
OIL
ENHANCED RECOVERY
Class III wells- Minimize environmental impacts from solution mining operations
SALT MINING
URANIUM MINING
URANIUM SOLUTION MINING
SALT SOLUTION MINING
SALT LAYER
*PRODUCTION WELLS ARE NOT REGULATED BY THE UIC PROGRAM
Class IV wells- Banned under all scenarios except as part of authorized hazardous waste cleanup activities
HAZARDOUS WASTE
Class V wells- Manage the shallow injection of all other fluids to prevent contamination of drinking water resources
FOOD PROCESSING
FARM HOUSE
APARTMENT BUILDING
LIGHT INDUSTRY
STREET DRAINAGE
AUTOMOTIVE SERVICE STATION
INDUSTRIAL WASTE
STORM WATER DRAINAGE
LARGE-CAPACITY SEPTIC SYSTEMS
100 FEET
In your community, there may be industrial waste disposal wells, storm water drainage wells, large-capacity septic systems, and other Class V wells. They are regulated and are not allowed to endanger drinking water resources.
Class V wells continued
SOURCE WATER PROTECTION AREA
SCHOOL
AUTOMOTIVE SERVICE STATION
DRINKING WATER PLANT
LARGE-CAPACITY CESSPOOL
MOTOR VEHICLE WASTE DISPOSAL WELL
PUBLIC WATER SUPPLY WELL
All large-capacity cesspools are banned.
New motor vehicle waste disposal wells are banned nationwide.
Existing motor vehicle waste disposal wells in source water protection areas or other sensitive ground water areas must close or receive a permit.
Class VI wells- Inject CO_2 for long-term storage to reduce emissions to atmosphere
COAL-FIRED POWER PLANT
CO_2 STORAGE
Not drawn to scale

Regulatory challenges of subsurface mineral program

- Public acceptance
- Funding
- Regulatory revision
  - 2011 Legislature authorized 1 FTE Geologist to supervise the program
    - Position has been advertized and hiring process is under way
  - NDAC 43-02-02-01 through 43-02-02-50 need to be modernized. Last update was August 1, 1986
  - NDAC 43-02-02.1-01 through 43-02-02.1-19 need to be modernized. Last update was March 1, 1984
- Permitting and Site selection:
  - Geology
  - Surface facility and pipeline spill prevention
  - Protecting Underground Sources of Drinking Water
    - Belle Plain tour

Table G Solubility Curves



Mosaic Potash Plant Belle Plaine, Saskatchewan


Mosaic
Belle Plaine
30


Mosaic
Belle Plaine
30


Grow

Mosaic Potash Plant Hersey, Michigan