

# Environmental and Safety Issues Associated with Shale Gas Production

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# Disclaimer

- This slide set is provided for informational purposes only. Nothing herein constitutes the provision of legal advice or services.

# Water Quantity

- Up to 4-5 million gallons of water per lateral (estimates vary)
- Multiple wells and laterals per well pad
- Refracing each lateral as many as 8 times over the well life

# Potential Contaminants to Water

- Fracing fluid chemicals
- Dissolved chemicals from the deposit in the return fluid
- Salts
- Particulates (sediment)

# Ground Water Quality

- Sources of contamination
  - defective well casings that allow fluid to leak into groundwater bearing strata
  - surface storage of waste fluid, and attendant seepage and spills, that can contaminate groundwater through infiltration
  - Transport and other accidents that result in spills and leaks

# Ground Water Quality

- Sources of contamination (continued)
  - illegal dumping into surface waters (groundwater can be contaminated as a result because of its hydrological connection to surface water)
  - incomplete treatment of the waste at treatment plants, discharge to surface waters and reintroduction to groundwater through a hydrological connection
  - failed injection wells, where that is the disposal method

# Surface Water Quality

- surface storage of waste fluid, and attendant seepage and spills, that can contaminate groundwater through infiltration
- Transport and other accidents that result in spills and leaks
- illegal dumping into surface waters (groundwater can be contaminated as a result because of its hydrological connection to surface water)
- incomplete treatment of the waste at treatment plants, discharge to surface waters and reintroduction to groundwater through a hydrological connection
- Runoff (chemicals, spilled oil & fuel, & sediment)

# Waste fluid disposal

- Methods
  - Recycling
  - Injection
  - Treatment
  - Evaporation
  - Storage
  - Illegal dumping



# Well Owner Protections

- *Bayer v. Nello L. Teer Company*, 256 N.C. 509 (1962)
- Private right of action (HB 242)
  - Limited to contracts signed after effective date
  - Prior well condition (baseline)
  - Proof of causation
- No fault compensation fund?

# Land

- Destruction of vegetation
- Archaeological/historic sites
- Critical habitat
- Erosion

# Emergency Response

- Emergency responder training
- Staffing
- Equipment
- Access to information held as trade secrets

# Traffic/Crime

- Need for additional law enforcement personnel & training
- Additional road maintenance & traffic control devices

# Air Quality

- Fugitive methane (7-8 percent)
  - Can be reduced
- Dust/particulates
- Mobile sources

# Methane Migration

- Sources
  - Defective well casings or piping
- Explosion hazard
- Health hazard in drinking water – none known

# Noise

- Traffic
- Processing units and compressors
- Construction

# USDA Programs

- Is leased land included in USDA conservation programs?
  - Any incompatibilities?
- Existing conservation easements



# Seismic Activity

- Injection wells