

“If it is not safe....
Don't Do It!!”

ExxonMobil SPSA Safety Program

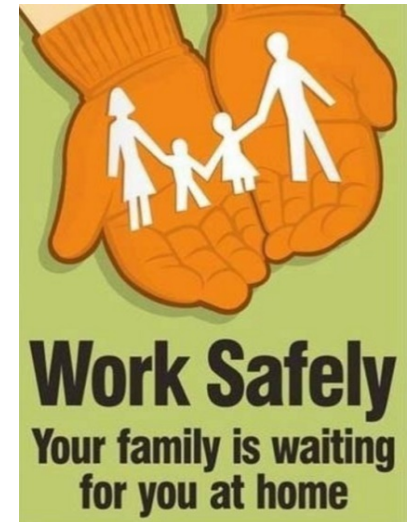
Forecourt Safety, Grounding & Bonding

Quick Agenda Review

- Forecourt Safety
 - Job Safety Analysis (JSA)
 - Planning to work on the forecourt
 - Identifying the Hazards
 - Handling Flammable Materials
 - Barricade Procedure
 - Personal Protective Equipment
 - Grounding/Bonding
 - Situational Awareness

A couple quick questions

- Anyone ever had an employee hit by an automobile when working on the forecourt?
- Anyone ever had an employee who had a significant spill (~ over 5 gallons) on the forecourt?
- Anyone ever had an employee who had a fire while working on the forecourt?
- Anyone have to deal with the family after an employee was severely injured while on the job.
- We all have a vested interest in working safely and eliminating injuries for many reasons...



Why Work Safely?

- Work safely for the most important people in your life, your family.
- Work related injuries cause not only time away from production activities at work but also time away from activities with your family.



Job Safety Analysis (JSA)

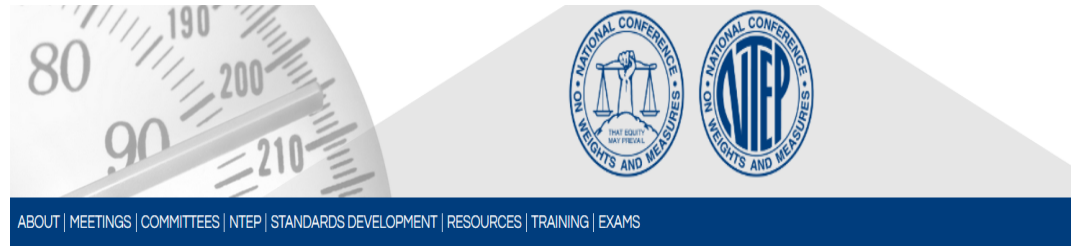
JOB SAFETY ANALYSIS

COMPANY Crompco LLC 1815 Gallagher Rd Plymouth Meeting, PA 19462		DATE 3/3/2015 JSA# 4	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> REVISED	PAGE 1 of 1
JSA # 2081	WORK TYPE Calibration	WORK ACTIVITY (Description) Accumeasure		
DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE	
Ryan Park	Field Technician	Safety Committee		
Tracy Richmond	FQM	Art Johnson	FQM	
Bill Callaway	Accumeasure Services Manager			
MINIMUM REQUIRED PPE AND SAFETY EQUIPMENT (SEE CRITICAL ACTIONS FOR TASK-SPECIFIC REQUIREMENTS)				
<input checked="" type="checkbox"/> VEST or HIGH VISIBILITY SHIRT (Vest must be worn at dusk/dawn) <input type="checkbox"/> HARD HAT <input type="checkbox"/> TRIPOD & BODY <input type="checkbox"/> HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES <input checked="" type="checkbox"/> FIRST AID KIT <input type="checkbox"/> VEHICLE WARNING TRIANGLES <input checked="" type="checkbox"/> ABSORBENT PADS <input checked="" type="checkbox"/> EYE WASH	<input checked="" type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION <input checked="" type="checkbox"/> SAFETY TOE BOOTS <input type="checkbox"/> LEL METER <input type="checkbox"/> VENTILATION FAN <input checked="" type="checkbox"/> 2-20 lb. FIRE EXTINGUISHERS <input type="checkbox"/> JOB CLEARANCE FORM <input type="checkbox"/> PERMIT TO WORK <input checked="" type="checkbox"/> APPROVED FUEL CONTAINER	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING <input checked="" type="checkbox"/> BARRICADING EQUIPMENT (Cones, Flags, & Bars) <input checked="" type="checkbox"/> CAUTION TAPE <input checked="" type="checkbox"/> NO SMOKING & FLAMMABLE SIGNS	<input checked="" type="checkbox"/> GLOVES (Leather, chemical, cut resist, etc.) <input type="checkbox"/> LADDER (w/ Ladder V installed) <input type="checkbox"/> BUCKET TRUCK <input type="checkbox"/> GCFI <input type="checkbox"/> OTHER - API Safety Key <input checked="" type="checkbox"/> GROUNDING STRAP <input type="checkbox"/> LO/TO DEVICES	
*JOB STEPS	*POTENTIAL HAZARDS	*CRITICAL ACTIONS		
Define work area	Contact with • Vehicular/pedestrian traffic Falls • Slips/trips	Determine appropriate work area size. Area should be large enough to complete all work safely. Barricade work area per <i>Barricading JSA</i>		
Prepare work area	Contact with • Sharp edges • Vehicular traffic/pedestrians Exposure • Fire/explosion • Petroleum products	Wear cut resistant gloves to remove dispenser panels Place vehicle as close to dispenser as possible and barricade other side of dispenser Remove both dispenser panels Attaching grounding wire to dispenser		
Standing on bumper step	Falls • Slips/trips from bumper step	Ensure footing is secure Ensure step and platform are clear of any obstacles During ascent and descent do so in controlled manner holding bumper or side cap for stability Use additional portable step if necessary		
Dispense fuel into prover	Exposure • Vapors • Fuel spray/spill	Watch fuel as it is being dispensed into prover Ensure nozzle auto shut off is operational If necessary slow fuel flow as it enters the meniscus scale Wear safety glasses		
Calibrate pump	Contact with • Sharp edges • Objects	Wear cut resistant gloves Wear safety glasses Refer to <i>Filter Change JSA</i> (if necessary)		
Reinstall dispenser panels	Exertion • Bending/twisting • Lifting Contact with • Sharp edges • Pinch points	Wear cut resistant gloves Use correct body positioning		
Return fuel to UST	Exposure • Fire/explosion • Fuel spray/spill	Ground on board tanks to UST, have absorbent pads and fire extinguishers readily available, always wear proper eye and hand protection Monitor fuel flow throughout delivery		

