Kentucky Gas Association

KY PSC & PHMSA Pipeline Safety Seminar 2010

Lessons Learned and Other Safety Related Topics

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Associated Electric & Gas Insurance Services

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Background Information

- Utility Mutual Insurance Company (member owned)
- Formed in 1975 by 22 gas utilities
- Electric Utilities began joining in 1977
- 490 members – 95% utilities and related energy

Where Things Go Wrong

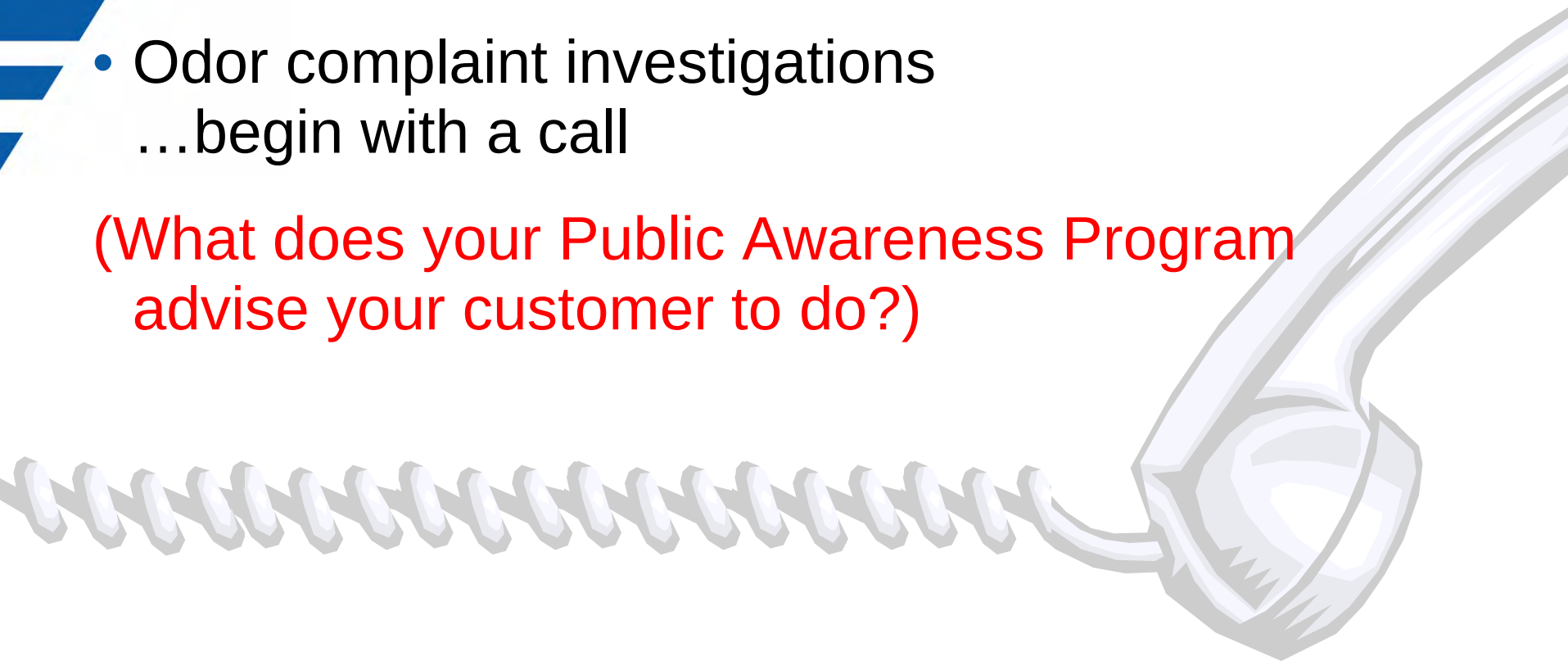
- Complacency
  - "We've done this job dozens of times"
- Tunnel Vision
  - Not focusing on the overall picture
- Shortcuts
  - Not following the approved procedures
- Lack of training/inexperience
  - Have never experienced this situation

The above highlight the importance of using Mock Emergency Drills and Emergency Response pre-planning

Odor Complaints

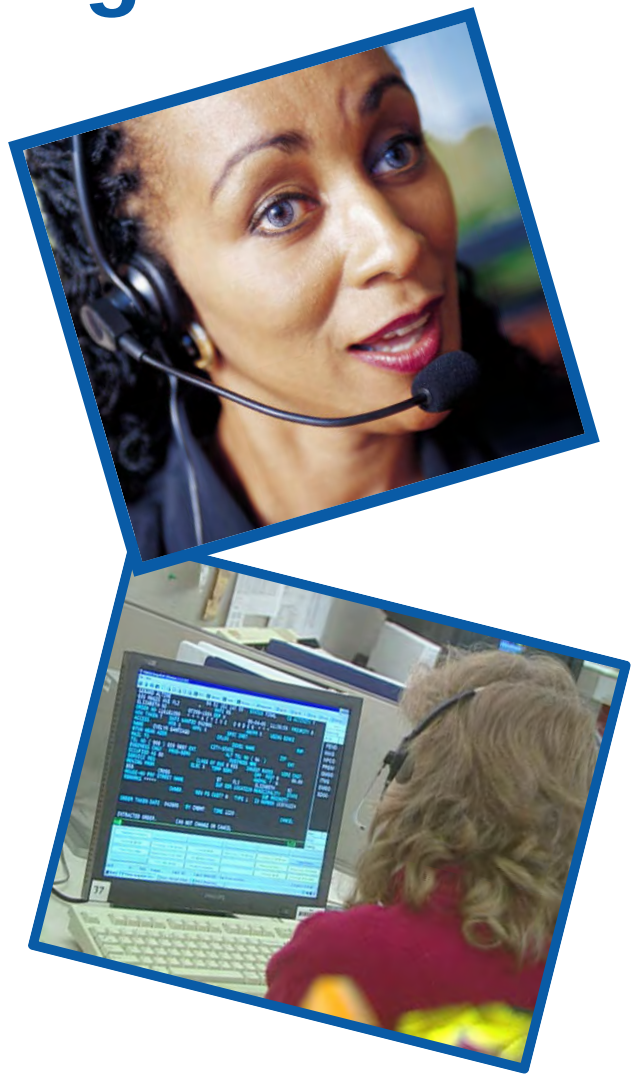
- Odor complaint investigations
  …begin with a call

