SUGGESTED SKILL

Mathematical Routines

6.B

Apply appropriate mathematical relationships to solve a problem, with work shown (e.g., dimensional analysis).

AVAILABLE RESOURCES

- Classroom Resource > **AP Environmental Science Teacher's Guide**
- The Exam > **Student Performance Q&A 2015, Q3**
- The Exam > **Samples and Commentary 2015, Q3**

TOPIC 8.2
Human Impacts on Ecosystems

Required Course Content

ENDURING UNDERSTANDING

STB-3

Human activities, including the use of resources, have physical, chemical, and biological consequences for ecosystems.

LEARNING OBJECTIVE

STB-3.B

Describe the impacts of human activities on aquatic ecosystems.

ESSENTIAL KNOWLEDGE

STB-3.B.1

Organisms have a range of tolerance for various pollutants. Organisms have an optimum range for each factor where they can maintain homeostasis. Outside of this range, organisms may experience physiological stress, limited growth, reduced reproduction, and in extreme cases, death.

STB-3.B.2

Coral reefs have been suffering damage due to a variety of factors, including increasing ocean temperature, sediment runoff, and destructive fishing practices.

STB-3.B.3

Oil spills in marine waters cause organisms to die from the hydrocarbons in oil. Oil that floats on the surface of water can coat the feathers of birds and fur of marine mammals. Some components of oil sink to the ocean floor, killing some bottom-dwelling organisms.

STB-3.B.4

Oil that washes up on the beach can have economic consequences on the fishing and tourism industries.

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LEARNING OBJECTIVE

STB-3.B

Describe the impacts of human activities on aquatic ecosystems.

ESSENTIAL KNOWLEDGE

STB-3.B.5

Oceanic dead zones are areas of low oxygen in the world's oceans caused by increased nutrient pollution.

STB-3.B.6

An oxygen sag curve is a plot of dissolved oxygen levels versus the distance from a source of pollution, usually excess nutrients and biological refuse.

STB-3.B.7

Heavy metals used for industry, especially mining and burning of fossil fuels, can reach the groundwater, impacting the drinking water supply.

STB-3.B.8

Litter that reaches aquatic ecosystems, besides being unsightly, can create intestinal blockage and choking hazards for wildlife and introduce toxic substances to the food chain.

STB-3.B.9

Increased sediment in waterways can reduce light infiltration, which can affect primary producers and visual predators. Sediment can also settle, disrupting habitats.

STB-3.B.10

When elemental sources of mercury enter aquatic environments, bacteria in the water convert it to highly toxic methylmercury.