- JSA is a useful technique for identifying hazards so that workers can take measures to eliminate or control hazards. Once the analysis is completed, the results should be communicated to all workers who are, or will be, performing that job.
- The process of completing a JSA requires the job to be broken down into chronological steps. Each step is reviewed in order to identify hazards that could cause injury.
- Once the hazard is identified recommendations are made to mitigate the hazard.
- If the hazard cannot be eliminated the JSA prescribes appropriate measures to be taken in order to reduce the risk associated with the task or minimize the potential injury.

NCWM

- The NCWM Safety Subcommittee has conducted a lot of research on safety.
- The goal of the subcommittee is to raise awareness regarding safety and provide some resources that can be easily accessed through the website for agencies who are developing or updating safety programs.
- The NCWM Safety Program Toolbox contains links to a lot of material that can be used when developing a safety program.



- State Directors
- Regional Associations
- Other Links
- Employment Opportunities
- Forms
- Handbook Downloads
- Publications
- Newsletter
- Advertise with us
- Press Room
- Consumer Information
- Safety
 - Safety Awareness Liaisons
 - Safety Articles
- Promotional Toolkit
- Historical Archive
- Historical Photos
- Committee Handbook
- NCWM Merchandise

Safety Awareness

There cannot be enough emphasis placed on safety awareness. During the course of our daily jobs, we often forget how important safety is until something happens that could have otherwise been avoided with an ounce of prevention. Please take the time to send safety articles, tips and specific occurrences from your region to the regional safety liaison in your jurisdiction. If these items are shared with other members, then hopefully we can prevent the same thing from happening to you and increase safety awareness.

[NCWM Safety Program Toolbox](#)

[State Safety Awareness Liaisons](#)

[State Safety Awareness Articles](#)

Safety Program Resources:

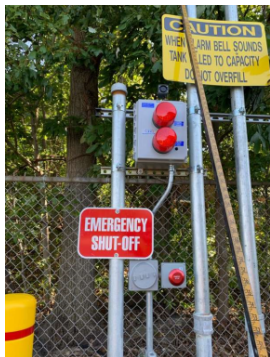
- [OSHA Safety and Health Program Management Guidelines](#)
- [OSHA Guidelines for Employers to Reduce Motor Vehicle Crashes](#)
- [OSHA Powered Industrial Truck Standard](#)
 - Applies to pallet jacks, forklifts, and weight carts
- [OSHA Crane, Hoist and Derrick Standard](#)
 - Applies to overhead cranes in metrology labs and loading docks; and cranes and hoists used in large capacity scale inspections
- [OSHA Confined Space Standard](#)
 - Applies to most scale pits

What are some of the hazards when working on the forecourt of a fueling facility?

- The fuel itself is flammable & hazardous if ingested or the body is exposed to the material.
- The traffic is often the most hazardous challenge of working on a fueling system.
 - Not only the volume of cars but the inconsistent traffic pattern.
- The equipment can be hazardous..
 - Sharp edges
 - The pump when pressurized can cause a spill
- Footing can be a hazard
 - The forecourt may not be in good shape and/or there may be curbs or dispenser islands.
 - Diesel fuel on the ground can be slippery.
 - If the truck you are working on has a step, the step may be a hazard.
- Lack of ergonomics - Bending, stooping, lifting and/or pulling the hose over to the prover can cause back or shoulder injuries over time if the proper technique is not utilized. Hand held provers are much more labor intensive especially when returning fuel into the UST.
- Weather – Weather effects everything we do in the field. Rain, wind, snow, ice, lightning, extreme temperatures (both heat & cold) all create safety challenges when working on the forecourt.

Emergency Stop Button (E-Stop)

- Before starting work on a fueling facility locate the e-stop button. The e-stop will immediately stop all fueling if the button is pushed.
- In the event there is an accident, spill or anything that could jeopardize the safety of people getting fuel hit the e-stop button immediately.
- E-stops are required to be tested every year for functionality.



