



ASSP Philadelphia Technical Meeting

September 15, 2022

**Virtual audience: ~11:30 – Noon is lunch
for in-person attendees**

Today's Educational Session

Topic: Being Lucky is Not a Rescue Plan

Presenter: Ed Davies, Rescue Services
Training Manager, Med-Tex Services



Who We Are:

- **Med-Tex Services, Inc.** has been providing Rescue Services for over 35 years. Located in Philadelphia
 - **Rescue Services**
 - Rescue Stand-by (4400 per year)
 - Technical Rescue Training (Rescue U)
 - **Safety Training**
 - OSHA classes
 - CPR / First Aid / Stop the Bleed
 - **Safety Consulting**
 - Job Site Audits
 - On site safety professionals
 - Fall Protection Engineered systems
 - **Health Services**
 - Fit Testing
 - Drug / Alcohol Testing
 - COVID Testing
 - **Equipment Sales and Service**
 - MSA, Falltech, 3M-DBI Sala
 - Petzl, CMC, RNR, Skylotec, Yates, PMI, Sterling



Definition of Rescue:

A Technical Response to a Medical Emergency



Whats your Rescue Plan?



**IN CASE OF
EMERGENCY
Call 911**

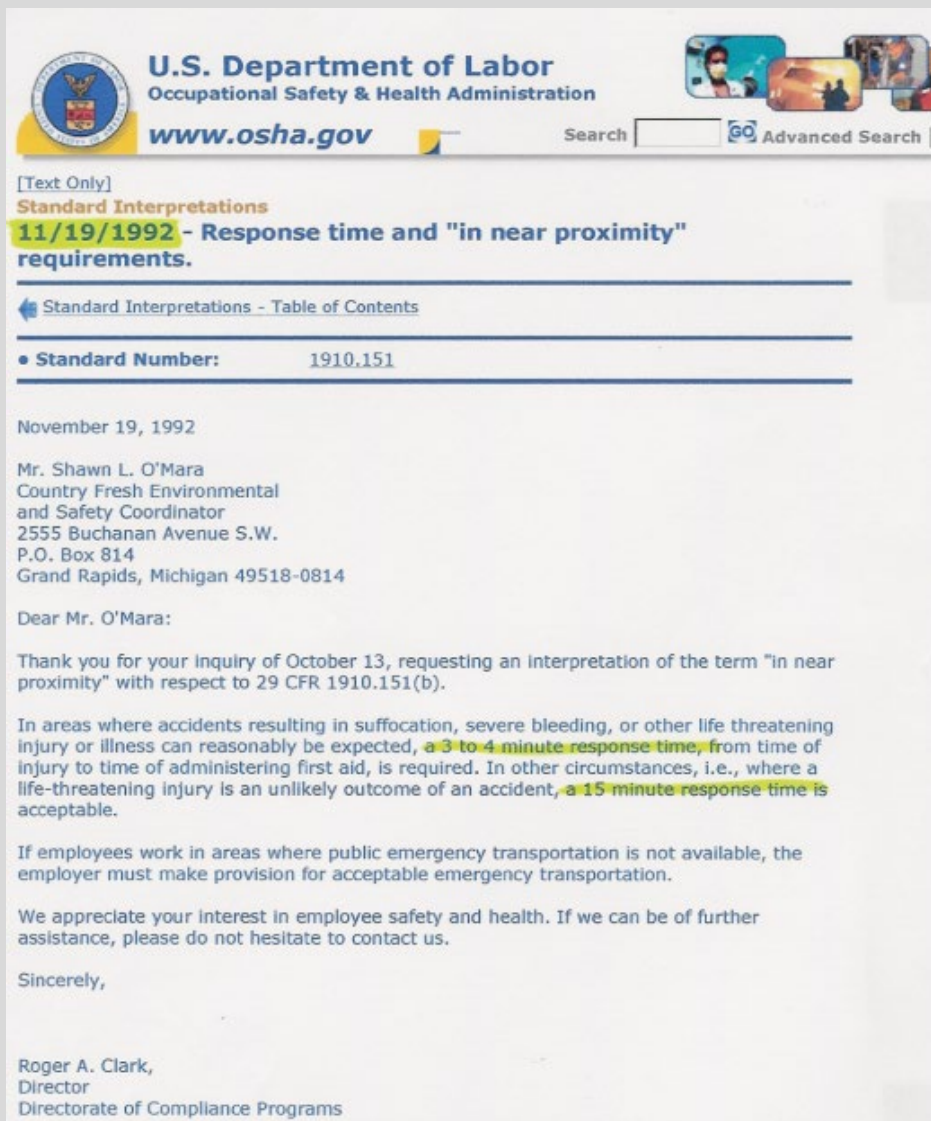


- Delay in calling 911
- Cell phone calls
 - Enhanced 911 Phase I and Phase II
- Answered by a PSAP
 - Public Safety Answering Point
 - Ring-Down center

**PEOPLE DON'T CALL 911 BECAUSE
THEY DID SOMETHING SMART**



Rescue Time Frames...



U.S. Department of Labor
Occupational Safety & Health Administration
www.osha.gov

Search Advanced Search

[Text Only]
Standard Interpretations
11/19/1992 - Response time and "in near proximity" requirements.

[Standard Interpretations - Table of Contents](#)

• **Standard Number:** 1910.151

November 19, 1992

Mr. Shawn L. O'Mara
Country Fresh Environmental
and Safety Coordinator
2555 Buchanan Avenue S.W.
P.O. Box 814
Grand Rapids, Michigan 49518-0814

Dear Mr. O'Mara:

Thank you for your inquiry of October 13, requesting an interpretation of the term "in near proximity" with respect to 29 CFR 1910.151(b).

In areas where accidents resulting in suffocation, severe bleeding, or other life threatening injury or illness can reasonably be expected, a 3 to 4 minute response time, from time of injury to time of administering first aid, is required. In other circumstances, i.e., where a life-threatening injury is an unlikely outcome of an accident, a 15 minute response time is acceptable.

If employees work in areas where public emergency transportation is not available, the employer must make provision for acceptable emergency transportation.

We appreciate your interest in employee safety and health. If we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Roger A. Clark,
Director
Directorate of Compliance Programs

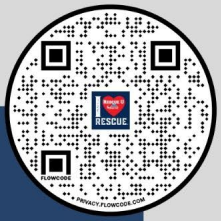
- Letters of Interpretation
- Mr. Shawn O'Mara
November 19, 1992
- Ms. Rachel Greenhouse
February 9, 1994
- Mr. Charles F. Brogan,
January 16, 2007,
- Mr. Brian Bisland,
March 23, 2007.

“Reasonable (Near) Proximity”

- First Aid for serious, life-threatening injuries such as accidents involving falls, suffocation, electrocution, or amputation must be available within three to four minutes
- OSHA recognizes that a somewhat longer response time of up to fifteen minutes may be reasonable in workplaces, such as offices, where the possibility of such serious work-related injuries is more remote

Life-Threatening = 3-4 minutes (Focus Four)

Non-Life-Threatening = 15 minutes



911 the Dirty Truth

- You Dial 911 – Info?
- Call Taker
 - 60-90 seconds to transfer information
- Dispatcher has 90 seconds to dispatch the units
 - Add time if not a county dispatch – ring down
- Help starts to respond
 - Crews on the road respond immediately
 - Crews in station have a 90 - 120 second out the door time
 - Volunteers much longer – coming from home



911 the Dirty Truth

- Drive to the scene
 - Average 5 – 6 minutes in city
 - Traffic and distance
- Arrive, Set up command
 - Investigate, Develop rescue plan 3-5 minutes
- Extricate and treat the pt.
 - Rescue in Upper Marion 3/31/22 - 41 minutes after being on scene
- Transport to trauma center
 - Ground transport or Aeromedical

