



Gulf Coast Chapter Newsletter

November 18, 2014

BONDING & GROUNDING

BY JEROME E. SPEAR, CSP, CH

CONTROLLING STATIC ELECTRICITY

A few years ago, I investigated an incident involving a fire that resulted from the transfer of a flammable liquid mixture. A driver of a chemical supplier was delivering a load of product to a customer. The product consisted of a solvent solution containing toluene and other flammable ingredients. As the driver was filling a 350-gallon metal (tote) container from a top nozzle, a fire suddenly erupted, causing burn injuries to the driver. He suffered second and third-degree burns to about 20 percent of his body.

The investigation of this incident determined that a spark, resulting from static discharge, ignited the solvent vapors. There are two basic techniques to protect against the dangers of static electricity - grounding and bonding. These techniques should be strictly followed in areas where flammable and combustible liquids are stored, dispensed or used. This article describes how static discharge occurs and how bonding and grounding help prevent potential fires due to electrostatic discharges.

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Mailing Address

ASSE Gulf Coast Chapter
P.O. Box 1090
Deer Park, TX 77536

Announcement

The Energy Corridor Section has started the process in becoming its own Chapter.

Bonding & Grounding Controlling Static Electricity Continued



Static Electricity

Static electricity results from the interaction of dissimilar materials. This can occur when materials are rubbed together, such as in the classic example of walking across a carpet on a dry winter day while wearing woolen socks. However, static discharges can also develop when a liquid passes through a pipe, through an opening into a tank, and/or when mixing or agitating the mixture. The liquid is moving different electrons from one to another, and the friction of electrons creates static electricity.

An electrostatic discharge (also called a static spark) is a discharge of electricity across a gap between two points not in contact, resulting from a difference in electrical potential. The spark produced when the electrical charge jumps across the gap usually contains enough energy to ignite flammable vapors if they are in concentrations that will sustain combustion.

The generation of static electricity cannot be totally eliminated because it is normally present at every interface. However, there are ways to reduce the potential for static charge build-up when transferring flammable liquids. The two most important ways to prevent static sparks are bonding and grounding.

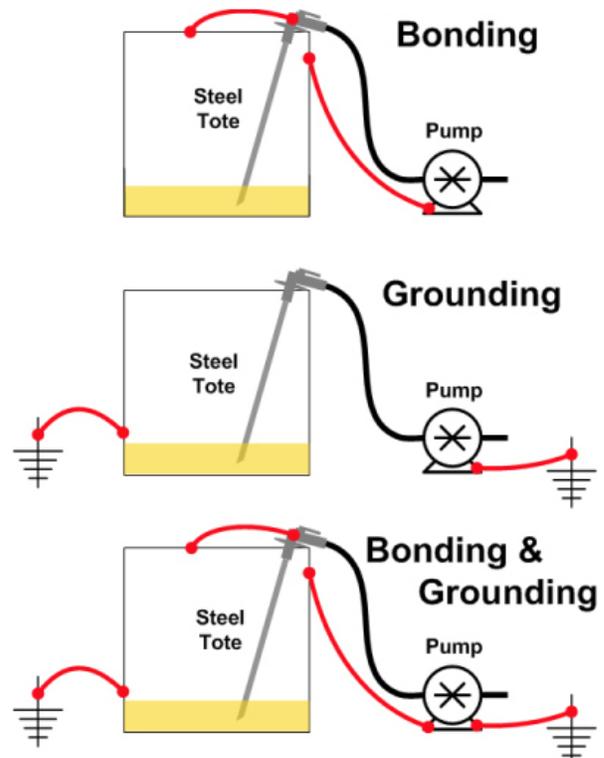
Bonding

Bonding is done to eliminate the difference in electrical potential between two or more objects. An adequate bond between two or more conductive objects will allow the charges to flow freely between objects, resulting in no difference in electrical potential. Bonding will not eliminate the static charge, but will equalize the potential between the objects bonded so that a spark will not occur between them. The likelihood of a spark between the objects is then essentially eliminated.

Bonding can be accomplished by attaching a conductive wire between the objects. The following are important factors for safe bonding:

⚡ Size of bonding wire: The size of the bonding wire is based on mechanical strength rather than on current-carrying capacity. Use a heavy 12-gauge, stranded wire that can stand up to continuous use. Bonding wires are available on reels or in individual specified lengths from industrial suppliers.

⚡ Attachment point on both objects: The attachment point on both objects must be solid and secure and should be on a bare metal surface. Using a pressure clamping device (screw-on or spring-loaded) is a good way to ensure a positive connection. The connection must be made prior to beginning the transfer of material between the containers. If the bonding is done after the transfer, the static charge build-up could result in a spark as the bond wire is connected to one of the containers.

