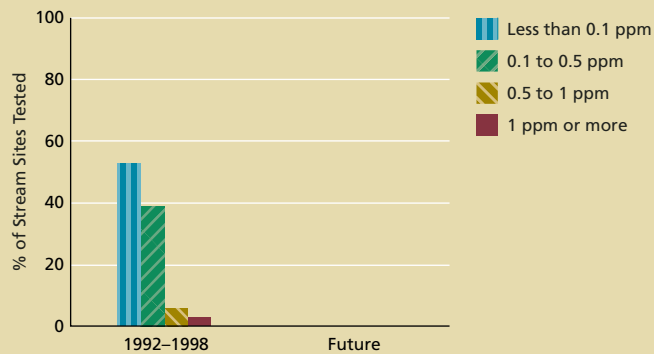




SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

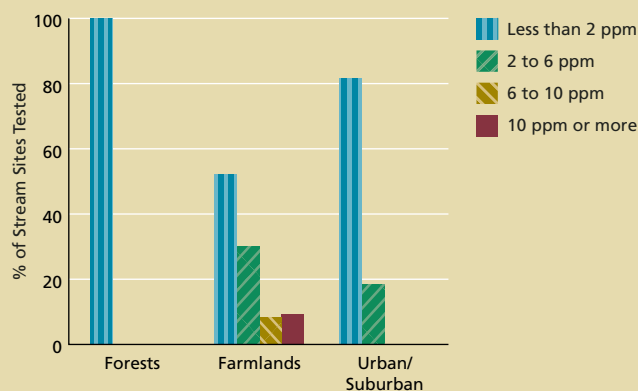
## Nitrate in Streams

Nitrate in Forest 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.

### What Is This Indicator, and Why Is It Important?

This indicator reports on the concentration of nitrate in representative streams in forested areas. Specifically, the indicator reports the percentage of streams with average nitrate concentrations in one of four ranges, for streams draining watersheds that are primarily forested.

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, which can 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 can also cause human health problems.

Elevated amounts of nitrate in streams are a sign that inputs from human sources have increased or that that plants in the system are under stress. Nitrogen is a critical plant nutrient, and most nitrogen, including nitrate, is used and reused by plants within an ecosystem. Thus, in undisturbed forested ecosystems, there is relatively little “leakage” into either surface runoff or groundwater, and concentrations are very low. Elevated stream nitrate might come from land clearing, the use of fertilizer in the watershed, or from rain and snowfall (in the form of acid rain).

### What Do the Data Show?

Almost all forest stream sites (97%) had nitrate concentrations below 1 part per million (ppm), more than three-fourths had concentrations of less than 0.5 ppm, and more than half had concentrations of less than 0.1 ppm.

Most streams in urban/suburban areas also have low average nitrate concentrations (less than 2 ppm), while farmland streams have the highest nitrate concentrations (see pp. 95 and 186). There is also a core national indicator for nitrogen (p. 46).

The federal drinking water standard for the protection of human health is 10 ppm of nitrate, which is exceeded only in agricultural areas (see p. 95).

The technical note for this indicator is on page 232.