Arcs, Sparks, Fire and Explosions – Taking Training to the Next Level!

Learn some effective techniques for developing and delivering high-impact presentations using PowerPoint and demonstrations. This session will cover some of the “how to” techniques in order punch up your training delivery, enhance your Power Point and incorporate demos to create dynamic presentations. You will see the masters perform their training “magic” with electric arcs and sparks, fire and explosions, as well as some unique “envelope pushing” items never before seen at a safety and health conference. Frank Perrino and John “Grizzy” Grzywacz (“Frankie and Grizzy”) Professors Emeritus OSHA National Training Institute have co-presented to standing room only groups of up to 600 at major conferences and events. Now they come together again to present some of their most exciting, and dramatic, demonstrations they have used in their training.
John “Grizzy” Grzywacz, Professor Emeritus
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John “Grizzy” Grzywacz, or “Grizzy”, as he likes to be called has been recognized by OSHA’s National Office in Washington D.C. as both a National Electrical Code (NEC®) historian as well as “the best electrical safety trainer in the country!” Certainly at the very least Grizzy has been OSHA’s electrical safety guru and has been instrumental in shaping and interpreting OSHA policy and regulations over the years.
Grizzy has appeared as an expert witness for OSHA, and served as chief OSHA investigator on complex electrical fatality investigations. For over two decades he has trained OSHA compliance officers in numerous areas, including Machine and Machinery safeguarding, and he has provided forensic analysis on electrical fatalities and accidents for OSHA. His electrical expertise has not only shaped OSHA policy but also OSHA’s Electrical Standards.
Grizzly is currently a member of the ASTM F-18 Committee which writes the “Electrical Protective Equipment for Workers” standards.
Currently, in addition to training numerous Federal Agencies as well as private sector Grizzy continues to train OSHA compliance officers and personnel coast to coast, as well as still providing investigative assistance to the Agency on fatality investigations and significant cases. Private sector corporations and agencies outside of OSHA are delighted that Grizzys availability means that they can now obtain the same training that the OSHA inspectors receive.

Frank Perrino, Professor Emeritus
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Frank Perrino, a world renowned seminar leader and instructor has taught at the OSHA National Training Institute and represented OSHA worldwide for over three decades. Frank has been called the “OSHA Ambassador”, and most senior safety and health professionals in all sectors have had the privilege of attending Franks training at some point in their career. Franks flamboyant teaching style has established him as a preeminent in safety and health training and he is certainly well known for his development of “the bottle” and “flame propagation” demonstrations. Fire and explosion teaching demonstrations are his trademark.
With expertise in both construction as well as general industry Frank is an industrial hygienist, although he seldom admits to it. Frank has developed and taught more courses in his career than any other OSHA instructor. Steel Erection, Fall Protection, General Construction Standards, Scaffolding, Demolition, Cranes and Material Handling, Construction Instructor Course, General Industry Instructor Course, 500 & 502 Trainer Course in OSHA Standards for Construction, 501 & 503 Trainer Course in OSHA Standards for General Industry, Update for Outreach Trainers, Occupational Safety and Health Standards for Construction, Initial Compliance Basic Accident Investigation, Introduction to Safety Standards or Safety Officers, Introduction to Industrial Hygiene for Safety Personnel, Introduction to Health Standards for Industrial Hygienists, and Inspection Techniques and Legal Aspects.
Arches, Sparks, Fire & Explosions - Extraordinary Excerpts!

JOHN “GRIZZY” GRZYWACZ & FRANK PERRINO
Professors Emeritus
OSHA National Training Institute

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Something for everyone!
Not just talking about training techniques but modeling
History
Technical Safety & Health concepts
Effective use of instructional media (AV) including PPT
Techniques not just for S & H training but any subject

Have Fun Learning...!

Nikola Tesla
Arrives New York 1884
with 4 cents in his pocket,
a reference letter to Edison,
along with dreams & ideas for a
new electrical polyphase ac system

Works for Edison for 1 year successfully rebuilding Edison's entire dc system for efficiency

Edison refuses to pay what he promised to Tesla, which was allegedly $50,000

Tesla tells Edison
Take this job and ..... The war of the currents begins

Tesla obtains U.S. patents:
Complete polyphase ac distributions systems, ac generators, induction motors, transformers and much more.
Westinghouse provides Tesla with funds, equipment and laboratory.

and

Secures a contract to electrify and illuminate the Columbian Exposition (worlds fair) in Chicago in 1893.