Handling a flammable material

- Eliminate all ignition sources
 - No Smoking
 - No running engines
 - No welding or hot-work without following the appropriate procedures and obtaining a hot-work permit.
 - Static Electricity
- Always have a fire extinguisher close by in case of a fire.
 - Fire extinguishers are required to be inspected annually.
 - Use ABC or BC rated extinguishers for flammable liquids
- Always identify the emergency stop button (E-stop) on a facility prior to working on the fueling system.
- Always avoid spills – spills are the uncontrolled release of flammable product which significantly increases the risk on a fire.
- Pumping/storing fuel in approved containers designed for fuel storage. Using appropriate equipment for doing the job. (Steel allows for a ground. Cones are not funnels)
- Wear adequate personal protective equipment so that if an accident occurs you are in the best position to react to it.
 - Gloves - nitrile
 - Safety Glasses
 - Cotton Uniform
 - Non Skid Boots (possibly steel toed)



What do the A B C ratings mean on Fire Extinguishers?



△ "A" TRASH-WOOD-PAPER

Fire extinguishers with a Class A rating are effective against fires involving paper, wood, textiles, and plastics. The primary chemical used to fight these fires is monoammonium phosphate, because of its ability to smother fires in these types of materials.



■ "B" LIQUIDS

Fire extinguishers with a Class B rating are effective against flammable liquid fires. These can be fires where cooking liquids, oil, gasoline, kerosene, or paint have become ignited. Two commonly used chemicals are effective in fighting these types of fires.

Monoammonium phosphate effectively smothers the fire, while sodium bicarbonate induces a chemical reaction which extinguishes the fire.



⊙ "C" ELECTRICAL EQUIPMENT

Fire extinguishers with a Class C rating are suitable for fires in "live" electrical equipment. Both monoammonium phosphate and sodium bicarbonate are commonly used to fight this type of fire because of their nonconductive properties.

Fire Extinguisher Ratings

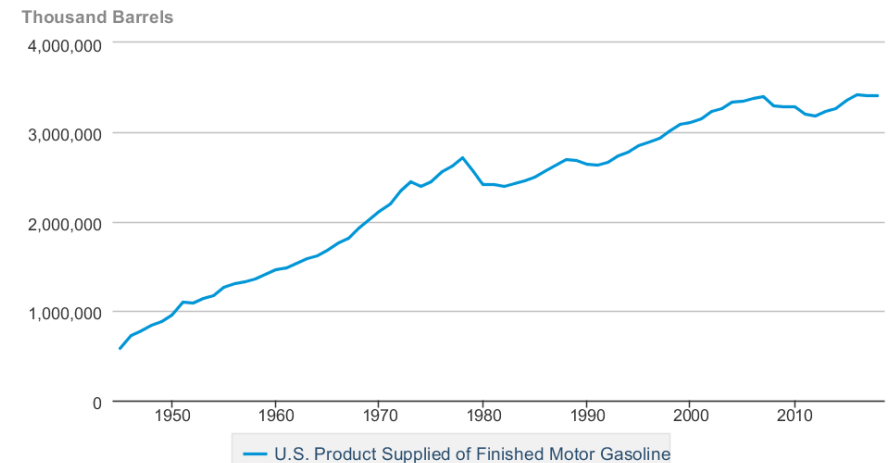
Fire extinguishers are classified by fire type. The A, B, C rating system defines the kinds of burning materials each fire extinguisher is designed to fight. The number in front of the A, B, or C indicates the rating size of fire the unit can extinguish.

<https://youtu.be/e8Wn4JzRnuc>

Traffic at Convenience Stores/Gas Stations/HyperMarketeters

- In 1990 there were approximately 2,265,985 active registered underground storage tanks in the US selling gasoline & diesel fuel.
- As of March 2019 there are approximately 548,682 active registered underground storage tanks in the US selling gasoline & diesel fuel.
- Despite declining # of UST's demand/consumption of gasoline has increased
- In the US we are selling more fuel through fewer fueling systems. (ave.1,725,600 gallons per store per year)
- More traffic on each store!!!

U.S. Product Supplied of Finished Motor Gasoline



Working Traffic Hazards

- Possibly the most hazardous part of the job when working on a fueling facility is the traffic.
 - Often people getting fuel are in a hurry. Traffic patterns on a busy gas station are often erratic.
 - Even though fueling a vehicle is pretty safe (statistically speaking) it can get dangerous very quickly. Many people are not paying full attention when fueling a vehicle.
- Although traffic hazards cannot be entirely removed there are several procedures that when used can greatly improve the safety of working on a fueling system.
 - Barricading is the most critical
- Barricading your work area helps deter people and cars from entering the work area.
 - The most effective barricade includes:
 - Positioning the vehicle so that it provides the most protection and allows the person to complete the job.
 - 28” orange cones
 - Safety flags
 - Caution tape and/or cone bars
- Barricading when putting fuel back in UST is often necessary



<https://www.youtube.com/watch?v=JE3NUHa0xIs>

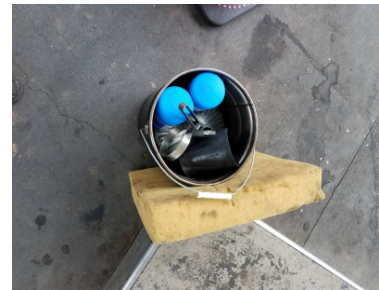
Personal Protective Equipment (PPE)

- Personal Protective Equipment is equipment/clothes worn in order to minimize exposure to hazards that may cause injuries.
- Typical PPE for working on the forecourt includes the following:
 - Gloves
 - Safety Vest or Hi-Visibility Shirts
 - Cotton uniform
 - Safety Glasses
 - Boots – possibly steel toe
 - First Aid Kit/Eye Wash Bottle



Ergonomics, Footing & Other Hazards

- Using provers is not a natural motion for most people. It often requires bending or lunging which can be hard on the body.
- It is important to use equipment to try to reduce the strain on the body.
- Always use caution when walking around pump islands. Not only are the curbs an obstruction but leaving tools or boxes around create tripping hazards.
- Diesel fuel is extremely slippery. If you get it on the bottom of your boots it can be a slipping hazard.
- Boots with ankle support can help reduce sprained ankles.



