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**DAMAGE PREVENTION TRAINING CONFERENCE**

**2023 • FRENCH LICK, IN**



# Natural Gas Safety First Responders and Contractors

*Presented by: Mike Miller, Public Safety Trainer*

*Northern Indiana Public Service Company*



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# OBJECTIVES

- Learn About Natural Gas Distribution Systems
- Gain An Understanding Of The Characteristic Of Natural Gas
- Be Able to Self Evaluate Response Guidelines, Based Off National Response Standards





This presentation is intended to assist first responders and contractors by providing essential and critical information when responding to a natural gas incident.

Information provided is intended to assist you when making strategic and tactical decisions during an incident.

It is not intended to replace your standard operating procedures or policies.

**ALWAYS FOLLOW YOUR PROCEDURES**



# NIPSCO

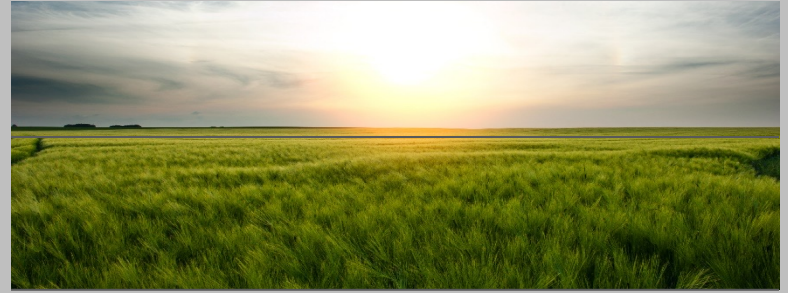
- Subject matter expert
- Available 24/7/365
- Respond to each and every emergency call as quickly and safely as possible.
- If in doubt, call.
- Incorporate into your Incident Command System
  - Fire Department is in control of the scene (life safety)
  - NIPSCO is like the haz-mat team





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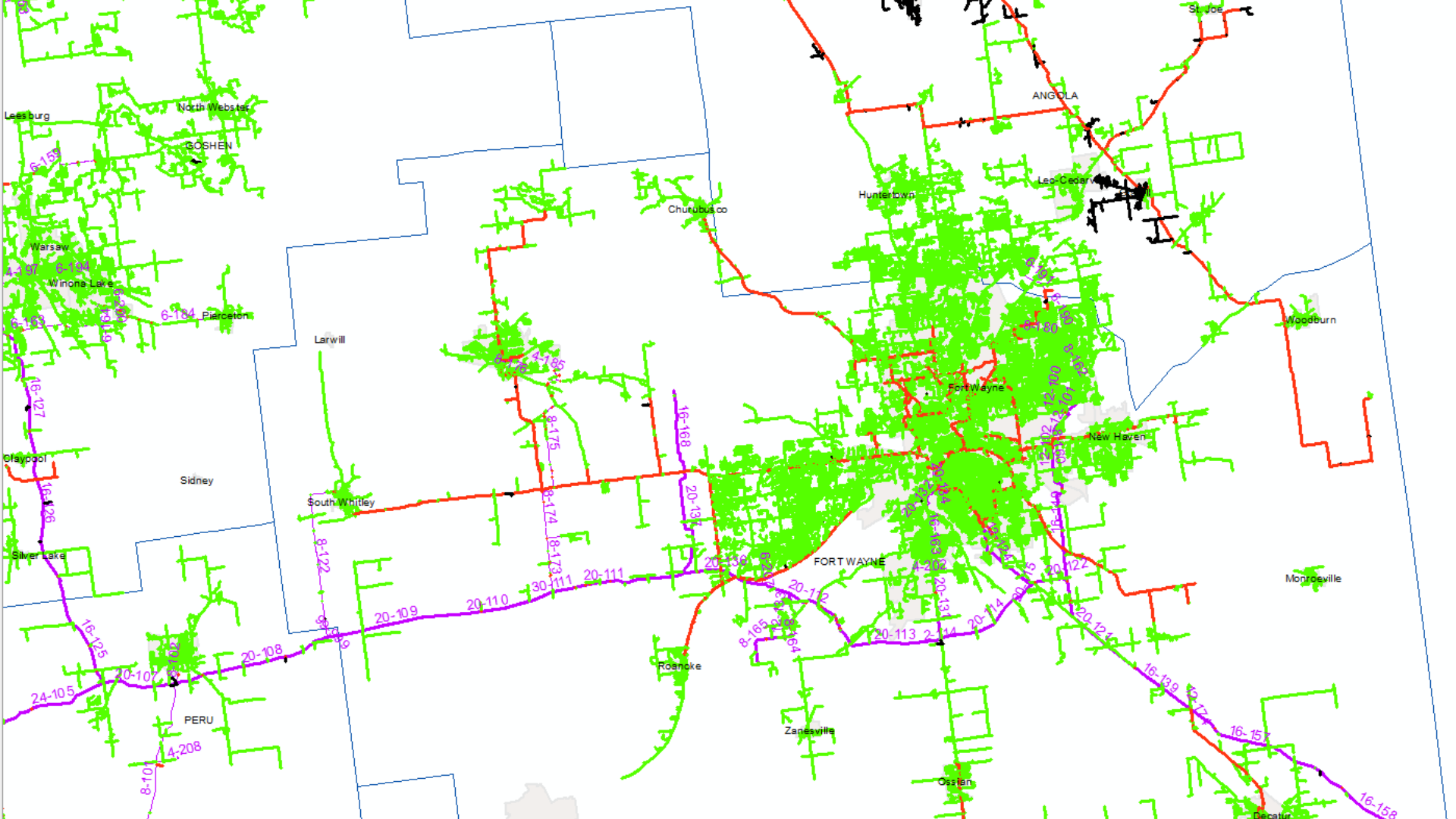
DISTRIBUTION SYSTEMS



