

# Chemistry Guide

CENG 340–Introduction to Environmental Engineering

Instructor: Deborah Sills

Fall 2013

September 29, 2013

## 1 Environmental Measurements and Units

To calculate the transport and transformation of chemicals in the environment, you need to be able to use the units presented here. This material does not really lend itself to presenting underlying fundamental concepts. However, without mastering the ability to manipulate units correctly you won't be able to apply the fundamentals that are covered later in the course.

### 1.1 Concentration Units

The concentration of a chemical determines degradation rates (except for zero order reactions) and the transport of many reactions (excluding zero order).

Concentration Units you need to know for this class:

1. In Water:

- (a) You need to be able to convert from a mass concentration (e.g., mg/L,  $\mu\text{g}/\text{m}^3$ ) to a mole concentration (e.g., mole/L, mmole/mL).
- (b)  $\text{ppm}_m = \text{g of } i \text{ in } 10^6 \text{ g total}$

Note that these units should only be used for aqueous or solid (e.g., soil) phases. In this class, we only use  $\text{ppm}_m$  for aqueous concentrations.

2. In Gas

3. In Solids (e.g., soil)