

WHAT MARKETERS SHOULD KNOW ABOUT MISSOURI'S WEIGHTS AND MEASURES REQUIREMENTS



Missouri Department of Agriculture
Weights, Measures & Consumer Protection
Petroleum/Propane/Nh3

414-052 Missouri Statutes

- ▣ Locations shall be kept in such condition as to be safe from fire and explosion and not likely to cause injury to adjoining property or to the public.
- ▣ The director shall have access during normal business hours to all places where motor fuels are marketed for the purposes of examination, inspection, taking of samples and investigation.





UNLEADED



Trash burning area



COFFEE
BREAK

CENTRAL AVE

100% DIESEL
100% DIESEL
100% DIESEL

DYED
FARM
MESELE

100% DIESEL
100% DIESEL
100% DIESEL

DYED DIESEL FUEL
100% DIESEL FUEL



414-052

- ▣ Premises utilized for the sale of fuels to be safe from fire and explosion-access for inspection, search warrant –stop use order appeal of stop use order, and hearing.
- ▣ All premises including bulk storage installations, terminals, dispensing or distributing facilities, equipment, appliances or devices utilized for the sale of products regulated by sections 414-010 to 414-152 shall be inspected at least every six months.

Areas that inspectors focus on

- ▣ Overall condition of tanks and equipment.
- ▣ Piping!!!!!!!
- ▣ Piping remains the number one cause of accidental releases of product into the environment.
- ▣ Releases are very often undetectable even with the best automated equipment available until the product shows up on a surface area or water supply.



FLAMMABLE
NO SMOKING

FLAMMABLE

JET A

NO SMOKING

FLAMMABLE

FLAMMABLE

NO SMOKING

JET A

Aluminum piping with rubber
sealed coupler.





Leaks

1,700 gallon release
“Undetected”



Flex connectors



Maximum bend radius has been exceeded



DO NOT PUT WRENCHES ON HOSE:

Wrenches must only be used on the *hex* of the fitting.

DO NOT OVERBEND THE CONNECTOR:

The installed radius of the connector must be larger than the minimum bend radius defined in *the table below*.

DO NOT ABUSE CONNECTOR:

...tracing the connector... contact with other
...service...

CONNECTORS

Flex piping

Areas of focus for most inspectors

- ▣ Safety of the facility.
Safety of adjoining properties and public.
Condition of tanks, piping, valves, fittings, gauging, venting, electrical.
Environmental Protection (secondary containment)
- ▣ Device accuracy (Missouri)
- ▣ Device accuracy is essential to reconcile inventory which plays a key role in leak detection and release prevention.

Manifolds



Areas of focus for inspectors

- ▣ Concerns related to piping manifolds.
- ▣ #1 inadequate venting/simultaneous fill or withdrawal.
- ▣ #2 inadequate capacity of secondary containment.
- ▣ EPA versus Missouri requirements and reasons why. “Displacement versus freeboard”
- ▣ NFPA versus Missouri requirements and reasons why. “fencing and tank size limitations”

