

COBALT 60 (Co-60) DIRTY BOMB: Health Care Information

Co-60 is a radioactive isotope that is used in medical radiotherapy, in commercial food irradiators and in industrial x-ray machines. It may be used as a “dirty bomb” by putting the isotope within a conventional weapon, detonating it and spreading small Co-60 particles.

Radiation Information: Co-60 emits both beta and gamma radiation.

Chemical Information: Co-60 is a solid that may appear in small metal disks or tubes (medical radiotherapy source) or as a powder.

Clinical Information:

GI absorption: poor (5%)
Pulmonary absorption: high
Pulmonary retention: low

Co-60 is well absorbed through the lungs and poorly absorbed through the gastrointestinal tract (5%). Little Co-60 is retained in the lungs after inhalation. Once absorbed, Co-60 may concentrate in the bones as well as the liver and kidneys and may increase the risk of cancer in these organs. Co-60 may cause radiation burns if allowed to be in proximity to skin for a period of time. If absorbed or the exposure is large, the patient may be exposed to enough radiation to have an increased risk of cancer or fetal effects in pregnant women. Significant absorption is considered unlikely in a dirty bomb scenario.

Diagnosis: Co-60 may be detected by a Geiger-Muller counter that detects beta or gamma radiation.

Decontamination: Patients with external contamination (e.g., proximity to the blast, directly down-wind from the blast, covered in debris/dust or have detectable radiation contamination by Geiger-Muller counter) should:

1. Remove their clothing (clothing should be bagged).
2. Shower for 2 to 3 minutes with soap and water.

Treatment: Patients with significant internal contamination (e.g., detectable radiation on gastric sample or nasopharyngeal swabs) may require internal decontamination or antidotal therapy. Very few patients are expected to have significant internal contamination after a dirty bomb. GI contamination may be treated with activated charcoal (1 g/kg, up to 50 g PO).

Antidotes: Penicillamine may be given in severe cases, but its use will be limited by supply.