



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

Chemical Contamination

What Is This Indicator, and Why Is It Important?

This indicator reports on contaminants found in urban and suburban streams and soils. The graph on the top reports the average number of contaminants detected throughout the year at urban and suburban stream sites, and the middle graph reports the percentage of stream sites with concentrations of chemical contaminants that exceeded standards or guidelines for the protection of human health or aquatic life. Compounds reported here include many pesticides, selected pesticide breakdown products, ammonia, and nitrate (because nitrate and ammonia occur naturally, they are not included in the graphs showing contaminant occurrence).

In sufficient quantities, contaminants such as pesticides can harm people as well as fish and other wildlife. The number of contaminants detected is important, but the presence of pesticides does not necessarily mean that the levels are high enough to cause problems. Comparison with standards and guidelines (benchmarks) provides a useful reference to help judge the significance of contamination.

However, appropriate benchmarks do not exist for many compounds: for example, there are no drinking water benchmarks for 33 of the 76 pesticides analyzed here and no aquatic life benchmarks for 48 of the 76. Current benchmarks do not account for mixtures of chemicals or seasonal pulses of high concentrations. In addition, potential effects on the reproductive, nervous, and immune systems, as well as on particularly sensitive individuals, are not yet well understood.

Why Can't This Entire Indicator Be Reported At This Time?

Data are not currently available to report in a consistent manner on chemical contamination in urban and suburban soils.

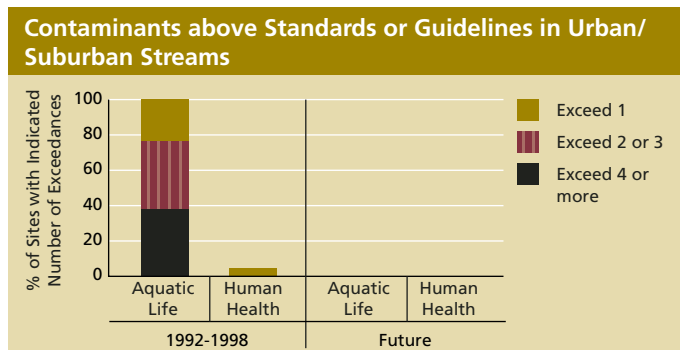
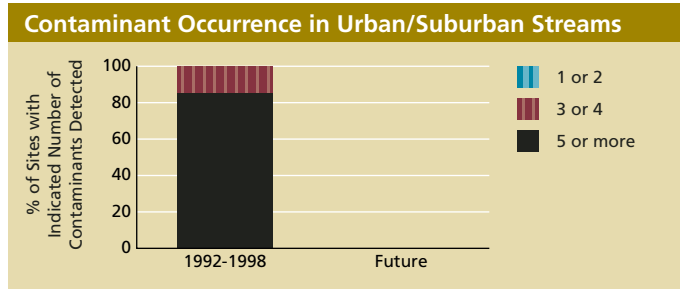
What Do the Data Show? About 85% of stream sites in urban and suburban areas had an average of at least five detectable contaminants throughout the year. All sites had at least one chemical that exceeded guidelines for protection of aquatic life, and about 5% of sites had a contaminant that exceeded human health standards or guidelines.

Discussion The data shown here do not represent assessments of the risks posed to people or ecosystems in any specific location, since they do not incorporate factors such as whether the water tested is actually used as a drinking water source or whether aquatic animals are biologically active at the time of year when the contaminants are found.

Guidelines for the protection of aquatic life are often numerically lower than similar benchmarks for human health. Aquatic animals spend much or all of their life in water and may be more sensitive to specific contaminants.

See also the national, coastal, and farmland contaminants indicators (pp. 48, 72, and 97).

The technical note for this indicator is on page 268.



Data Source: U.S. Geological Survey, National Water Quality Assessment Program (NAWQA). Coverage: lower 48 states. Note: Each sampling area was sampled intensively for approximately 2 years during 1992-1998.