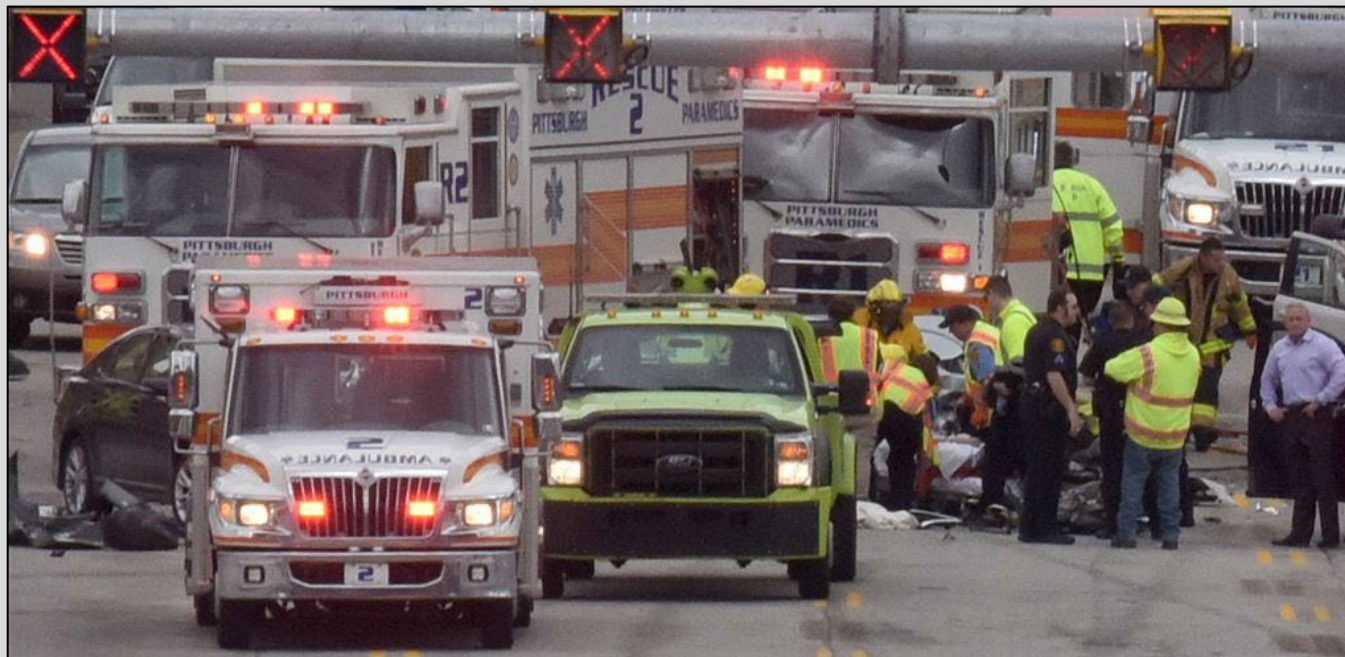


Using 911 as Your Rescue Plan

Letter of Interpretation

May 23, 2008

Mr. Jonathan L. Pennington
McCulley Eastham & Associates, Inc.
P.O. Box 320
Greenup, KY 41144



Compliance may require the employer to be in close communication with the off-site rescue service immediately prior to each permit space entry. In the scenario you describe, the employer must ensure close communication with the rescue service during entry operations so that if the rescue service becomes unavailable while an entry is underway, the employer can instruct the attendant to abort the entry immediately. Entry operations cannot resume until the entry supervisor verifies that rescue services are able to respond in a timely manner.

Richard E. Fairfax, Director
OSHA Directorate of Enforcement Programs



RESCUE SERVICES

SAFETY PROFESSIONALS



**NIMS
SOP/SOG**



**HSA/JSA
Rescue Plan**



Not all Emergency Services are Created Equal



- Fire / Rescue / EMS / Police
 - Career vs. Volunteer
 - Old School vs. Progressive Departments
- Accreditation – Center for Public Safety Excellence
- Certification – Technical Rescue
 - ITRA – International Technical Rescue Association
 - 3-year certification
 - Pro-Board or IFSAC
 - Certifications
 - Permanent



Not all Emergency Services are Created Equal

- ISO rating – Insurance Services Office
 - Class 1-10
- Fire Academy Courses
 - 4, 8, 16, 24, 48-hour classes, not certification
- Paramilitary –
 - Chief, Asst. Chief, Deputy Chief, Division Chief, District Chief or Battalion Chief, Capt., Lt., MFF, Engineer



CHAIN OF COMMAND



Chief



Assistant Chief



Deputy Chief



Battalion Chief



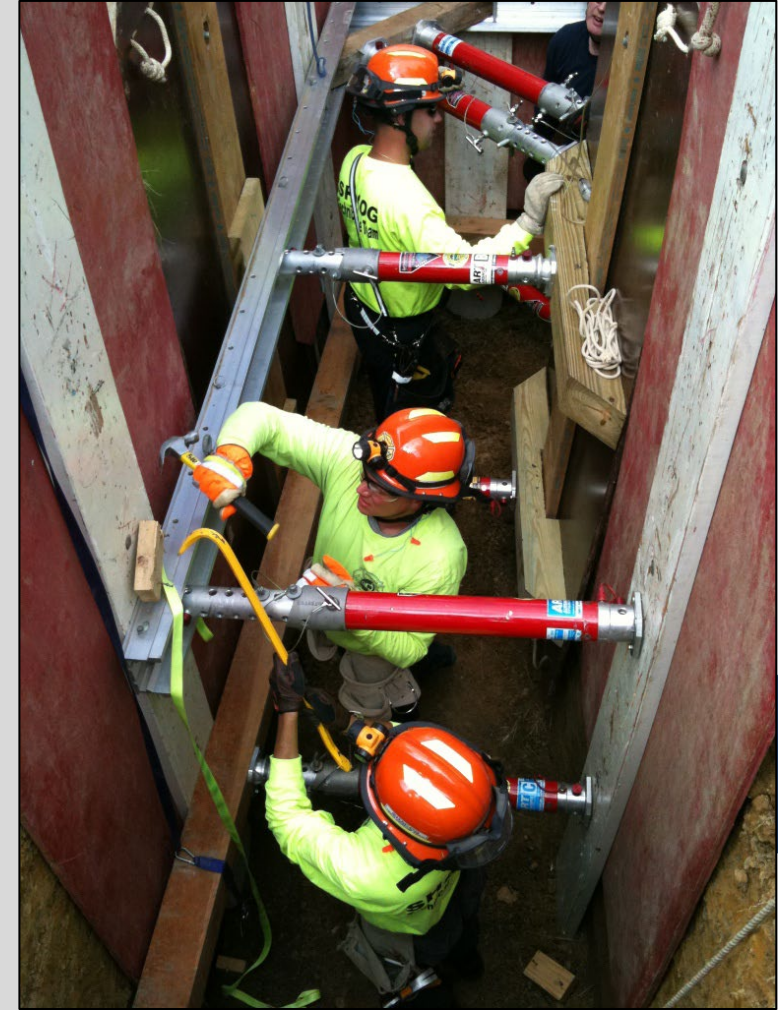
Captain



Lieutenant

Not all Emergency Services are Created Equal

- **Nomenclature**
 - **Firefighter vs. Rescue Tech**
 - Urban vs. Wilderness (Urban Interface)
 - Search and Rescue, USAR, TRT
 - **FA-CPR, EMR, EMT, AEMT, EMT-Paramedic**
 - Paramedic vs. Rescue Medic
 - Paramedic vs. Nurse
 - **Police Patrol officer vs. Tactical officer**

