

**Principle 6:  
The ocean and humans are inextricably interconnected.**

**Principle 6:  
Grades 6-8**

**Human Impact on the  
Ocean and Atmosphere**

**D.**  
Human activity contributes to changes in the ocean and atmosphere.

**D.1.**  
Fishing and aquaculture affect the ocean.

**D.8.**  
The introduction of non-native species affects ocean ecosystems.

**D.10.**  
Human-made modifications to the landscape affect the ocean.

**D.13.**  
Human activity can lead to the excess input of greenhouse gases into the atmosphere, which can alter the temperature of Earth's atmosphere and affect the ocean.

**D.18.**  
Pollution affects life in the ocean.

**D.2.**  
Aquaculture and fisheries can be a positive way to supply growing demands for seafood, if done responsibly.

**D.5.**  
Aquaculture and fisheries can be destructive to ecosystems, if done improperly.

**D.9.**  
Non-native species can disrupt native food webs, introduce novel diseases and out-compete native species for resources, leading to changes in ecosystems and loss of native species.

**D.11.**  
Building structures on land can affect the ocean in many ways, such as causing erosion, creating polluted runoff or altering the flow of waterways.

**D.12.**  
Building structures in the ocean, such as piers, jetties and marinas, can alter the shape of nearby coastlines and disrupt coastal habitats.

**D.14.**  
The excessive input of greenhouse gases traps increased amounts of solar heat, which can raise the temperature of the ocean.

**D.16.**  
Excessive greenhouse gases in can lead to increased uptake of carbon dioxide by the ocean, which results in more acidic ocean water.

**D.19.**  
Pollutants move from the land into the ocean as water flows through watersheds via runoff and rivers.

**D.20.**  
Pollutants move from the atmosphere onto land and into the ocean through rain (e.g., acid rain, acid deposition).

**D.21.**  
Solid waste, such as garbage, fishing nets and sewage, enters the ocean via human activity.

**D.3.**  
Aquaculture can reduce stress on overfished wild-caught seafood populations.

**D.4.**  
Responsible fishery practices prevent the overfishing of target species, thus sustaining the ecosystem.

**D.6.**  
Aquaculture practices can release extra pollutants or non-native organisms into the water, and destroy habitats.

**D.7.**  
Many large-scale fishing practices can disrupt ecosystems, take more fish than can be replaced naturally and catch unintended organisms (bycatch).

**D.15.**  
Changes in ocean temperature can influence marine organisms by altering physical conditions (i.e. current patterns and temperature ranges) to which they are adapted.

**D.17.**  
Changes in pH of ocean water can dissolve the shells, tests, and skeletons of many marine organisms.

**D.22.**  
Marine organisms may ingest or absorb harmful toxicants, be impacted by water turbidity and get caught in and ingest marine debris.

See Principle 3: B5

See Principle 1: C10