**HIGH PRESSURE  
TRANSMISSION  
<1200 PSI**

**HIGH  
PRESSURE  
DISTRIBUTION  
<200 PSI**

**MEDIUM  
PRESSURE  
<60  
PSI**



# POINTS OF PURCHASE



**GAS FROM TRANSMISSION LINES ENTERS THE DISTRIBUTION  
SYSTEM AT POINTS OF PURCHASE**



# MERCAPTAN



- Flammable liquid
- ID: 3336
- DOT Guide: 130



# REGULATOR STATIONS





# REGULATOR STATIONS





# REGULATOR STATIONS





# REGULATOR STATIONS





**NEVER OPERATE ANY  
VALVES AT POINTS OF  
PURCHASE,  
REGULATOR  
STATIONS,  
TRANSMISSION OR  
DISTRIBUTION MAINS**



# SERVICE LINES





# SAFE DIGGING RULES



**Know what's below.  
811 before you dig.**



- Must call before any digging.
- Utilities have 2 business days to complete locate.
- Each contractor must have their own ticket.
- Locate ticket is good for 20 days.
- 24" tolerance zone from locate marks.

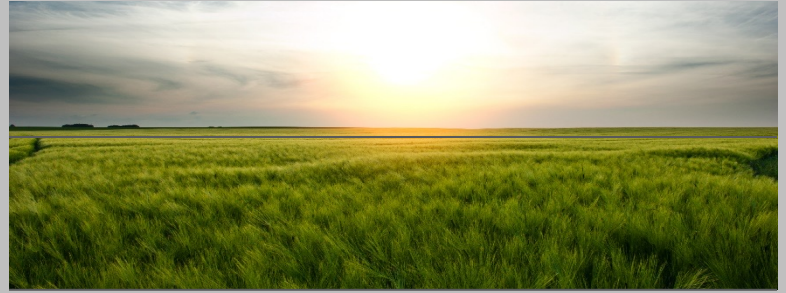




# PUNCTURED GAS LINE FROM INSTALLING A MAILBOX







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PROPERTIES AND CHARACTERISTICS  
OF NATURAL GAS





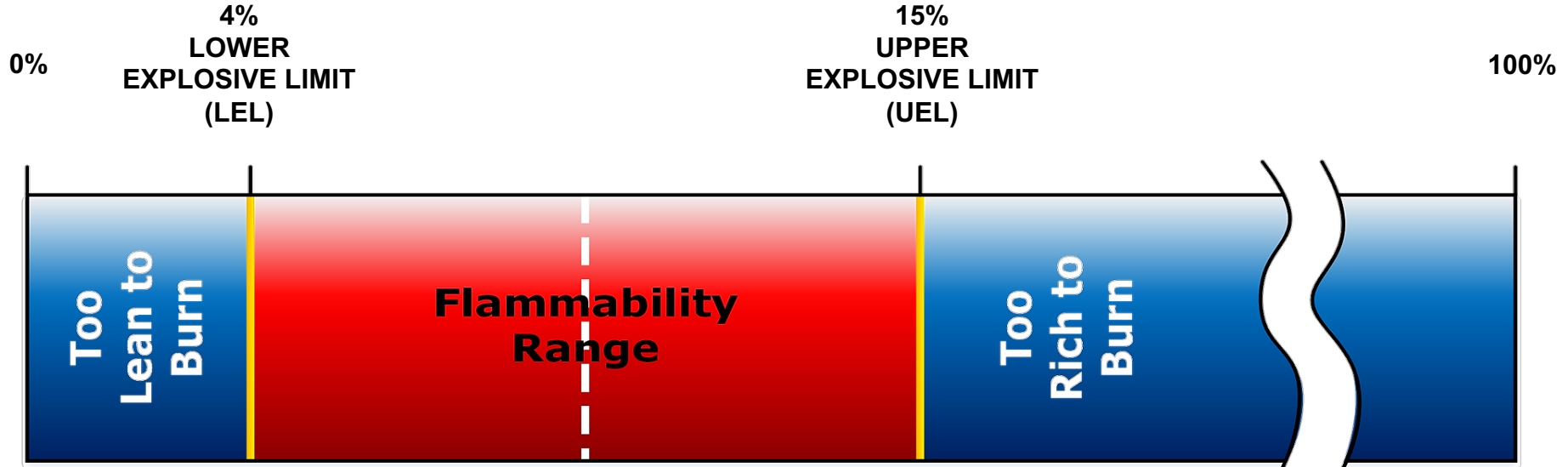
# NATURAL GAS FACTS

- Colorless
- Odorless (Mercaptan added)
- Tasteless
- Asphyxiate
- Lighter than Air – Vapor Density = 0.6
- Ignition Temperature – Around 1200° F
- By-Products – Carbon Dioxide and Water
- By-Products Incomplete Combustion – Carbon Monoxide