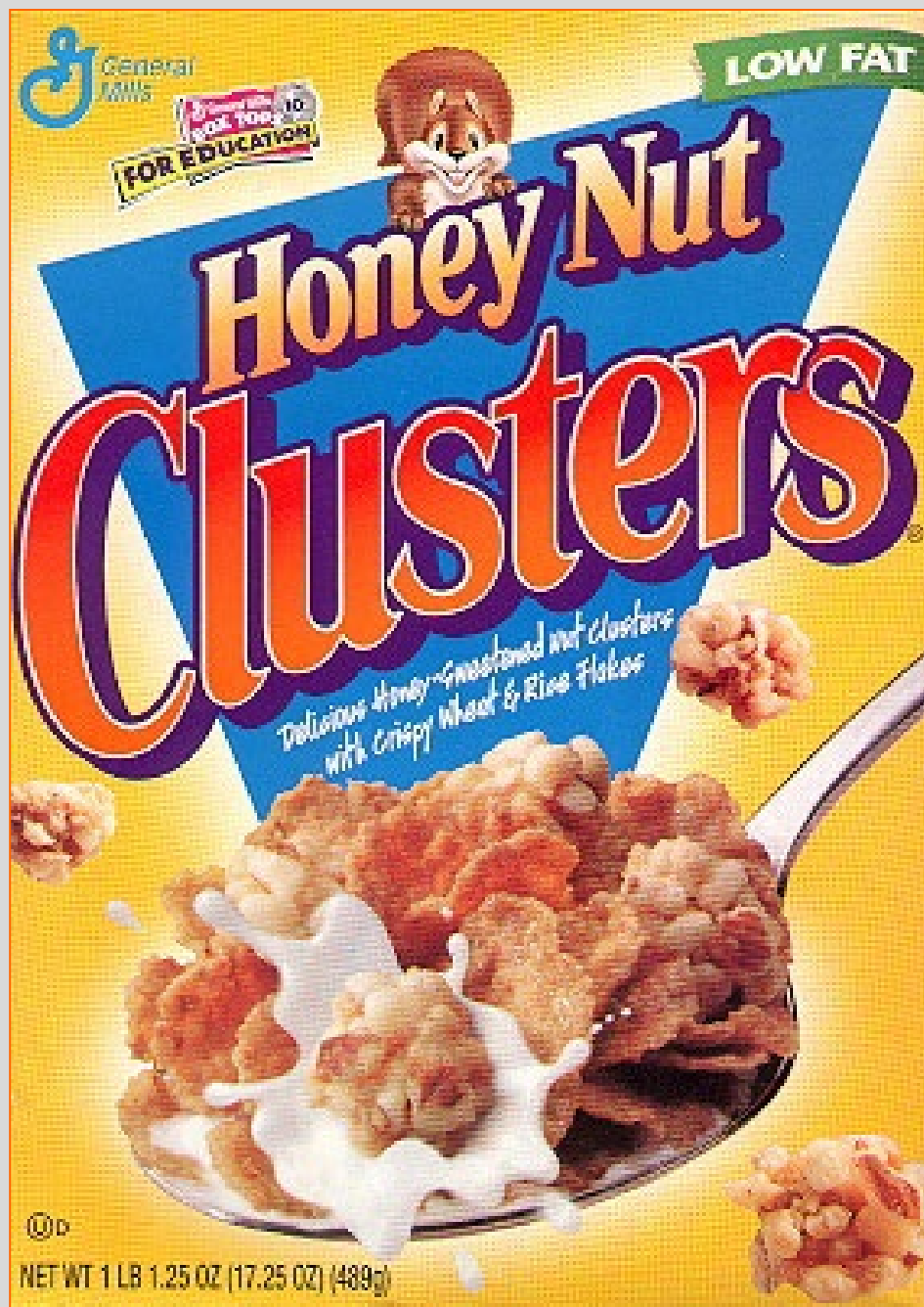


Research Studies

EB³ - Evidence, Environment, Experience Based Rescue

**SCIENCE
BECAUSE
FIGURING THINGS OUT
IS BETTER
THAN MAKING STUFF UP**





**HAVE
YOU
EVER
BEEN TO
ONE OF
THESE?**



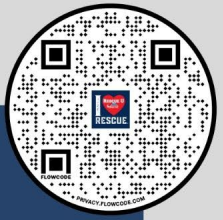


Rescue Mode vs. Recovery Mode

- Risk Benefit Assessment
- Patient Assessment



Plan A, B, C,.....F



Teamwork



Elevated Stress Levels



SLOW DOWN TO SPEED UP





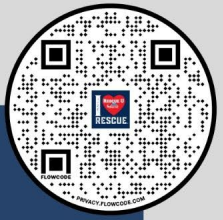
1. Preparation

- Know the hazards in your response area.
- Training



2. Dispatch and Response

- Information from Dispatch
- Driving to scene
- Staging of units on scene
- Command instructions



3. Scene Size-up

- Do NOT rush into the incident.



