

Thermal Pollution

A factory releases clean, warm water into a stream. The stream becomes severely polluted as a result. How does this happen? Fish living in the water depend on dissolved oxygen in order to breathe. Like other gases, oxygen molecules tend to spread out. In order to dissolve them, it is necessary to confine them. Anything that makes it easier for gas particles to spread out reduces their solubility. This is obvious when a soda can is opened, reducing the pressure, or if a soda is stirred. Heat speeds the molecules up and also makes them spread out more. This is exactly the opposite of what is needed to dissolve them. As a result, heat drives the oxygen out of the water, causing the fish to die. The dead fish begin to decay. Growing decay bacteria deplete the water of oxygen even further. In this way, clean warm water can pollute a stream. When this occurs, it is called **thermal pollution**.



Answer the questions below based on your reading above and on your knowledge of physics.

1. A warm can of soda is dropped and bounces down a flight of stairs. When it is opened, carbon dioxide gas coming out of solution causes it to spray all over. Explain the affect of each of the following:
 - a. The fact that the soda was warm. _____

 - b. The fact that the soda was dropped and bounced down a flight of stairs. _____

 - c. The fact that the can was opened. _____

2. When a gas dissolves, the particles need to be confined. Why does heat make it harder for gases to dissolve?

3. Water is used in may power plants and factories for cooling. The hot water produced as a by-product is released into a natural body of water causing the temperature to rise. How does this cause pollution? _____