Every transport drivers nightmare



1

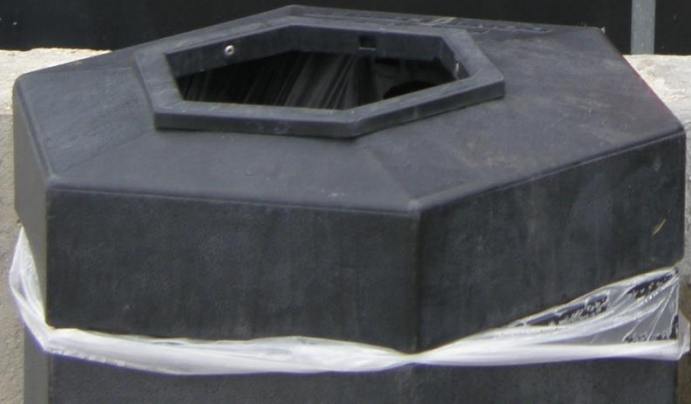
**DIESEL
FLAMMABLE**

STOP

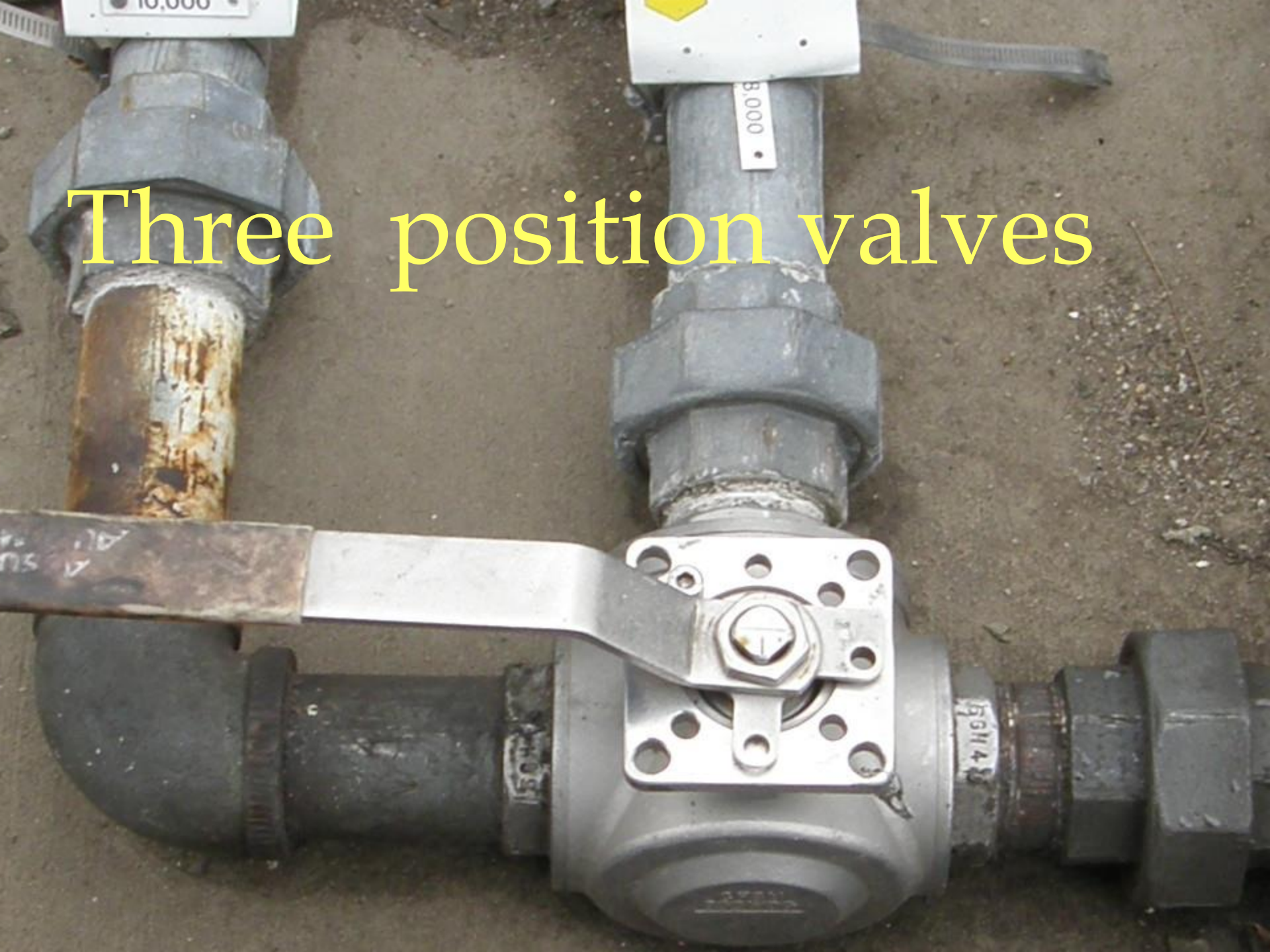
**IS THE
DRAIN VALVE
CLOSED?**

**If filling diesel
tanks 1-4, tanks
do not fill evenly.**

**Tank 1 fills much
faster, watch
gauges and close
valve as needed.**

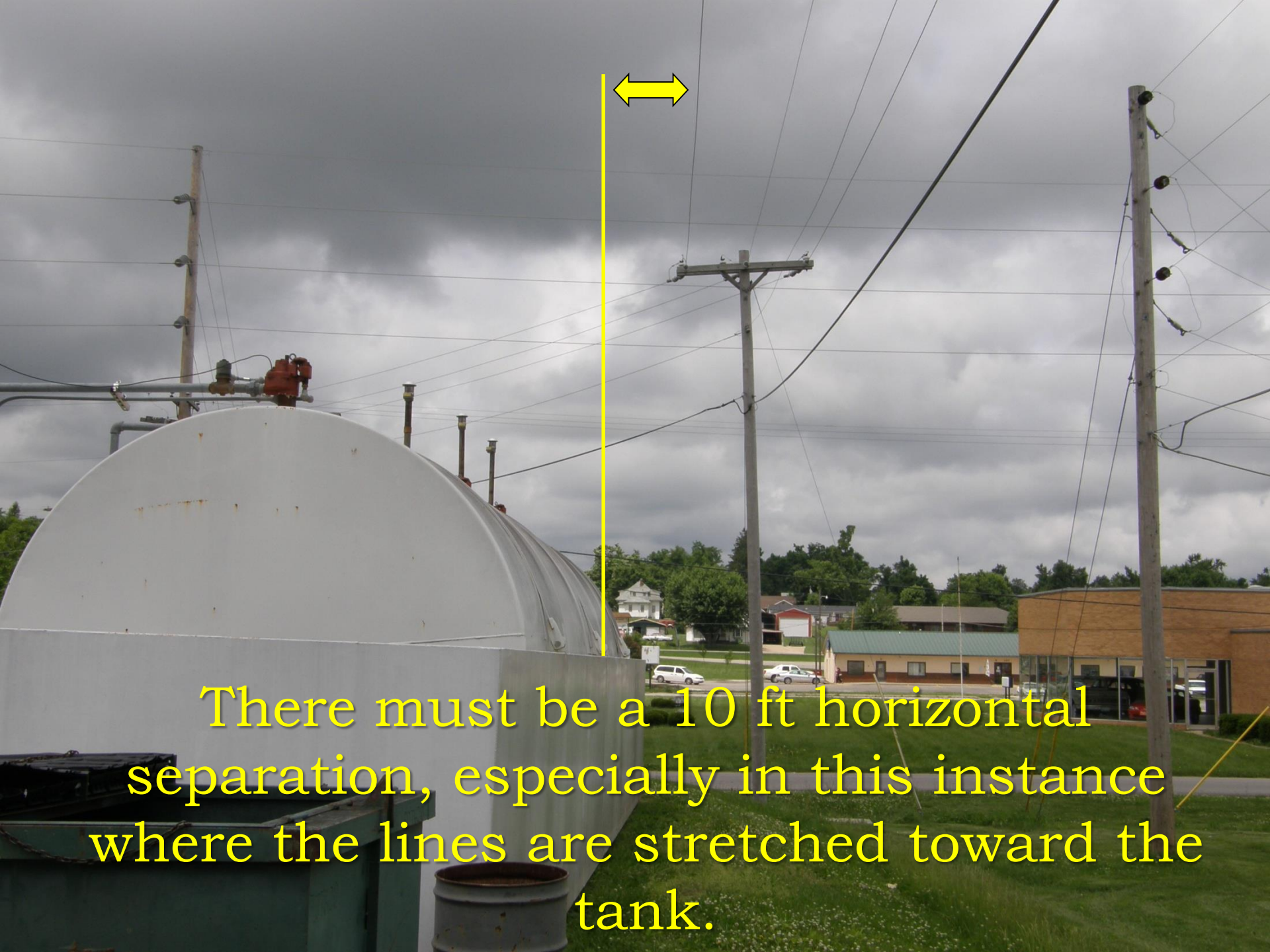


Three position valves



General safety concerns

- ▣ Ignition sources.
- ▣ Power lines passing over storage tanks.
- ▣ Directional vents that could push vapors towards an ignition source.
- ▣ Proper grounding.
- ▣ Proper electrical wiring for the classified area.