4. Gaining access to the patient.

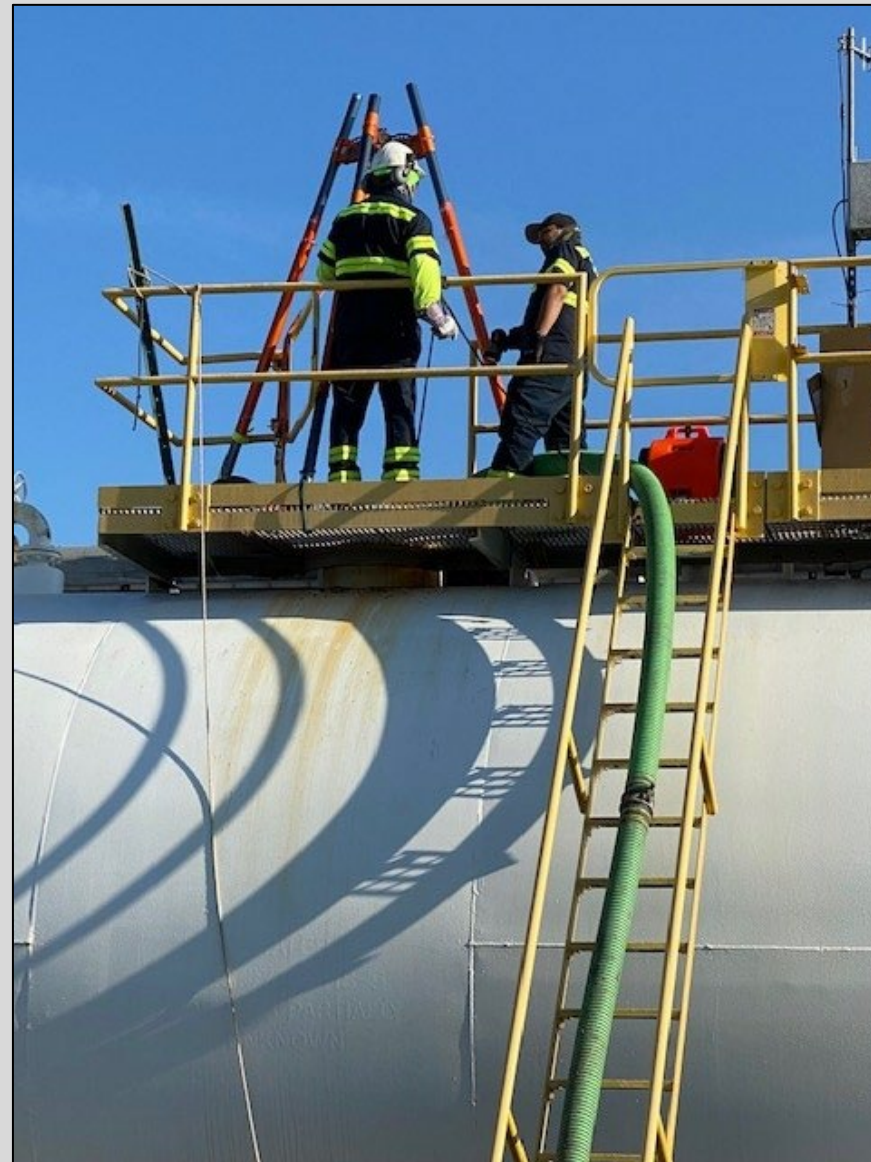


5. Patient Assessment and Care

- Prolong Patient Care



6. Patient Disentanglement.

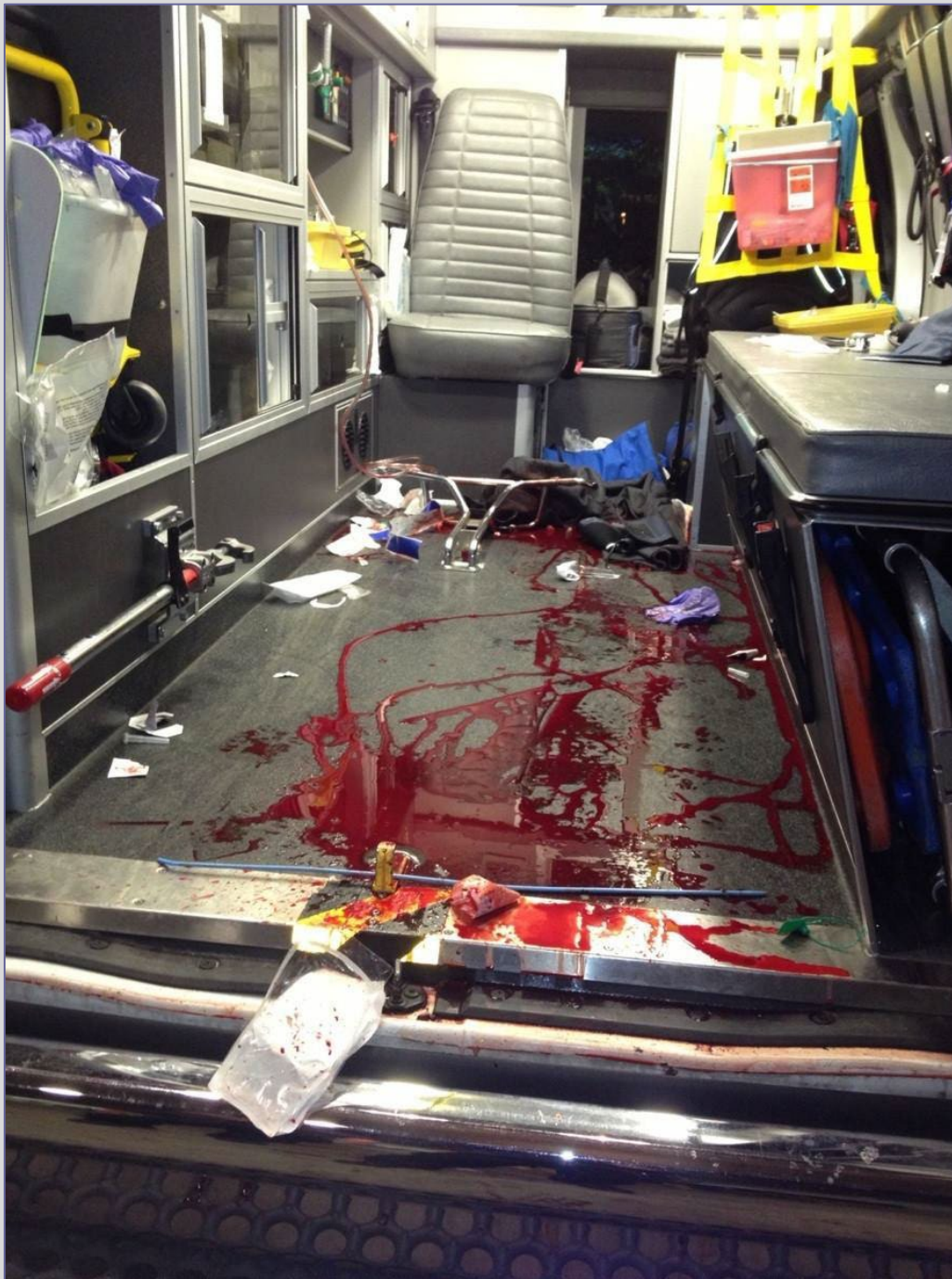


7. Treatment and Packaging of the Patient.



8. Transport of the Patient.





9. Post Rescue



What is your Rescue Plan?

Lamar Outdoor Advertising employee, Bob Churchill, dangles from a billboard after being blown off by the wind while trying to install a tarp on a billboard in Erie PA.

Churchill, dangled from the billboard for almost 20 minutes until rescuers could get him down.

(AP Photo by Janet B. Campbell / Erie Times-News)





Dorsal (Rear) attachment point

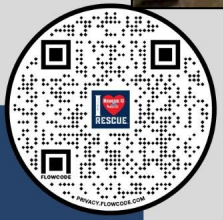
- The head drops forwards and so the airway is at risk.
- Many people can't even reach their attachment points after a fall

Ventral or Sternal (Front) attachment points

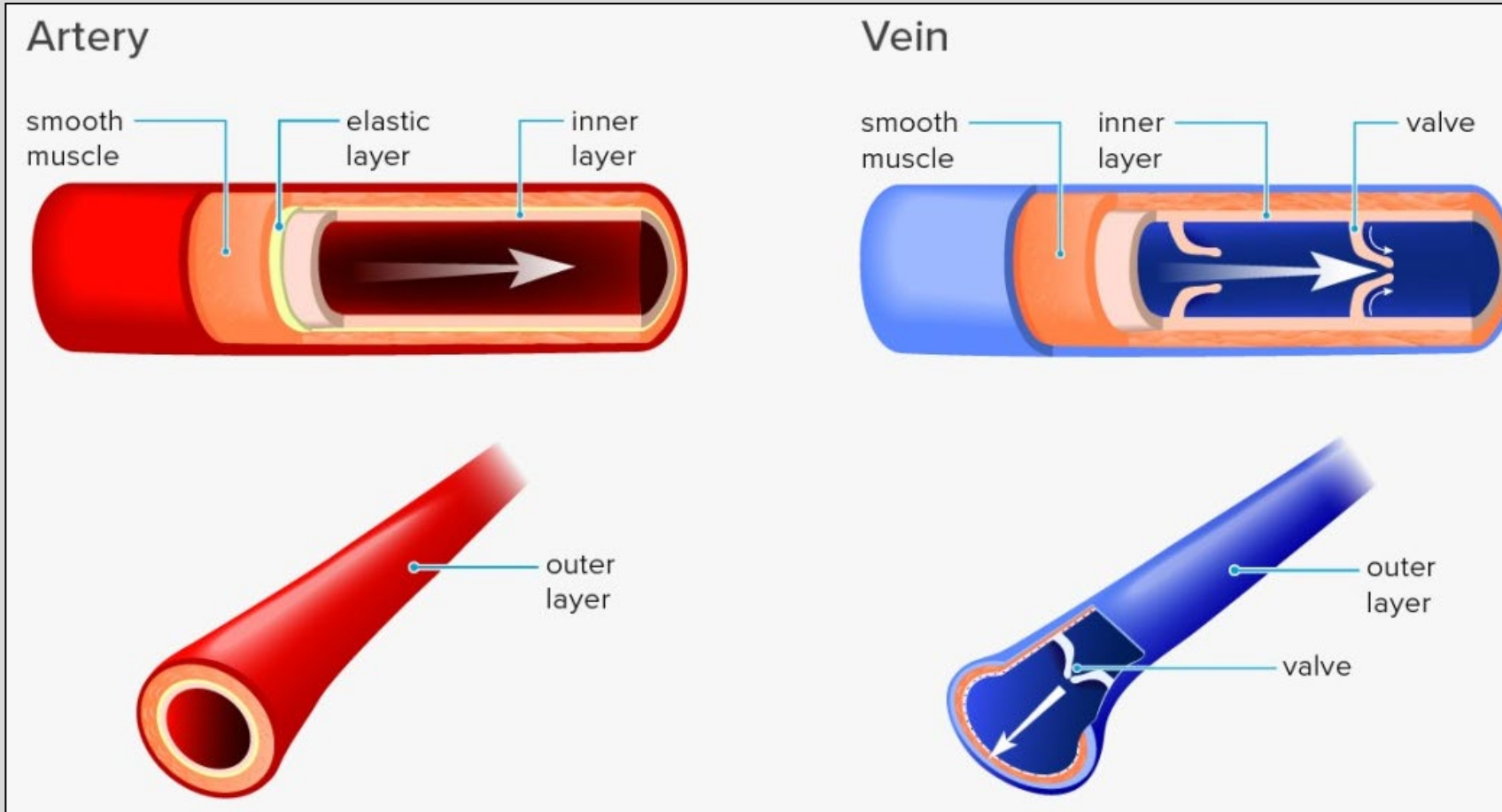
- Rope Access, Rescue, sport climbing or caving harnesses, or fall arrest with a front attachment point, access and knee-lifting is easier



