



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration



# Michigan Petroleum Pipeline Task Force



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# Our Mission

**To protect people and the environment from the risks of transporting hazardous materials by pipeline.**



# What We Regulate

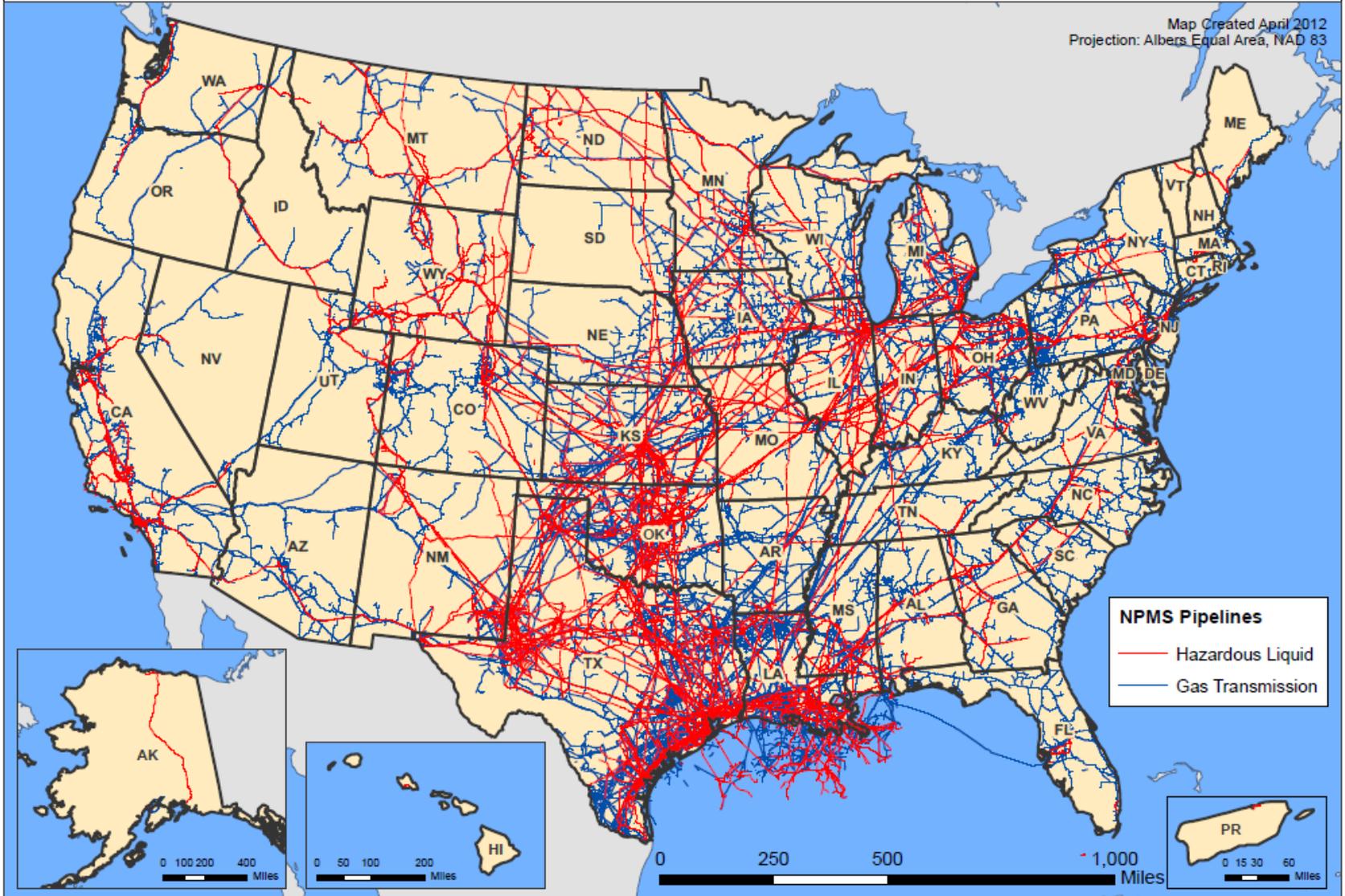
<b>Pipeline Miles by System Types – end of CY 2011, as-of 7/31/2012</b>			
<b>System Type</b>	<b>Miles</b>	<b>% Total</b>	<b>Number of Operators</b>
<b>Hazardous Liquid</b>	<b>182,135</b>	<b>7%</b>	<b>351</b>
<b>Gas Transmission</b>	<b>304,571</b>	<b>12%</b>	<b>900</b>
<b>Gas Gathering</b>	<b>20,035</b>	<b>1%</b>	<b>311</b>
<b>Gas Distribution</b>	<b>2,114,725</b>	<b>81%</b>	<b>1284</b>
<i>Main</i>	1,233,000	47%	
<i>Service</i>	881,725	34%	
<b>Total</b>	<b>2,621,466</b>		Some Operators have multiple System Types