In the "war of the currents between Edison and the Tesla Westinghouse camp, Edison tried to discredit ac electricity through many means.

Edison covertly funded research, and lobbied the legislature for the legalization of electrocution for capitol punishment.

Harold Brown, Edison's Chief Electrician is today considered the inventor of "the chair".

Edward's covertly funded research to discredit alternating current vs. direct current. He electrocuted dozens of dogs, cattle, and horses, to establish evidence of greater hazard from alternating current vs. direct current. The dogs were purchased from neighborhood boys at twenty-five cents a head. Within one year Orange NJ was depopulated of stray dogs.
Training both an art and a science

Development
Delivery approach
Training equipment
Lesson introduction
Engagement techniques
Oral questioning techniques
Reinforcement techniques

Planning - preparation
Execution - presentation
Evaluation - quiz, test, performance

Instructional planning:
Performance objectives
Curriculum development
Lesson planning
Instructional material
Instructional media (audio visuals)

Proper execution requires engagement.
Lesson introductions – Get student attention.
Make a shocking or provocative statement.
Ask a thought provoking question.
Ask a rhetorical question.
Do an interesting or flamboyant demonstration

WIIFM – What’s in it for me?

Engaging the student is critical!
Need to address their preferred learning style.
- Visual
- Auditory
- Kinesthetic
Proper execution supports engagement.

Lesson introductions & summary skill demonstrations, demonstrate concepts, utilize instructional media, adult learning techniques, reinforcers (positive reinforcement).

Engagement techniques.

Anecdotal stories / “war stories” – use to support and reinforce training not to fill time.

History is always interesting and effective.

Tell them - they will forget!
Show them - they will remember!
Involve them – they will understand!
Fire Triangle
50% LEL

Heat

Fire Triangle
75% LEL

Heat

Fire Triangle
100% LEL

Heat

Fire Triangle
100% LEL

O2 = 20.9%

Levels of Concern as the vapor evaporate

Clean AIR
Odor
IDLH
LEL
UEL

IAQ
TLV
PEL
Levels of Concern

Clean AIR  Odor  IDLH  LEL  UEL
IAQ  TLV  PEL

As the gas evaporates

Fire Triangle

10% LEL
O2 = 20.9%

Fire Triangle

25% LEL
O2 = 20.9%

Fire Triangle

50% LEL
O2 = 20.9%
Don’t interrupt your presentation pacing to close PPT and open/search other directory files and folders to play a video. Embed it in the presentation program.

Alternatively if it’s not Windows Media Player compatible insert a “hyperlink” in the presentation to immediately launch the video clip. Also large size files that are compatible won’t embed and ultimately crash the PPT program.

MS “power point” isn’t perfect and obviously not designed by professional trainers/educators.

Presentation pacing is important!
How does it work?

If the imbalance of current between the hot & neutral exceeds 5ma (UL 943)

Earth or surroundings

GFCI

2 a

.005 a

2 a
CaC$_2$ + H$_2$O

Calcium Carbide + Water

CaC$_2$ + 2H$_2$O $\rightarrow$ Ca(OH)$_2$ + C$_2$H$_2$(gas)

Calcium Carbide + Water $\rightarrow$ Acetylene

LEL 2.5 %

UEL 100 %

Minimum Ignition Energy .017mj

And now a brief word on instructional media.
(audio visuals)

If you’re only using power point you’re missing the boat !!!

Non-projected Visuals

Still Pictures
Models
Drawings
Charts
Posters
Cartoons

Chalk boards
White boards
Peg boards
Bulletin boards
Demonstrations

Flip Charts
Exhibits
Realia
Projected Visuals

35mm Slides & Films
Overhead projectors
Videos

LCD projectors & computers power point.

Nothing belongs on the visual/slide that does not immediately contribute to the point being made and specifically contributes to what is being presented/taught on the slide/projected visual!

Nothing beats a cut. – Alfred Hitchcock

A “wipe” / reveal is simple and clean.

Keep animations simple – “appear” or simple “wipe”, possibly a zoom for larger blocks of text or objects. Ask, how does it support and facilitate the training?

Nothing beats a cut. – Alfred Hitchcock

A “wipe” / reveal is simple and clean.

Educational / didactic / psychological research addressing stimuli relative to learning.

We’ve already seen Dales Cone of Experience and that the printed/written word is the most abstract and difficult to process.

