How Hazardous Liquids Operators Learn from PHMSA Incident Data

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PHMSA Data Workshop
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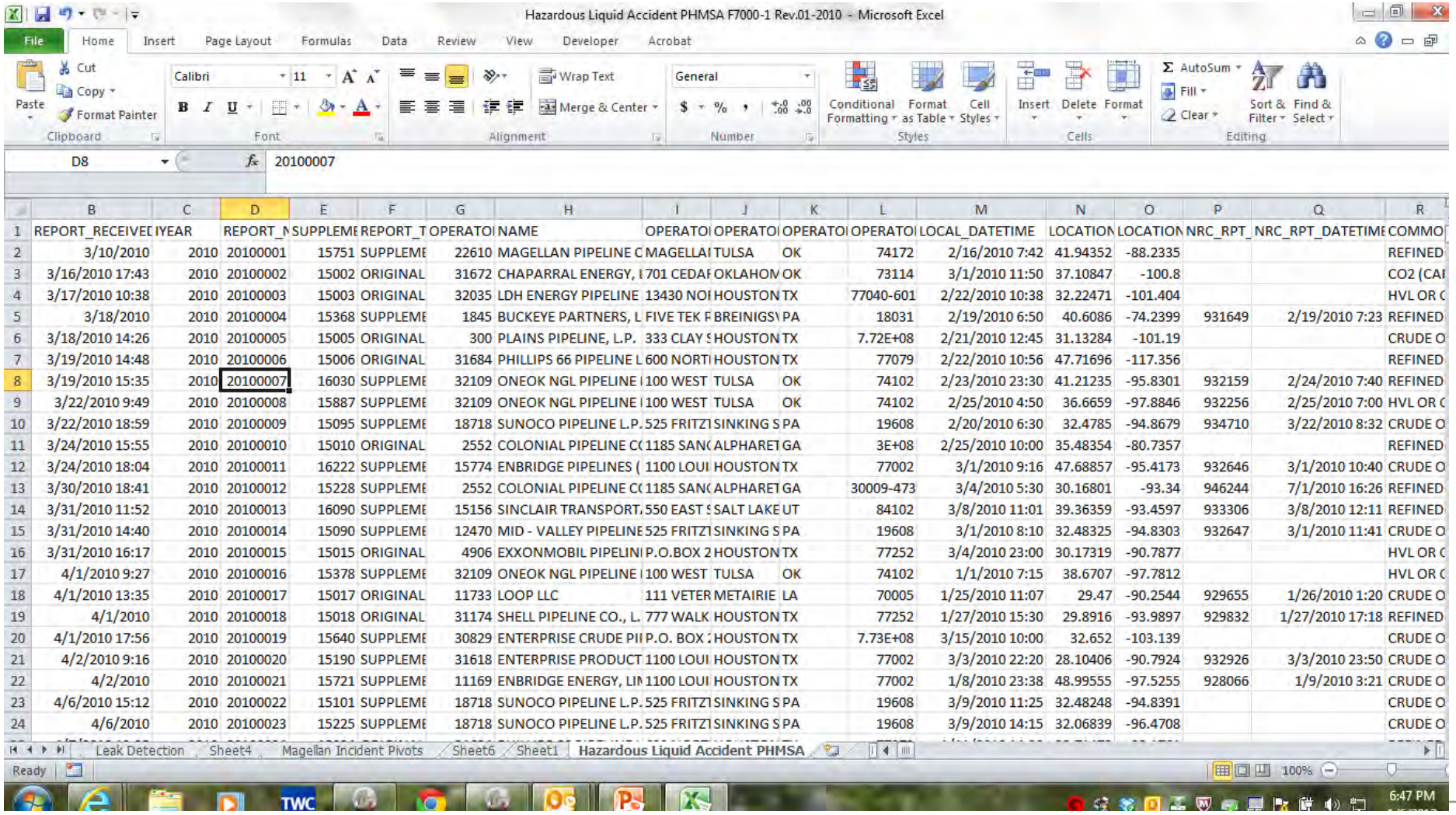
