

Radioactive Material Safety Data Sheet

This data sheet presents information on radioisotopes only. This document is not subject to WHMIS requirements. For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Cobalt-60

Part 1 – Radioactive Material Identification

Common Names: Cobalt-60 **Chemical Symbol:** Co-60 or ^{60}Co
Atomic Number: 27 **Mass Number:** 60 (33 neutrons)
Chemical Form: Cobalt metal **Physical Form:** Thin cylinder of cobalt metal

Part 2 – Radiation Characteristics

Physical half-life: 5.27 years **Specific Activity (GBq/g):** 41,800

Principle Emissions	E_{Max} (keV)	E_{eff} (keV)	Dose Rate ($\mu\text{Sv/h/GBq}$ at 1m)	Shielding Required
Beta* (β)	318 (100%)	96	-	-
Gamma (γ) / X-Rays	1173 (100%) 1332 (100%)	-	370 ^a	HVL Lead: 1.2 cm
Alpha (α)	-	-	-	-
Neutron (n)	-	-	-	-

* Where Beta radiation is present, Bremsstrahlung radiation will be produced. Shielding may be required.

Note: Only emissions with abundance greater than 10% are shown.

^a *The Health Physics and Radiological Health Handbook*, Scintra, Inc., Revised Edition, 1992

Progeny: Nickel-60 (Ni-60)

Part 3 – Detection and Measurement

Methods of detection (in order of preference)

1. A radiation survey meter equipped with an energy-compensated Geiger Mueller detector.
2. Ion chamber survey meter – tends to be less sensitive than a Geiger Mueller survey meter but is able to respond more precisely in higher radiation fields.
3. Gamma scintillation detector – very sensitive but is also energy dependent. Must be calibrated for Co-60 before it can be used for dose assessment surveys.

Part 7 - Emergency Procedures

*The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life-threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.*

Personal Decontamination Techniques

- Wash well with soap and water and monitor skin
- Do not abrade skin, only blot dry
- Decontamination of clothing and surfaces are covered under operating and emergency procedures

Spill and Leak Control

- Alert everyone in the area
- Confine the problem or emergency (includes the use of absorbent material)
- Clear area
- Summon Aid

Damage to Sealed Radioactive Source Holder

- Evacuate the immediate vicinity around the source holder
- Place a barrier at a safe distance from the source holder (min. 5 meters)
- Identify area as a radiation hazard
- Contact emergency number posted on local warning sign

Suggested Emergency Protective Equipment

- Gloves
- Footwear Covers
- Safety Glasses
- Outer layer or easily removed protective clothing (as situation requires)

This information was prepared by:

Stuart Hunt & Associates Ltd.
20 Rayborn Crescent
St. Albert, Alberta
T8N 5C1
Phone: (780) 458-0291 or (800) 661-4591
Fax: (780) 459-0746
Web site: www.stuarthunt.com