Nutrients Transported to Ground Water

Nutrients (organic and inorganic) stored, concentrated, or applied are transported to ground waters in quantities that degrade water quality and limit its use for intended purposes.

What is it?
Water bodies require nutrients, such as nitrogen and phosphorus, to be healthy, but too many nutrients can be harmful. Many of our nation’s waters, including streams, rivers, wetlands, estuaries, and coastal waters, are affected by applied nutrients. The effect to a given water body depends on its location and the source of nutrients.

Why is it important?
Ground water contaminated by excess nitrogen, as nitrates, when withdrawn by water wells, is a health concern specifically for human babies, the elderly, and some livestock during certain life stages. Shallow ground water can move laterally to surface water. Increased nitrogen and phosphorus levels in water can cause increased aquatic vegetation and algal blooms resulting in reduced dissolved oxygen, harmful toxins, and increased water temperature. In extreme cases, dissolved oxygen may be so low that dead zones, known as hypoxia, exist where most aquatic life cannot survive. Algal blooms can also impart an undesirable taste to potable water that is difficult to remove by water treatment. High ammonia levels are toxic to some freshwater fish species.

What can be done about it?
Management is the key to protecting water quality by reducing transport of nutrients into ground water. Nutrient management specifies the rate, source, placement, and timing of plant nutrients needed for production, while minimizing movement of the nutrients to ground water. Nutrients should not be applied to sensitive areas such as established setbacks, sinkholes, wetlands, wells, or rapidly permeable soil areas.

Nutrients Transported to Ground Water at a Glance

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| Algae blooms, mass death of fish or aquatic organisms, dissolved oxygen concentrations, hypoxia | • Overusing fertilizer (both residential and agricultural usage)  
• Soluble nutrients  
• Runoff from cropland, animal feeding operations, and pastures, picking up nutrients and depositing them in water bodies and ground water access points  
• Low nutrient holding capacity of soil | • Nutrient management to address the rate, source, placement, and timing of plant nutrient application  
• Cover crops  
• Crop rotations  
• Conservation buffers and setbacks from sensitive areas  
• Residue management to improve the soil’s ability to retain nutrients  
• Livestock production practices, such as feed management, animal waste storage, and handling animal mortality  
• Drainage water management  
• Irrigation water management |