Understanding Static Electricity

Seraphin[®] Test Measure

Rancocas, NJ 08073

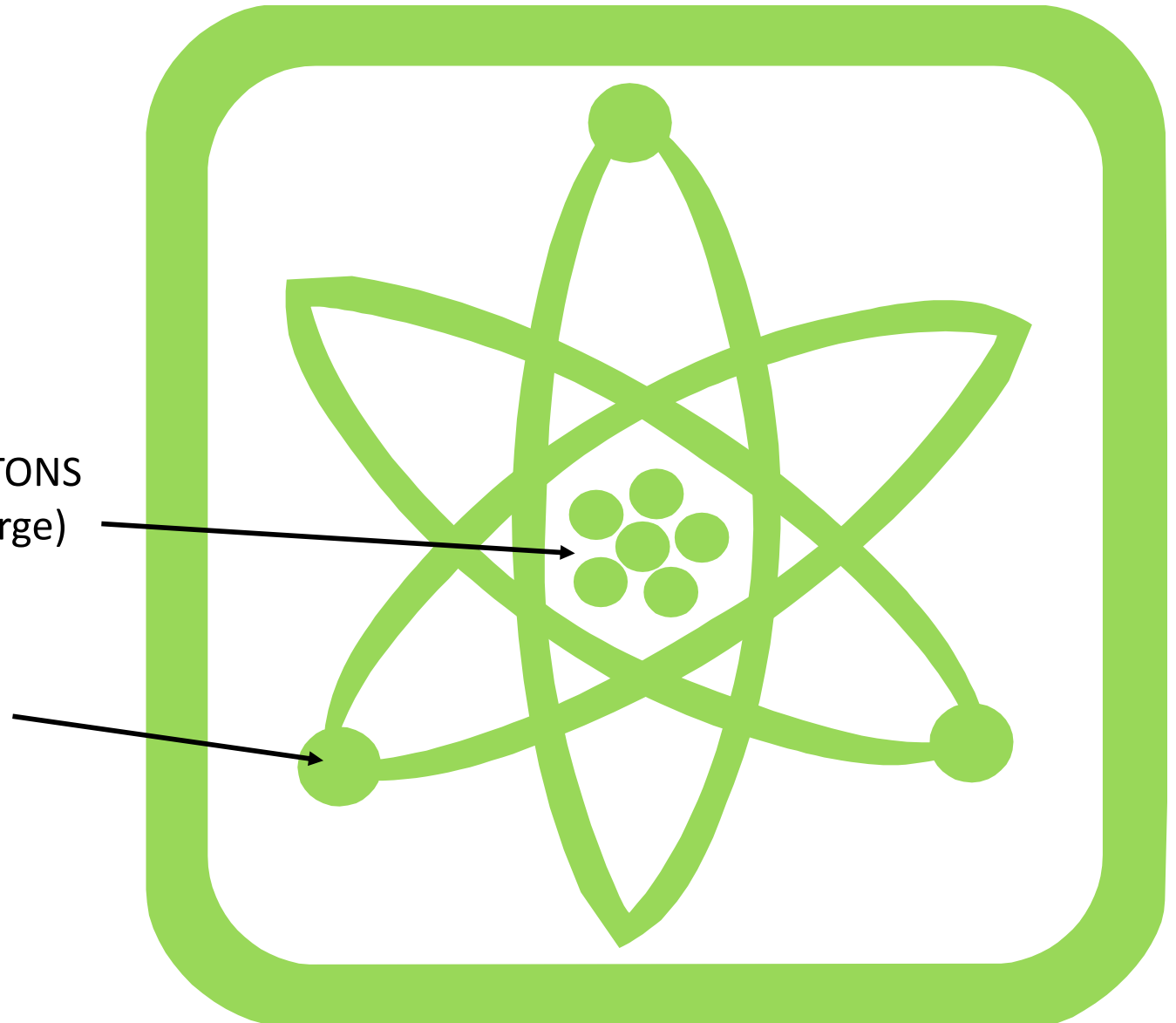
(609)267-0922

www.seraphinusa.com

PARTS OF THE ATOM

NUCLEUS made up of PROTONS (+) and NEUTRONS (no charge)

ELECTRONS (-) travel around the nucleus



ELECTRICAL CHARGES

- The charge of one proton is equal in strength to the charge of one electron.
- When the number of protons in an atom equals the number of electrons, the atom itself has no overall charge, it is neutral.

