



Compressed Gas ER Equipment

April 2013

ER Techniques for leaking cylinders

- Shut Valve
- Repair Valve
- Containment (Emergency Containment Vessels (ERCV), Capping Kits (Chlorine Kits)
- Isolate and Divert (Leaker Cabinet)
- Transfer into Empty Cylinder
- Dispose (Vent to abatement device)

Compressed Gas ER Kit

- Vaportight cap kit
- Large Pipe Cutter
- Manual Cylinder Valve Handle Adapters
- Ceodeux Pneumatic Cylinder Valve Manual Override
- Fiberoptic Camera/scope
- Portable Leak Detection
- Cylinder cap wrench
- Cylinder cap strap wrench

Vaportight Cap and Gasket ER Kit

- Vaportight Cap Kit allows for the quick mitigation of a valve seat leak
- Contains 2 each of the most common CGA outlet cap/plugs
- Contains 2 of the most common CGA gaskets
- Secondary seal for cylinder valve

Manual Cylinder Valve Handle Adapters

Allows team to close a cylinder valve when the connection is leaking and on fire





Leaker Gas Cabinet

Empty gas cabinet that is exhausted to a treatment system
Will contain the leaking cylinder until a decision is made what to do with it

Emergency Response Containment Vessel (ERCV) can be used to contain and transport high pressure leaking gas cylinders

Solkatronic Model 5502

ASME Pressure Vessel, Section 8, Div 1
Working Pressure - 1100 psig
Exemption #10504 (No longer required)
Cylinders Up To 50 liters
Volume of 34.6 gallons (131 liters)
Empty Weight - 945 lbs
Normally On Brakes
Pneumatic Foam filled Tires, Optional Solid
Chain To Hold In Place
Slide Rails



Can safely hold a 49 liter cylinder with pressures greater than 2400 psig since the internal volume is 131 liters

If cylinder is not on fire, overpack in ERCV and ship back to supplier or waste disposal. Sometimes referred to as "Cylinder Coffins" preferred term is ERCV (Emergency Response Containment Vessel)

Other ERCV's from IES, Sigri, Chlorine Institute



Chlorine A Kit

Designed to seal the top of a chlorine gas cylinder

Most common compressed gas ER kit at public HazMat teams

Can be used for other low pressure liquefied gases if proper gaskets are used

Other Capping Kits custom designed for cylinder and gas



Isolate and Divert

Isolate the leak and divert it to a safe location such as a exhaust system, scrubber

Temporary isolation until a means of mitigation can be setup

Caps may not hold the pressure

Not suitable for transport

McGuyver Bag Purging Device

For small leaks, must have constant flow of purge air to sweep the bag clean of the leaking gas





ER Gas Transfer

A variety of techniques are used to transfer the gas into empty cylinders

- Cascade
- Cold Coil
- Vapor Condensation
- Pressure Push

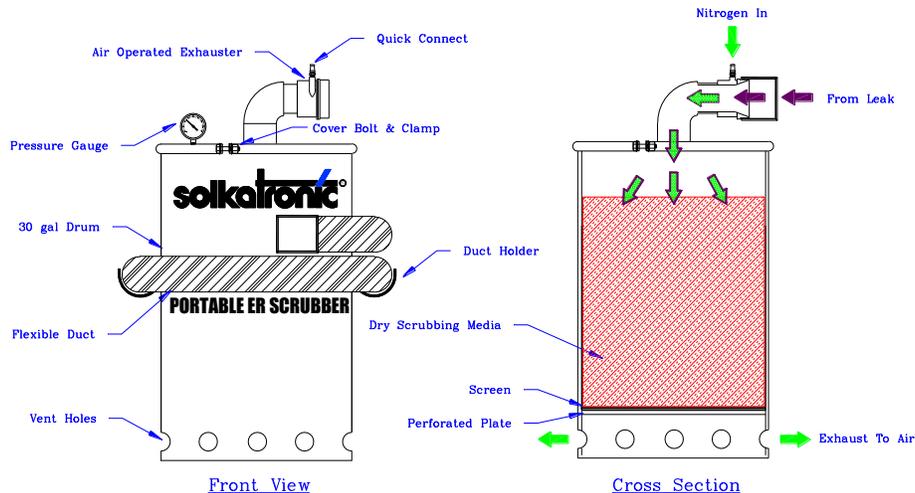
ER Gas Disposal

A variety of methods can be used to dispose of the gas

- Dilution Vent
- Flare
- Solubilize into a solvent
- Hydrolyze into water
- Chemically Neutralize using
 - Solid
 - Liquid

Portable Scrubber

Air/Nitrogen powered venture that can capture the leaking gas and pass it through a dry scrubbing media that can react alkaline, metal hydride or acid gases.



Other ER devices include valve outlet clamps, cylinder drilling

Remote valve Opener for Explosive Gas mixtures

ER Safety Rules

- If no gas comes out when the valve is opened, test valve function with pressure, don't assume it's empty
- Check valve handle to make sure it's closed before you remove vaportight cap
- Cylinder is not empty until purged with inert gas



Stand to the side of the cylinder when removing outlet plug/cap
Never put out gas fire, shutoff source
Tightening a fitting that is pressurized will cause a larger leak
Pig putty will not seal a gas leak