

Project Recording Sheet**Algebra Toolbox**

What toxic gases are created in a fire? The table lists some of the gases that are formed when different materials are burned.

Fire-Caused Toxic Gases

Gas	Dangerous Level (ppm)	Burning Source
Carbon dioxide (CO ₂)	40,000	Complete burning of wood, paper
Carbon monoxide (CO)	1200	Incomplete burning
Hydrogen chloride (HCl)	50	Plastics
Hydrogen cyanide (HCN)	50	Wool, nylon, polyurethane foam, rubber, paper
Nitrogen dioxide (NO ₂)	20	Grains, some plastics
Phosgene (COCl ₂)	2	Refrigerants

The unit ppm stands for “parts per million.” This means the number of molecules of gas there are in every million molecules of air. For example, 1200 parts per million of carbon monoxide means that for every one million molecules of air, 1200 molecules are carbon dioxide and the remaining 998,000 are similar to the air in the atmosphere.

Use the table for Exercises 1–5.

1. Which gas released by a fire is the most dangerous? Why do you think so?

2. How many times more dangerous is the most dangerous gas compared to the least dangerous?

3. Which toxic gas is most likely to be found in a common house fire? Why do you think so?

4. Write an algebraic equation that compares the toxicity of all of the gases. (For example: 50 HCL = 1200 CO.)