Additional extraneous stimuli makes the message that much more difficult to process and assimilate.
Nothing beats a cut. – Alfred Hitchcock

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MS “power point” isn't perfect and obviously not designed by professional trainers/educators.

Downsides to white print on a black background, is when you print for handouts/student manuals, etc.

PPT allows a change backgrounds of all slides in presentation with a couple of key clicks, however all text must be changed manually (size, font, color, etc.) text box by text box, slide by slide.

You can print black & white to get the white print to show as black on printed handouts.

This still doesn’t help the professional educator/trainer!

Perhaps someday the computer companies and software developers will consult with professional educator/trainers to find out what we need before designing their products!

Hello!
Ka Boom!

Frankie was here!
Dime museums, a nineteenth century urban American phenomena, were large-scale venues dedicated to the exposition of human curiosities, under the guise of being an educational sophisticated form of entertainment. The display of non-normative human bodies have their roots in 16th century English fairs.

P.T. Barnum’s museum - unprecedented success!
Delighted audiences of 5,000 people daily!
Connecting link between man and monkey still here!
Living black SEA LION, the grizzly BEAR, Samson; the Learned SEAL.
NOTICE TO BOYS--1000 living mice wanted for the Baby Anacondas.
At one point, Barnum noticed that people were lingering too long at his exhibits. He posted signs indicating "This Way to the Great Egress!"

Circuses began featuring traveling museums (in addition to the skilled performers & animal acts)

Circuses suffered a serious decline in popularity after the turn of the 20th century

Carnivals sprang up which originally featured only "side shows"

Bally or Ballyhoo — The "Bally" is the "outside talker’s" spiel drawing a crowd (called a "tip") to see a sideshow. Talker — Never "barker".

Hubert’s Museum 42nd St. NYC 1926-1965

R.C. (Richard "Charlie") Lucas managed the museum (1956-1965)

He was known as "Woo-Foo", a former Ringling Brothers fire eater.

The relentless chokehold of sleaze and decay, which characterized 42nd Street, doomed Hubert’s museum to an untimely death.

By late 1965 Lucas was gone, and "Hubert’s" stopped its live performances — the downstairs basement remaining open free of charge with its decaying exhibits until 1968. A few seconds of film in the 1969 movie Midnight Cowboy capture Hubert's neon entrance — a last fleeting glimpse of the NY legend.

Walking down 42nd St. NYC in 1964 you would have heard this "Grind" as performed by Manager Charlie Lucas

Grind Show — A show or attraction the customer can walk through and see at any time without being guided through. The front men and ticket sellers just "grind away" all day. The "Grind" compelling and rhythmic verbal pitch.
Do not attempt this at home!

This demonstration is very dangerous and should only be attempted by trained professionals!

All demonstrations are engineered with safety in mind.

Grizzly & Frankies secret to make the “magic” happen in the classroom!

Teach from the heart not from the head!

Safe Travels &
Be safe out there!

Frank & Grizzy
Seminar Abstracts & Courses

What’s OSHA Teaching its Inspectors Regarding OSHA’s Electrical Safety Related Work Practices and NFPA 70E! (typically 1 ½ - 2 hrs)

After reviewing the fundamental hazards of electricity, OSHA professor “Grizzy” will present OSHA’s Electrical Safety Related Work Practice Standard requirements and how NFPA 70E applies. Virtually everyone knows that qualified electrical workers need training but did you know that it is a requirement that virtually all workers including non electrical workers (unqualified workers) need electrical training? Find out what electrical training is required for the non-electrical workers, and the procedures every company needs to have in place. . Actual OSHA cases and electrical accidents, some of which were investigated by Grizzy, will be shown and discussed. This seminar is not only loaded with the latest and greatest technical information on some really hot issues but also gives a glimpse of what the OSHA electrical professor has taught all the OSHA investigators nationwide.

Lockout Tagout – What You Didn’t Know Could Cost You (1½ hrs.)

Lockout/Tagout continues to dominate OSHA’s most frequently cited standards list.

- Failure to Lockout/Tagout is a leading cause of accidents and fatalities in the workplace.
- OSHA has nearly a half-dozen different programmatic LOTO standards.
- You could be following the wrong LOTO standard.
- Nearly every training program and course on the topic of lockout/tagout exclusively covers the popular OSHA 1910.147 control of hazardous energy. Did you know that you could be implementing this standard and still be out of compliance and cited for LOTO deficiencies?