- 1910.140c(22) Dorsal – If fall is less than 2 feet may be worn sternal



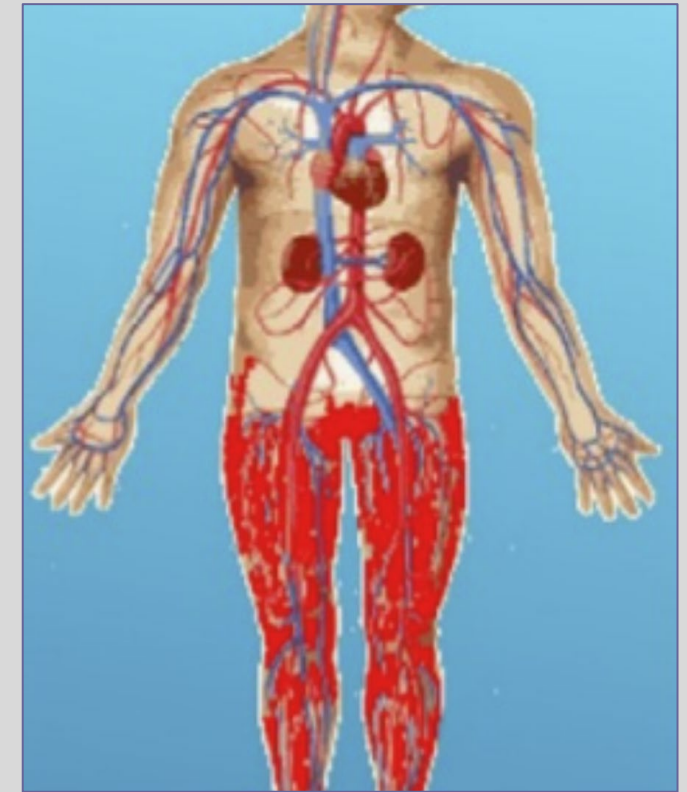
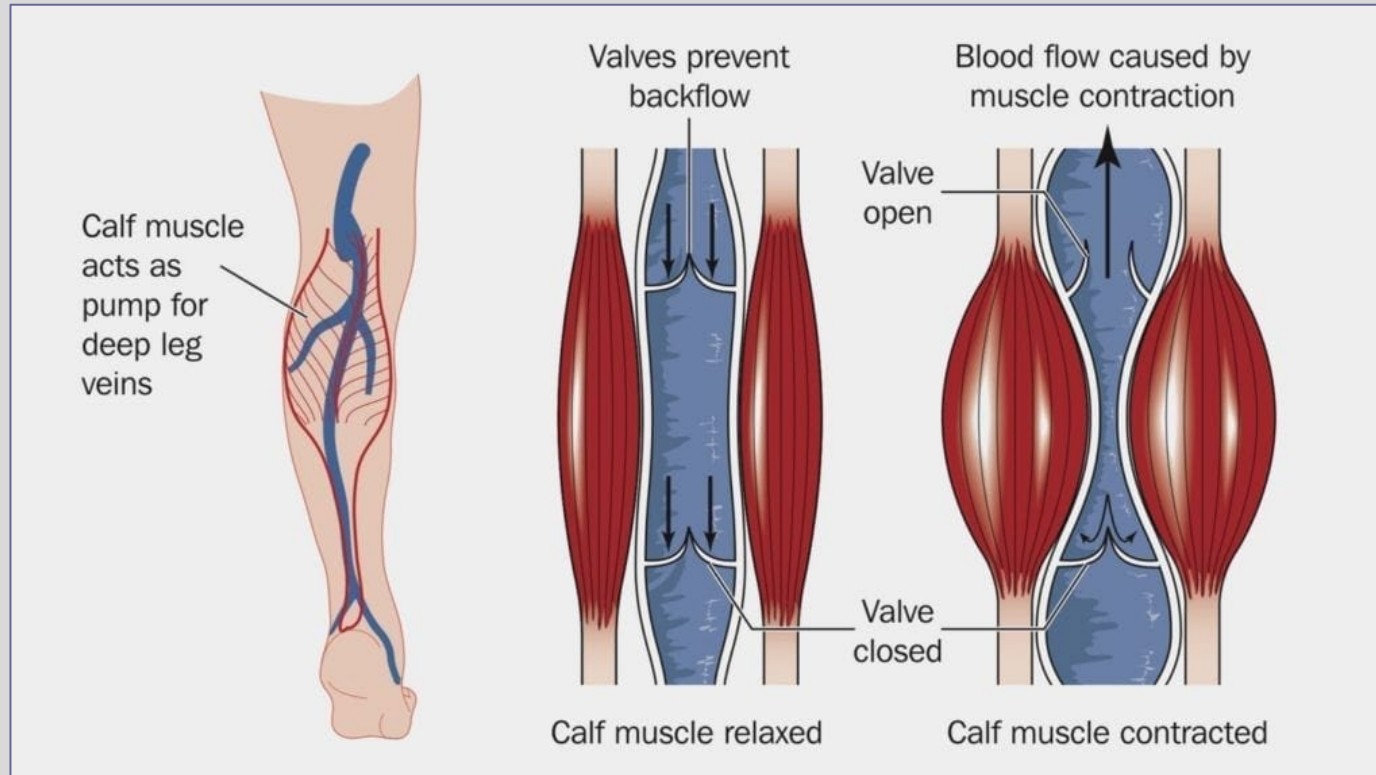
Artery vs. Vein



- Arteries run deep and next to bone, they are under pressure
- Veins run on the surface and use a one-way valve system, not under pressure.

Lower Extremities

- The Average Human has 10 Pints of Blood with 2 Pints normally in the lower extremities while standing
- The lower extremities can hold up to 60% of the total blood volume



**Arterial pressure
can only pump
blood 8" up the
legs**





Feeling Faint?

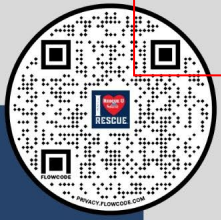
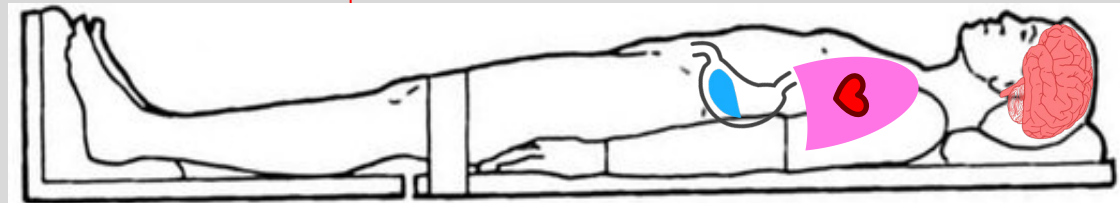
John Smith on parade

- Blood pools in the legs
- Brain detects low O₂
- Cardiac output increases
- Brain O₂ still falls
- Emergency response:
 - Pulse drops
 - Loss of consciousness
 - John falls over
 - Blood flows back to brain
- John wakes up.



John Smith in suspension

- Blood pools in the legs
- Brain detects low O₂
- Cardiac output increases
- Brain O₂ still falls
- Emergency response:
 - Pulse drops
 - Loss of consciousness
 - John **CANNOT** fall over
 - Brain cells start to die
- John never wakes up.



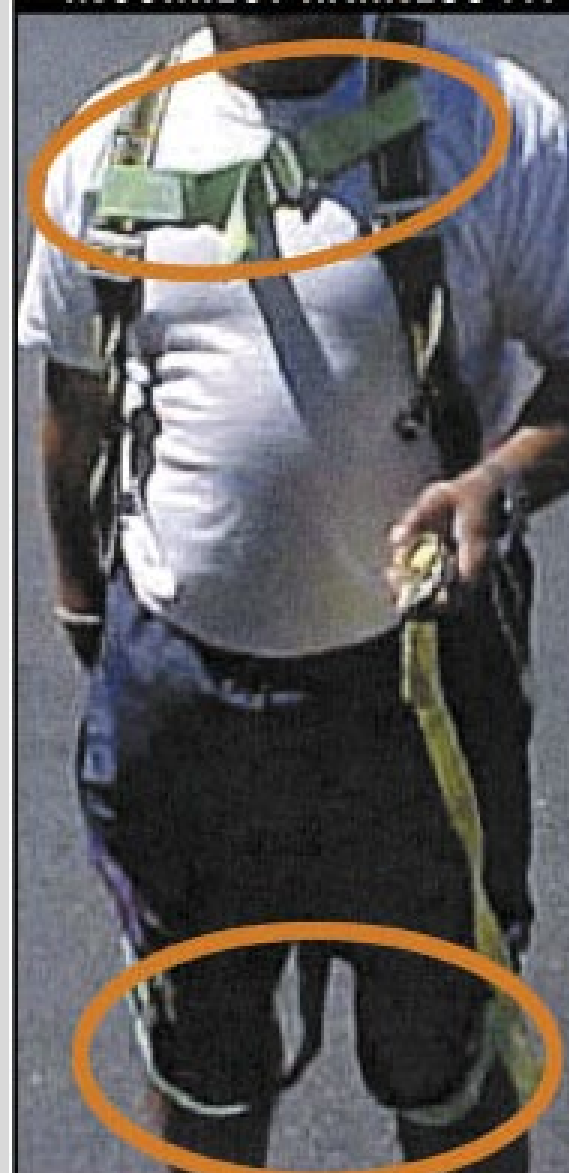
So What Happens?

