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# ★ 2021 MIDWEST ★ **DAMAGE PREVENTION** ★ TRAINING CONFERENCE



## ***RECIPE FOR DISASTER!*** ***THE TOP FIVE THEMES OF WORKPLACE*** ***INCIDENTS***

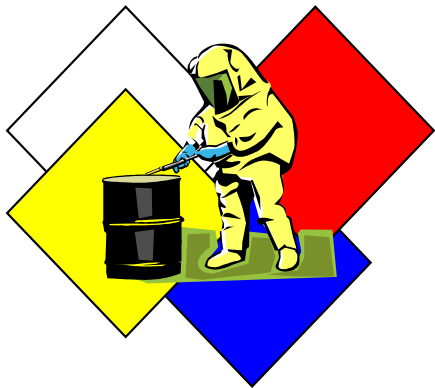
November 2021  
French Lick, Indiana



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**HAZARDOUS MATERIALS SPECIALIST**



**OFFICE OF THE STATE FIRE MARSHAL**  
INDIANA DEPARTMENT OF HOMELAND SECURITY





# Introduction to Disasters

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- Brooklyn Theater, NY (1876-285 killed)
- Iroquois Theatre, Chicago (1903-602 killed)
- Rhoades Opera House, PA (1908-170 killed)
- The Rhythm Club, Miss (1940-190 killed)
- Cocoanut Grove, Boston (1942-492 killed)
- Circus Tent Fire, Hartford, Conn. (1944-168 deaths)
- Beverly Hill Supper Club, Ky. (1977-165 killed)
- Happy Land Social Club, NY (1990-87 killed; only 6 of the occupants survived).
- E2 Night Club, Chicago Feb. 17, 2003; 21 killed (crushed & asphyxiated during a panic induced exit).
- The Station, West Warwick, RI (Feb. 20, 2003-100 killed; 200+ injured when a fire broke out).

[illegible]



# Requirements to be Prepared

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- OSHA requires that plans, policies, and procedures be developed for emergencies:
  - 1910:38 *Emergency Action Plans*
  - 1910:120 *Hazardous Waste Operations and Emergency Response*
- Cardinal Rule: Never have an employee perform a task that you have not trained them to do...
- Do not expect personnel to act properly when an emergency occurs if you do not prepare them...with a proper mindset, it's easier to be ready when disaster strikes.
- Situational Readiness:
  - The ability to anticipate what things need to be in place to be well-prepared for an emergency response.

# 5 Sure Ways to Get Into Trouble

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1. Failing to process the meaning of critical clues and cues.
2. Underestimating the speed of the incident.
3. Overestimating the abilities of assigned personnel.
4. Feeling the pressure to take action without considering the risk & benefit.
5. Focusing on the wrong things or trying to process too much information.

# Clues & Cues

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- Cues are sensory elements (sights, sounds, smells) that recall previous actions under similar circumstances.
- Positive & negative does not mean “good or bad”...
- Rather positive & negative means “**present or absent**”.
- Clues & Cues right in front of us that, after the fact, seem very obvious but as the incident was unfolding may not seem so.
- **Situational Awareness** is formed based on what you see and hear and what you don't see & hear.

# Underestimating the Speed of the Incident

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- Every incident has speed.
- Physical forces are always in play.
- Speed at which the incident is moving is critically important information.
- Can your resources overwhelm the incident, slow it down and eventually stop the progression of the undesirable events.

# Overestimating the Abilities of Assigned Personnel

- Are your personnel trained to work under “emergency conditions”?
- Can your personnel **overwhelm** the incident to stabilize or control?
- When assigning a “task”...are your personnel capable?
- What happens when you are not notified of task completion?
  - Give the crew more time?
  - Allocate more resources?
  - Withdraw...reelevate the plan?





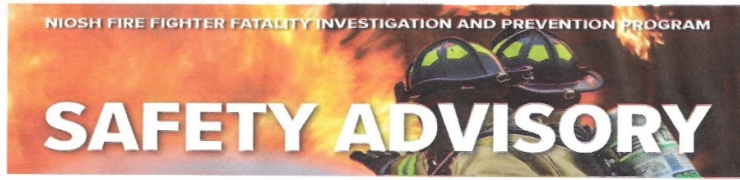
# Feeling the Pressure to Take-Action

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- Peer pressure & public expectations.
- Go or no-go decision is one of the hardest a responder/supervisor ever makes.
- Risk-Based Response
  - Facts
  - Science
  - Circumstances

# F/F Fatalities @ HM Incidents



## Odor Fade in Natural Gas and Propane

### RECOMMENDATIONS

The NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) recommends that fire departments ensure all firefighters responding to natural gas or propane incidents:

- ❑ use gas detection equipment and do not rely upon their sense of smell to determine if propane or natural gas is present
- ❑ understand that the odorant in natural gas or propane can fade
- ❑ are trained on the proper calibration, maintenance, and use of gas detection equipment to determine if a potential explosive atmosphere is present
- ❑ recognize that the lack of odor can result from the natural gas or propane contacting soil, concrete, and a wide variety of building materials such as drywall, wood, and new piping storage tanks



Propane tank involved in the explosion described in the FFFIPP investigation  
Photo courtesy of Maine Fire Marshal

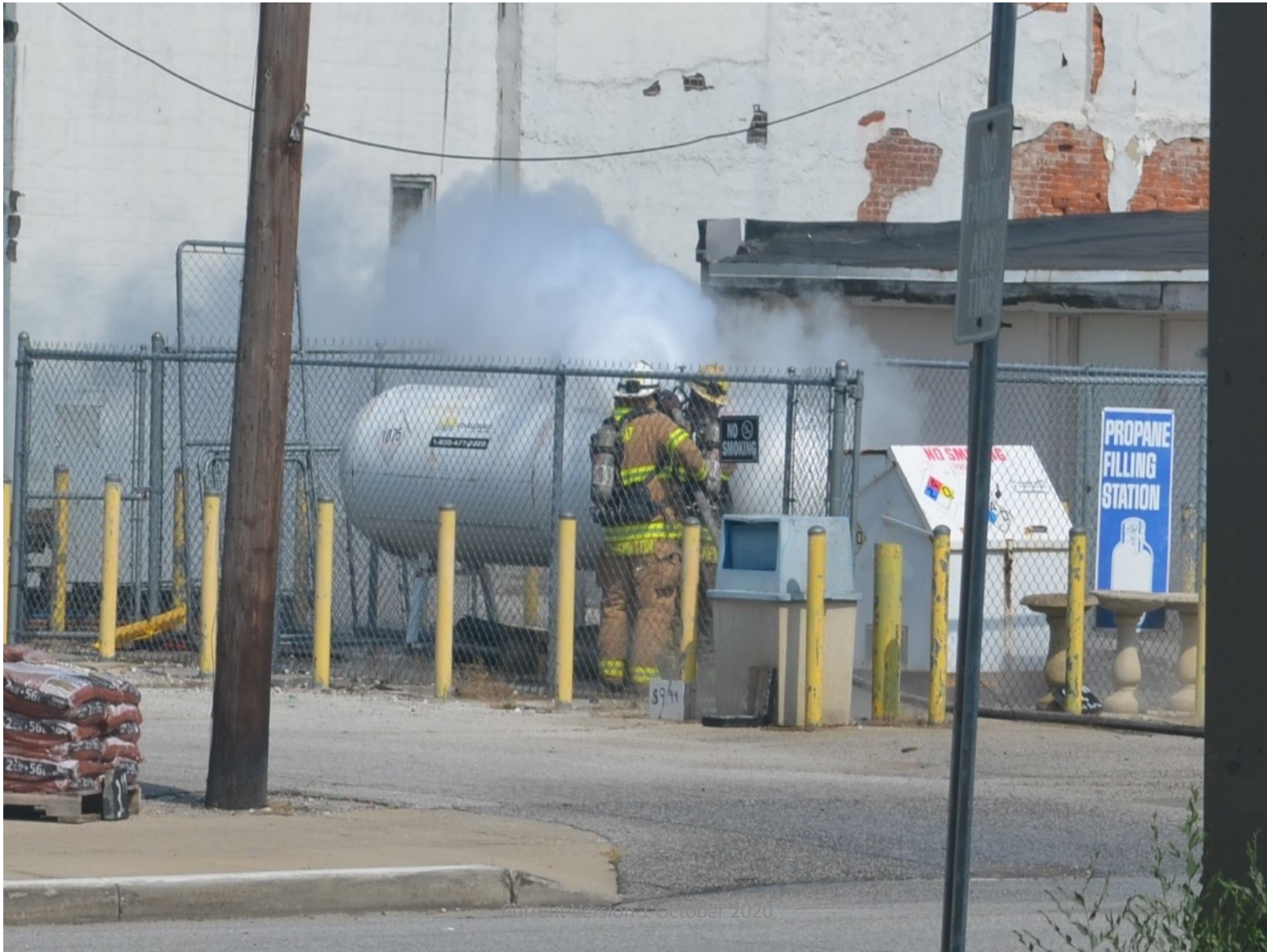
### FFFIPP INVESTIGATION

On September 16, 2019, a fire department responded to a propane leak at a newly renovated office building. Several firefighters entered the building. The propane gas ignited and caused an explosion. The blast resulted in a line of duty death of a firefighter and the hospitalization of six other firefighters. The NIOSH FFFIPP investigated this incident and identified the odor fade of mercaptan as a key contributing factor. During this investigation, NIOSH FFFIPP investigators learned that some fire departments may not fully understand odor fade. They also may not recognize the subsequent explosion hazard that exists when responding to natural gas and propane incidents where there is not enough odorant in the released material to alert firefighters to its presence.