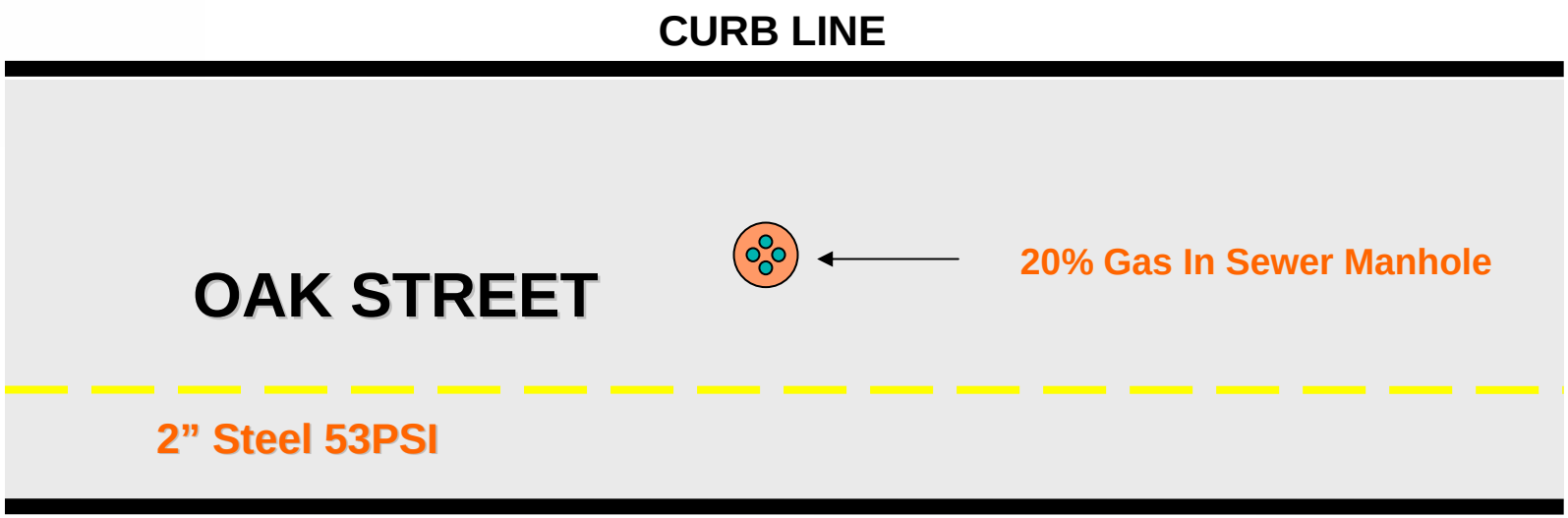
(What does your Public Awareness Program advise your customer to do?)



The Key Is Listening

- Not every call is a gas emergency, however, calls involving an odor complaint should be considered an emergency.
- Listen to the customer and ask questions in order to gather the information needed




CURB LINE
OAK STREET
20% Gas In Sewer Manhole
2” Steel 53PSI

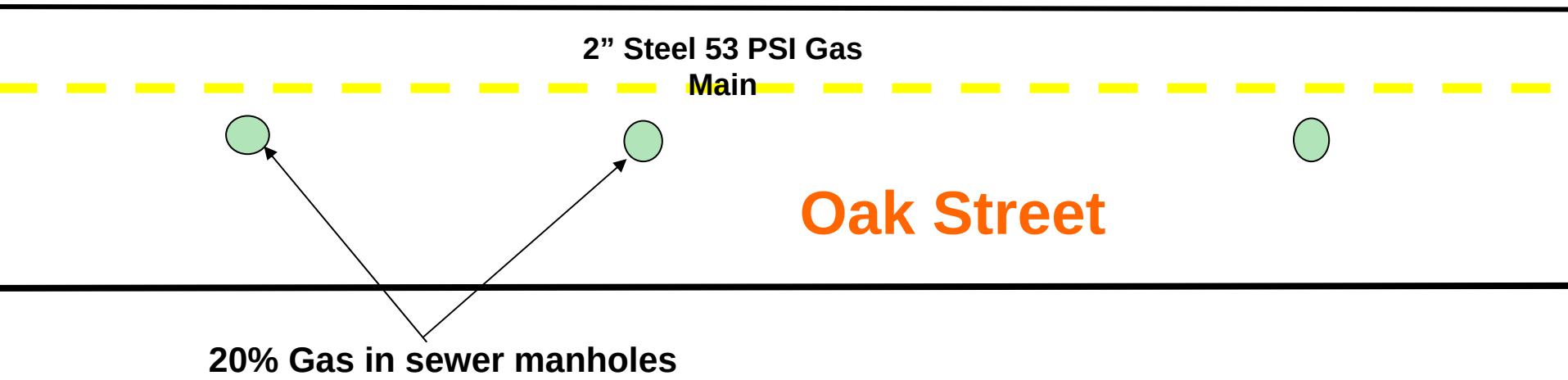
Resident calls @ 3:34 pm Gas odor

46

50

54

First Responder smells a very strong odor of gas in the area as he arrives (4:05 pm). Checks sewer manholes in the street and finds 20% gas in each manhole. Calls for a crew.