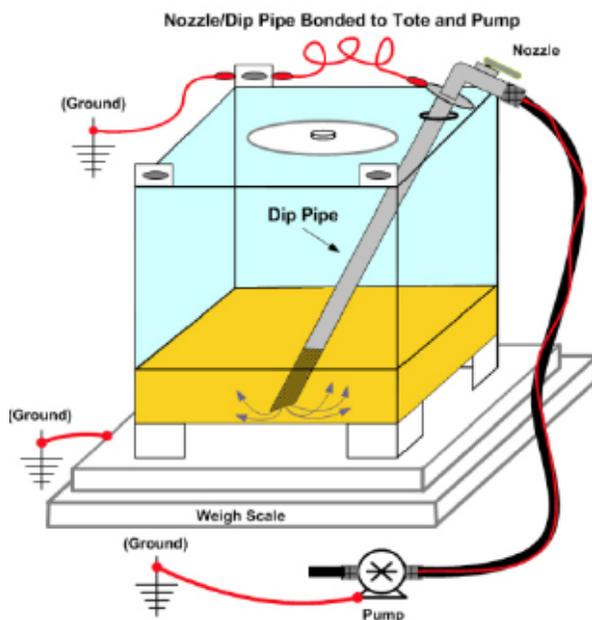


Bonding & Grounding Controlling Static Electricity Continued

Grounding

Grounding an object serves a different purpose than bonding. Bonding eliminates the difference in electrical potential between containers that are bonded together, but it will not eliminate the potential difference between an object and the ground. To ensure that a static charge will not create a spark as a result of this difference, a conductive path must be provided to the earth. A proper ground will provide a means for continuously discharging a charged, conductive body to the earth.

Grounding may be achieved by attaching a wire conductor between the container and a water pipe or the full length of an 8-foot long copper clad steel rod embedded in the ground. Total resistance to ground should be kept below one mega-ohm. When using a buried rod, resistance is affected by soil moisture. It is important that the grounding system be checked to ensure that there is continuity and proper resistance.



Rate of Static Discharge

Electrical charges can build up in flammable liquids when the liquids flow through piping systems or when they are agitated in their storage containers as a result of mechanical movement.

or splashing. The proper bonding and grounding of the system is often enough to control this static build-up. However, if rapid flow rates are used to transfer the liquid into a storage tank or container, high electrical potentials can occur on the surface of the liquid in the tank. The rate of accumulation of static charge may be much greater than the liquid's ability to transfer it to the grounded metal storage vessel. If the accumulated charge in the container builds up enough, a static spark may result when the liquid level approaches a body with a different potential. This kind of static situation can be controlled by reducing flow rates, avoiding violent splashing in the tank, and allowing for time until the static charges dissipate. Splash filling can be avoided by using a fill pipe designed in accordance with NFPA 77.

In Review

In review of the incident described earlier, the driver failed to connect the bonding cable to the metal container. The driver also created a high rate of static discharge due to the product's splashing during filling. These errors may be due to lack of training, lack of company procedures, and/or lack of enforcement and management oversight. The container also did not have a proper ground. However, the container belonged to the customer and was located at the customer's site. When transferring flammable materials at a multiemployer worksite, some planning and coordination may be necessary to ensure that safe bonding and grounding practices are followed.

Additional guidance for controlling static electricity may be found in NFPA 77, *Recommended Practice for Static Electricity*.

Jerome E. Spear, CSP, CIH
President



Safety, Health, and Environmental

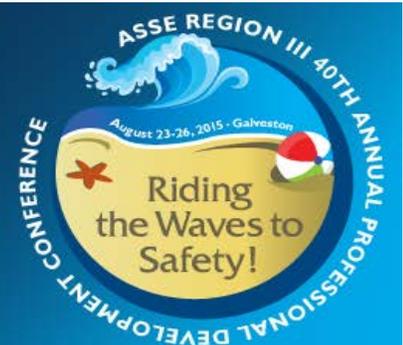
spear consulting, LP

19314 Timber Ridge Drive, Suite 100
Magnolia, Texas 77355
Phone (281) 252-0005 Fax (281) 252-0092
www.jespear.com
jerome.spear@jespear.com