## Gas Transmission And Hazardous Liquid Pipelines

Pipelines as of 4/10/2012

Map Created April 2012  
 Projection: Albers Equal Area, NAD 83





- **9,000 gallons  
(215 bbls)**

- **33,000 gallons  
(785 bbls)**





## For Perspective

**Line 5 capacity of 540,000 bbls/day:**

- **688 Railcars**
- **2512 Tanker Trucks**





# Strategic Focus

- **Safety**
  - *Reduce the risk of harm to people due to the transportation of hazardous materials by pipelines*
- **Reduce Congestion**
  - *Pipeline system capacity lost due to incidents, corrective action orders and other issues*
- **Global Connectivity**
  - *Standardize the requirements for pipeline transportation internationally*
- **Environmental Stewardship**
  - *Reduce the risk to the environment due to the transportation of hazardous liquids by pipeline*
- **Preparedness and Response**
  - *Mitigate the consequences after a pipeline failure has occurred*



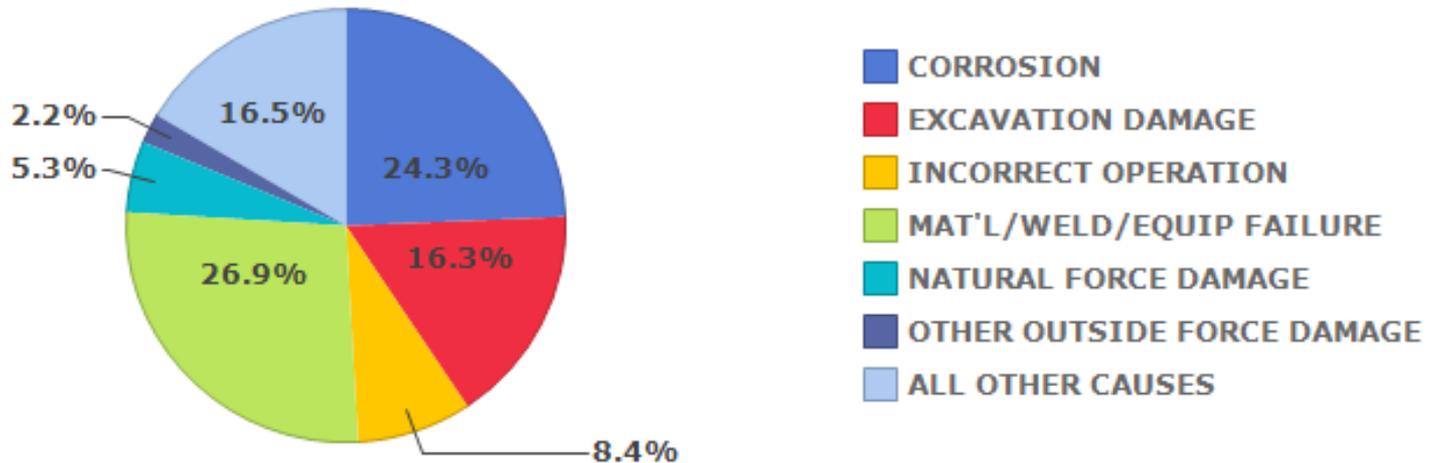
# Program Focus: Safety

- Performance measurement
  - data-driven, risk informed strategies
- Long-term focus on Integrity Management
- Inspection Integration
- Special inspections/emphasis on poor performing pipeline operators
- Focus on damage prevention and mitigation of high consequence accidents
- Cooperative efforts with stakeholders
  - including enhanced communications (S.C.)
- Support for state partners