QUESTIONS & ANSWERS on p. 2







12/9/21

Current Version 1 October 2020

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# Multi-Gas Detector







# Indiana Fire Departments

- 91% of all the fire departments in Indiana use volunteers.
- 74% of Indiana fire departments are ALL volunteer:
  - 10% fully paid
  - 16% combination paid and volunteer
- There are currently only 16,500 volunteer firefighters in the State.
- When divided by the 820 volunteer or part-volunteer fire departments in the State, this means that the average department has just 20 volunteers on the roster.

# To Err...is Human

- Human error is the leading cause of accidental injury, death and property damage.
- Aircraft crash investigations conducted in the 1970's determined that over 70% of the incidents were caused by pilot error.
- NASA developed a workshop now entitled: Crew Resource Management (CRM) in 1979.



# Crew Resource Management

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- **Communication:**
  - Is the key to success in any endeavor.
  - We all have experienced misunderstandings that led to errors and mistakes.
  - Speaking directly and respectfully...communication responsibility.
- **Situational Awareness:**
  - Need to maintain attentiveness to an event.
  - Perception, observation and stress on personnel.
- **Decision Making:**
  - Based on information.
  - Too little information results in poor risk assessment by the decision-maker.
  - Too much information overloads the decision maker & makes it difficult to make effective decisions.
- **Teamwork:**
  - Any group that fails to perform as a team is eventually doomed to fail.
- **Barriers:**
  - Recognizing the effect barriers have on the preceding four factors.





# Czar-52



# Czar-52



# Crew Resource Management

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- CRM is not an attempt to undermine the legal authority of the manager, supervisor, authority having jurisdiction.
- Nor is CRM management by committee.
- In fact, authority should be enhanced using CRM.
  - All team members direct information flow to the individual in charge.
  - While opinions are valid, the final decision rests with the individual in charge.
- Using CRM provides for:
  - Better teamwork;
  - Better communication & problem solving skills;
  - An operating philosophy that promotes team member input while preserving legal authority.
  - Proactive accident prevention.

# Cactus 1549 - January 15, 2009

- Airbus A320-214
- First Officer Jeff Skiles was at the controls.
  - 37 hours in the A320 aircraft
- Capt. Chesley “Sully” Sullenberger
  - 4,765 hours in the A320 aircraft
- In air for approximately 95 seconds, under 3,000’...bird strike.
- Both engines were taken out...



N106US

# Cactus 1549 - January 15, 2009



- 3:27:23.2 "My aircraft"...message was confirmed by FO.
- FO had more recent experience practicing emergency procedures using the Quick Reference Handbook(QRH) which contained 150 checklists...engine restart checklist
- "I knew that I had seconds to decide on a plan & minutes to execute it"
- General Rules of Aircraft Emergencies:
  - Aviate...fly the plane.
  - Navigate...flight path is appropriate and look for options
  - Communicate...let those on the ground HELP you & let those on the plane know what might be necessary to save their lives.
- "We were too low, too slow, too far away, and pointed in the wrong direction, away from nearby airports"...he also considered the likely need for a serious rescue effort.
- 3:30:38 "We're gonna brace!"

# Final thought...Guiding Principles

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- **Preparedness:**
  - If we have a preparedness mindset, its easier to be ready when disaster strikes.
- **Trust:**
  - Trust in oneself and trust in one another.
  - If we do not have trust, we don't have relationships...without relationships, we can't accomplish the mission.
- **Respect:**
  - If we treat people with respect, they might be more willing to listen to your ideas.
  - Organizationally, we must have the utmost respect for our workforce, for without them we don't exist.
- **Teamwork:**
  - The very essence of the work that we do is incumbent on the success of the team.
- **Moral Imperative:**
  - We have a duty to act, to respond and be prepared to the best of our ability.



*Any Questions???*

...The past is not the  
past...but is often  
the future looking  
to be relearned.



**1-317-439-9122 (cell)**



**24-hour Emergency Notification**  
**1-800-669-7362 (option 1)**

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# Reference

- Gasaway R. (2013) *Situational Awareness Matters*, Vol.1. St. Paul, MN: Gasaway Consulting Group. LLC.
- International Association of Fire Chiefs (2003) “*Crew Resource Management Handbook*”: Fairfax, VA.
- Rubin, Dennis L. (2001) “*Crew Resource Management*”. Firehouse magazine. Cygnus Business Media, Melville NY.