There must be a 10 ft horizontal separation, especially in this instance where the lines are stretched toward the tank.







Serious corrosion

Deep pitting





**Corrosion and
pitting**



**Over
Pressurization**

A close-up photograph of a white propane tank lying on its side on a bed of dark mulch. The tank is oriented vertically in the frame. The words "NO SMOKING" are printed in large, bold, red capital letters across the middle of the tank's side. Below this text, there is a small, rectangular yellow label with black text that reads "NO. 2 GRADE FUEL". At the bottom of the tank, a silver metal valve is visible, connected to a grey metal pipe that extends horizontally to the right. The background consists of dry, brownish grass and soil. The lighting is bright, casting a shadow to the left of the tank.

NO SMOKING

NO. 2 GRADE FUEL



Riveted tanks

A close-up photograph of a metal surface, possibly a ship's hull, showing a horizontal seam or joint. The metal is heavily rusted and discolored, with a mix of brown, grey, and black tones. The seam runs horizontally across the middle of the frame. The text "Concealed rivets" is overlaid in white, serif font in the lower-left quadrant of the image.

Concealed rivets

CONVERTIZONTALS



Other areas of focus

- ▣ Tank stability and proper drainage.
- ▣ Adequate emergency and normal venting.
- ▣ Adequate control valves to operate the system.
- ▣ Corrosion control.
- ▣ Gauging
- ▣ Overfill prevention.
- ▣ Potential ignition sources.



TANK STABILITY

22 11:13 AM



12 4:25 PM







Areas subject to flooding

Gauging

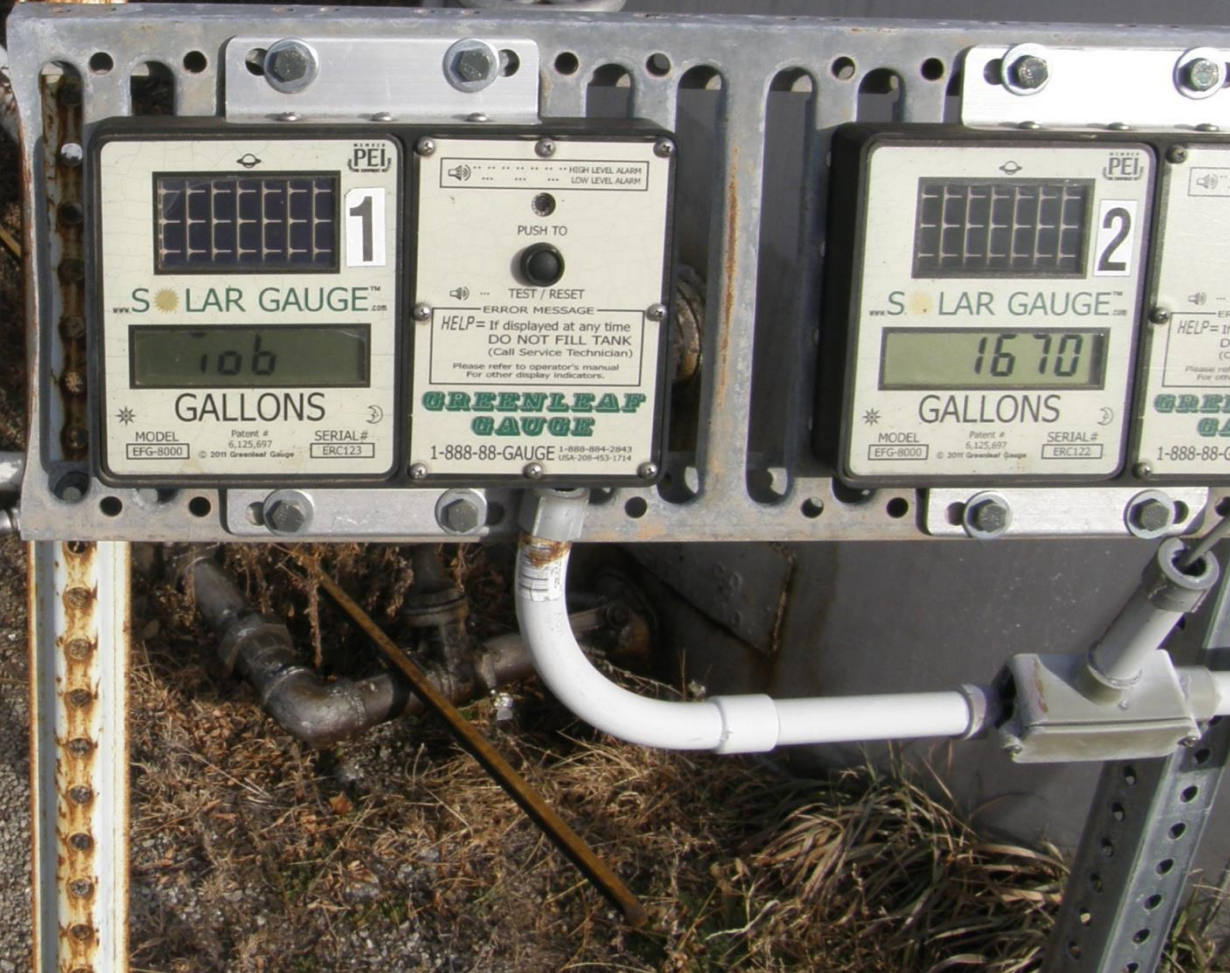
Small diameter piping must
Be adequately supported or
otherwise protected