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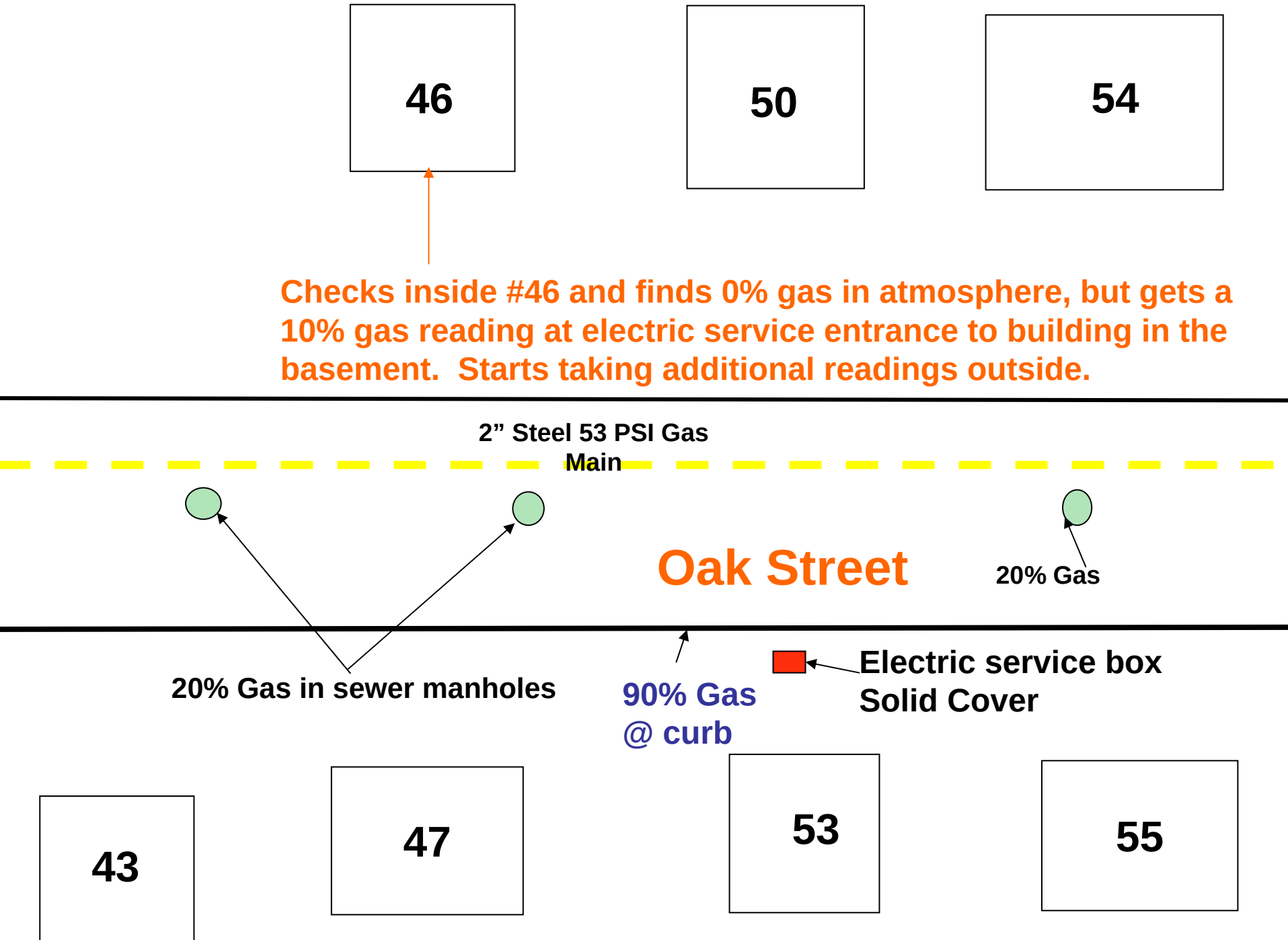
46
50
54
Checks inside #46 and finds 0% gas in atmosphere, but gets a 10% gas reading at electric service entrance to building in the basement. Starts taking additional readings outside.
2” Steel 53 PSI Gas Main
Oak Street
20% Gas
20% Gas in sewer manholes
90% Gas @ curb
Electric service box Solid Cover
43
47
53
55

46

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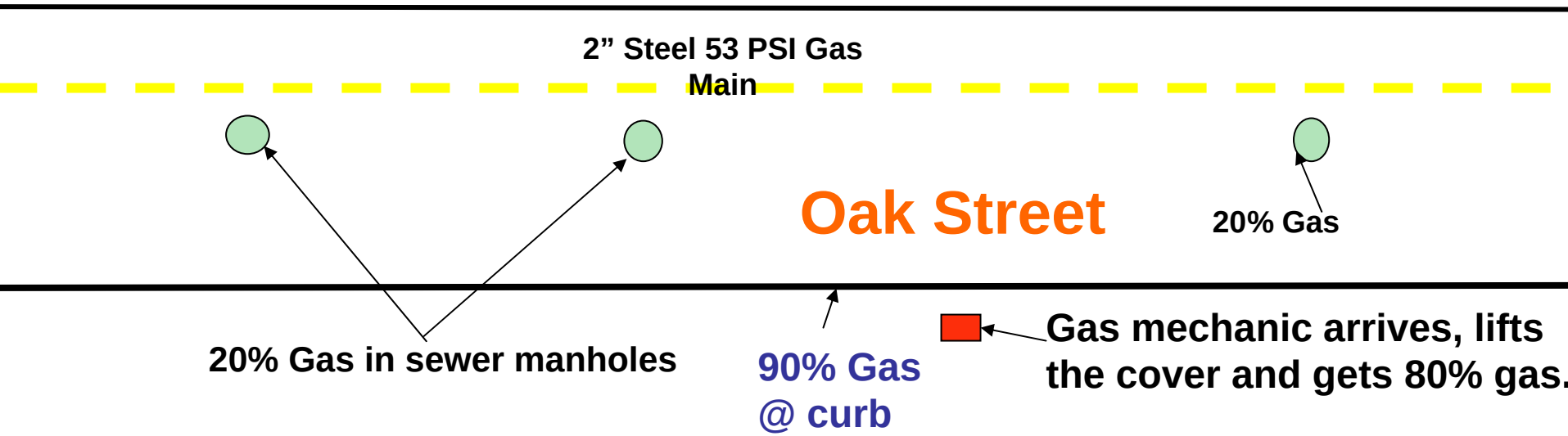
54

Gas mechanics arrive and they lift the cover on the electric service box and They get a 80% gas in air reading.



