

**BUREAU OF ENVIRONMENTAL REMEDIATION/REMEDIAL SECTION  
POLICY  
RECOMMENDED REMEDIAL LEVELS FOR NITRATE IN  
SOILS**

**BER POLICY # BER-RS-012  
DATE: January 9, 1991  
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Bureau Manager:  Date: 12/30/05

**REVISIONS**

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**ORIGINATOR**

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AMMONIA IN SOILS**

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This policy addresses nitrate and ammonia contamination in the soil from point sources of contamination. The Bureau does not commonly take actions to address contamination from non-point sources such as low-level, widespread contamination due to normal farming activities. The policy was developed following discussions with Kansas State University and researching the cleanup standards used by other states.

Soil Pathway:

- In areas where no vegetation is present such as contamination in a gravel roadway, parking area, etc. the following remedial standards shall apply:
  - Upper 8 inches of soil - 85 mg/kg total nitrate plus ammonia (N) can be left in place.
  - Below 8 inches in depth - 40 mg/kg nitrate plus ammonia (N) can be left in place.
- In areas where vegetation is present such as cultivated and cropped agricultural ground, pasture, lawn, etc. the following remedial standards shall apply:
  - Upper 24 inches of soil - 200 mg/kg total nitrate plus ammonia (N), or the maximum application rate recommended by Kansas State University for the particular crop.
  - Below 24 inches in depth - 40 mg/kg nitrate plus ammonia (N) can be left in place.
- C Conditions: If it is not possible to excavate soil to reach a 40 mg/kg total nitrate plus ammonia (N) level then the responsible party must determine the vertical extent of total nitrate plus ammonia (N) contamination through vertical profiling approved by KDHE.
  - 1) If ground water is 50 feet or less in depth then ground water monitoring wells may be requested by KDHE in the area of contamination and hydraulically down gradient to

determine the ground water quality, and monitor movement of the nitrate. Depending on the nitrate concentration in ground water additional actions may be required:

If nitrate (N) in ground water is between the drinking water standard of 10mg/l and KDHE Bureau of Water's policy for public water supply wells of 20 mg/l then the responsible party may be requested by KDHE to monitor the situation over a period of time. Note that where nitrate is detected at concentrations in excess of 10 mg/l in actual private or public water supply wells, other requirements may apply as specified by the KDHE Bureau of Water Kansas Nitrate Strategy.

If nitrate (N) in groundwater exceeds 20 mg/l then the responsible party may be required by KDHE to install a remedial system to hydraulically contain and/or remove the contamination.

If nitrate (N) in ground water is below the drinking water standard, or if the nitrate is shown to be from off-site sources, the monitoring points must be sampled in accordance with KDHE identified sites reclassification criteria to monitor ground water quality.

2) If ground water exceeds 50 feet, installation of a monitoring well will be determined by KDHE on a case-by-case basis depending on ground water usage, soil type, and soil concentration of nitrate plus ammonia (N). Depending on the nitrate concentration in ground water additional actions as described above may be required.

3) If vertical soil profiling indicates the presence of impervious bedrock (i.e. shale) isolating the nitrate/ammonia from ground water, up to 200 mg/kg nitrate plus ammonia (N) can be left in place (as determined by the KDHE project manager).

- Recommended cleanup methods and disposal of nitrate-contaminated soil may vary but excavation is commonly used for soil contaminated with nitrate and/or ammonia. Nitrate and ammonia contaminated soils can be land applied on cultivated land. This approach requires the completion of the KDHE Land Application Work Plan and Agreement Form available from the KDHE Project Manager.

Hydraulic control through pumping the aquifer is commonly used for contaminated ground water. The withdrawn water can be used for irrigation and/or discharged into surface drainage under a National Pollutant Discharge Elimination System (NPDES) permit available through the KDHE/Bureau of Water, (785) 296-5502.