# Significant Incident Causes

**Significant Incident Cause Breakdown**  
National, Hazardous Liquid, 1994-2013



Source: PHMSA Significant Incidents Files, May 07, 2014

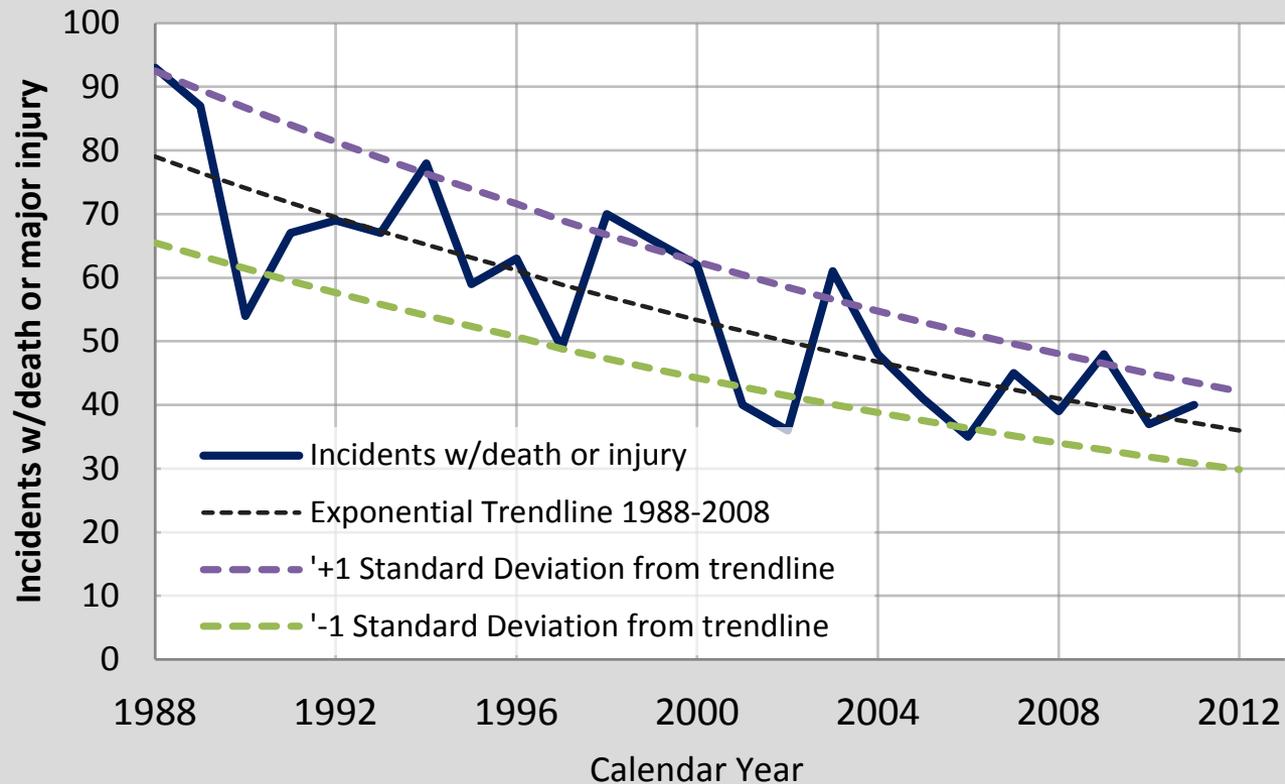
Significant Incidents involve:

- 1) Fatality or injury requiring in-patient hospitalization.
- 2) \$50,000 or more in total costs, measured in 1984 dollars.
- 3) HVL releases of 5 barrels or more or other liquid releases of 50 barrels or more.
- 4) Liquid releases resulting in an unintentional fire or explosion.



