# RADIONUCLIDE DATA SHEET
# Thorium

**Th-228** 90 protons 138 neutrons

***Radiation:*** **Decay mode:** Alpha

**Major Alpha:**

| E (MeV) | # per 100 dis |
|---|---|
| 5.423 | 72.2 |
| 5.340 | 27.2 |
| 5.211 | 0.420 |

**Major Gammas:**

| E (MeV) | # per 100 dis |
|---|---|
| 0.084 | 1.22 |
| 0.132 | 0.13 |
| 0.215 | 0.25 |

Max. Beta Range in air N/A cm or N/A ft
Max. Beta Range in water N/A cm

**Avg. gamma E** = 0.108 MeV

***Half – life:*** 1.9116 years

***Gamma constant:*** 0.615E-2 mR/hr per mCi at 30 cm

***Radiological data:***

**Min. Ingestion ALI:** 10μCi equals 5rem TEDE (Whole Body)
6μCi equals 50rem CEDE (Bone surf)

**Min. Inhalation ALI:** 0.02μCi equals 5rem TEDE (Whole Body)
0.01μCi equals 50rem CEDE (Bone surf)

***Doses:***

**Skin Dose:** Reported for 1 μCi over 10 $cm^2$ of skin
1.45 mrad/hr (gamma dose)

**Point Source:** 0 mrad/hr (beta dose)

**Disk Source:** 0 mrad/hr (beta dose)

***Shielding data:***

**Max. range for beta:** Plastic = N/A cm
Aluminum = N/A cm

**Tenth Value Thickness for average gamma:** Concrete = cm
Lead = cm

***Detection Information:*** Usable Detectors listed with estimated efficiencies
(Use efficiencies listed on instrument when available)

**Ludlum 3 with pancake probe at 1 cm:** %
**Ludlum 3 with NaI probe near surface:** %
**Liq. Scint. Counter:** %
**Gamma Counter:** %

***Action Quantities:***

| | |
|---|---|
| **Bench top quantity must be less than** | 0.1 μCi |
| **Containers require labeling when greater than** | 0.001 μCi |
| **Rooms require posting when there is greater than** | 0.01 μCi |
| **Contamination lasting more than 24 hrs require NRC notification when greater than** | 0.05 μCi |