

INCOMPLETE COMBUSTION

b 5 Products

Carbon Dioxide - CO_2

Nitrogen - N_2

Water Vapor - H_2O

Heat

"Carbon Monoxide"

CAUSES OF CARBON MONOXIDE

b LACK OF AIR

b FLAME IMPINGEMENT OR COOLING OF THE FLAME

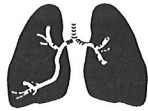
PROPERTIES OF CARBON MONOXIDE

b Slightly lighter than air depending on the humidity (.975)

b Colorless

b Tasteless

b Very toxic



EFFECTS OF CARBON MONOXIDE

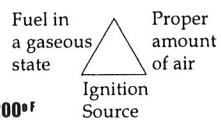
b Produces flue like symptoms in humans

b Can build up in your blood stream over a period of time

b The only positive way CO poisoning can be verified is with a blood test

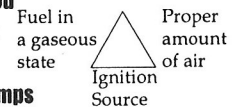
REQUIREMENTS OF COMBUSTION HOT ENOUGH SOURCE OF IGNITION

- Natural Gas = 1100 to 1200°F
- Propane = 871 to 1120°F
- Butane = 761 - 1000°F
- Gasoline = 495°F



REQUIREMENTS OF COMBUSTION HOT ENOUGH SOURCE OF IGNITION

- Static spark is a good source of ignition at 3,000 - 10,000°F
- Static spark that jumps from the inside to the outside of the plastic pipe requires 64,000 volts



EMERGENCY CALLS AND PROCEDURES

b ***SAFETY AT QUESTAR WILL ALWAYS BE #1
IN EVERYTHING WE DO, FROM DRIVING
VEHICLES TO OUR DIFFERENT JOB
RESPONSIBILITIES.***

b ***DO NOT TALK TO THE MEDIA.***

b ***KEEP DISPATCH CURRENT OF THE
SITUATION ON EMERGENCIES.***

Leak Detection Equipment

- b Check equipment operation daily
- b Calibrate as necessary per Manufacturer
- b CGI (Combustible Gas Indicator)
Ranger
- b CGD (Combustible Gas Detector)
TIF 8800

CLASSES OF GAS LEAKS

b **"A" IMMEDIATE ATTENTION REQUIRED**

- LINE BROKEN AND BLOWING.
- GAS IN OR AGAINST A BUILDING.
- HIGH VOLUME LEAK OR ANY LEAK CONSIDERED
HAZARDOUS.

CLASSES OF GAS LEAKS

- b **"B" RUSH EVALUATE AND/OR REPAIR**
 - ANY LEAK ON A RISE WITH LESS THAN 2% CGI
READ AT 20" BELOW GROUND THAT CAN BE
VENTED SAFELY.
- b **"C" SCHEDULED AND MONITORED REPAIR**
Low volume leak, not considered to
be an immediate danger.

CLASSES OF LEAKS

b **"H" "DOT" REQUIRED TO BE NOTIFIED BECAUSE
OF:**

- DEATH OR INJURY REQUIRING IN PATIENT
HOSPITALIZATION.
- ESTIMATED DAMAGE INCLUDING COST OF GAS
\$50,000 OR MORE.
- AN EVENT THAT IS SIGNIFICANT IN THE JUDGEMENT
OF THE COMPANY.
- NOTE: COMPLIANCE GROUP NOTIFIES "DOT" AND
"UDOT".

Carbon Monoxide Detection Equipment

- b Gas Ranger
 - Displays PPM CO
 - Displays readings both with & without
excess air.
 - With excess air (above 16% oxygen)
 - Without excess air (16% or less oxygen)

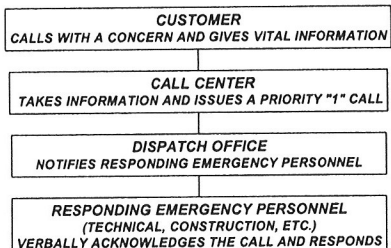
"CO" DETECTORS CAUTIONS AND CHECK

- b **TURN ON AND ZERO OUTSIDE.**
- b **OSHA GUIDELINES:**
 - **35 PPM ENVIRONMENT FOR AN 8 HOUR WORK DAY.**
 - **200 PPM--15 MINUTES MAXIMUM FOLLOWED BY 1 HOUR IN FRESH AIR (4 TIMES PER DAY).**