# Safety Benchmark

## Pipeline Incidents w/Death or Major Injury (1988-2011)

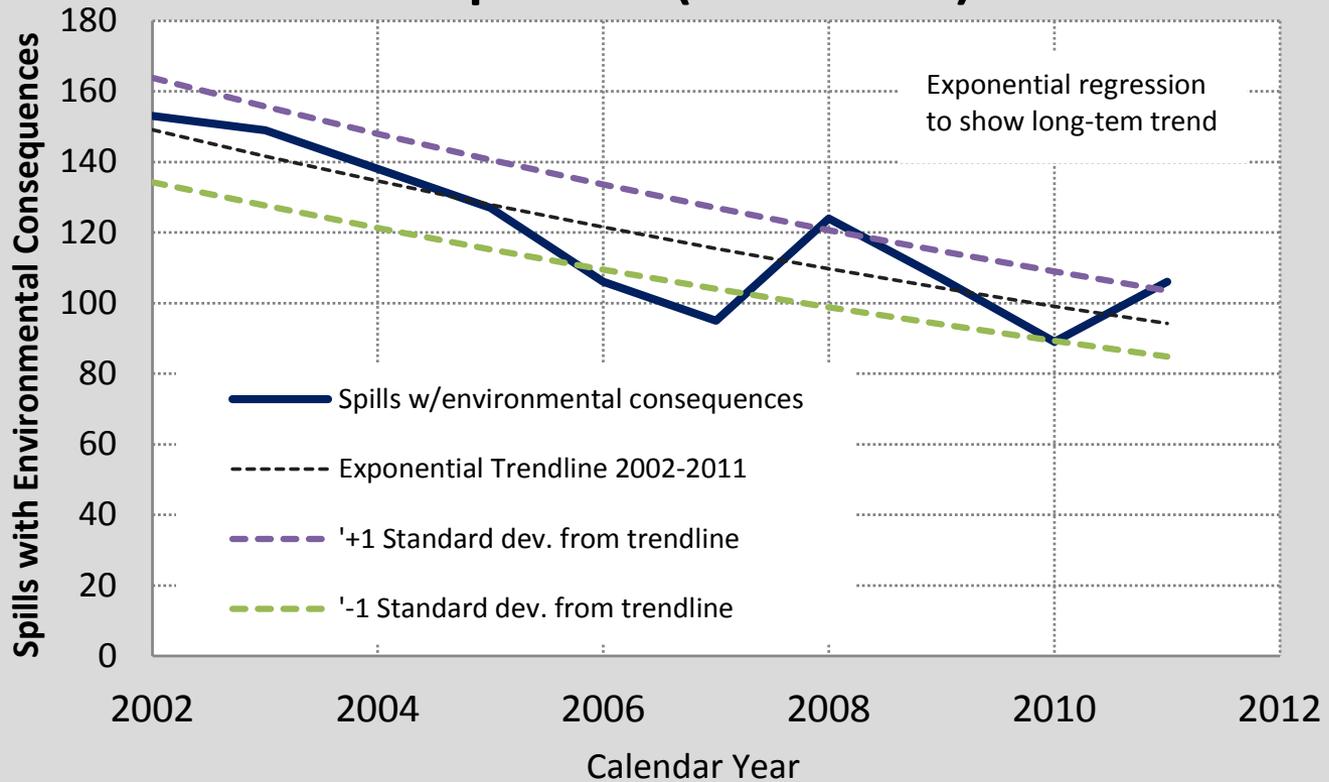


Data Sources: DOT/PHMSA Incident Data - as of Feb. 3, 2012.



# Environmental Benchmark

## Liquid Pipeline Spills w/Environmental Consequences (2002-2011)



Data Sources: PHMSA Incident Data - as of Feb. 3, 2012.



# 811

# April is Safe Digging Month

# ALWAYS CALL BEFORE YOU DIG



One free, easy call gets your utility lines marked AND helps protect you from injury and expense.

**Safe Digging Is No Accident:  
Always Call 811 Before You Dig**

Know what's below. Always call 811 before you dig.  
Visit [call811.com](http://call811.com) for more information.



