



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

② Harmful Algal Blooms

Harmful Algal Blooms

Indicator Development Needed

What Is This Indicator, and Why Is It Important?

This indicator will report the number of harmful algal blooms (HABs) of low, medium, and high intensity for estuaries and ocean waters within 200 miles of shore. Harmful algal blooms are defined as an increased abundance of algae species that cause illness in people or marine animals or the actual occurrence of algae-caused illnesses.

HABs can cause mass mortalities of marine organisms (p. 77), are a public health risk, and can cause economic damage through declines in tourism, shellfish bed closures, and reductions in the market value of seafood. There are indications that HABs may be

occurring more frequently, both in the United States and worldwide. The causes of HABS are not fully known, but changes in sea surface temperature (see p. 74) and nutrient inputs (see the national nitrogen indicator, p. 46) are believed to increase the likelihood of such events.

Why Can't This Indicator Be Reported at This Time? There are no nationwide monitoring or reporting programs for harmful algal blooms, nor are there generally accepted definitions of low, medium, and high intensity. High-intensity events might be defined as those that last for more than a month or affect an area of 40 square miles or more, low-intensity events as those that last for less than a week or affect less than 4 square miles and medium-intensity events as those that are intermediate in either size or duration. Because these definitions apply to a classic "bloom" event, they would have to be refined to include events that are characterized by illness in people or marine animals.

Discussion Algae, also called phytoplankton, are directly or indirectly the source of food for virtually all marine animals, including commercial and sport fish. Most species are not toxic, and most algal blooms do not involve species that produce toxins harmful to people or animals; however, they may reduce oxygen in coastal waters, which can harm fish and other animals (see the hypoxia indicator, p. 71). This indicator targets the most common species known to produce toxins; these species are listed in the technical note.

The technical note for this indicator is on page 224.