This seminar will list the various OSHA Lockout/Tagout standards and examine how they should be selected and applied including how the benefits of separate LOTO programs could actually save time and costs in the implementation. Safety professionals with any responsibility for lockout/tagout need to hear this. This is the approach that OSHA inspectors use to determine the applicability of the appropriate lockout/tagout standard.

Electrical Safety on Construction Sites

The majority of electrical accidents and fatalities occur primarily as a result of only a few main deficiencies on site. Instructor “Grizzy” will outline and explain these, including the importance of the frequently misunderstood purpose of equipment grounding and GFCI’s. There will be some vivid demonstrations used to illustrate why these things are required and how they function to protect employees. Some actual OSHA fatality and accident cases will be discussed.

Electrical Safety and Hazard Recognition

Electricity behaves the same at home as it does in the workplace. Learn some of the common misconceptions of electrical safety as well as some common hazards associated with its use. This seminar will address the purpose and importance of grounding as well as GFCI use and how to properly test your GFCI’s at home or at work. Many interesting and vivid demonstrations make this an exciting as well as informative seminar.

Concepts and Techniques of Machine Safeguarding

This session will examine the fundamentals of machine safeguarding and the application of the various methods of protecting hazardous operations on machinery through the use of various types of guards and devices. The seminar will list the primary hazards associated with machinery as well as the principal areas of concern on machinery, as well as the application of guards and devices which may be applied to the machinery. The fundamentals examined will be applied to the requirements of OSHA’s Machine Guarding Standards. References will also be furnished for some requirements of OSHA’s Machine Guarding Standards.
How to Prepare for an OSHA Visit
Few companies are positioned to maximize their protection and legal rights when an event occurs or OSHA shows up. Did you know that OSHA must establish certain factual evidence in order to issue a legally sustainable citation. This is called “legal sufficiency/Prima Facia”. Employers have legal rights also and the courts have established recognized “affirmative defenses” which prevent OSHA from meeting its requirements and prevent OSHA from issuing a sustainable citation. By preparing in advance many organizations can position themselves to minimize and even eliminate an OSHA citation. How do you accomplish this?

Do you know your legal rights and responsibilities under the OSHA law? This seminar will outline what OSHA must do and what an employers legal rights are during an OSHA visit. How to position yourself to successfully contest OSHA citations. What steps and policies do you need to have in place to accomplish this. The material covered in this seminar is from the OSHA “Legal Aspects” course which all new OSHA compliance officers are required to take as part of their initial training and in preparation for their career in OSHA enforcement. This seminar is not about specific OSHA safety and health standards but about managing your position to maximize your legal and administrative rights you have with respect to OSHA with specific steps you can take well in advance to protect against OSHA citations.

Fine print disclaimer: This seminar is not to be construed as legal advice obtained from legal counsel.

Courses

Electrical Safety Standards (4-5 day course)
This shortened version of the two week OSHA #3090 course is designed to provide the student with a survey of OSHA’s electrical standards as well as the NFPA electrical standards and the hazards associated with electrical installations and equipment.

Topics include: electrical fundamentals, overcurrent protection, ampacity, instrumentation, branch circuits, feeder circuits, equipment grounding, Ground Fault Circuit Interrupters, Three Phase Circuits, OSHA Standards requirements, equivalent NEC® requirements and introduction to NFPA 70E. Emphasis is placed on electrical hazard recognition and OSHA policies and procedures. Students are encouraged to bring their electrical test equipment and will be instructed on the safe and correct use of the testers as well as the limitations of the various electrical testers. Students will use the testers on “specially designed fault board outlets” provided in order to, determine branch circuit conditions, identify the associated hazards and reference the applicable standards for each separate condition as well as to illustrate uses and limitations of the circuit testers.

Several application models/paradigms which have been developed by the instructor will be presented which will be useful in assisting attendees in locating the correct electrical standards reference as well as to identify causal factors in an electrically related accident / fatality investigation. OSHA policy and compliance are heavily discussed throughout the course with a focus on what will OSHA look for and how it can be cited. This is the one week electrical safety training course that was developed by Grizzy and taught to the OSHA CSHO’s/inspectors as a part of their overall compliance training. Each student receives an interactive course workbook containing all of the course topics and reference materials which they use throughout the course, as well as a copy of a cross reference guide “CSHO Code Finder”. The CSHO Code Finder contains OSHA’s Subpart S (including .331-.335 electrical safety related work practices and Subpart K and contains cross references between OSHA’s Subpart S
NFPA 70E, OSHA and You: Insight for Implementation (2 day)
This course is for qualified employees or employees preparing to become qualified, and examines the OSHA and NFPA electrical safety work practice standards required for the safety of all employees while working on or near electrical equipment. The course is pragmatically based upon the hazards of electricity and explores the relationship of the standards requirements to specific electrical hazards. Engineering controls, including Lockout/Tagout as well as PPE for both electrocution as well as burn and arc flash/arc blast protections are applied relating directly to the safety control hierarchy.

