Oceanography
Chapter 13 Learning Objectives and Study Questions

1. Suggest what types of samples you might collect to determine if PCB and heavy metal contamination still linger in a marine environment even if contaminant levels are too low to detect in the water, and explain your reasons for studying each additional sample.

2. Tell what type of contamination you might expect to be responsible for the formation of a hypoxic zone on the seafloor near a river mouth, and briefly describe how such hypoxia might develop.

3. If 200 metric tons of oil are recovered from a 1000 metric ton spill, determine whether this is an unusually high, low or typical recovery rate.

4. Describe two key roles that wetlands play in maintaining the health of the marine environment and the organisms it sustains.

5. Describe how invasive species are commonly introduced to new marine environments and why they often multiply so quickly that they become a problem.

6. If a fisherman catches 500 kilograms of marine life but throws 100 kilograms of it back because it does not consist of species he can make a profit on, determine if this is a high, low, or typical amount of incidental catch.

1. Because of bioaccumulation, which of the following samples is likely to contain the largest concentrations of toxicants such as heavy metals or PCBs?
   A. water
   B. phytoplankton
   C. zooplankton
   D. insects
   E. fish

2. The addition of excess nutrients leads to hypoxia in marine ecosystems due to ______.
   A. algal growth
   B. algal decay
   C. chemical pollution
   D. poisoning of fish
   E. poisoning of invertebrates

3. If a tanker accident results in the spill of 7000 metric tons of oil and 1000 tons are ultimately recovered and removed from the marine environment, the recovery rate for this spill is ______ the average rate.
   A. less than half
   B. somewhat less than
   C. about equal to
   D. somewhat more than
   E. more than twice

4. Marine wetlands serve as ______.
   A. spawning areas for marine species
   B. feeding areas for marine species
   C. filters that trap land-derived pollutants
D. buffers against storms
E. all of the above

5. Probably the largest source of *invasive species* found in U.S. coastal waterways is _____.
   A. airborne transfer of larvae
   B. attachment to ship hulls
   C. ballast water
   D. natural migration
   E. smuggling of endangered species

6. If a fisherman hauls in 600 kg of “catch” it is probable that about _____ kg of it will be unintended species or will be “bycatch”.
   A. 60
   B. 100
   C. 150
   D. 200
   E. 540