ASSE REGION III
40th Annual PDC

Moody Gardens Hotel
Spa & Conference Center
Galveston, Texas

AUGUST 23-26, 2015



ASSE Bulletin Board



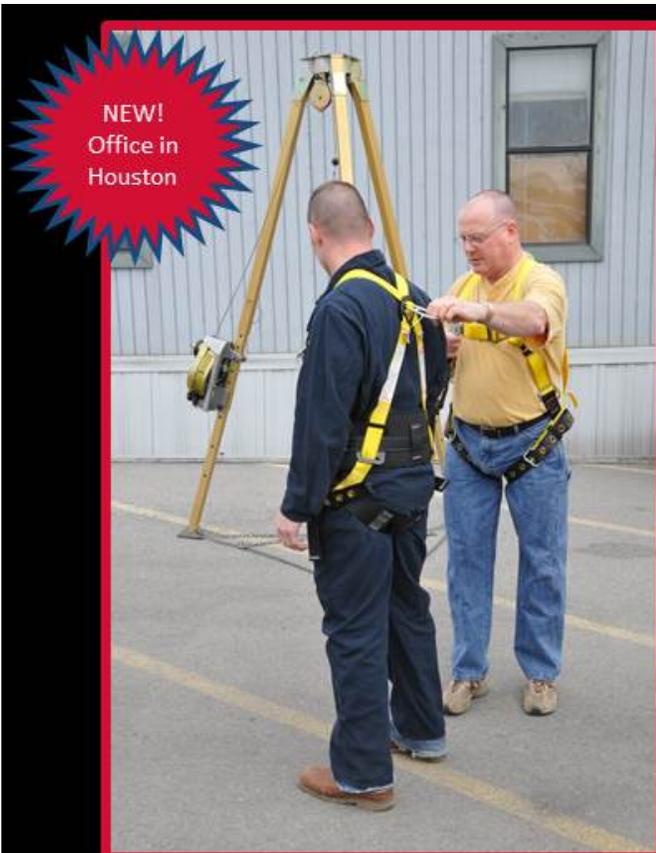
The ASSE Foundation's 2015 Scholarship and Professional Education Grant program is now available to students pursuing degrees in occupational safety & health and to safety professionals working to advance their professional credentials. The Foundation will award more than \$250,000 to students and professionals in 2015.

New this year are several awards including the Nick D. Yin Scholarship, the first global-oriented scholarship intended for students from China, Taiwan, Hong Kong, or Macau studying in the United States. In addition, SafeStart and UL join the Foundation's program lineup with generous awards for students. Texas Safety Foundation has increased their funding to add a new scholarship and two new professional education grants are available from the ASSE Greater Boston and Oklahoma City chapters.

The Foundation is introducing a new category of awards titled Impact Scholarships. These awards range from \$10,000 – \$15,000 and are designed to cover a substantial portion of a student's tuition, offering significant support during their education. The Foundation thanks Applications International Corporation for being the first to fund these special awards.

To apply visit assescholars.communityforce.com between September 1, 2014 and **December 1, 2014**. Award recipients will be notified and announced on the Foundation's website on April 1, 2015. Before submitting an application, applicants are encouraged to review the Frequently Asked Questions to be sure they qualify.

Mary Goranson
Foundation Manager



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Upcoming General and Section Meetings

Gulf Coast General Chapter Meeting

Date: Thursday, December 4, 2014
Time: 11:00 AM – 1:00 PM
Location: Brady's Landing, 8505 Cypress Street, Houston, TX
Speakers: Bob Leitz - *Snap-on Industrial*
Topic: Hand Tools Safety & Injury Prevention Strategies
Cost: \$22 (for buffet lunch)

Description: Come to the December ASSE – Gulf Coast Chapter meeting to see an exciting presentation designed to educate and humor you about the safe use of workplace hand tools and equipment. The Presentation will include typical injuries that could occur with the use of incorrect equipment/usage and individually modified equipment. The discussion will also include considerations that have proven successful to prevent these types of workplace injuries at your sites.

Speaker Bio: Bob Leitz is the National Account Manager for Snap-on Industrial. He has worked with Snap-On for 27 years and has worked with Oil and Gas Companies to develop programs on drop-object prevention and hand/power tool safety. He has been a member of various safety organizations and has championed various global safety initiatives.

Energy Corridor Section

Date: Thursday, December 11, 2014
Time: 11:00 AM – 12:30 PM
Location: 17420 Katy Freeway, Houston, TX
Speaker: Allan Brown – *ASSE Region III Vice President*
Topic: Forming the Energy Corridor Chapter
Cost: \$15.00 (Includes Lunch)
Section Website: <http://gulfcoast.asse.org/energy-corridor-events/>

Construction Specialties Section

Date: Friday, November 21, 2014
Time: 11:30 AM – 1:00 PM
Location: Brady's Landing, 8505 Cypress Street, Houston, TX
Speaker: Mark Hernandez – *OSHA*
Topic: OSHA Update
Cost: \$20.00 (Includes Lunch)
RSVP: Thomas Scott at riskcsp@gmail.com or 281-989-6075

Student Section

Section: Gulf Coast – College of Mainland
Dates and Times: 1st Meeting: First Saturday of every month at 10:00 AM
2nd Meeting: Second Thursday of every month 12:30 AM
Location: Gulf Coast Safety Institute, 320 Delay Road, La Marque, TX 77561
Questions: Email Zach Garthwaite at ZHGarth@gmail.com

*Section Meetings, like the General Chapter Meeting, are open to anyone.
Members are encouraged to bring co-workers, management, vendors, and other guests.*

Please contact Cristal Shie to add your ASSE meeting here.