Common Ground Alliance





# Pipeline System 2008-2012

- **9,259,157,795,428 bbl-miles crude**
  - ✓ **11.8 billion railcar miles**  
(112 million unit trains)
  - ✓ **43.1 billion tanker truck miles**
- **8,082,039,488,453 bbl-miles products**
  - ✓ **10.3 billion railcar miles**  
(98 million unit trains)
  - ✓ **37.6 billion tanker truck miles**
- **2,801,484,098,111 bbl-miles HVLs**



# Pipeline System 2008-2012

Approximately 70% of all crude oil and refined products transported

- 11 fatalities
- 16 injuries
- 238,000 bbl lost



## **What PHMSA Doesn't Do:**

- **Authorize or Permit Pipelines**
- **Approve Pipeline Siting or Routing**
- **Grant Imminent Domain Authority**
- **Monitor or Track Commodity Shipments**
- **Enforce Right-of-way Contract Provisions or Resolve Disputes**
- **Establish Spill Cleanup Criteria or Oversee Cleanup Operations**



## **What PHMSA Does Do:**

- **49 CFR Part 195**

**Transportation of Hazardous Liquids by Pipeline**

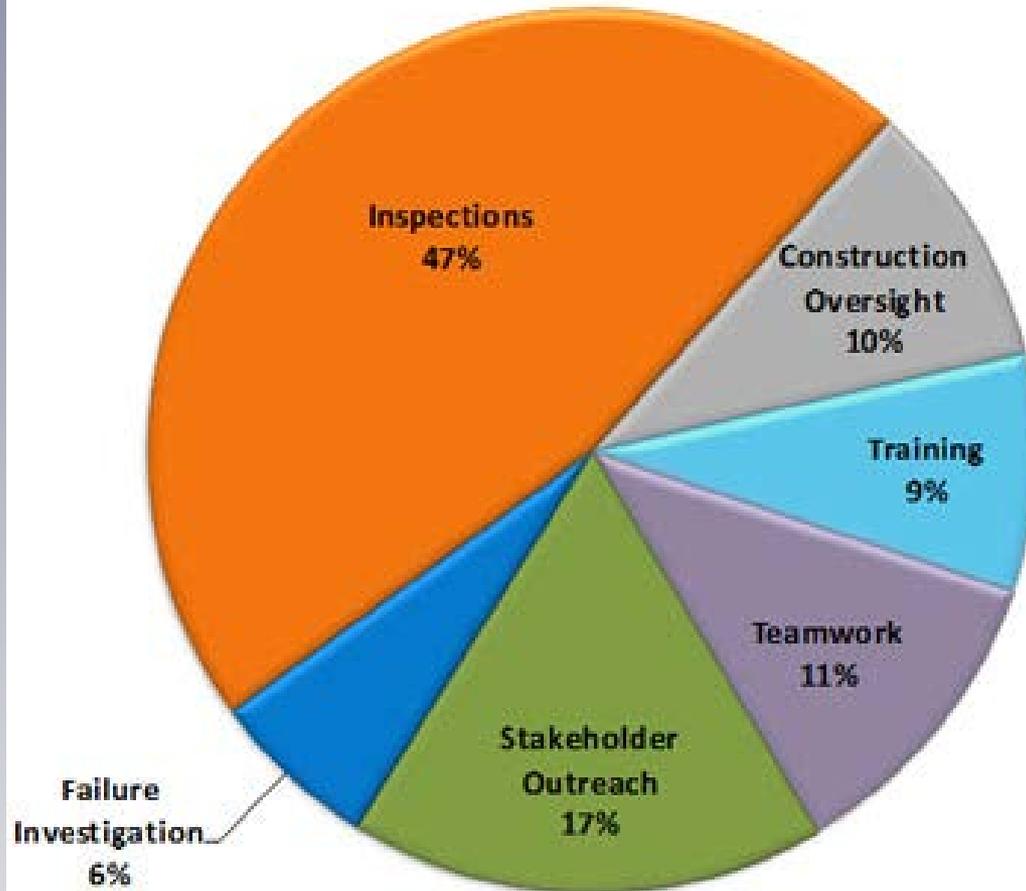
- **49 CFR Part 194**

**Response Plans for Onshore Oil Pipelines**



# What PHMSA Does Do:

**OPS Inspector Effort Allocation 2013**  
*All Regions*





# 49 CFR Part 195

## Transportation of Hazardous Liquids by Pipeline



# Hazardous Liquids?

- **Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.**
- **Crude Oil – including diluted bitumen.**
- **Highly Volatile Liquids – ethane, propane, ethylene, natural gas liquids, etc.**
- **Anhydrous Ammonia**
- **Carbon Dioxide**
- **Ethanol**