ELECTRONS CAN MOVE

- The protons and neutrons in the nucleus are held together very tightly. Normally the nucleus does not change. But some of the outer electrons are held very loosely. They can move from one atom to another.
- **POSITIVELY CHARGED ATOM:** An atom that loses electrons
- **NEGATIVELY CHARGED ATOM:** An atom that gains electron

STATIC ELECTRICITY IS THE IMBALANCE OF POSITIVE AND NEGATIVE CHARGES

- When two different materials come into close contact -- for example, felt rubbing against a balloon, or two air masses in a storm cloud -- electrons may be transferred from one material to the other.
- When this happens, one material ends up with an excess of electrons and becomes negatively charged, while the other ends up with a deficiency of electrons and becomes positively charged.
- **This accumulation of imbalanced charges on objects results in the phenomena we commonly refer to as static electricity.**

STATIC ELECTRICITY (continued)

- Materials that bear imbalances of opposite charge will attract each other and cling together.
- Materials that bear imbalances of like charge will repel each other.
- **When an object bearing an enormous accumulation of positive or negative charge comes close to another object bearing the opposite charge, a spark may jump across the space between them.**
 - This results in both the enormously powerful discharges of lightning and the small yet stimulating shocks we receive when touching something after shuffling across a carpet in our stocking feet.



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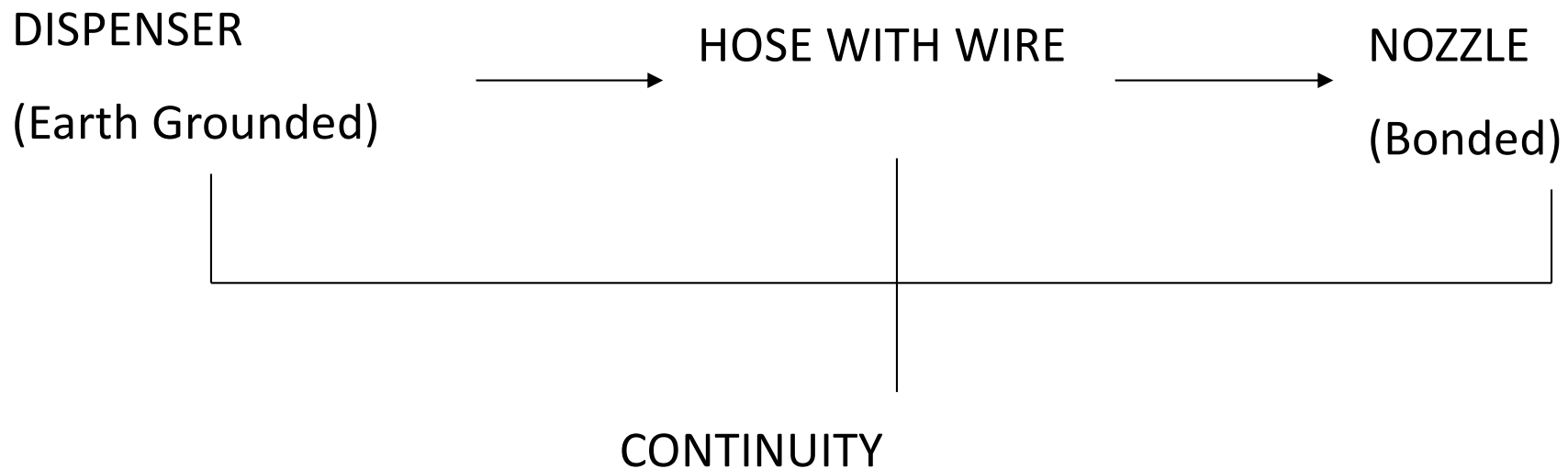


DEFINITIONS

- **BONDING:** Connects various pieces of conductive equipment together to keep them at the same potential. Static sparking cannot occur between objects that are at the same potential.
- **GROUNDING:** A form of bonding in which conductive equipment is connected to an earthing electrode or to a building grounding system in order to prevent sparking between conductive equipment and grounding structures.
- **CONTINUITY:** Continuous electrical path

DISPENSERS

- Standards call for continuity between the dispenser and nozzle



STATIC ELECTRICITY AND SAFE OPERATION OF YOUR VOLUMETRIC TESTING EQUIPMENT

EARTH GROUND



PROBLEM?