Student workbooks are provided along with copies of the OSHA Electrical Safety Related Work Practice standard and the latest edition of NFPA 70E which are extensive used during the course. The course also addresses the role of OSHA as related to NFPA 70E, what OSHA can and cannot cite from 70E and how OSHA can use and has applied 70E with respect to enforcement. Each student receives and interactive workbook which they use throughout the course, as well as a current 2012 edition of NFPA 70E which is also used throughout the course.

The interactive workbook contains a copy of OSHA’s Electrical Safety Related Work Practices Standard 1910.331-.335 which is also referenced throughout the course. The OSHA Electrical Safety Related Work Practices Standard which each student receives also has a unique and specially designed cross reference for each OSHA paragraph to the equivalent NFPA 70E code reference.

Electrical Safety & Hazard Recognition for Non Electrical Workers (typically ½ day)
OSHA as well as NFPA 70E requires that non electrical workers also receive electrical safety training. The Training begins with a review of the fundamental electrical hazards and includes some typical exposures to all employees who do not even have any responsibilities for performing any electrical work. The methodological approach used relates common electrical conditions (both at home as well as the workplace) to the fundamental hazards and the potential resulting injuries. This underscores the import of safety rules emphasizing the safety and well-being of the employee as opposed to presenting “just another set of work rules”. Some of the topics to be covered include equipment grounding and its importance, where can arc blast/arc flash exposures occur, GFCI’s, ampacity and electrical overloads. Typical examples of exposure to hazardous conditions will be both discussed as well as demonstrated and since electricity behaves the same both at home as well as the workplace specific guidance for identifying and avoiding these hazards will be covered.

OSHA’s 1910.269 Power Generation Transmission and Distribution Standard (contact for details) It’s not just a utility standard but can also apply to industrial facilities.

Machinery and Machine Safeguarding (contact for details)
Various other courses are also available, contact for details.
The History of Electricity and Fascinating Electro-Medical Gadgets!
(Featuring a travelling museum of early antique electrical devices.)

Exciting – Intriguing – Informative – Interactive – Entertaining

Electricity is in every workplace and in every home today. Travel back through time and experience how it evolved from Edison’s invention of the light bulb to the electrification of Niagara Falls by George Westinghouse and Nikola Tesla and its expansion into factories and homes in America.

- Where did the electrical safety codes begin? What did they contain for safety?
- See and experience actual working electrical equipment demonstrations including the first working carbon filament light bulbs.
- See an actual demonstration of Nikola Tesla’s greatest invention the “Tesla Coil” generating nearly a half a million volts and demonstrates the transmission of electricity without the use of wires to power electric light. See Grizzy electrify himself to a half million volts!
- See actual photographs from the first world’s fair (Columbian Exposition of 1893 in Chicago) where electricity was first used. See real artifacts from the event.
- Listen to a discussion of the famous “War of the Currents” battle between Edison and Tesla where live animals were electrocuted during public displays in New York City to discredit the use of alternating current over direct current. See an actual rare film clip of such an event.
- The first electric chair used for capital punishment, its first use – all orchestrated by Edison.
- Experience interactive demonstrations of actual operating “antique electro-medical devices” such as the “Faradic Generator”, “Violet Ray” and others just as they were used in the late 19th century to enhance a person’s health and well being and advertised to cure everything and anything. Electricity was new and mysterious so it must have powers to restore health.

The presentation includes dynamic and vivid demonstrations with audience participation! Don’t miss this unique and rare opportunity to see, hear and experience the evolution of electricity. An interactive display of the antique devices from Grizzys personal collection, will be available for audience examination immediately following the presentation. Many of the devices have been restored to working condition by Grizzy. Nothing intrigues people more than history with rare and stunning historical anecdotes, unless it’s a travelling museum of interactive electrical apparatus dating back to the 19th century. This seminar has both.