QUESTAR GAS GUIDELINES FOR AMBIENT AIR CO READS

- b **0-10ppm, NORMAL LIMITS IF ALL APPLIANCES HAVE BEEN ELIMINATED AS SOURCE.**
- b **11-69ppm, ASSESS IF BUILDING SHOULD BE VENTILATED AND/OR EVACUATED.**
- b **70-199ppm, VENTILATE BUILDING AND IF NECESSARY, EVACUATE.**
- b **200ppm - EVACUATE STRUCTURE.**

FLOW OF EMERGENCY INFORMATION



GAS LEAKS

- b **Assess location.**
- b **Assess hazard.**
- b **Take immediate steps.**
- b **EVACUATE IF NECESSARY (see Standard Practice 5-00-08).**
- b **QUESTIONS = SUPERVISON**

GAS LEAKS

- b **LEAKS LOCATED ON:**
 - **Main or Service - notify dispatcher, if evacuation wait for repair personnel.**
 - **Meter Set - Repair.**
 - **House piping - Repair if possible.**
 - **Appliances are to be repaired - if possible.**
- b **LEAKS UNABLE TO REPAIR.**
 - **184 Notice and Tag.**

GAS LEAKS

- b **CANCELLATIONS:**
 - **PRIOR TO ARRIVING:**
 - **CANCELLED BY CUSTOMER PER DISPATCH.**
 - **NO CALL TO ADDRESS.**
 - **AFTER ARRIVING:**
 - **WRITE "CANCELLED PER CUSTOMER" ON FORM 205.**
 - **HAVE CUSTOMER INITIAL AND SIGN ORDER.**
 - **COMPLETE THE OUTSIDE GAS LEAK PROCEDURE.**

GAS LEAKS

b INSIDE LEAK CALL:

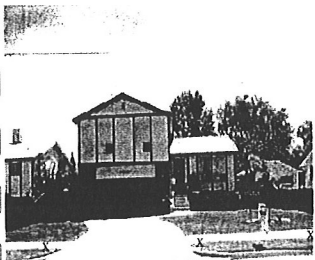
- Enter building with CGI (Ranger)
- Meter spot / manometer test
- Check meter set for leaks
- Leak screen / bar test
- Appliance safety checks

GAS LEAKS

b OUTSIDE LEAK CALL:

- Check meter set for leaks
- Bar test
- If any indication of leakage inside, or at customer's request – complete Inside Leak Procedures.

GAS LEAKS



**UNDERGROUND
TEST LOCATIONS
(8 minimum)**

**REGULAR
BUILDING LOT**

GAS LEAKS



**UNDERGROUND
TEST LOCATIONS
(15 minimum)**

**CORNER
BUILDING LOT**

GAS LEAKS

- b ALL APPLIANCE SAFETY CHECKS ARE TO BE COMPLETED AS OUTLINED IN "APPLIANCE ADJUSTMENTS". (Policies and Procedures Manual)**
- b AT THE COMPLETION OF THE CALL, YOUR ORDER MUST INDICATE:**
- IF LEAK WAS FOUND - IF NO LEAK WAS FOUND THE POSSIBLE SOURCE OF THE ODOR.
 - WHERE LEAK WAS FOUND AND IF REPAIRED

GAS LEAKS

- b WHEN IS METER SPOT TEST OR MANOMETER TEST IS REQUIRED?: REFER TO THE "EMERGENCY CALLS" SECTION OF THE POLICIES AND PROCEDURES MANUAL.**
- REQUEST OF THE CUSTOMER.
 - GAS LEAK IS REPORTED INSIDE THE BUILDING.
 - AN IN-LINE OR SERVICE VALVE IS TURNED ON.
 - TECHNICIANS JUDGEMENT.
 - USE A CGD ON OR SOAP TEST ALL PIPING, FITTINGS AND CONTROLS NOT IN THE TEST.