CART PROPERLY GROUNDED



TEST MEASURE TOUCHING FUNNEL DURING DRAINING



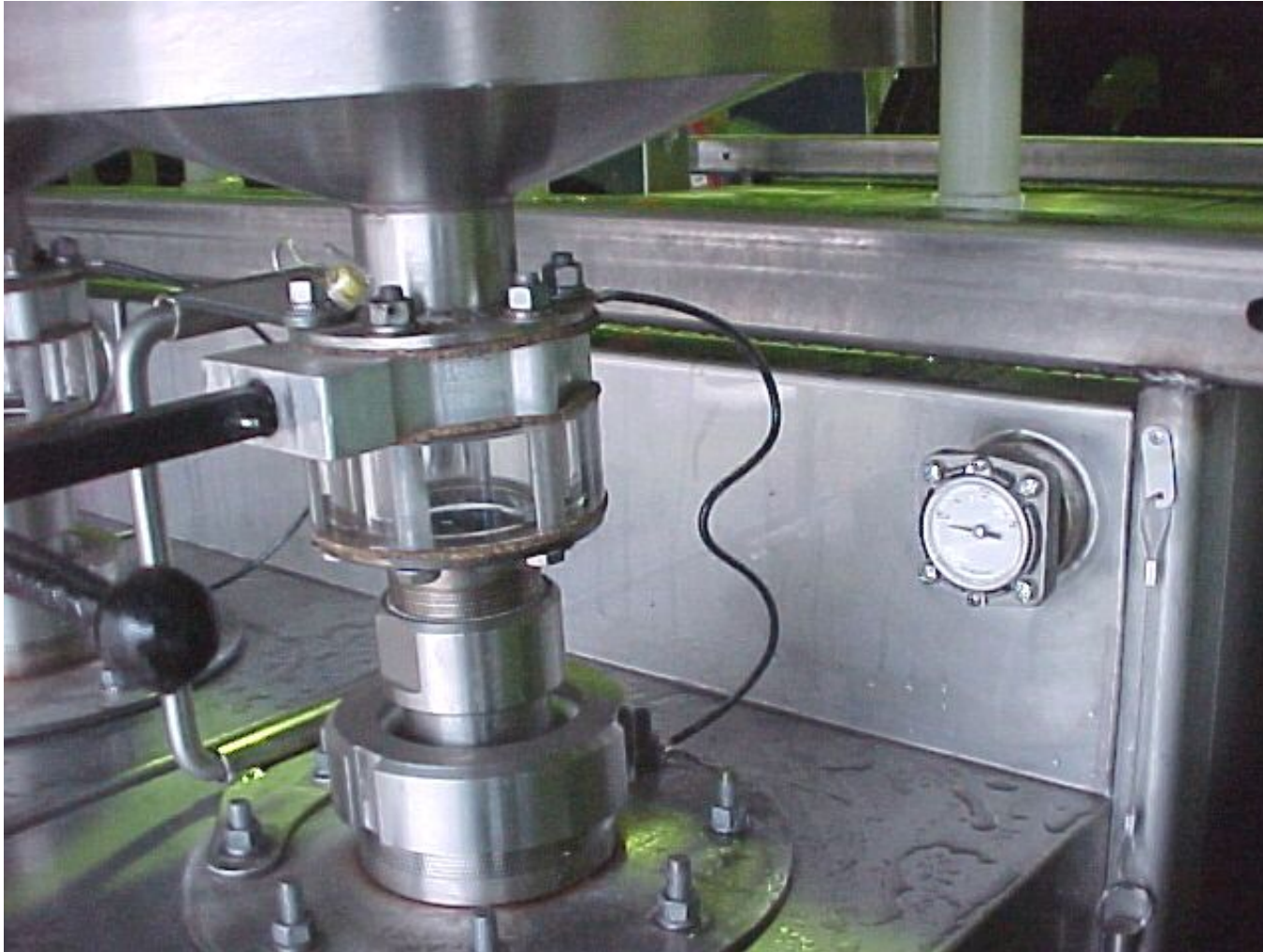
PORTABLE CALIBRATION CART



GROUNDING & BONDING



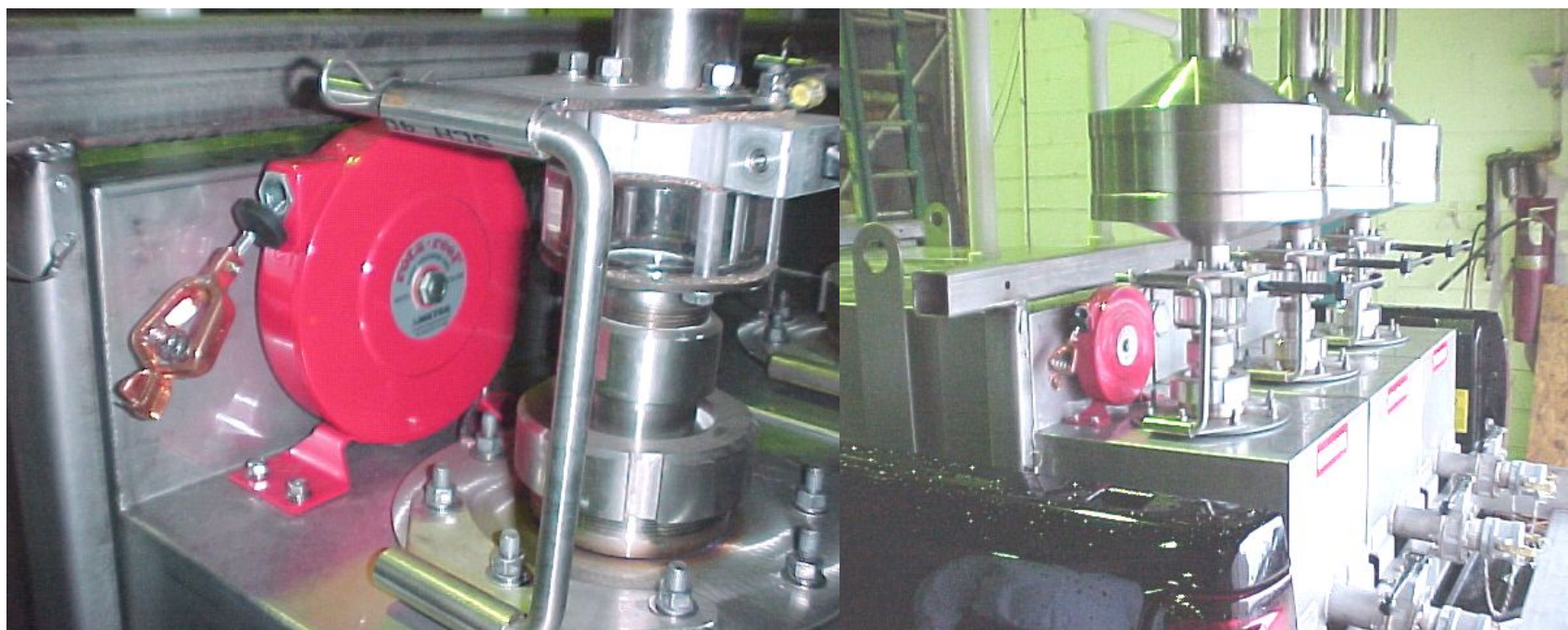
BALL JOINT BONDING WIRE



SLIP-ON UNIT



SLIP-ON UNIT WITH GROUND REEL



Perform periodic tests of the bonded object to the ground clamp on the end of the cable grounding reel with Ohm Meter to confirm continuity. Maximum resistance to be 25 ohms. If higher, remove and replace reel. Inspect the entire cable length for kinks and/or broken wires. Inspect the cable clamp for good compression force and/or damage.