43

47

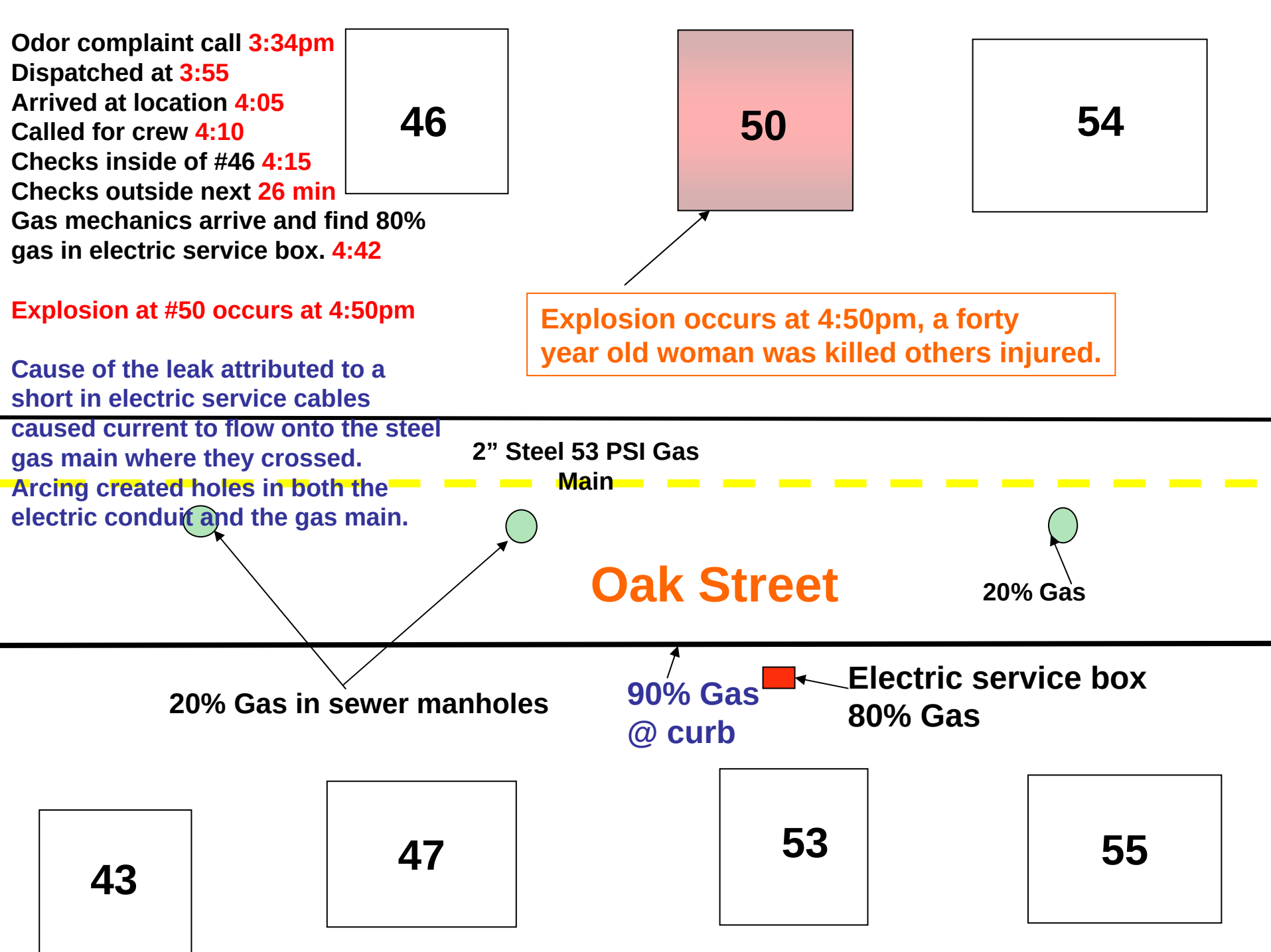
53

55

Odor complaint call 3:34pm
Dispatched at 3:55
Arrived at location 4:05
Called for crew 4:10
Checks inside of #46 4:15
Checks outside next 26 min
Gas mechanics arrive and find 80% gas in electric service box. 4:42

Explosion at #50 occurs at 4:50pm

Cause of the leak attributed to a short in electric service cables caused current to flow onto the steel gas main where they crossed. Arcing created holes in both the electric conduit and the gas main.



Hole Made When Shorted Electric Cable Arced Over To Gas Main

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HAZARD

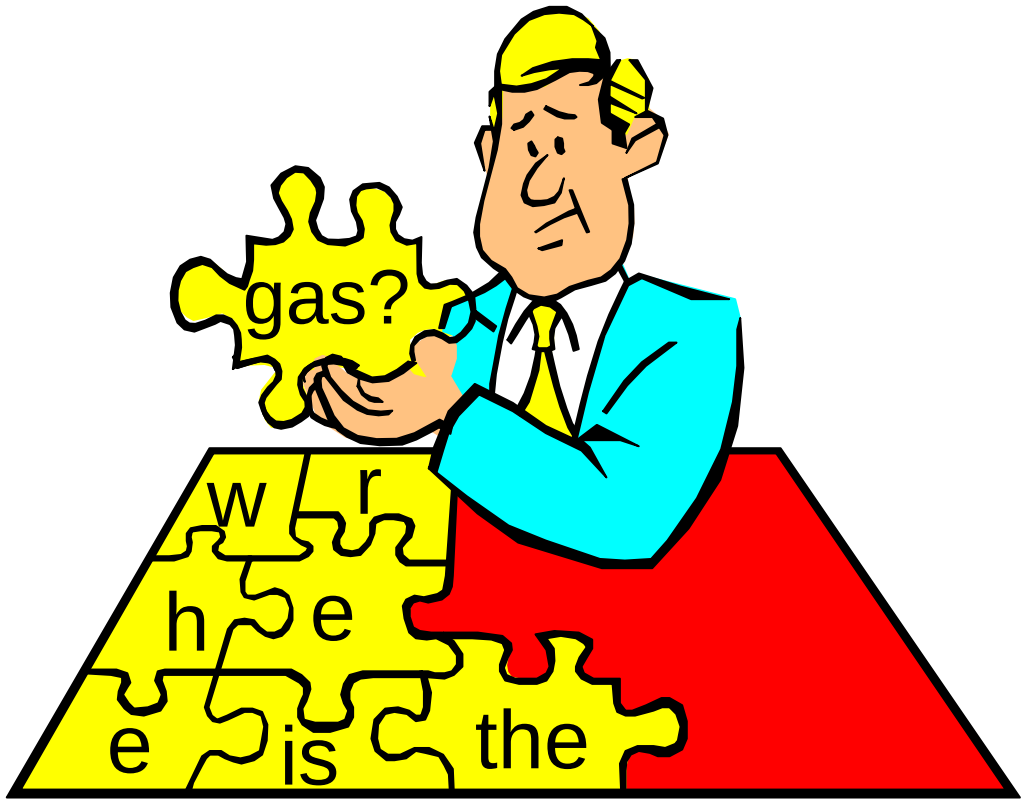
EXTENT

LIFE

PROPERTY

Evaluating The Leak

Where is the gas?