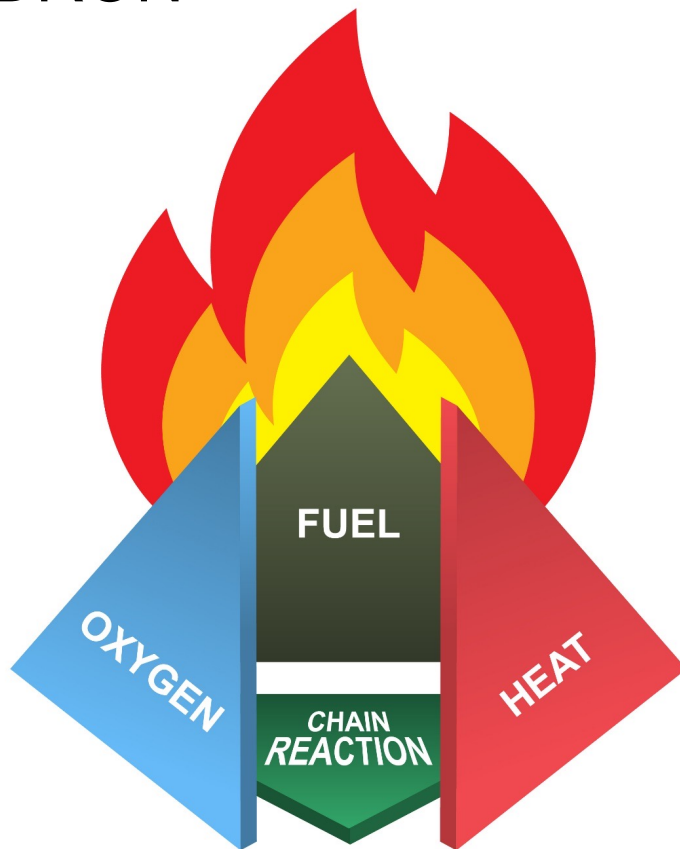


# LIMITS OF FLAMMABILITY

Percentage of Natural Gas in Air



# FIRE TETRAHEDRON





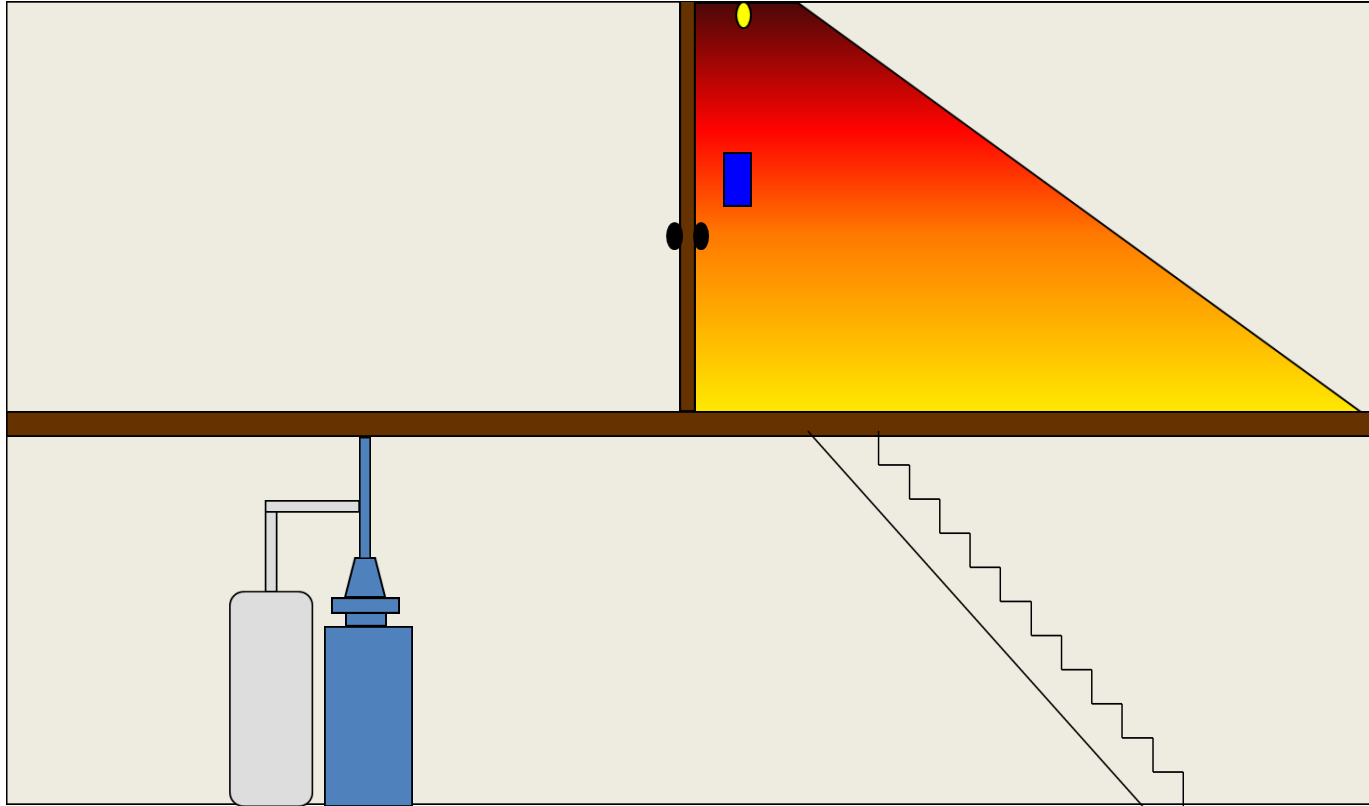
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# An Explosion Requires a 4<sup>th</sup> Element...