GAS LEAKS

b NOT HOME:

- **CUSTOMER NOT HOME – Inside Leak**
 - COMPLETE OUTSIDE CHECKS
 - SHUT OFF AND SEAL METER & LEAVE NNN
 - WINTER / NOTIFY SUPERVISION
- **CUSTOMER NOT HOME – Outside Leak**
 - COMPLETE OUTSIDE CHECKS
 - CHECK AROUND ACCESSIBLE WINDOWS, DOORS, ETC.
 - IF NO INDICATION OF LEAKAGE, LEAVE METER ON

EVACUATIONS

b STANDARD PRACTICE 5-00-08

b SUMMER AND WINTER

b FROST CONDITIONS DEC 21 to MARCH 21

- **"EMERGENCY LEAK PROCEDURES" WOULD COMMENCE IF ANY OF THE FOLLOWING CONDITIONS EXIST:**
 1. GAS DETECTED IN OR WITHIN 10 FT IN SUMMER OR 20 FT IN WINTER OF A BUILDING. (If the level of gas in the building measures 1% or higher with a CGI, notify Emergency Response Officials to assist)

EVACUATIONS

2. GAS DETECTED (APPROXIMATELY 2% OR MORE) WITH A "CGI" IN A DUCT SYSTEM (SEWER, TELEPHONE, STORM DRAIN OR POWER DUCT SYSTEM.)

• STEPS:

1. CONTACT DISPATCH, ASK FOR ASSISTANCE.
2. SHUT OFF GAS AT THE SERVICE VALVE AND EVACUATE THE BUILDING.
 - DO NOT RING THE DOORBELL
 - HAVE CUSTOMER LEAVE LIGHTS, TELEPHONES, ETC. AS THEY ARE.

EVACUATIONS

b STEPS:

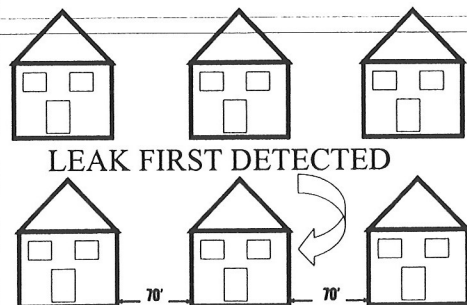
- LOCATION OF EVACUEES (PHONE/ADDRESS/CONTACTS).
- REFUSAL TO LEAVE - 2ND EMPLOYEE.
- CONTINUE EVACUATION OF ANY STRUCTURES WITHIN 70 FT OF THE ORIGINAL STRUCTURE EVACUATED.
- MARK OFF HAZARDOUS AREA AND ALL ENTRANCES TO THE BUILDING WITH WARNING TAPE.
- 3. ISSUE "E1" FOR EACH METER SHUT OFF
- 4. DISPATCH TO ISSUE "ET1" TO HAVE SERVICE RESTORED
- 5. MONITOR THE AREA AND EVACUATED BUILDINGS, KEEPING RECORDS OF GAS PERCENTAGES.

EVACUATIONS

• STEPS

6. AFTER LEAK IS LOCATED, VENT HOLES ARE TO BE PROVIDED TO ALLOW GAS OUT OF THE GROUND.
7. PEOPLE CAN BE ALLOWED INTO THE BUILDING AFTER:
 - A. THE LEAK IS SECURED.
 - B. Gas in ground ventilated to 2% OR LESS WITHIN 10 FT SUMMER OR 20 FT WINTER OF THE BUILDING.
 - C. BUILDING IS CLEARED FIRST BY ONE EMPLOYEE USING A CGI, AND A SECOND EMPLOYEE USING A CGI OR CGD TO VERIFY.

