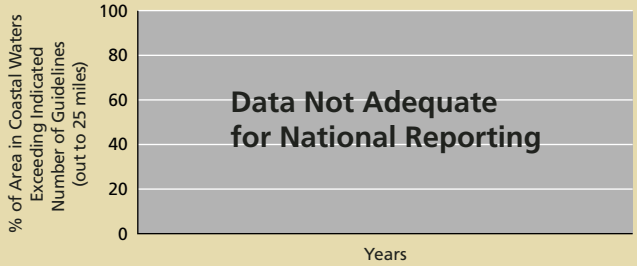
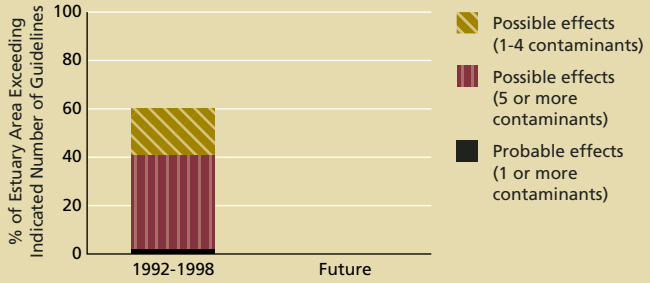
Contamination in Bottom Sediments

Sediment Contamination—Ocean



Sediment Contamination—Estuaries

Partial Data Indicator: Mid-Atlantic, South Atlantic, and Gulf Coast Regions Only



Data Source: U.S. Environmental Protection Agency, Environmental Monitoring and Assessment Program (EMAP). Guidelines are from the National Oceanic and Atmospheric Administration (NOAA).

What Is This Indicator, and Why Is It Important? This indicator reports the percentage of sediments that exceed federal guidelines for concentrations of four major classes of contaminants—pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals. The indicator reports on estuaries and ocean waters within 25 miles of the coast that have bottom sediments with varying degrees of contamination, the lowest indicating *possible* effects on fish and other aquatic organisms from 1 to 4 contaminants and the highest indicating *probable* effects from at least one contaminant.

Polluted sediments are a starting point for contamination throughout the food chain, potentially damaging marine life and affecting human health (see Selected Contaminants in Fish and Shellfish, p. 83). Pollutants from industrial discharges, burning of fossil fuels, and runoff from farms and urban and suburban areas are carried to coastal waters by rivers, rainfall, and wind, where they accumulate on the bottom. Small organisms incorporate these contaminants into their bodies, and when they are eaten by other organisms, the contaminants may move up the food chain (bioaccumulation). Areas with contaminated sediments may also be unsafe for swimming and other recreation.

Why Can't This Entire Indicator Be Reported at This Time? No program exists to provide nationally consistent data on sediment contamination in ocean waters along the coast. Data for estuaries in the North Atlantic, Southern California, and Pacific Northwest will be available in the future.

What Do the Data Show? Sediment contaminant levels in about 60% of the area of U.S. estuaries monitored are high enough to potentially harm fish and other aquatic organisms. In 19% of sediments, the concentration of 1 to 4 contaminants exceeds the guideline for *possible* harmful effects; in 39%, 5 or more contaminants exceed this level; and in 2%, contaminant levels exceed the guideline for *probable* harmful effects. (Note that all sites with contaminants exceeding the *probable* effects guidelines also had 5 or more compounds exceeding the *possible* effects level.)

Discussion The NOAA guidelines used here were developed as informal interpretive tools and are intended as the basis for regulatory decisions. The *possible* effects guidelines identify concentrations below which negative effects rarely occur, and thus levels above which such effects may occur. The *probable* effects guidelines indicate levels above which negative effects are likely.

The technical note for this indicator is on page 220.