- General feelings of unease
 - Dizzy, sweaty and other signs of shock
 - Increased pulse and breathing rates
- Then a sudden drop in pulse & BP
- Instant loss of consciousness
- If not rescued, death is certain
 - From suffocation due to a closed airway, and / or from lack of blood flow/oxygen to the brain.



Improper Fitting Harness

- **Compromised respiratory Ability**
- **Increased Venous Compression**
- **Testicular Trauma**
- **Neck/throat trauma**



The Punch Line - US National Library of Medicine National Institutes of Health - Evidence Based Medicine

Suspension trauma

- Emergency Medical Journal
- 2007 Apr;24(4):237-8.
- Caroline Lee, Keith M Porter

Does the horizontal position increase risk of rescue death following suspension trauma?

- Emergency Medical Journal
- 2009 Dec;26(12):896-8.
- Thomassen, Skaiaa, Brattebo, Heltne, Dahlberg, Sund e

Suspension syndrome: a potentially fatal vagally mediated circulatory collapse—an experimental randomized crossover trial

- European Journal of Applied Sciences
- 2019; 119(6): 1353–1365.
- Simon Rauch, corresponding author K. Schenk, G. Strapazzon, T. Dal Cappello, Gatterer, M. Palma, M. Erckert, 5 L. Oberhuber, B. Bliemsrieder, 7 H. Brugger, and P. Paal

Clinical Update: Suspension Trauma

- Wilderness Environ Med
- 2011 Jun; 22: 167-71.
- Mathieu Pasquier, Bertrand Yersin, Laurent Vallotton, Pierre-Nicolas Carron

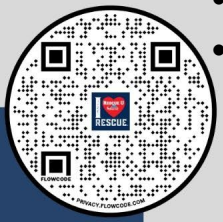
Harness suspension and first aid management: development of an evidence-based guideline

- Emergency Medical Journal
- 2011 April ;28(4):265-8
- A Adishes, C Lee, K Porter

Suspension Trauma: A Clinical Review

- Journal of American Medical Society
- 2020 Jun; 12: e8514.
- Mackenzie M.D., McGahan M.D., Kaufmann M.D., Saptarshi M.D., Biswas M.D.

21,000 internet hits on other sites

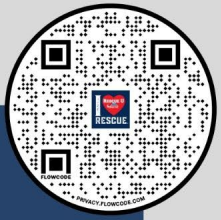


Crush Syndrome



Reflow Syndrome Theory

- Pooled blood in the legs is 'stale' after 10-20 mins
 - Drained of oxygen, saturated with CO_2
 - Loaded with toxic wastes from the fat burning process
- Re-elevating the legs returns this to the rest of the body in a massive flood
 - Heart can be stopped – Potassium
 - Internal organs, especially the kidneys, can be damaged

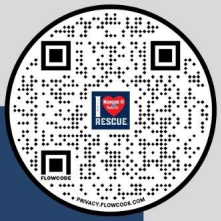




First Aid / CPR / AED Training

Courses are not all the same.

- Red Cross / AHA / National Safety Council
- Stop the Bleed
- Current CPR standard



