

Equipment Needed:

- Ground rods (enough to establish 2 fields)
- Sledge hammer, post driver, or PAC hammer
- Grounding wires (1 for each container)
- Bonding wires for ground field (enough to connect rods in a field)
- Ground resistance meter
- Intrinsically-safe ohm meter
- Wire brush to clean connections if necessary.

Set-up:

1. Monitor surrounding area for chemical presence.
 - a. If monitor readings indicate flammable atmosphere, start vapor suppression.
2. Survey damaged container for hazards and stability.
3. Check all equipment for function (meters have batteries; wires have continuity; no damage).
4. Set (1) ground stake within length of ground wire from truck to a height of 4 to 6 inches.
5. Check ground resistance.
 - a. Determine distance needed for auxiliary test electrodes (see chart below).
 - b. Place electrodes and connect ground resistance testing equipment.
 - c. Test ground field. Field must have a resistance of 25 ohms or less.
 - d. If > 25 ohms, set second ground rod one rod distance apart, bond with wire.
 - e. Repeat steps a, b, c, and d above until 25 ohms is achieved.
6. Connect ground wire to tank or structure that is **welded** to tank.
7. Test for continuity. Resistance should be less than 5 ohms.
8. Make final connection at ground rod.
 - a. If foam blanket is present, make connection below foam blanket and then bring clamp above the blanket.
 - b. Mark ground field.
9. Test for continuity. Resistance should be less than 5 ohms.
10. Repeat for recovery container and transfer pump.
11. Complete bonding of system (**see other side**).

Additional information

Approximate distance to auxiliary electrodes using the 62% method		
Depth Driven	Distance to Y	Distance to Z
6 ft	45 ft	72 ft
8 ft	50 ft	80 ft
10 ft	55 ft	88 ft
12 ft	60 ft	96 ft
18 ft	71 ft	115 ft
20 ft	74 ft	120 ft
30 ft	86 ft	140 ft

Multiple Electrode System		
Max Grid Distance	Distance to Y	Distance to Z
6 ft	78 ft	125 ft
8 ft	87 ft	140 ft
10 ft	100 ft	160 ft
12 ft	105 ft	170 ft
14 ft	118 ft	190 ft
16 ft	124 ft	200 ft
18 ft	130 ft	210 ft
20 ft	136 ft	220 ft



Clamps
Rod



Clamp
Container

Equipment Needed:

- Bonding wire for containers (1)
- Bonding wires for transfer pump and pick-up tubes (Stinger tubes)
- Intrinsically-safe ohm meter
- Wire brush to clean connections if necessary

Set-up:

1. Connect bonding wire to damaged container at a point on the tank or structure **welded** to the tank.
2. Test for continuity. Resistance should be less than 5 ohms.
3. Connect other end of bonding wire to recovery containers at a point on the tank or structure **welded** to the tank.
4. Test for continuity. Resistance should be less than 5 ohms.
5. Connect bonding wire to metal connection on stinger tube.
6. Test for continuity. Resistance should be less than 5 ohms.
7. Connect other end of bonding wire to metal part on transfer pump.
8. Test for continuity. Resistance should be less than 5 ohms.
9. Do same for other pick-up tube.
10. Allow system to sit or “relax” for a minimum of 15 minutes. **The longer, the better.**