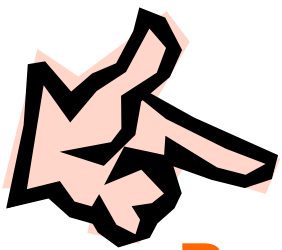
Evaluating The Leak

- **W**here is the gas?
- **H**ow much is there?
- **E**xtent of hazard (migration)
- **R**elation to other structures
- **E**valuate/evacuate

“Centering” = Where is the Gas?

Centering The Leak

- Probe holes must be of sufficient depth
- Test all available openings
- “Zero out” N-S-E-W
- You must have sufficient information to make a good judgement



Be Careful – “Don’t make a leak, looking for a leak.”

Incident (2005)

- A homeowner contacted the gas company stating that “she smelled a very strong odor of gas in the vicinity of her gas meter”.
- The gas company sent a service technician to investigate the odor complaint. Upon arrival, the technician noticed the smell of gas as soon as he got out of his truck.
- He decided to put a bar hole down near the riser to check the soil atmosphere. The temperature was around 5 degrees and there was frost in the ground making it difficult to make the test hole.

Incident (2005)

Cont'd.

- After a lot of effort, he was able to get a test hole in the ground below the frost layer. When he pulled his probe bar out of the ground, gas started blowing up through the test hole. The escaping gas was making considerable noise so he put the probe bar back in the hole. He ran back to the truck to get a shovel to dig the plastic service up in order to squeeze it off and stop the leak.
- As he was attempting to expose the service, approximately 30 minutes after the line was hit, there was an ignition and two people inside of the home were injured.

What Happened?

- Bar testing and checking the soil atmosphere for gas is a crucial part of the overall odor complaint investigation. It is necessary to make the test hole a sufficient depth in order to obtain an accurate reading, thus getting below the frost layer is essential.
- In this case, the bar should have been left out of the bar hole to allow the gas to “vent” and notifying the occupants to leave the house until the line could be shut off.
- The main priority is **Public Safety**!

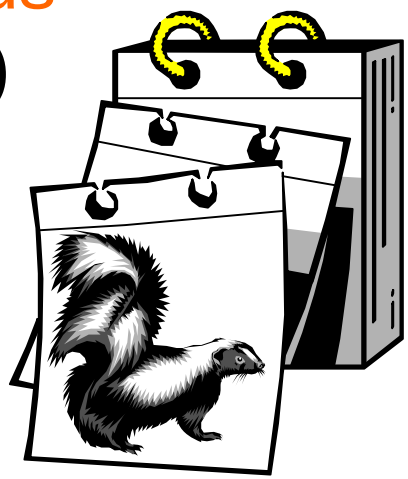
The Combustible Gas Indicator

- CGI should be used to:
  - Classify an atmosphere
    - Inside a building or in a confined space
  - Classify underground leakage
    - Determine “Where is the gas?”
  - Pinpoint underground leakage
    - Determine “Where is the leak?”
- You must know:
    - How to properly use it
    - What readings might constitute a hazardous condition

Anatomy Of A Gas Leak
A Collaborative Approach

Odorization Issues

Odorization must be continuous (every day)



and it must be adequately documented!

Factors Which Affect Odorant Quality

- Physical ailments
- Age
- Masking
- Distraction

Incident (2000)

Company Retention $200K

- While parking the family car in his attached garage, a retired 83 year-old physician lost control of his automobile and struck the concrete block foundation that supported and elevated his home's heating and hot water equipment.
- The impact moved the boiler about one foot from its original position. The damage was severe enough to warrant an inspection, so the doctor called his regular plumbing and heating service provider who agreed to check the unit that afternoon.
- The doctor then called the local gas company and explained what had happened.

Incident (2000) Cont'd.

Company Retention $200K

Cont'd.

- He was asked whether he smelled gas. He answered that he did not. The company's call center representative then explained that the company would not examine the damage unless he smelled gas, but if he did, he should please call back and they would gladly send someone out to his home.
- 90 minutes later the home exploded and the doctor and his wife were severely burned. Less than one month later, suffering from severe burns over most of his body, the doctor died.