Chapter Information

GCC ASSE Executive Committee and Chairs for 2014- 2015

Position	Name	Email
Delegate/President	Luke J. Albrecht, CSP	luke@sageenvironmental.com
Delegate/Sr. Vice President	Gena Fendley	gena.fendley@pfshouston.com
Delegate/Vice President	William Gonzales	William.Gonzales@brockgroup.com
Delegate/Treasurer	Paul Hernandez, CSP	paul.hernandez@shell.com
Delegate/Secretary	James Charo	jamescharo@msn.com
Past President / Nominations	Carrie Atkins	carrie@hasc.com
Delegate / Program Chair	Cameron Isaacs	cameron.isaacs@exxonmobil.com
Delegate / Newsletter Chair	Cristal Shie	shiecrystal@gmail.com



Do you have an article you would like published or republished in the newsletter? Contact Newsletter Chair, Cristal Shie if you have an article we could use in the newsletter.

Have a speaker recommendation or want to be a speaker? Contact Program Chair, Cameron Isaacs.



Community Outreach



Christmas Drive Idea: Collect leftover hotel items (*i.e.* soaps, shampoos, tooth brushes) from your travels and donate them to Hope Impacts. Hope Impacts seeks to provide hope to homeless, helpless, and under resourced people in the Katy/West Houston community, through tangible acts of love. For more information contact Tina Hatcher at (713)-705-7884 or email tina@hopeimpacts.net.



www.hopeimpacts.net

NOMINATIONS AND ELECTIONS

In accordance with our Chapter Bylaws the Gulf Coast Chapter Nominations and Elections Committee for Chapter Year 2014-2015 has been appointed. As it states in our Bylaws **Article VI, Section,1 b) & e)** "The Committee, including the Chair, will consist of no less than three (3) nor more than five (5) members." And "Selection of the Committee members shall be completed and published no later than the December newsletter."

The newly appointed Gulf Coast Chapter Nominations and Elections Committee will oversee the election of our 2015-2016 Chapter Executive Committee. Names are as follows:

Carrie Atkins - Committee Chair
 Kevin Rice, CSP - Committee Member
 Luke Albrecht, CSP - Committee Member

Anyone interested in running for an Executive Committee position should email the Chapter Nominations and Elections Committee Chair – Carrie Atkins at carrie@hasc.com.

Upcoming Free Classes / Courses



All classes are held at the Gulf Coast Safety Institute,
320 Delany Road, La Marque TX 77568.

Spring 2015 Risk Management Schedule [Here](#)

Upcoming, No-Cost, Safety Classes held at the Gulf Coast Safety Institute Center for Risk Management.

Occupational Exposure to Crystalline Silica

December 5, 2014 8:00am-5:00pm

Instructor: Michael Seymour

This seminar will discuss OSHA's proposed rule for respirable crystalline silica. Topics to be covered include: The health effects of silica exposure, content of the proposed general industry standard, content of the proposed construction standard, exposure monitoring methods, methods of controlling exposure. The seminar will provide description of OSHA's rulemaking process and a summary of the public commentary on the proposed rule and what to expect from OSHA as they finalize the rule.

OSHA Recordkeeping

January 16, 2014 8:00am-5:00pm

Instructor: Cindy Lewis

On Jan. 1, 2015, new recordkeeping rules take effect on reporting specific work-related injuries. This course will detail the rules and review the requirements for recording injuries or illnesses on your OSHA Log 300. Students learn through case studies and a hands-on workshop on how to improve skills in identifying recordable incidents.

To register for the classes above contact SeAlice Hemphill at 409-933-8365 or email at riskmanagement@com.edu.



FREE OSHA 10-Hour Construction training courses by the Texas Department of Insurance

(Schedule is, also, located @ <http://www.tdi.texas.gov/wc/events/index.html>)

December 2014

- [OSHA 10-Hour Construction Class \(English\)](#) - Houston
December 02, 2014 through December 03, 2014
- [OSHA 10-Hour Construction Class \(Spanish\)](#) - Fort Worth
December 09, 2014 through December 10, 2014
- [OSHA 10-Hour Construction Class \(English\)](#) - Austin
December 16, 2014 through December 17, 2014

January 2015

- [OSHA 10-Hour Construction Class \(Spanish\)](#) - Houston
January 06, 2015 through January 07, 2015
- [OSHA 10-Hour Construction Class \(English\)](#) - Fort Worth
January 13, 2015 through January 14, 2015
- [OSHA 10-Hour Construction Class \(Spanish\)](#) - Austin
January 20, 2015 through January 21, 2015
- [OSHA 10-Hour Construction Class \(English\)](#) - Austin
January 22, 2015 through January 23, 2015