# 49 CFR Part 195

- **Reporting**
- **Design, Materials, and Construction**
- **Pressure Testing**
- **Operations**
  - ✓ **Maximum Operating Pressure**
- **Maintenance**
- **Corrosion Control**
- **Integrity Management**
- **Operator Qualification**
- **Public Awareness**
  - ✓ **Establish and Maintain Liaison with Emergency Responders**
- **Damage Prevention**



# 49 CFR Part 194

## Response Plans for Onshore Oil Pipelines



# Oil?

- **Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.**
- **Crude Oil – including diluted bitumen.**
- **Petroleum distillate or oil that is produced by natural gas wells and stored at atmospheric pressure and temperature (commonly referred to as condensate or drip gas).**



## Not Oil?

- Natural gas (including liquid natural gas and liquid petroleum gas) is not considered an oil.
- Highly volatile liquids that volatilize on contact with air or water (ethane, propane, ethylene, liquid petroleum gas, natural gas liquids, etc.) are not considered to be oil.
- Anhydrous Ammonia
- Carbon Dioxide
- Ethanol



# OPA 90 Plans

- 49 CFR Part 194 outlines response plan requirements for onshore pipelines.
- Plans must be submitted to PHMSA headquarters staff for review and approval.
- Plans must be resubmitted every 5 years or if substantial information changes.
- Includes provisions for EPA and Coast Guard review and input.



# Act of 2011

## § 60138. Response plans

- (a) **IN GENERAL.**—The Secretary of Transportation shall—
- (2) provide upon written request to a person a copy of the plan, which may exclude, as the Secretary determines appropriate—
    - (A) proprietary information;
    - (B) security-sensitive information, including information described in section 1520.5(a) of title 49, Code of Federal Regulations;
    - (C) specific response resources and tactical resource deployment plans; and
    - (D) the specific amount and location of worst case discharges (as defined in part 194 of title 49, Code of Federal Regulations), including the process by which an owner or operator determines the worst case discharge.



# Enbridge Line 5

## Enbridge Superior Region Response Zone Plan

- Submitted
- Reviewed and Approved
- Public Version Posted
- ✓ FOIA Electronic Reading Room



# Emergency Response PHMSA Role

- **Not an emergency response Agency.**
- **Don't conduct hazwoper activities or environmental monitoring.**
- **Don't direct remediation activities, but can assist with coordination.**



# Emergency Response PHMSA Role

- Investigate the cause of the release.
- Verify future integrity of the pipeline.
  - ✓ Monitor repairs
  - ✓ Pressure reduction
  - ✓ Corrective Action Orders
- Provide assistance and advice on pipeline matters to Incident Command.



# Act of 2011 – “DiIBit”

## Transportation of Diluted Bitumen:

- **Study to determine whether existing regulations are sufficient to regulate pipeline facilities transporting diluted bitumen due within 18 months.**



# Act of 2011 – “DiIBit”

## Transportation of Diluted Bitumen:

### Issues considered in the study:

- External corrosion
- Internal corrosion
- Internal erosion
- Water, sediment, etc.
- Temperature
- Internal pressure
- Pressure fluctuations/fatigue



# **Act of 2011 – “DiIBit”**

**“TRB Special Report 311: Effects of Diluted Bitumen on Crude Oil Transmission Pipelines”**

**National Academy of Sciences  
June 2013**



## Act of 2011 – “DiIBit”

### Transportation of Diluted Bitumen:

**“The committee does not find any causes of pipeline failure unique to the transportation of diluted bitumen. Furthermore, the committee does not find evidence of chemical or physical properties of diluted bitumen that are outside the range of other crude oils or any other aspect of its transportation by transmission pipeline that would make diluted bitumen more likely than other crude oils to cause releases.”**



## Act of 2011 – “DiIBit”

### Transportation of Diluted Bitumen:

**It is important to note that the study did not consider the consequences of a diluted bitumen release that would include an analysis of emergency preparedness and response issues, including potential alternative remediation strategies.**



# **“DilBit” - Canadian Government Study**

**“Properties, Composition and Marine Spill Behavior, Fate and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands”**

**Environment Canada  
Fisheries and Oceans Canada  
Natural Resources Canada  
November 30, 2013**



## **Act of 2011 – “DiIBit”**

### **Transportation of Diluted Bitumen:**

**There were reports of elevated benzene levels associated with the Marshall, Michigan, and Mayflower, Arkansas releases.**