Corrosion problems



Diesel TEXACO



PEI
1
SOLAR GAUGE™
www.SOLARGAUGE.com
106
GALLONS
MODEL EFG-8000 Pat. # 6,125,697 SERIAL # ERC123 © 2011 Greenleaf Gauge

... HIGH LEVEL ALARM
... LOW LEVEL ALARM
PUSH TO
TEST / RESET
ERROR MESSAGE
HELP = If displayed at any time
DO NOT FILL TANK
(Call Service Technician)
Please refer to operator's manual
for other display indicators.
GREENLEAF GAUGE
1-888-88-GAUGE USA 208-453-1714

PEI
2
SOLAR GAUGE™
www.SOLARGAUGE.com
1670
GALLONS
MODEL EFG-8000 Pat. # 6,125,697 SERIAL # ERC122 © 2011 Greenleaf Gauge

PEI
...
HELP = If displayed at any time
DO NOT FILL TANK
(Call Service Technician)
Please refer to operator's manual
for other display indicators.
GREENLEAF GAUGE
1-888-88-GAUGE

Tape/float style gauges / overfill alarms must be maintained when storing class one liquids to prevent vapor loss.



Plug missing

Cables don't slide well around corners.



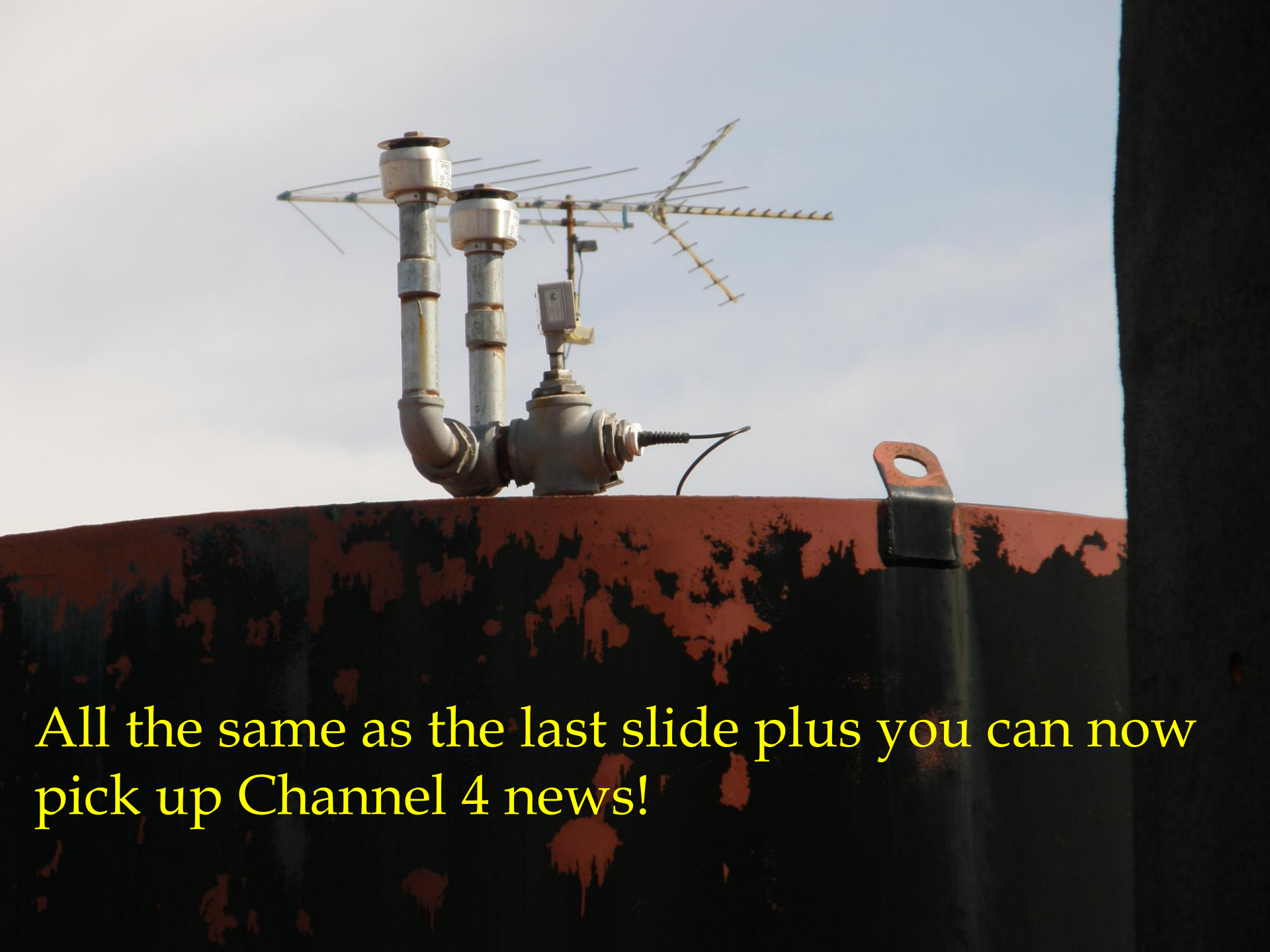
Cables tend to swirl around with the vortex created when the tank is being filled.

Evidence of overflow



Normal venting/overflow alarms/tank gauges
Same 2 inch pipe!





All the same as the last slide plus you can now pick up Channel 4 news!

ELECTRICAL PROBLEMS











UNLEADED
REGULAR

8,000



KILLARA @ CL. J. CL. M. CL. R.
CUP.

Ignition source in the classified area

Copper vent tube

Float cable restriction

Many problems !



Normal venting

Directional vents must discharge away from ignition sources. This includes the transport delivery area



Overfill with directional vents



Same cause



Same Cause



Incompatibility issues





Shim will affect the operation of the vent / overfill alarm and allow fugitive emissions.

Vent manifolds





Premium

#2 Diesel

Unleaded

**Never manifold Class I and
Class II vent Pipes.**

Most CARB approved vents are one and one half inch inside diameter.