# CONTAINMENT



# CONTAINMENT WITHIN A STRUCTURE



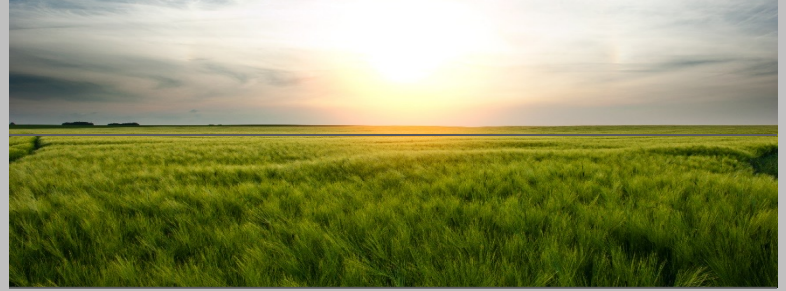


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## NATURAL GAS INCIDENTS



# ODOR OF GAS

## THINK YOU SMELL NATURAL GAS?



**STOP**

**WHAT YOU'RE  
DOING**



**LEAVE**

**THE AREA  
IMMEDIATELY**



**CALL**

**911 &  
NIPSCO**



# IT'S THE LAW

- **CALL 911**
- Contact the Utility Company  
NIPSCO  
**1-800-634-3524**  
PUT IN YOUR PHONE
- Call 811 for Damage Ticket



**911 &  
NIPSCO**



# WHEN TO CALL NIPSCO



- Early
- For any reported or known gas leak
- Fires involving natural gas
- Anytime you shut off a service valve
- CO in a building serviced by natural gas
- Unknown odors in a building serviced by natural gas



# UNIVERSAL RESPONSE TACTICS FOR ALL NATURAL GAS INCIDENTS

- Respond from upwind
- Park at least 200' away from explosion and debris zones
- Do not park over manholes or sewer basins
- Check for gas coming out of sewers / manholes / street cracks
- Approach structures from the corners
- Secure the perimeter, reroute traffic and restrict access
- Evacuate the public
  - Gas companies must be notified when evacuations take place. Reporting to IURC.
- Do not be the ignition source.





# UNIVERSAL RESPONSE TACTICS FOR ALL NATURAL GAS INCIDENTS

- Eliminate ignition sources
- Always wear full personal protective equipment (PPE) including SCBA
- Monitor the atmosphere continuously with your gas meter





# SOME SOURCES OF IGNITION

LIGHT SWITCHES

FLASHLIGHTS

CELL PHONE

RINGING TELEPHONES

STATIC ELECTRICITY

RADIOS & PAGERS

GARAGE DOOR OPENERS

PILOT LIGHTS

BATTERY BACK UP DEVICES

GENERATORS

DOORBELLS

CIGARETTES



# INDOOR LEAKS

- Ensure NIPSCO has been called and is responding
- Use the Universal response Tactics
- Stretch a hose line for in case of scene deterioration
- Evacuate all the occupants, restrict access
- Use caution to not introduce ignition sources
- CODE RED: 1.5% Gas in Air. 30% LEL
  - Evacuate 500' residential
  - Evacuate 1000' for larger building



# INDOOR LEAKS

Use gas meter to monitor. If gas levels are well below the LEL, and it is determined safe to enter, monitor and check:

- Areas where underground lines enter the building
- Gas regulator, meter and associated piping
- High point in the building/area where gas can collect (low spots if propane is suspected)
- Check all appliances serviced by gas



# INDOOR LEAKS

- Shut off gas at the meter, or appliance as appropriate
- Eliminate all potential ignition sources before ventilation
- Natural ventilation
- Be cautious using mechanical ventilation (PPV) so as to avoid forcing gas into adjoining structures or unaffected areas



# OUTDOOR LEAKS

- Ready a hose line for potential rescue, or exposure protection
- If it's leaking, **LET IT LEAK**. If it's burning, **LET IT BURN**
- Eliminate any potential ignition sources
- Use gas meter to check surrounding buildings and surrounding area (check for migration)
- DO NOT fill a gas line or excavation hole with water.
- **DO NOT attempt to stop the flow of gas from a damaged line, this is extremely dangerous**



