

APPENDIX C

Units of Measure and Half-Life Periods

UNITS OF RADIATION MEASUREMENT AND CONVERSIONS

| U.S. System | International System | Conversion |
|-------------|----------------------|--------------------------------|
| curie (Ci) | becquerel (Bq) | 1 Ci = 3.7×10^{10} Bq |
| rad | gray (Gy) | 1 rad = 0.01 Gy |
| rem | sievert (Sv) | 1 rem = 0.01 Sv |

APPROXIMATE METRIC CONVERSIONS

| When you know | multiply by | to obtain | When you know | multiply by | to obtain |
|--------------------------------------|---------------|---------------------------------|-----------------|-----------------|-----------------|
| centimeters (cm) | 0.39 | inches (in.) | in. | 2.54 | cm |
| meters (m) | 3.28 | feet (ft) | ft | 0.305 | m |
| kilometers (km) | 0.62 | miles (mi) | mi | 1.61 | km |
| kilograms (kg) | 2.20 | pounds (lb) | lb | 0.45 | kg |
| liters (L) | 0.264 | gallons (gal) | gal | 3.785 | L |
| cubic meters (m ³) | 35.32 | cubic feet (ft ³) | ft ³ | 0.03 | m ³ |
| hectares (ha) | 2.47 | acres | acres | 0.40 | ha |
| square kilometers (km ²) | 0.39 | square miles (mi ²) | mi ² | 2.59 | km ² |
| degrees Celcius (°C) | 1.8 (°C) + 32 | degrees Fahrenheit (°F) | °F | (°F - 32) / 1.8 | °C |

SCIENTIFIC NOTATION USED FOR MEASUREMENTS

| Multiple | Decimal Equivalent | Notation | Prefix | Symbol |
|---------------------|--------------------|----------|--------|--------|
| 1×10^{12} | 1,000,000,000,000 | E+12 | Tera- | T |
| 1×10^9 | 1,000,000,000 | E+9 | giga- | G |
| 1×10^3 | 1,000 | E+03 | kilo- | k |
| 1×10^{-2} | 0.01 | E-02 | centi- | c |
| 1×10^{-3} | 0.001 | E-03 | milli- | m |
| 1×10^{-6} | 0.000001 | E-06 | micro- | μ |
| 1×10^{-9} | 0.000000001 | E-09 | nano- | n |
| 1×10^{-12} | 0.000000000001 | E-12 | pico- | p |

CONCENTRATION CONVERSIONS

| |
|-----------------------------|
| 1 ppm = 1,000 ppb |
| 1 ppb = 0.001 ppm = 1 μg/L* |
| 1 ppm = 1 mg/L = 1000 μg/L* |

* For aqueous fractions only.

APPENDIX C: Units of Measure and Half-Life Periods

| HALF-LIFE PERIODS | |
|-------------------|--------------------------------|
| Am-241 | 432.7 yrs |
| C-11 | ~20 min |
| Co-60 | 5.3 yrs |
| Cs-137 | 30.2 yrs |
| N-13 | ~10 min |
| N-22 | 2.6 yrs |
| O-15 | ~2 min |
| PU-238 | 87.7 yrs |
| Pu-239 | 24,100.0 yrs |
| Pu-240 | 6,560.0 yrs |
| Sr-90 | 29.1 yrs |
| tritium | 12.3 yrs |
| U-234 | 247,000.0 yrs |
| U-235 | ~700 million yrs (7.0004E8) |
| U-238 | 87.7 yrs |