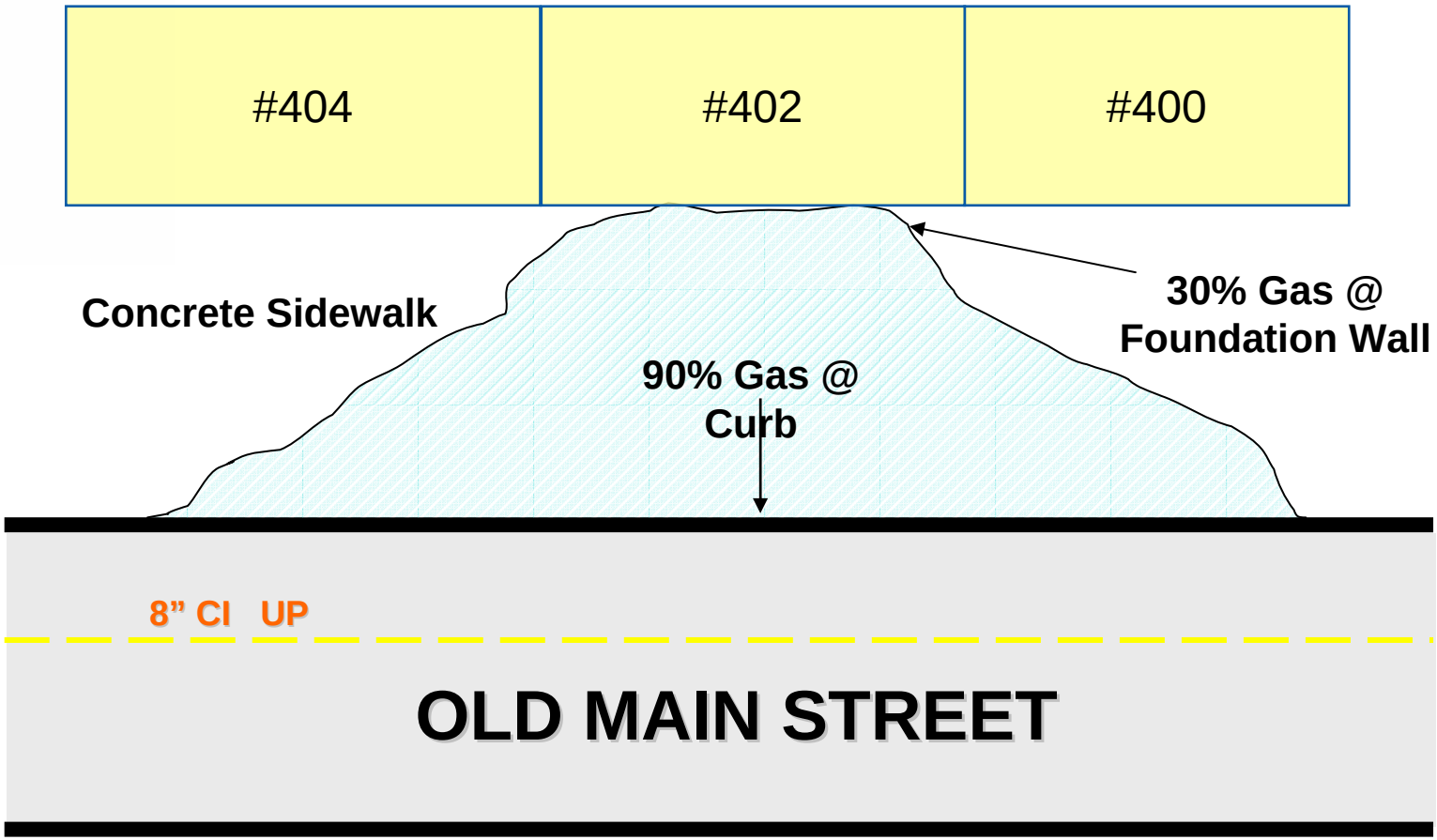
AEGIS Incurred $2.7 Million

What Happened?

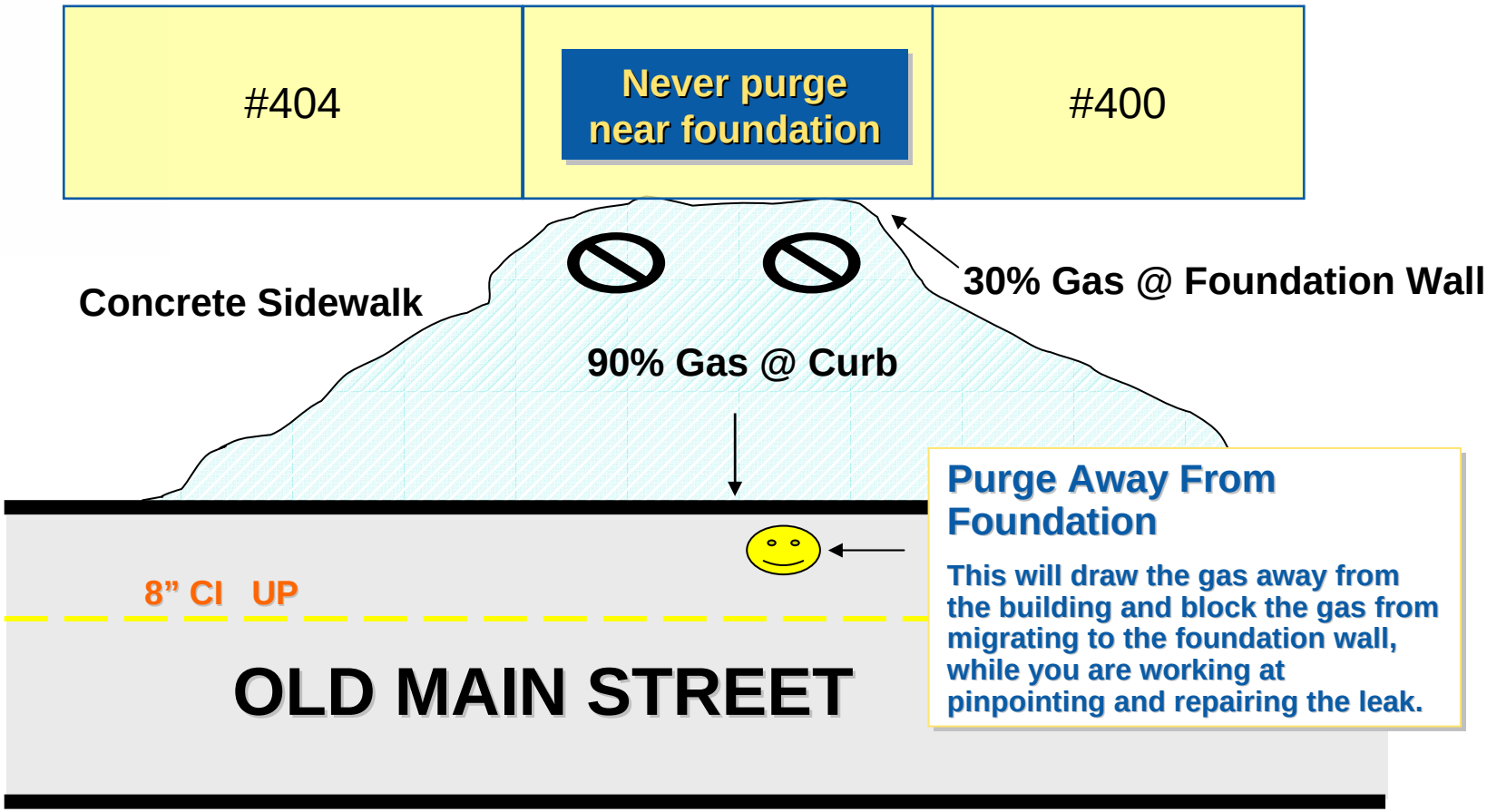
- At times, customers and the general public seek assistance from gas utilities for situations that are not commonly encountered. Such was the case in this unusual incident. The call center representative did not recognize the potential severity of a situation involving an automobile striking the heating equipment.
- Listening to callers and their circumstances is critical to effectively achieve the ultimate goal of emergency response and the protection of life and property.
- The doctor, being 83 years old may have lost much of his sense of smell with age.