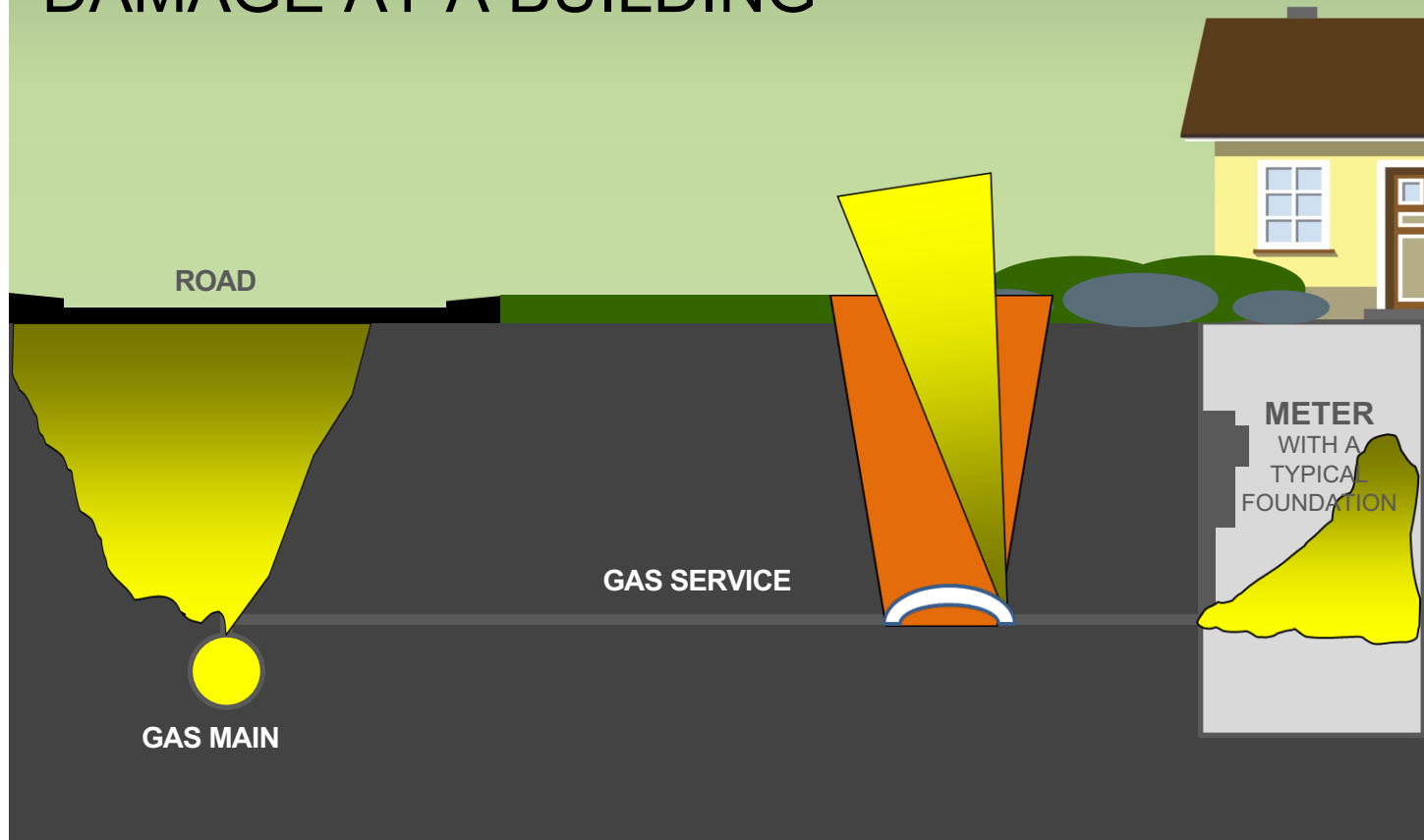


# OUTDOOR LEAKS

- Evacuation Guidelines:
- DOT: guide 115 = 330 ft
- Assess situation with CGI
  - Gas readings near buildings
  - Gas readings in sewers
  - Gas readings in buildings
  - Wind direction
- Protect in Place vs. Evacuation

