

# ENERGY, HEALTH, AND THE ENVIRONMENT

## How energy choices affect our health and the environment

### AIR POLLUTION'S HEAVY HITTERS

Pollutant	How Produced	Effects
<b>Carbon dioxide (CO<sub>2</sub>)</b>	<b>In nature:</b> Forest fires; volcanoes; other natural processes. <b>By humans:</b> Burning fossil fuels and biomass.	Excess in the atmosphere is believed to contribute significantly to global climate change, through the greenhouse effect.
<b>Carbon monoxide (CO)</b>	<b>In nature:</b> Forest fires; other natural processes. <b>By humans:</b> Incomplete burning of carbon in fossil fuels, reduced by pollution controls.	In upper atmosphere, naturally occurring CO is not a health hazard. At ground level, it is highly toxic, even lethal.
<b>Mercury (Hg)</b>	<b>In nature:</b> Volcanoes; oceans; soil erosion. <b>By humans:</b> Burning of coal and oil; municipal and medical wastes; mining; cement industry.	Toxic in high concentrations; accumulates in soil/water; builds up in fish which, when eaten by humans, causes nerve/liver damage; especially dangerous for fetuses.
<b>Methane (CH<sub>4</sub>)</b> (Natural gas is about 94 percent methane)	<b>In nature:</b> Wetlands; peat; termites; oceans; wild animal wastes. <b>By humans:</b> Cattle/rice farming; natural gas coal, and biomass production and combustion; landfills; farm animal wastes; human sewage.	Contributes to global climate change. At higher concentrations, displaces air.
<b>Nitrogen oxides (NO<sub>x</sub>)</b>	<b>In nature:</b> Lightning; organic decay. <b>By humans:</b> Burning fossil fuels, especially coal; certain farming practices.	Contribute to formation of photochemical smog, acid precipitation, global climate change.
<b>Ozone (O<sub>3</sub>)</b>	<b>In nature:</b> In upper atmosphere, occurs naturally; in lower atmosphere, lightning. <b>By humans:</b> In lower atmosphere, formed by a reaction involving sunlight and unburned hydrocarbons produced by burning fossil fuels.	In upper atmosphere is necessary to block the sun's harmful ultraviolet rays. In lower atmosphere is a pollutant causing eye, lung, and throat irritation; also degrades rubber and other materials.
<b>Particulates</b> (Very small particles suspended in the air, including smoke, dust and vapor)	<b>In nature:</b> Forest fires; volcanoes; dust. <b>By humans:</b> Burning fossil fuels and wastes; construction; mining; certain farming/ranching practices; winter street sanding.	Can directly harm respiratory tracts, cause haze, damage buildings and other materials; may also contribute to global climate change.
<b>Sulfur oxides (SO<sub>x</sub>)</b>	<b>In nature:</b> Volcanoes, organic decay <b>By humans:</b> Burning fossil fuels, especially coal, fuel oil, and diesel	Element of smog that is corrosive and lung-damaging; contributes to "acid precipitation" that damages lakes, forests, and crops.
<b>Unburned hydrocarbons or volatile organic compounds (VOCs)</b> excluding methane	<b>In nature:</b> Gas/oil seeps; forest fires; other natural processes. <b>By humans:</b> Incomplete burning of fossil fuels; evaporation (fumes) of petroleum fuels, dry cleaning fluids, paints, solvents.	Contribute to formation of photochemical smog.

This chart lists many kinds of air pollution, some caused by nature and some by humans. Much, but not all, of human-caused pollution comes from the burning (or incomplete burning) of fossil fuels.