

Concentration Analogies¹

1 Part Per Million

- ▶ 1 automobile in bumper-to-bumper traffic from Cleveland to San Francisco
- ▶ 1 pancake in a stack 4 miles high
- ▶ 1 inch in 16 miles
- ▶ 1 minute in 2 years
- ▶ 1 cent in \$10,000
- ▶ 1 bogey in 3,500 golf tournaments
- ▶ 1 lob in 1,200 tennis matches



1 Part Per Billion

- ▶ 1 4-inch hamburger in a chain of hamburgers circling the Earth at the equator 2¹/₂ times
- ▶ 1 silver dollar in a roll of silver dollars stretching from Detroit to Salt Lake City
- ▶ 1 kernel of corn in a 45-foot-high, 16-foot-diameter silo
- ▶ 1 sheet in a roll of toilet paper stretching from New York to London
- ▶ 1 second in 32 years
- ▶ 1 cent in \$10,000,000
- ▶ 1 pinch of salt on 10 tons of potato chips
- ▶ 1 bad apple in 2,000 barrels of apples

1 Part Per Trillion

- ▶ 1 drop of detergent in enough dishwater to fill a string of railroad tank cars 10 miles long
- ▶ 1 square inch in 250 square miles
- ▶ 1 mile on a 2-month journey at the speed of light
- ▶ 1 6-inch leap on a journey to the sun

1 Part Per Quadrillion

- ▶ 1 postage stamp on a letter the size of California and Oregon
- ▶ 1 human hair out of all the hair on all the heads of all the people in the world
- ▶ 1 mile in a journey of 170 light years

¹Kamrin, Michael; Dolores J. Katz; and Martha L. Walter. *Reporting on Risk: A Journalist's Handbook on Environmental Risk Assessment*. Ann Arbor, MI: Michigan Sea Grant Program and the Foundation for American Communications, 1995, 96.