Types of Rescues

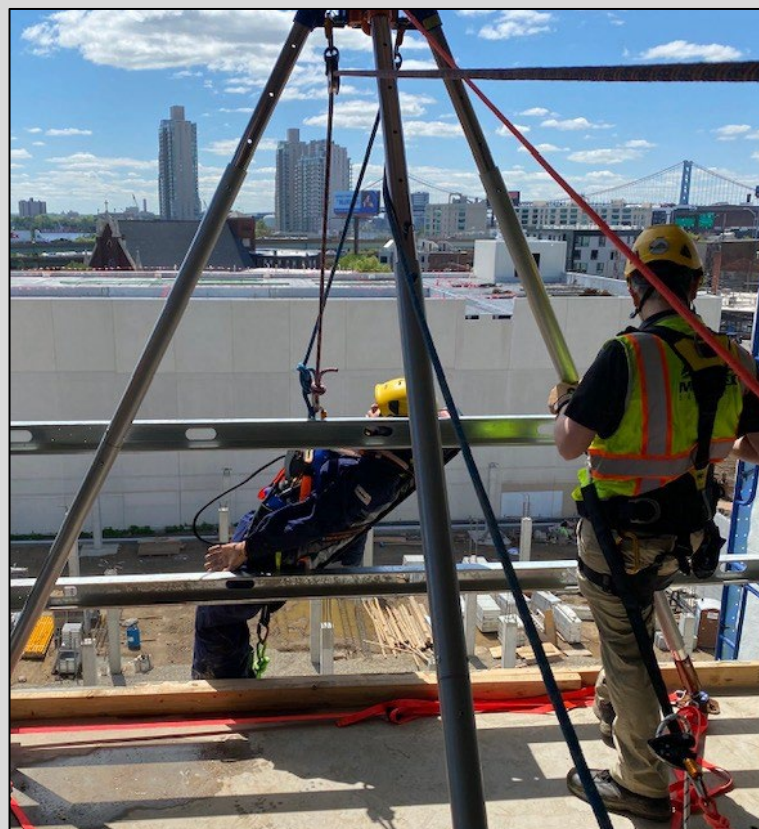


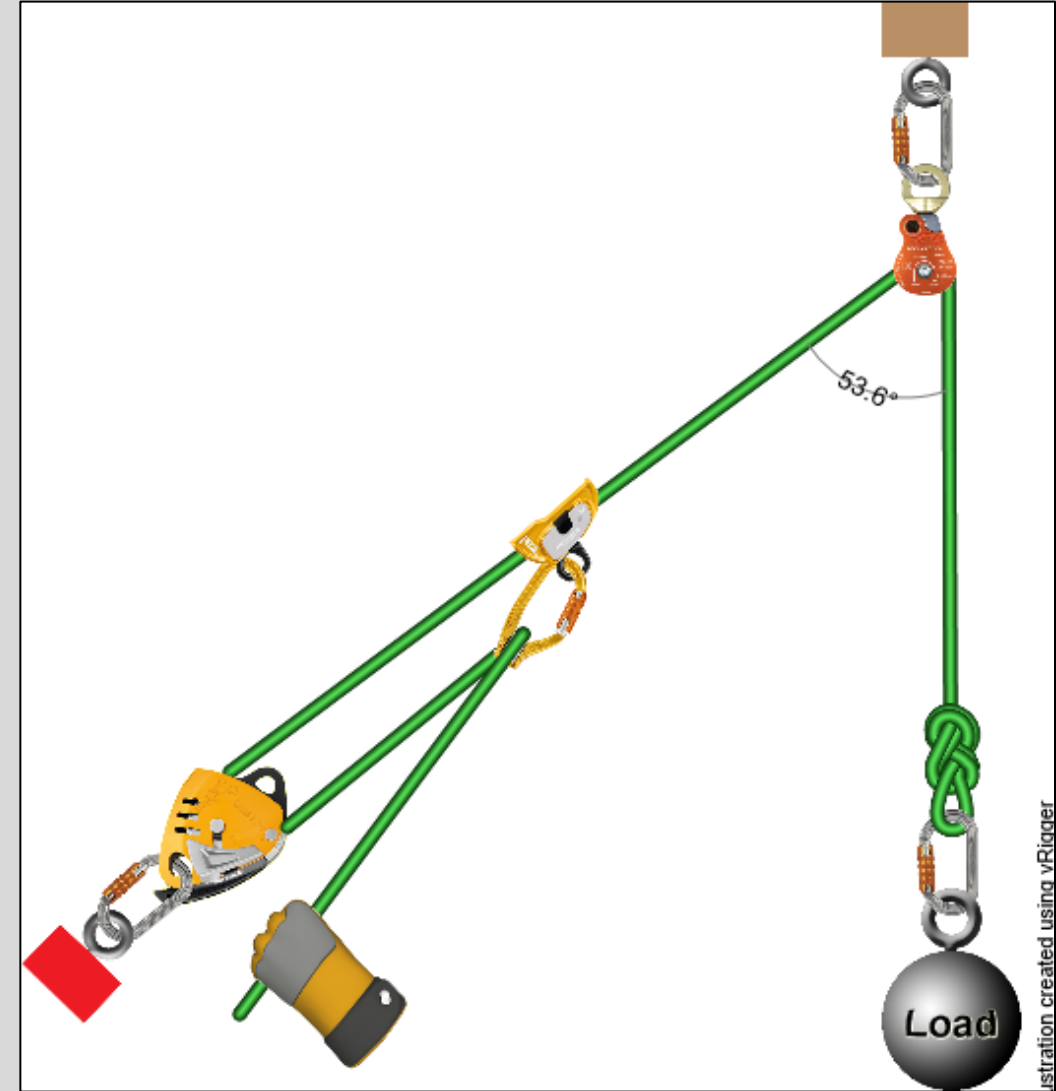
Types of Rope Rescue

**Tower, Crane, Scaffolding
Window washer, Arborist
Tree stand**



Artificial High Directional





Patient Movement System



Confined Space Rescue

- A confined space is defined by OSHA as any space that

- has limited or restricted means of entry/exit

- is large enough for an employee to enter and perform assigned work

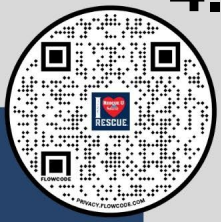
- is not designed for continuous human occupancy



Permit-Required Confined Space

A confined space that has one or more of the following characteristics:

1. Contains or has the potential to contain a hazardous atmosphere
2. Contains a material that has the potential for engulfing the entrant
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward or tapers to a smaller cross section; or
4. Contains any other recognized serious safety or health hazard



Types of Incidents

- Overcome by bad atmosphere
- Injured worker(s) - fall, struck by object, entrapped in machinery
- Medical emergency
- Haz Mat emergency
- Explosion/fire
- **60% of all fatalities** are people attempting to rescue a victim



Water / Ice Rescue



- Water rescues may involve many kinds of water bodies—pools, rivers, streams, lakes, or even flooded roads



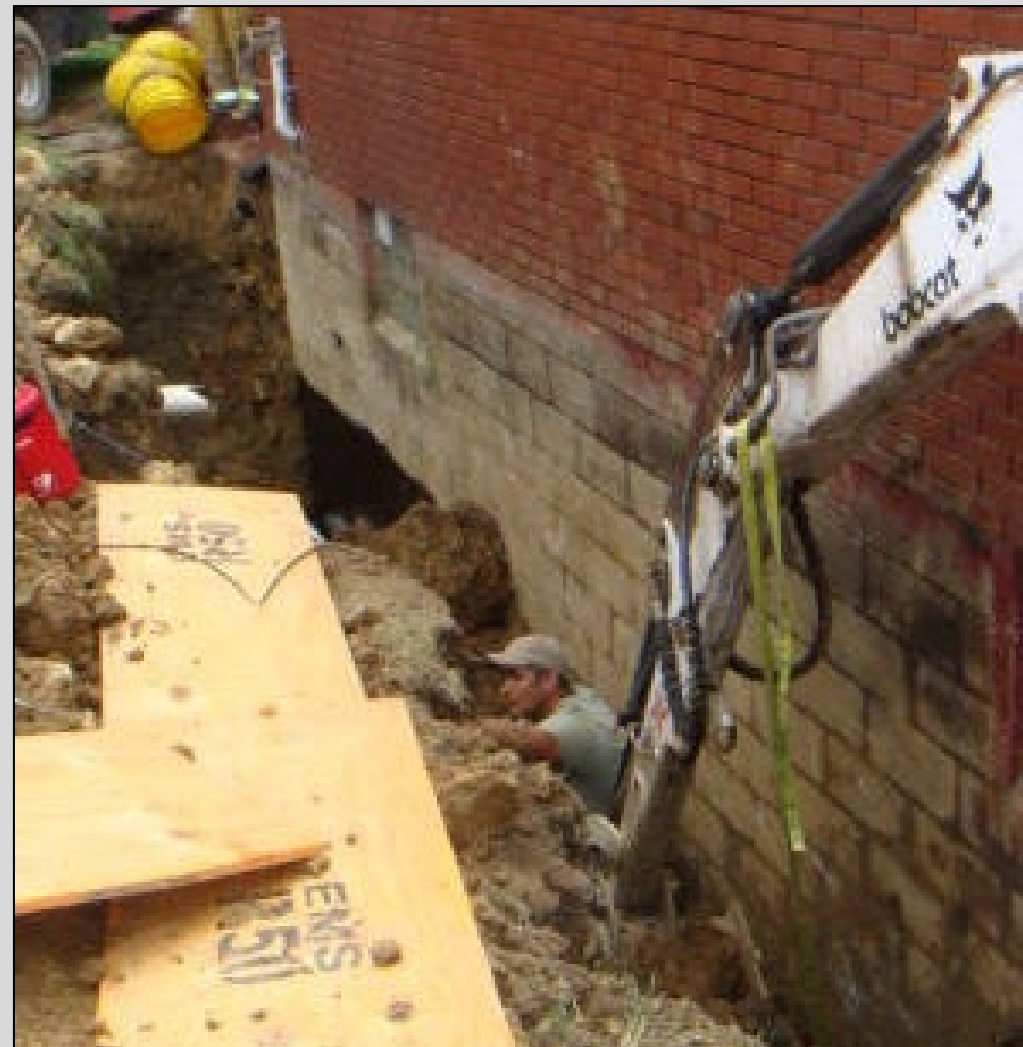
Wading in Water

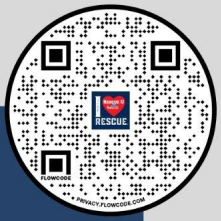
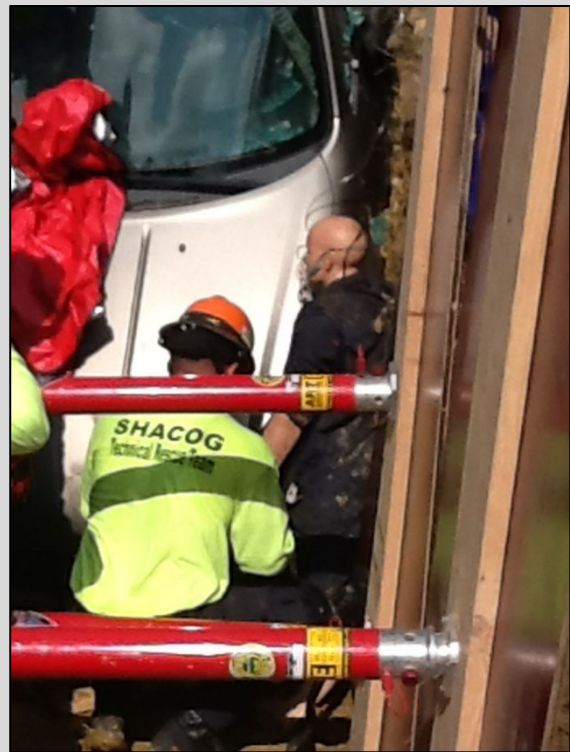
- Never wade in water unless you have...
 - The proper training
 - The proper PPE
 - Considered Haz Mat / Utilities
- Always beware of potential foot entrapments