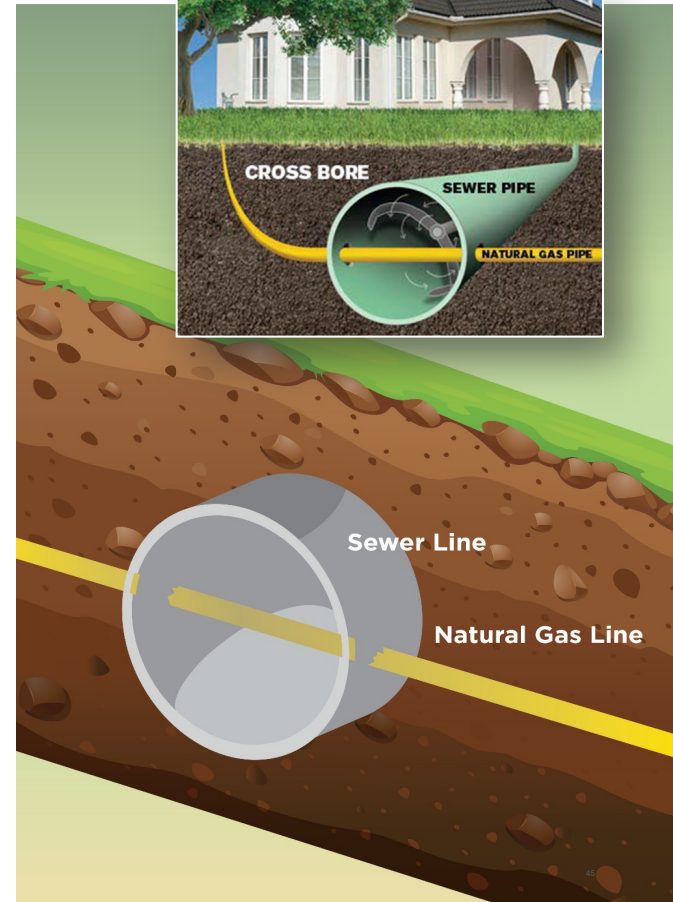


# DAMAGE AT A BUILDING



# CROSS BORES

- Trenchless Technology
  - Often Found Years Later
  - Most Hazardous When Gas/Sewer Pipes Cross
  - Can Create a Multiple Building Event
- Call 811 Before You Clear



# NATURAL GAS FIRES

- Use Universal Response Tactics
- Let it burn – when the gas source has been shut off, the fire will go out
- Protect exposures
- Check surrounding area and buildings for gas migration.







# NATURAL GAS FIRES

- Shut off service if possible (meter or appliance valves)
- Use fog pattern for exposure protection
- Multiple fog pattern lines may be used for rescue operations
- If extinguishment is **ABSOLUTELY NECESSARY** such as a rescue, use dry chemical.



# GAS IN MANHOLES, VAULTS AND SEWERS

- Use universal response tactics
- Keep people and equipment away, secure the area
- Check surrounding buildings and basements for migration – evacuate as necessary to a safe area
- Eliminate ignition sources
- Remember, never operate underground gas valves or open any closed valves

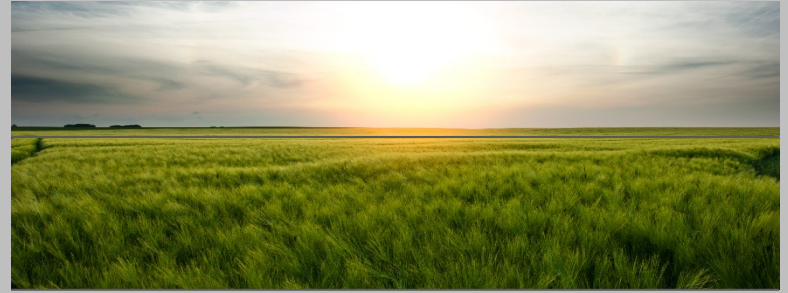




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QUESTIONS?  
THANK YOU FOR YOUR TIME.

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