Vent is restricted down from
it's nominal pipe size.



Emergency venting





DECEPTION

21 12:39 PM





21 12:38 PM

Deception



Emergency Venting

Deception







ENARDO
LEVER TYPE
STACK VALVE

CONCIQUINCES OF
INADEQUATE / inoperable
EMERGENCY VENTING

January 6, 2005

- Weather Conditions on January 6, 2005
 - Freezing rain, Sleet & Snow, 30° F
- Weather Conditions on January 7, 2005
 - Cloudy/overcast skies, 30° F, & SE winds 0 – 5
- Fire burned for over 30 hours
- Approx. 4 million gallons of water used
- >450 gallons of AFFF foam
- >750 gallons of fuel for the fire fighting apparatus
- Four responding departments - > 100 personnel





8 9:41 AM



REPAIRS









21 2:58 PM







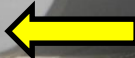
SOLVENT

Secondary containment



FLAMESHIELD
Tested to NFPA 30A-2000
Fire-Resistant Tank
Requirements

FLAMESHIELD
Tested to NFPA 30A-2000
Fire-Resistant Tank
Requirements





Serial No. FS 010548
FLAMESHIELD™

SwRI I.D. 00077-01/100-01

Listed by:
Southwest Research Institute
San Antonio, Texas

SwRI is recognized as a testing
laboratory and quality
assurance/inspection agency by the
National Evaluation Service, Inc.
and ICBO ES.

- Follow Installation Instructions.
- Tank is intended for stationary installation.
- This tank is built in accordance with UL 142 (1994) and complies with the requirements of Section 2-4.5(a) of NFPA 30A, 1996 edition as a Fire Resistant Tank.

In Missouri, Tanks storing different classes of products must have double bulkheads

#2D Clear

Premium

Unleaded

FLAMMABLE

ULTRA-LOW SULFUR HIGHWAY DIESEL FUEL
NO. 2 DIESEL - CLEAR



GASOLINE

NO. 2 DIESEL - CLEAR

UNLEADED

FLAMMABLE

UNLEADED GASOLINE



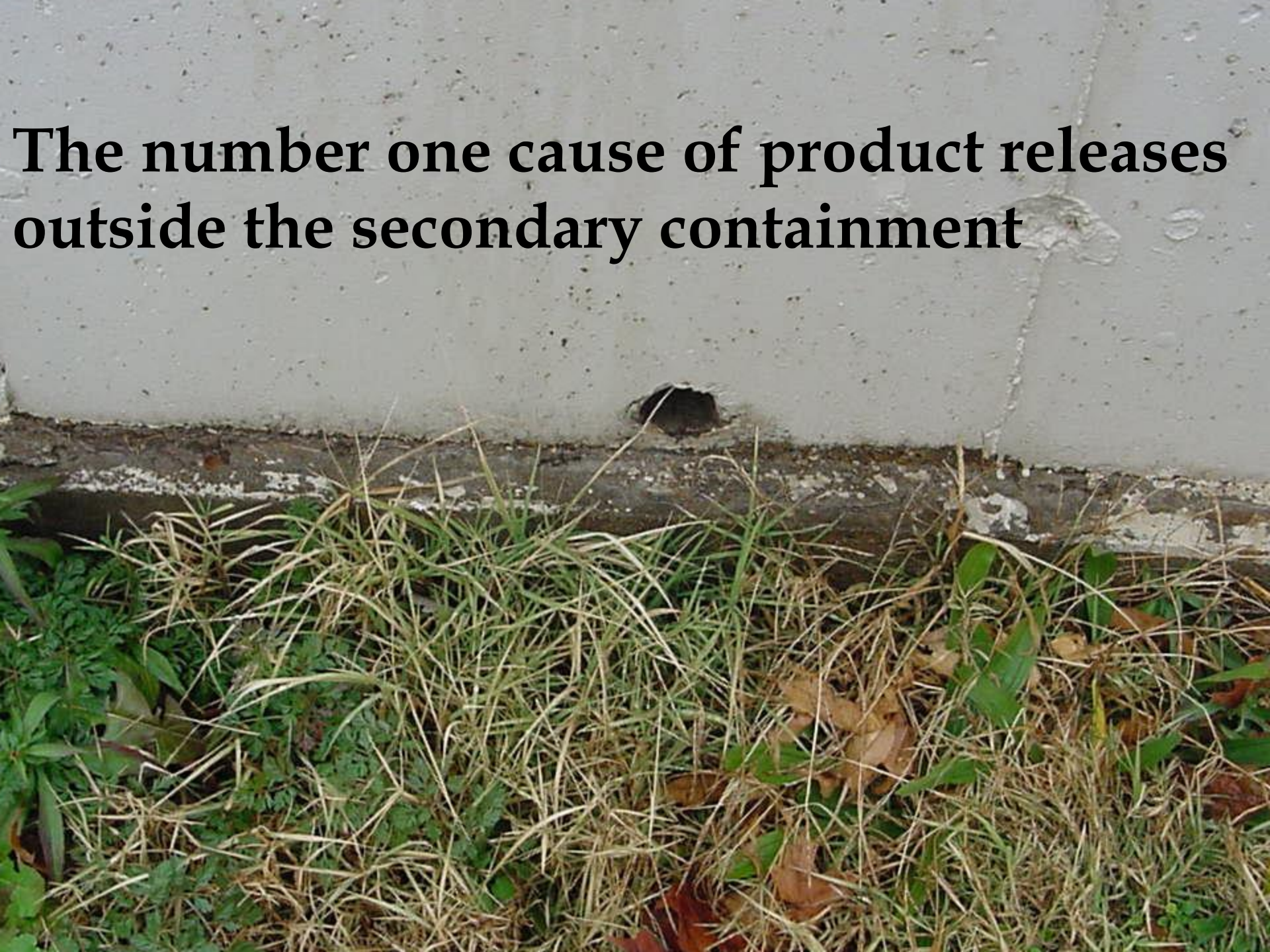
A photograph of a concrete wall with a large vertical crack. A white pipe runs horizontally across the top of the wall, secured by a metal clamp. The crack is deep and jagged, extending from the top of the wall down to the bottom. The text "Secondary containment" is overlaid in green in the center of the image.