The call center is the “First Line of Defense”

Handling Grade 1 Leaks


#404
#402
#400
Concrete Sidewalk
30% Gas @
Foundation Wall
90% Gas @
Curb
8” CI UP
OLD MAIN STREET

Types of Soil Purgers/Aerators


#404
Never purge near foundation
#400
Concrete Sidewalk
30% Gas @ Foundation Wall
90% Gas @ Curb
8" CI UP
OLD MAIN STREET
Purge Away From Foundation
This will draw the gas away from the building and block the gas from migrating to the foundation wall, while you are working at pinpointing and repairing the leak.

Emergency Response

Pre-planning Can Be Extremely Helpful

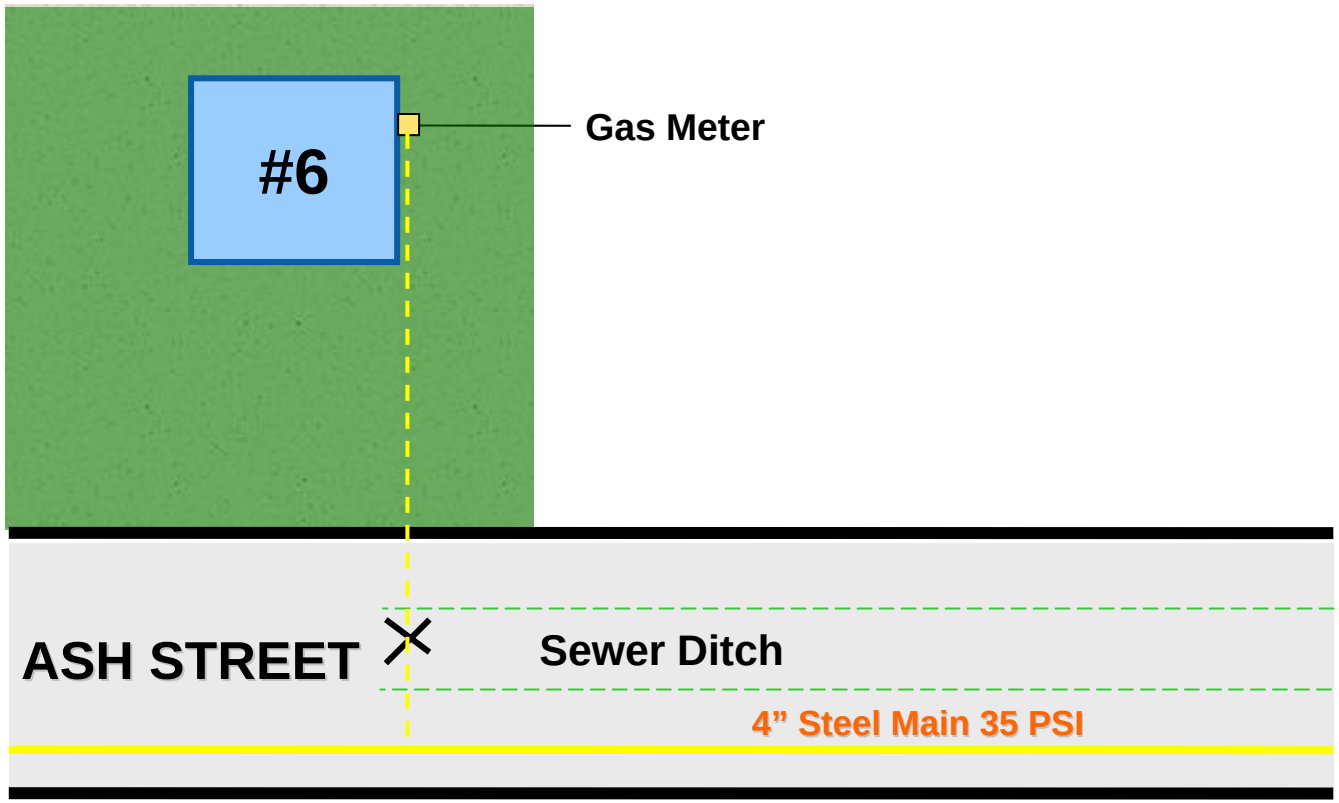
- Personnel readiness
- Personnel training
- Communication
- Emergency plan
- Coordination with fire service
- Availability of special equipment
- System records
- Involvement of claims & legal depts.
- Public relations - media response

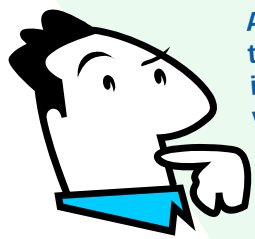
Response To “Dig-Ins”

Our main job is *not*
finding & fixing leaks

Our main job is
public safety

Figure # 1





A contractor has snagged the 1” steel service and bowed it in the ditch. A small hole was made in the line and gas is blowing in the ditch.

What would be your actions?

Incident (1998)
Company Retention $5M

- A contractor working on a highway reconstruction project struck the service line to a house, causing the service line to separate from a compression coupling near the gas main.
- The gas company was called at 11:15 am; a serviceman arrived on the scene at 11:45 and immediately called for a crew. Thinking the gas was venting out into the street, he sat in his truck for 20 minutes until the crew arrived. Although the damage location was only 32 feet from the incident site, no attempt was made to check nearby buildings with a combustible gas indicator for the presence of migrating gas.

