



SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

● Nitrate in Farmland Streams and Groundwater

What Is This Indicator, and Why Is It Important?

This indicator reports on the concentration of nitrate in representative farmland streams and groundwater sites. Specifically, the indicator reports the percentage of streams and groundwater wells with average nitrate concentrations in one of four ranges, in areas that are primarily farmland.

Nitrate is a naturally occurring form of nitrogen and an important plant nutrient; it is often the most abundant of the forms of nitrogen that are readily usable by plants, including algae. Increased nitrate in streams that ultimately empty into coastal waters can lead to algal blooms in those waters; these blooms decrease recreational and aesthetic values and help deplete oxygen needed by fish and other animals (see the national nitrogen indicator and the hypoxia indicator, pp. 46 and 71). Elevated nitrate in drinking water is a health threat to young children and is of particular concern for people using household groundwater wells; municipal water supply systems typically take steps to remove nitrate.

Sources of nitrate in farmlands streams and groundwater include chemical fertilizers and runoff from manure associated with animal raising operations. If more fertilizer is applied than can be used by plants or stored in the soil, nitrates will seep into groundwater or drain into streams.

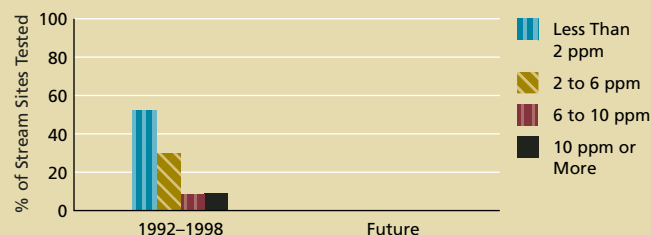
What Do the Data Show? Just over half the stream sites and 45% of groundwater wells sampled in areas where agriculture is the primary land use have concentrations of nitrate below 2 parts per million (ppm). About 20% of the groundwater wells and about 10% of stream sites had concentrations that exceed the federal drinking water standard (10 ppm).

Groundwater samples from areas dominated by agricultural use have higher concentrations of nitrate than either urban or forested areas, with forested lands having the lowest of the three. Only for farmland areas (and 3% of urban groundwater sites) did nitrate exceed the 10 ppm federal drinking water standard.

There is also a core national indicator for nitrogen (p. 46).

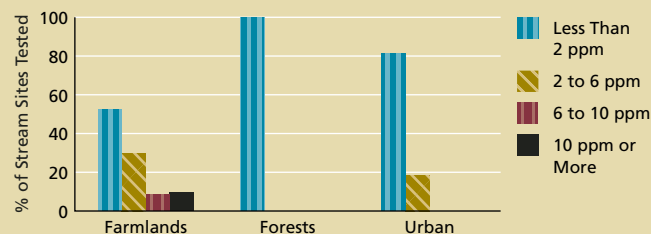
The technical note for this indicator is on page 232.

Nitrate in Farmland Streams



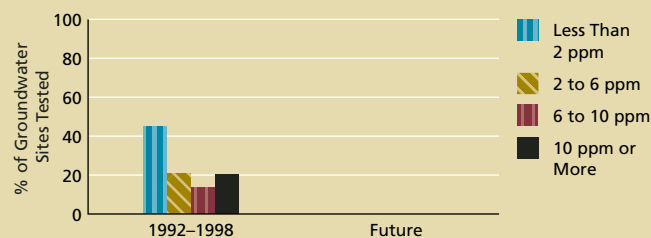
Data Source: USGS National Water Quality Assessment. Coverage: lower 48 states. Each sampling area was sampled intensively for approximately 2 years during 1992-1998.

Ecosystem Comparison: Nitrate in Streams, 1992-1998



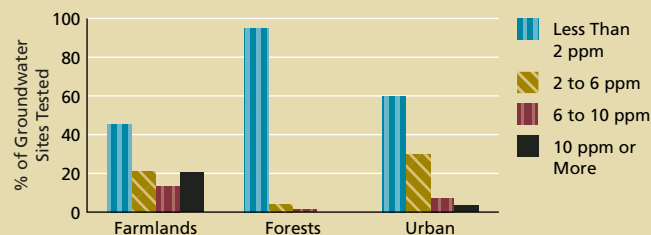
Data Source: USGS National Water Quality Assessment. Coverage: lower 48 states. Each sampling area was sampled intensively for approximately 2 years during 1992-1998.

Nitrate in Farmland Groundwater



Data Source: USGS National Water Quality Assessment. Coverage: lower 48 states. Each sampling area was sampled intensively for approximately 2 years during 1992-1998.

Ecosystem Comparison: Nitrate in Groundwater, 1992-1998



Data Source: USGS National Water Quality Assessment. Coverage: lower 48 states. Each sampling area was sampled intensively for approximately 2 years during 1992-1998.