DISCHARGE HOSE WITH STATIC WIRE



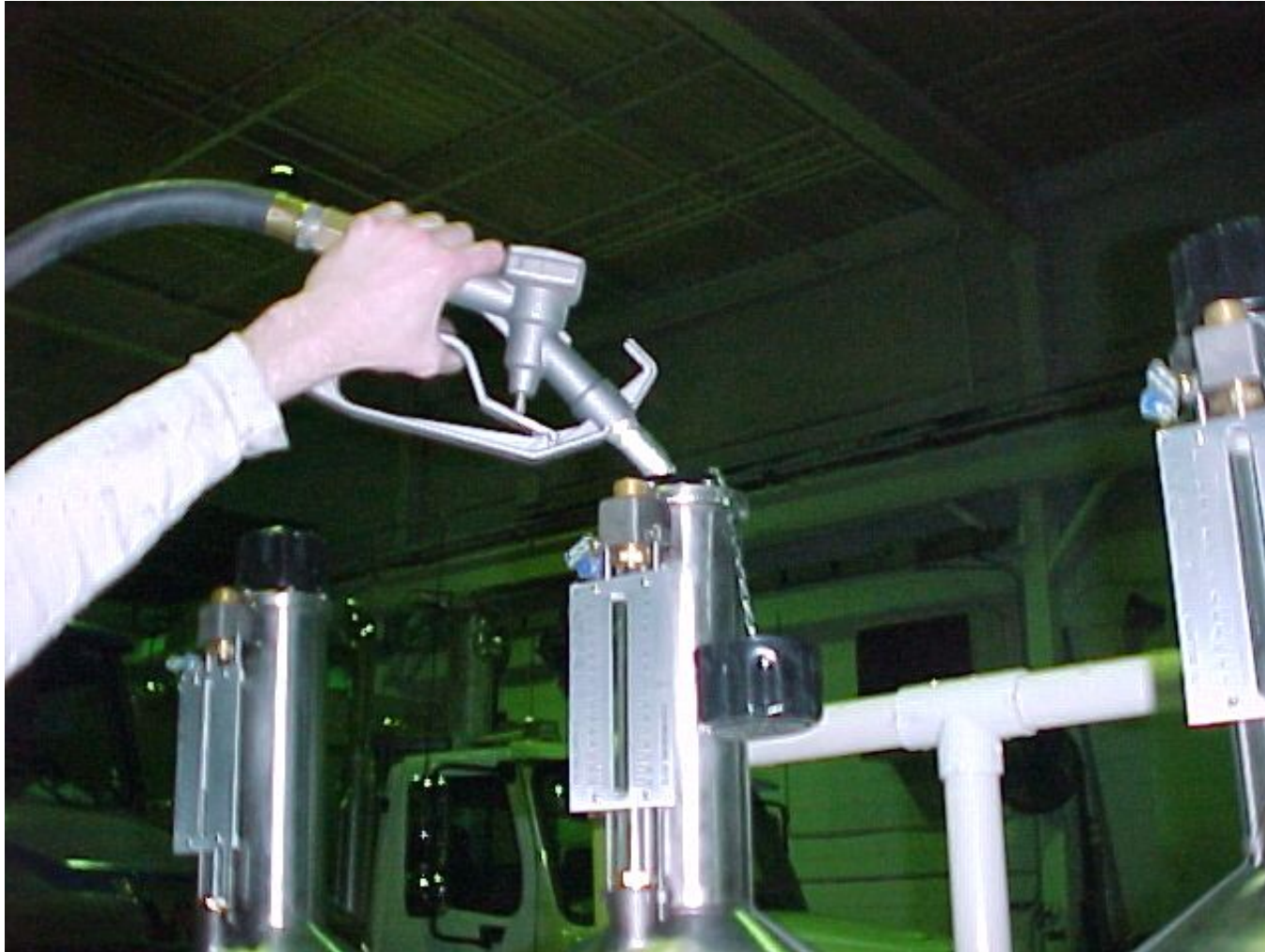
STEEL FUNNEL WITH COPPER SPOUT



BONDING WIRE



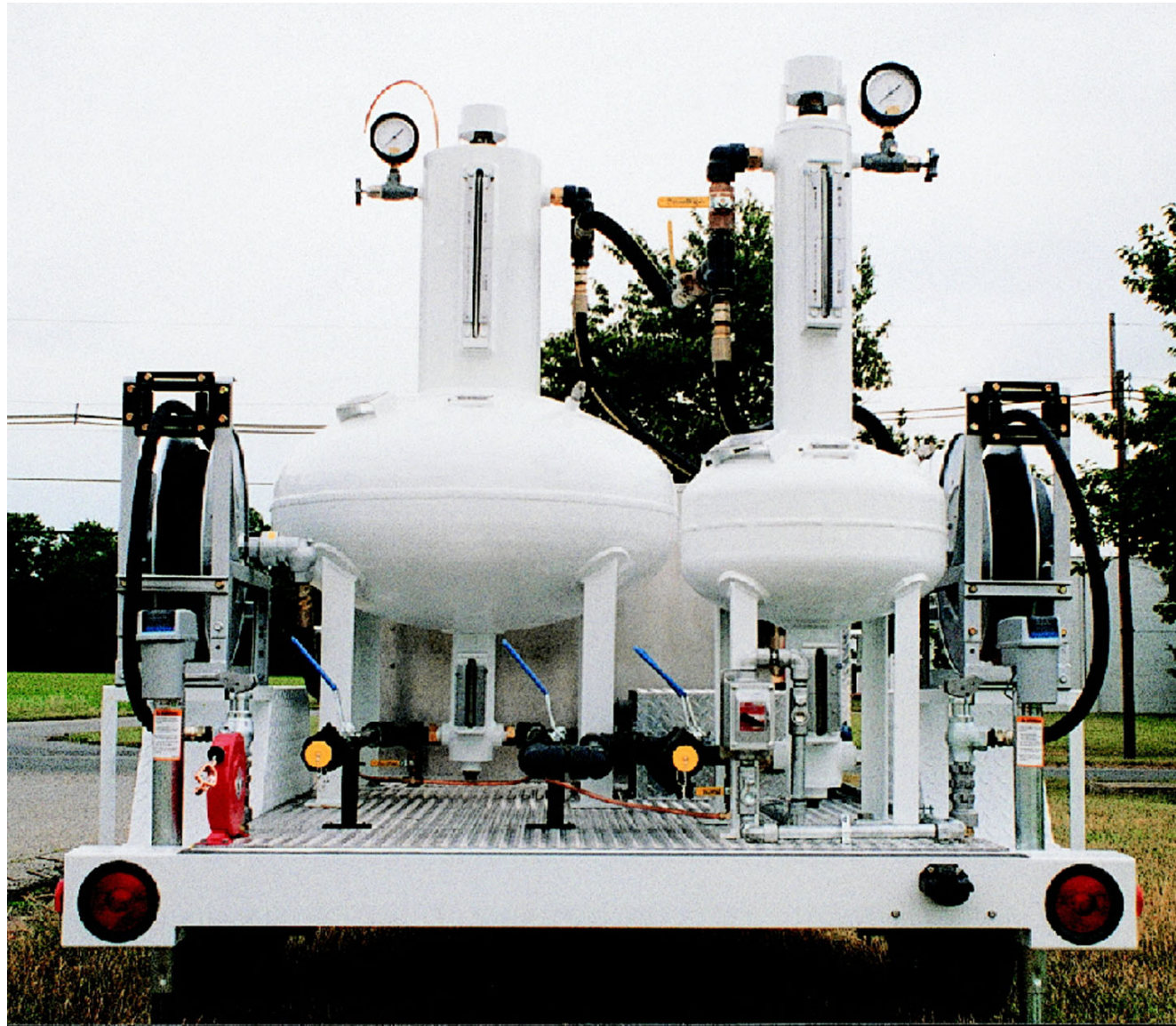
NOZZLE / PROVER CONTACT PRIOR TO FILLING PROCESS



PROBLEM?



S/S LPG PROVER SYSTEM



REVIEW

- Static electricity is an imbalance of charges on objects.
- When an object bearing an enormous accumulation of positive or negative charge comes close to another object bearing the opposite charge, a spark may jump across the space between them.

WARNING

- No prediction or advice can be given about all the different conditions which can cause static discharges to accumulate.
- Refer to the National Fire Protection Association Codes, NFPA 77 and NFPA 99 for recommended practice on static electricity.

Understanding Static Electricity

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Situational Awareness

- What is situational awareness (SA)?
 - Situational awareness is being aware of what is happening around you in terms of where you are, where you are supposed to be, and whether anyone or anything around you is a threat to your health and safety.
 - Our knowledge, experience and education enables us to understand what is going on around us and helps us to determine if it is safe. This means that everyone's situational awareness is individual and potentially different. We use our situational awareness to make decisions and instruct others.
- The reason why it is important to provide forecourt training is not only to prevent accidents/injuries from taking place but also to be in a position to react quickly when a problem occurs.
- Often a quick reaction to a problem can minimize the damage and or possibly prevent injury.
- Stay alert while working on the forecourt.....

Safe Performance Self Assessment (SPSA)

Before Beginning Any Activity/Task/Job



Assess the risk

What could go wrong?

What is the worst thing that could happen if something does go wrong?

Analyze how do you reduce the risk!

Do I have all the training and knowledge to do this job safely?

Do I have all the proper Tools and Personal protective equipment ?

ACT to ensure safe operations!

Take necessary Action to ensure the job is done safely!

Follow written procedures! Ask for assistance, if needed!

Do Not Proceed Unless Everything is Safe!

For Everyone Every Day All the Time