Secondary containment





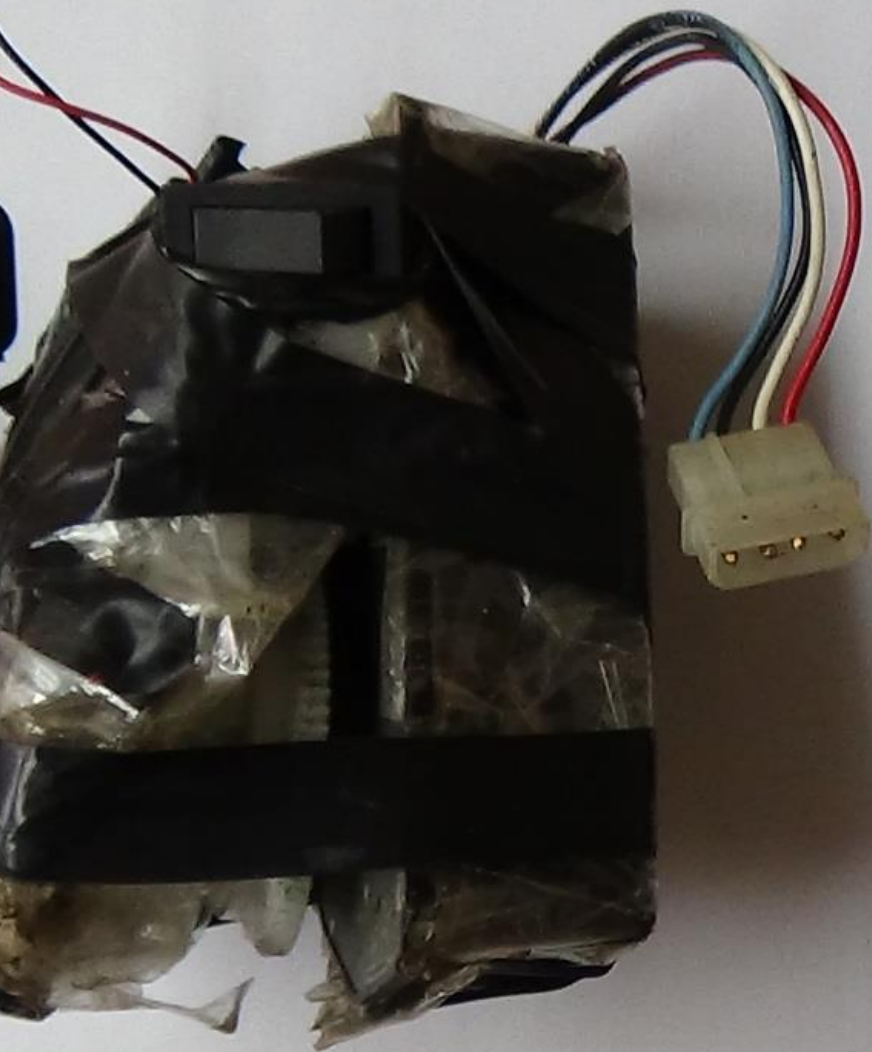
**The number one cause of product releases
outside the secondary containment**