Trench Rescue

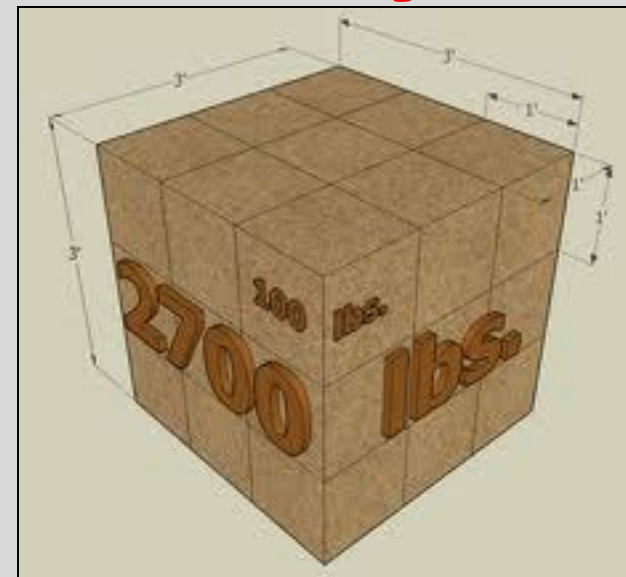
- **Trapped by dirt in a wall collapse**
- **Struck by equipment or objects that fall into trench**
- **Medical emergencies**
- **Overcome by bad atmosphere**
- **Injured by unsecured utilities**





Rescue vs. Recovery

- One cubic foot = 100#
- One cubic yard = 2700#
- A typical trench collapse has three to five cubic yards of soil
- In a side-wall shear collapse the resulting force is equal to or greater than being struck by a vehicle at 45 MPH



Aluminum Shoring



Natural Disasters



**Tornadoes,
Earthquakes, Floods,
etc.**



Structural Collapse

- **Structural collapse: Sudden and unplanned fall of part or all of a building.**
 - **Consider building construction.**
 - **Dynamics of building change.**
 - **In a partial collapse be aware of secondary collapse.**

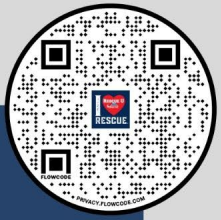




Rescue of Surface Patients



- Injured laying on top or partially buried Pt's first
- 50% of survivors
- Look for your escape routes
- Listen for emergency communications







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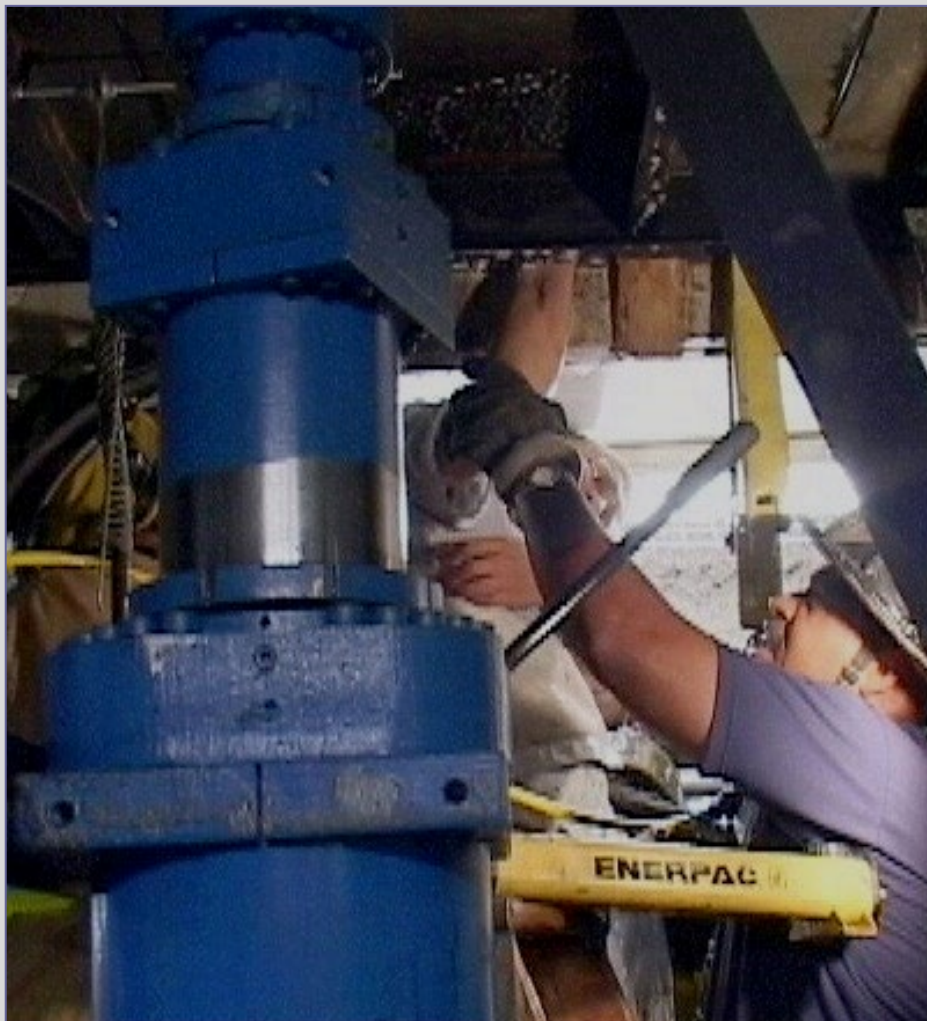


Industrial Entrapment

- **Manipulation**
 - Chemically assisted
- **Disassembly**
 - Most common approach
 - May require special tools
- **Force the machine**
 - Least desirable
 - Ensure you have appropriate tools for the job



Elevator Entrapment







Emergency Incident Rehab

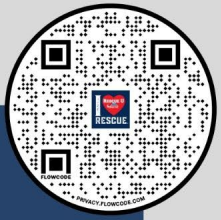
- Rehydrate
 - Cold vs. room temp.
- Nourishment
 - Carbs / salt
- Body temperature
 - Arm immersion
 - Shade / Tents
 - Misting Fan?





–Initial
–Secondary

Critique / After Action Report / Hot Wash



Smoke Detectors

- Hardwired vs. Battery
 - Lithium 10 year battery
 - Not 10 year warranty
- 10 Year life and need to be replaced
- One on each floor AND one in each bedroom
- Teach children the sound
- Photoelectric vs. Ionization



Carbon Monoxide Detector



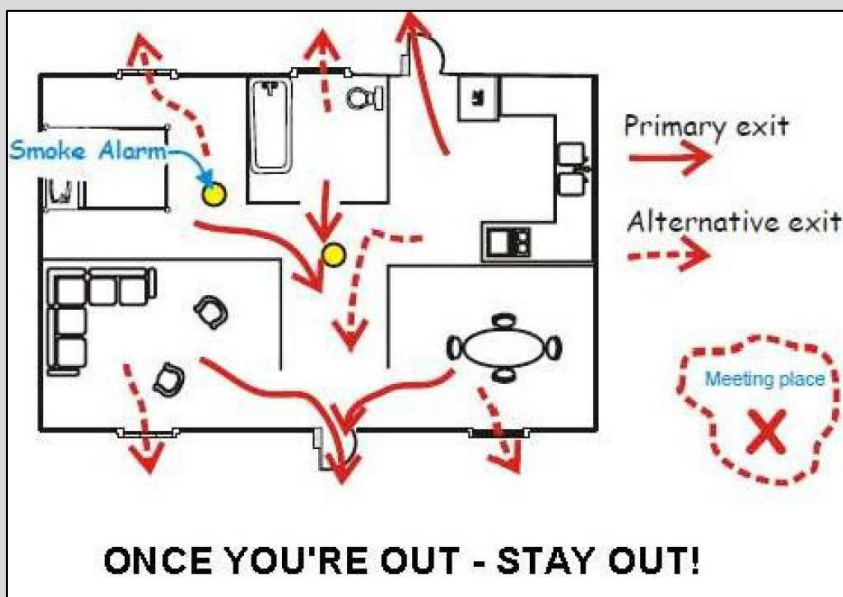
- An alarm will sound after three and a half hours of continuous exposure at a level of 50 PPM, but after only eight minutes of continuous exposure at a level of 400 PPM.
- One on each floor is best
 - If just one, in the sleeping area
- CO Detectors only last for 7 years



Fire Extinguisher and EDITH



- Fire Extinguishers
- Escape Ladders
- EDITH Drills
- Practice



Rescue is the Art of Diversity



- Never say Never
- Never say Always.
- We work in shades of gray



- Ed Davies
- edavies@med-texservices.com
- Cell - 412-953-3504