**[crudemonitor.ca](http://crudemonitor.ca)**



## Crude Quality Data Summary

#201, 17850 - 105 Avenue  
Edmonton, Alberta, T5S2H5  
Phone: (780) 991-9900

Condensate: Southern Lights Diluent

Location: Edmonton

Batch: SLD-539

Sample Date: September 1, 2013

### Summary Comments

*The September sample of Southern Lights Diluent contained slightly reduced density along with elevated mercaptans and hexanes.*

### Basic Analysis Information

	September 1, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Relative Density	0.669	0.675 +/- 0.005	0.670	0.680
Gravity (degrees API)	80.1	78.2 +/- 1.5	76.7	79.7
Absolute Density (kg/m <sup>3</sup> )	668.1	674.2 +/- 4.7	669.5	678.9
Sulphur (mass%)	0.02	0.03 +/- 0.01	0.02	0.04
MCR (mass%)	ND	ND	-	-
Viscosity (cSt)	0.50	0.53 +/- 0.02	0.51	0.55
RVP (kPa)	79.3	81.7 +/- 4.5	77.2	86.2
Sediment (ppmw)	17	15 +/- 23	0.00	38

### Mercaptans

	September 1, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Volatile Mercaptans (mass ppm)	70.7	21.6 +/- 17.3	4.3	38.9
C7- Mercaptans (mass ppm)	96.7	53.7 +/- 17.8	35.9	71.5

### BTEX (Vol%)

	September 1, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Benzene	1.11	0.97 +/- 0.12	0.85	1.09
Toluene	0.82	1.03 +/- 0.13	0.90	1.16
Ethyl-Benzene	0.12	0.11 +/- 0.02	0.09	0.13
Xylenes	0.44	0.48 +/- 0.10	0.38	0.58
BTEX Total	2.49	2.58 +/- 0.24	2.34	2.82

“DiBit”



## Crude Quality Data Summary

#201, 17850 - 105 Avenue  
Edmonton, Alberta, T5S2H5  
Phone: (780) 991-9900

Crude: Western Canadian Select

Location: Hardisty

Batch: WCS-807

Sample Date: September 17, 2013

### Summary Comments

*The September 17th sample of Western Canadian Select contained slightly elevated density, sulphur, MCR, BTEX and C7 x C10 concentrations, while butanes and pentanes were slightly decreased. Simulated distillation results indicate an increase in the residue fraction.*

### Basic Analysis Information

	September 17, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Relative Density	0.935	0.930 +/- 0.005	0.925	0.935
Gravity (degrees API)	19.8	20.7 +/- 0.8	19.9	21.5
Absolute Density (kg/m <sup>3</sup> )	934.5	929.2 +/- 4.8	924.4	934.0
Sulphur (mass%)	3.71	3.52 +/- 0.10	3.42	3.62
MCR (mass%)	10.20	9.71 +/- 0.38	9.33	10.09
Sediment (ppmw)	305	329 +/- 66	263	395
TAN (mgKOH/g)	0.94	0.94 +/- 0.07	0.87	1.01

### Light Ends (Vol%)

	September 17, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Propane	0.04	0.06 +/- 0.01	0.05	0.07
Butanes	1.04	2.02 +/- 0.40	1.62	2.42
Pentanes	3.56	4.44 +/- 0.81	3.63	5.25
Hexanes	3.86	3.94 +/- 0.51	3.43	4.45
Heptanes	3.70	2.82 +/- 0.43	2.39	3.25
Octanes	3.08	2.12 +/- 0.39	1.73	2.51
Nonanes	2.36	1.50 +/- 0.34	1.16	1.84
Decanes	1.27	0.72 +/- 0.19	0.53	0.91

### BTEX (Vol%)

	September 17, 2013	5 Year Avg. +/- Std. Dev.	Avg. - Std. Dev.	Avg. + Std. Dev.
Benzene	0.18	0.16 +/- 0.03	0.13	0.19
Toluene	0.41	0.30 +/- 0.06	0.24	0.36
Ethyl-Benzene	0.09	0.06 +/- 0.01	0.05	0.07
Xylenes	0.45	0.29 +/- 0.06	0.23	0.35

"DiBit"



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# Questions

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