FRAUD



Credit card
skimmers

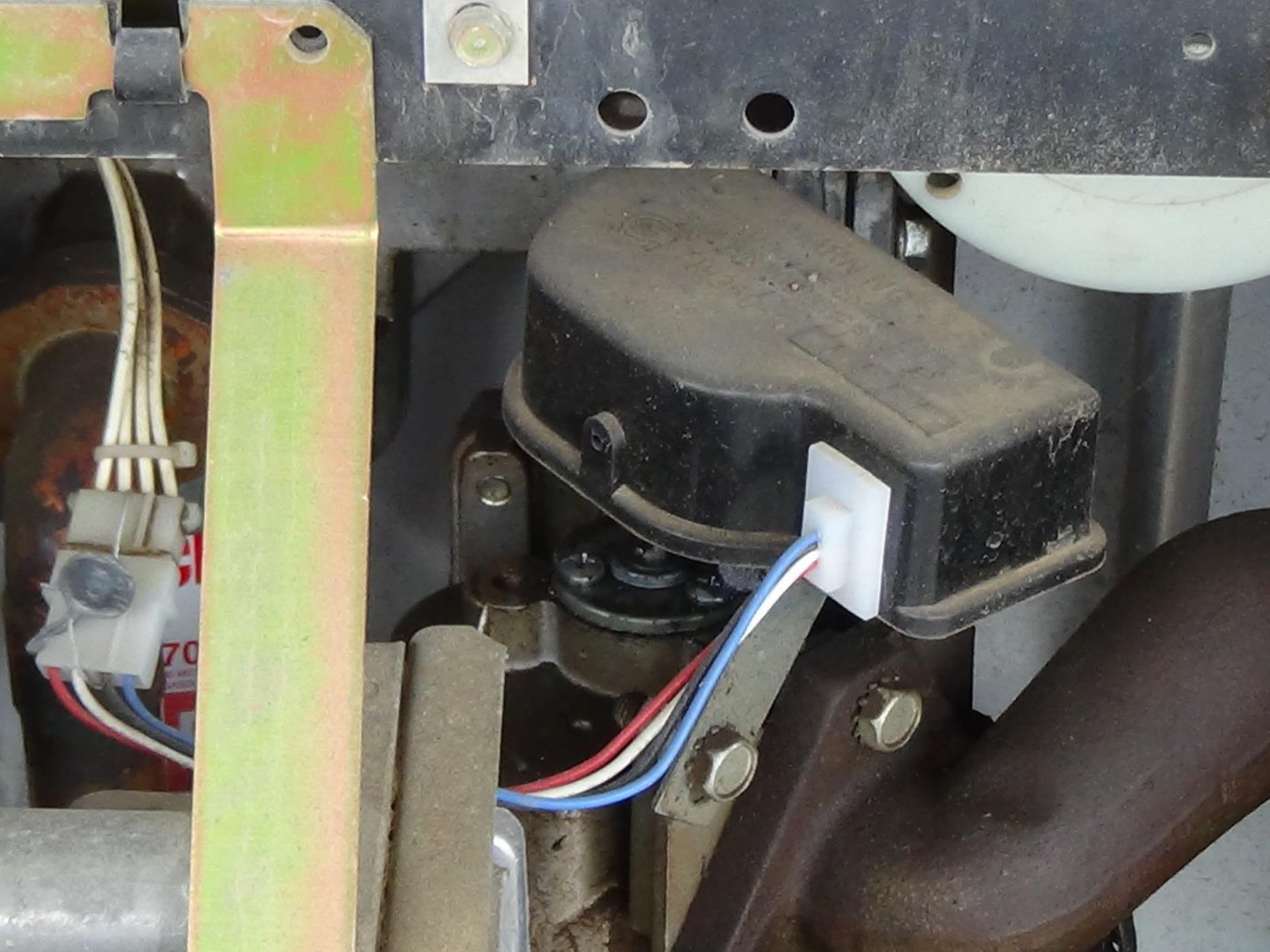


Battery driven pulsar

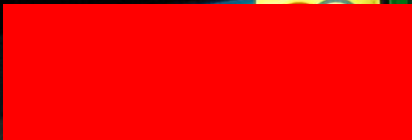




07/21/2013 02:03



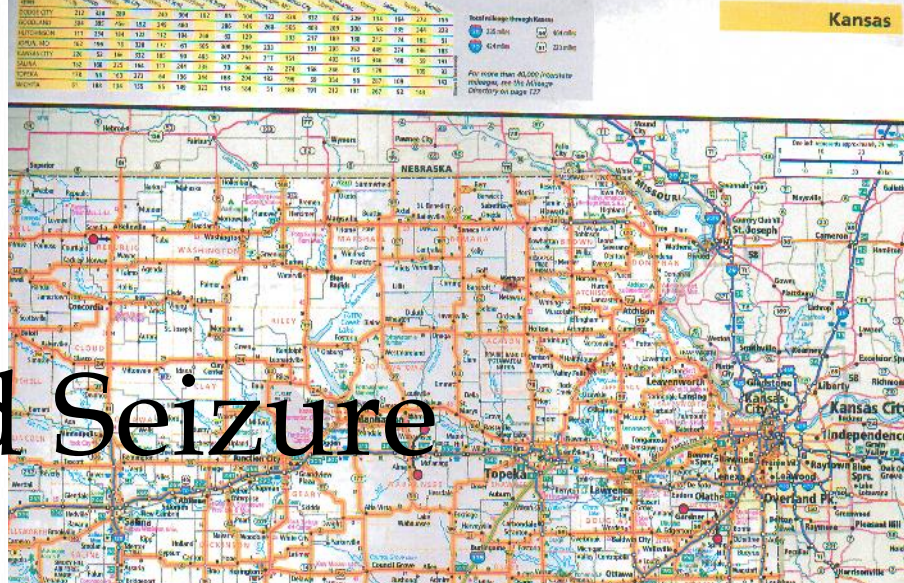




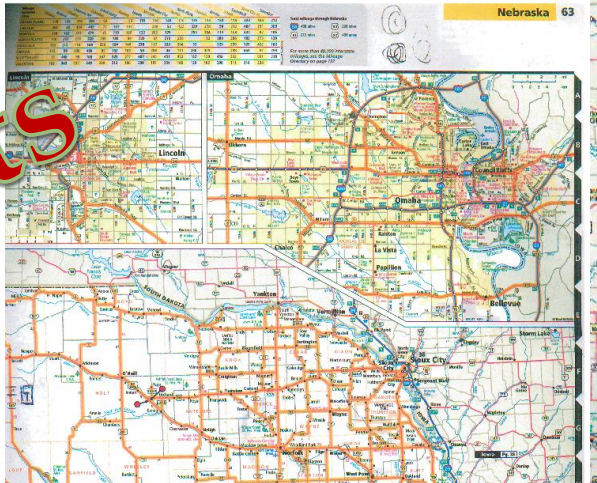
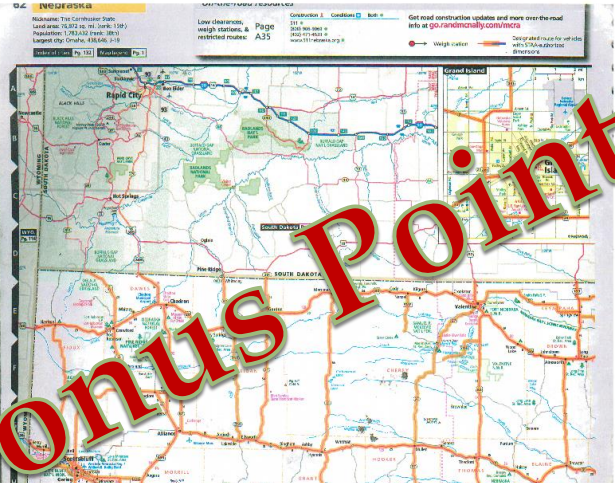
Unleaded		Diesel
359 ⁹		388 ⁹



