

Typically Asked Questions Regarding Cobalt-60 Shipments

GIPA FACT Sheet

1. What type of economic impact do the currently existing fee structures in States imposing such fees have on the Cobalt-60 industry and health care?

ANSWER: Typical transportation costs for a trans-continental shipment (e.g., from the west coast ports, San Pedro/Oakland) are approximately \$25,000.00. As each State adds additional transportation fees to these shipments, the incremental cost of such shipment increases rapidly. A combination of fees from two of the higher assessed fee States will add more than 30-50% of the shipping cost to the total transportation costs. If more states implement similar fee structures, these additional costs could easily double the cost of transporting this material to its place of intended use.

2. Are members of the industry seeking to preempt the States' ability to inspect or just to charge fees on inspections? How do you envision States paying for inspections if they choose to do so?

ANSWER: GIPA is not seeking to preempt the States' ability to inspect vehicles. The States in question are all part of the Commercial Vehicle Safety Alliance (CVSA), who has adopted a policy requiring a CVSA Level VI inspection upon entry into the United States that is valid from point-of-entry to point-of-destination. GIPA fully supports this requirement and complies with CVSA policies, as well as the stringent health, safety and security policies proffered and enforced by the U.S. Department of Transportation (DOT) and the United States Nuclear Regulatory Commission (NRC). But with this requirement in place, it is not necessary for States along the route to perform additional Level VI inspections. A short safety inspection of the vehicle upon entering the State would be sufficient to verify the vehicle has not sustained damage during the trip and verify the point of entry Level VI inspection was performed. There is no fee associated with the shipment inspections.

3. What are the currently applicable health and safety requirements to a shipment cobalt-60?

ANSWER: The Type B package design, used to transport Cobalt-60, must meet stringent regulatory requirements established by the International Atomic Energy Agency (IAEA), Safety Standards Series, SSR-6, Regulations for the Safe Transport of Radioactive Material, (current edition). The IAEA regulations form the basis for the various national regulations, including those in the United States. In the United States, two Federal agencies regulate the transportation of cobalt-60: the Department of Transportation (DOT) and the Nuclear Regulatory Commission (NRC). Package designs are tested using computer simulation, scale model testing, and/or full- scale testing. Certification of Type B package design is contingent upon successful completion of stringent and severe destructive testing measures, simulating maximum credible accident conditions of transport. National authorities are responsible for assessing the package design against the regulations and for issuing certificates once safety has been demonstrated.

A Cobalt-60 transport package must withstand all Type A tests and Type B tests. For example, Type A Packaging must withstand moderate degrees of heat, cold, reduced air pressure, vibration, impact, water spray, drop, penetration, and stacking tests. Type A Packaging must also be able to withstand a series of tests that simulate normal transport conditions. Such testing includes:

- Water spray for 1 hour to simulate rainfall of 2 inches per hour; Free drop test onto a flat hard surface;
- Stacking test of at least 5 times the weight of the package. This test is conducted for at least 24 hours;
- Penetration test by dropping a 13-pound, 1.25 inch diameter bar vertically onto the package from a height of 3.3 feet.

In addition to the requirements for Type A packages, a Cobalt-60 package (Type B packaging) is subjected to the cumulative effects of the two mechanical tests and the thermal test as follows:

- The package shall be dropped from a height of 30 feet (9 meters) onto an unyielding target in the worst possible orientation;
- The package shall be dropped in the worst possible orientation from a height of 40 inches (1.2 meters) onto a solid mild steel bar mounted onto the unyielding target.;
- The package shall be subjected to a fully engulfing fire at 1475°F (800 °C) for a period of 30 minutes;
- A water immersion under 50 feet of water for 8 hours.

No significant loss of shielding or loss of radioactive material is allowed following all these tests. Upon completion of the Type B tests, a Safety Analysis Report is prepared which shows compliance with the regulations. The Safety Analysis Report includes: containment analysis, heat transfer and insulation calculations, radiation & shielding assessment, stress analysis of tie-downs and lifting attachments and handling procedures.

Security of Cobalt-60 transportation (to minimize theft, loss of control or misuse of product while in transit) has received particular attention by international and national regulators around the world to address terrorist threats since the September 11, 2001 incident.

Multiple controls exist to manage shipments of cobalt-60 into and through the United States. Coordination of a highway route controlled quantity (>27KCi) Cobalt-60 shipment begins weeks before the actual ship date with initial notification to regulators and State agencies. In addition, notifications just prior to, during, and upon completion of each shipment occurs with all relevant regulatory authorities. Transportation conveyance drivers must be properly qualified, trained and tested, and must regularly communicate with required organizations during the transit process. Vehicles transporting the Cobalt-60 are subject to inspections and are tracked throughout the shipment. In addition, in the aftermath of the attacks of September 11, 2001, many new and revised regulations have been implemented by NRC and DOT to specifically address security.

4. What is done with the cobalt-60 that is recycled out of the sterilization facilities?

ANSWER: Cobalt-60 can be either reused, repackaged or, at the end of its useful life, can be safely and securely stored in a long term management facility. Since Cobalt-60 is not manufactured anywhere in the United States, all spent Cobalt-60 sources are transported out-of-the-country after use.

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