Incident (1998)
Company Retention $5M

Cont'd.

- The leaking gas migrated to the house where an explosion occurred killing an elderly woman and severely burning 3 children, the explosion occurred at 1:00 pm. The children received burns to over 45% of their bodies with most of the burns occurring in the facial areas.
- In the settlement the contractor also paid more than $15,000,000.00 in claims.

AEGIS Incurred $15 Million

What Happened?

- First Responder failed to recognize the gravity of the situation and made the assumption that the pulled line was leaking in only one place.
  - The First Responder's main job on a reported gas leak is to determine "Where is the gas?" and "Is it affecting people or property?" The appropriate way of determining this is with a combustible gas indicator (CGI) – Test Don't Guess!
- Our first priority must always be focused on

Public Safety

#682

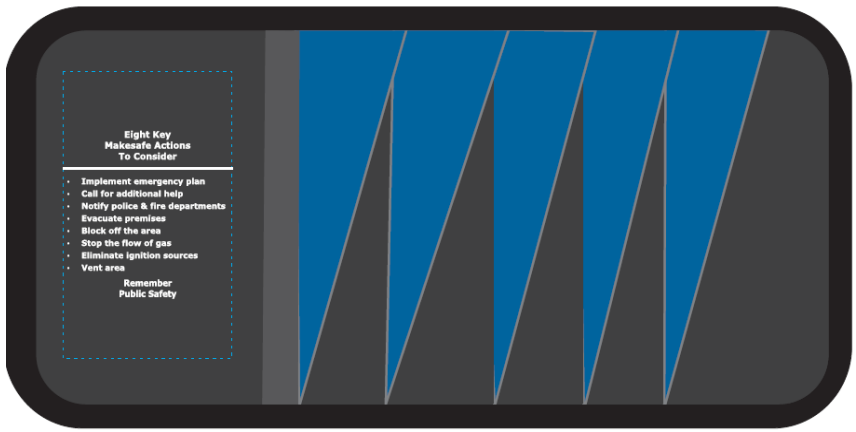
#686

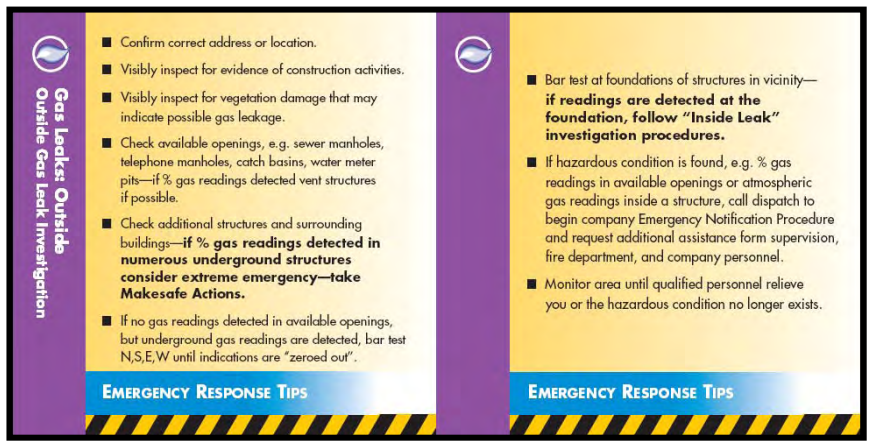

4” Plastic Main 45 PSI
ASH ST
Water Main
Dead Cast Iron Gas Main

Tip Cards

- Designed to assist First Responders in the steps necessary to evaluate a situation
- Focus is on assisting the First Responder in identifying a hazard and the steps necessary to make the area safe i.e.,

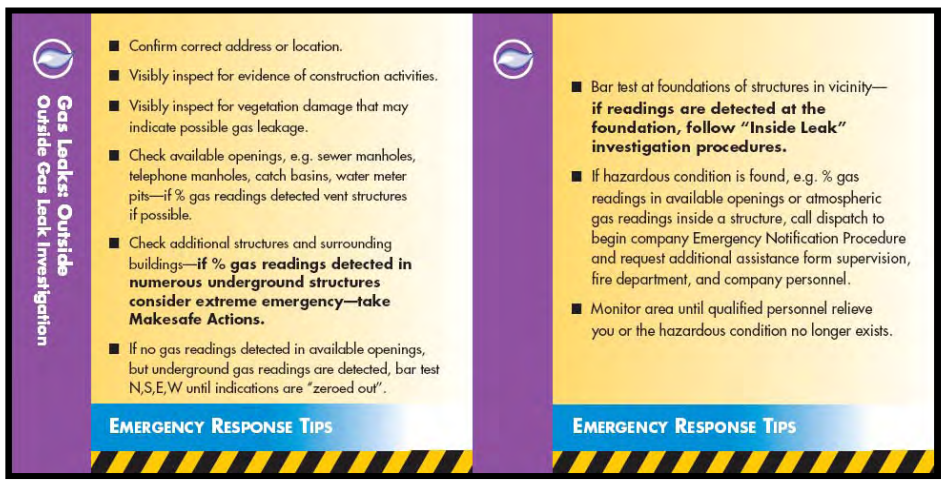
MAKESAFE





Tip Cards

- There are 5 different “Tip Cards”:
  - Gas Explosion
  - Outside Damage or “Dig In”
  - Inside Gas Leak Investigation
  - Outside Gas Leak Investigation (shown)
  - Carbon Monoxide Investigation



Tip Cards

- Direct Link to order Tip Cards/Visor:

  http://www.culverco.com/aegissafety/

- or email RonaldSix@aegislimited.com for more information.

AEGIS Investigating Natural Gas Incident Workshops/Webinars

2010 INGI Workshops:

AMEREN Springfield, IL May 19, 2010

AMEREN St. Louis, MO May 20, 2010

Puget Sound Energy, WA Oct 19, 2010

LC Webinar 6/2/2010 HDD-Sewer Laterals

To register go to the AEGIS website:

www.aegislink.com

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Thank You

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