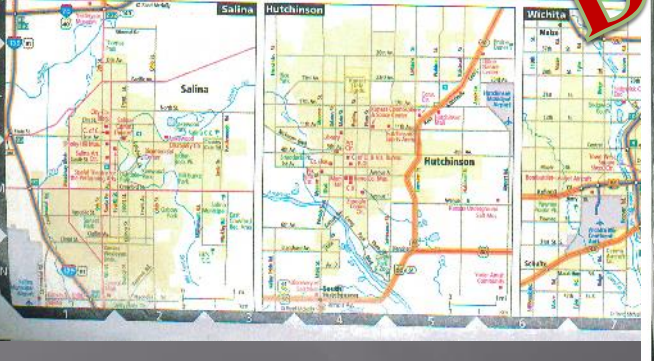
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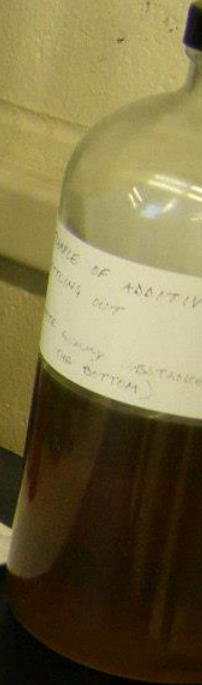
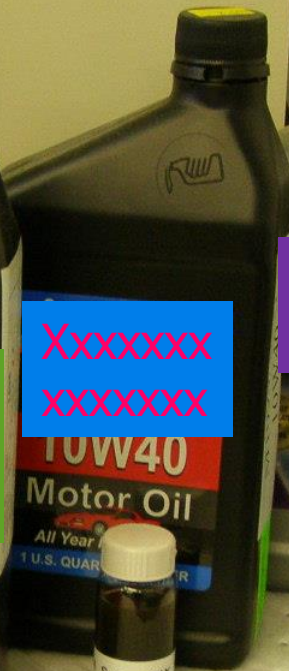
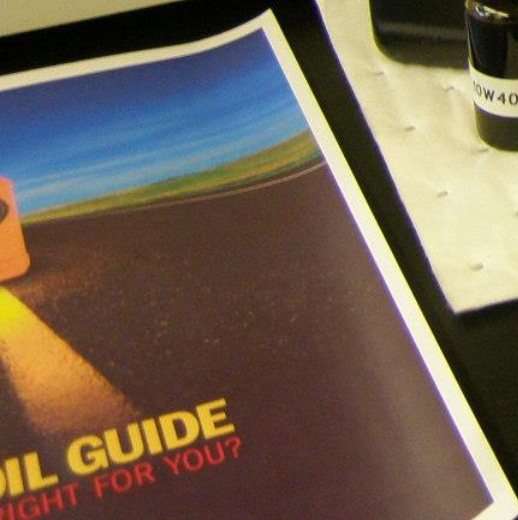
Arrest and Seizure



Bonus Points



Motor oil testing



e 10W40



e 10W40

Motor Oil Product Notice

The Weights, Measures and Consumer Protection Division has tested the following Motor oil products which fail to meet Missouri's requirements for one or more of the following reasons: the product contains used motor oil, is labeled with the wrong SAE viscosity, or contains less than the declared net contents on the label. The following products cannot be offered for sale in the State of Missouri:

Apex 5W30 SG/CD

Black Knight 10-30 SB/CB

Black Knight 10-40 SB/CB

Bullseye 5W30 SC/CC

Challenger 10W30 SB

City Star 5W30 SA

City Star 10W30 SA

Liberty 10W30

Orbit 5-30

Orbit 5W30 SB

Orbit 10-30

Orbit 10W30 SB

Orbit 10-40

Orbit 10W40 SB

Pinnacle Platinum 10W30
Royal 10W-30 SA
Royal 10W-40 SA
Star Petroleum 5W-30 SB
Star Petroleum 10W40 SB
Super XX 5W-30
Super XX 5W30 SB
Super XXX 5W30 SB
Super XXX 10W40 SM
Super XXX 10W-40 SB
TruStar 5-30 SC/CC
TruStar 10-40 SC/CC
US Economy 5-30

Bullseye

North Atlantic

Orbit

Super XXX

Supreme XXX

Automatic Transmission Fluid (ATF) Notice
The Weights, Measures and Consumer Protection Division has also tested the following Automatic Transmission Fluid (ATF) products which fail to meet Missouri's requirements for one or more of the following reasons: the product does not contain the advertised contents declared on package labeling, or contains less than the declared net contents on the label.

The following products cannot be offered for sale in the State of Missouri:

Black Knight ATF Type A

Bullseye ATF Type A

Formula 100 ATF

Mach 4 ATF Type A

Orbit ATF Type A

Star ATF Type A

Super XXX ATF

Value ATF Type A

Warco ATF Type A

Fuel Quality Program

- ▣ Laboratory performs: octane, distillation, RVP, sulfur, Saybolt color, cetane index, water, sediment, flash point, cloud point, copper corrosion, oxygenates (alcohol & ethers), density, gum, and infrared spectra tests.





GASOLINE
UN1203

Complaints

Very Low Octane





NO SMOKING TURN OFF ENGINE

Sale \$

blEnd

Gallons

rAt 105

\$ Price Per Gallon (Including Tax)

0

Regular

50

Plus

100

Premium

Product identity

The Ozarks

NO
SMOKEiNG



PERM

Financial responsibility

- ▣ 1,134 AST sites now covered by PSTIF
- ▣ Additional 39 sites insured privately.
- ▣ 91% compliance.
- ▣ Enforcement will be completed this year.

Other W&M Inspections

- ▣ Taxi meters
- ▣ Car wash timers
- ▣ All packaged commodities
- ▣ Egg & milk inspections
- ▣ Country of origin labeling
- ▣ Grain moisture meter inspection
- ▣ All scales from jewel weight to highway truck
- ▣ Scanners
- ▣ Anhydrous ammonia / Propane

A testament to the quality and long service life
of AST's when properly maintained.

2
MORRISON.
7-28.

IN THE MISSOURI OZARKS OLD TANKS NEVER DIE





**2,000 GALLON stationary WATER TANK
CONVERTED TO SMOKER**

MDA Weights & Measures Petroleum Inspection Program

THANK YOU