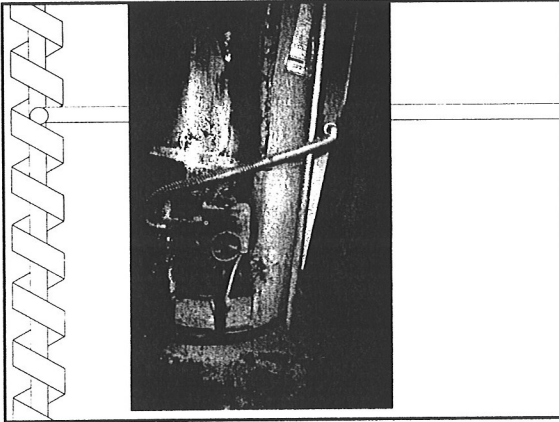
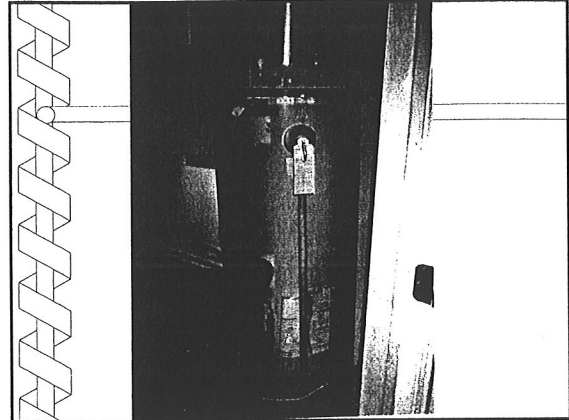
EVACUATIONS



FIRE CALLS

REQUIREMENTS:

- FIRST PRIORITY IS SHUT OFF GAS TO BUILDING
- SUPERVISION ON CALL AND OR ON THE JOB SITE.
- MAKE CONTACT WITH FIRE DEPARTMENT PERSON IN CHARGE.
- INJURED PERSON (S) NAME AND WHERE TAKEN FOR TREATMENT.
- CAUSE OR FIRE.
- EXTENT OF PROPERTY DAMAGE AND DOLLAR VALUE.
- COMPLETE INSIDE LEAK PROCEDURES WHEN POSSIBLE.
- METER ON OR SEALED OFF AT COMPLETION OF CALL.



ASPHYXIATION

REQUIREMENTS:

COMPLETE INSIDE GAS LEAK PROCEDURE PLUS:

- CO1 PROCEDURE
- SUPERVISION ON CALL AND OR ON THE JOB SITE.
- INJURED PERSON (S) NAME AND WHERE TAKEN FOR TREATMENT.
- METER ON OR SEALED OFF AT COMPLETION OF CALL.

“CO” COMPLAINTS

STEPS:

1. TURN ON AND ZERO DETECTOR OUTSIDE
2. TEST FOR “CO” ON EACH LEVEL OF THE BUILDING AT FLOOR, MIDWAY IN THE ROOM AND CEILING.
3. TEST EACH APPLIANCE BEFORE DILUTION AIR, RECORD READINGS BEFORE AND AFTER ADJUSTMENTS.
 - A. ALLOW APPLIANCE TO HEAT UP.
 - B. ACCEPTABLE LEVELS.
 - C. UNACCEPTABLE LEVELS.

CO1 CALL- ACCESS MUST BE GAINED (NOT HOME) SHUT METER OFF AND CONTACT SUPERVISION.

CO2 CALL- ACCESS NOT REQUIRED, OK TO NOT HOME ORDER.

EXPLOSIONS & FLASHES

REQUIREMENTS:

COMPLETE INSIDE GAS LEAK PROCEDURE PLUS:

- SUPERVISION ON CALL AND OR ON THE JOB SITE.
- INJURED PERSON (S) NAME AND WHERE TAKEN FOR TREATMENT.
- EXTENT OF PROPERTY DAMAGE.
- CAUSE OF THE EXPLOSION OR FLASH.
- VERIFY PROPER OPERATION AND INPUT OF APPLIANCE INVOLVED IN THE FLASH, DEBATE IF NECESSARY.

GAS LINE BREAK

- **REQUIREMENTS:**
 - **SECURE AREA**
 - **911 MUST BE CALLED**
 - **EVACUATE (if necessary).**
 - **BAR TEST AREA TO VERIFY NO FURTHER LEAKAGE.**
 - **AFTER BREAK SECURED COMPLETE ITEMS IN EVACUATION PROCEDURES.**
 - **CAUSE OF BREAK.**
 - **PERSON / COMPANY RESPONSIBLE.**
- **DO NOT ATTEMPT REPAIR OF PLASTIC LINES UNLESS YOU HAVE BEEN PROPERLY TRAINED.**

ANY QUESTIONS ?