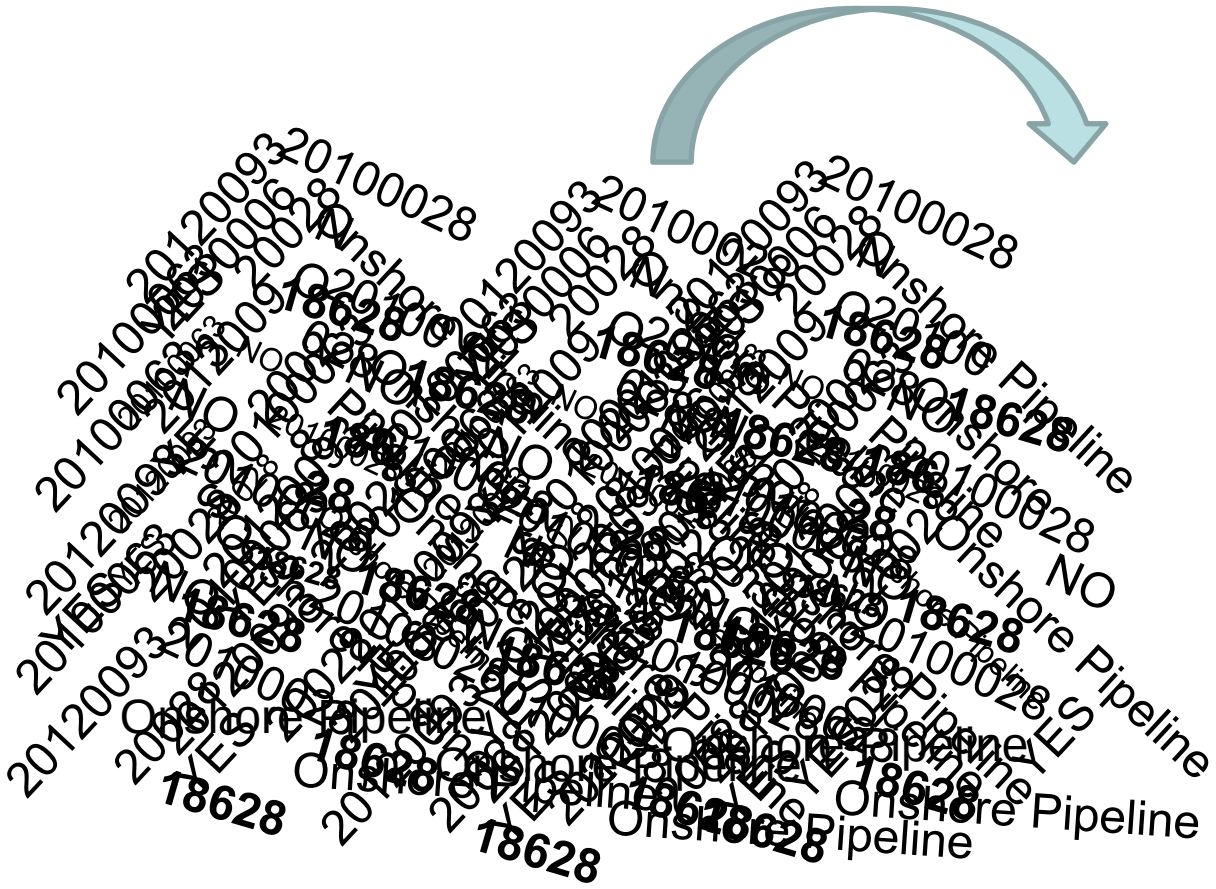
Making a picture out of a heap of data



	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	REPORT_RECEIVED	YEAR	REPORT_N	SUPPLEME	REPORT_T	OPERATOI	NAME	OPERATOI	OPERATOI	OPERATOI	OPERATOI	LOCAL_DATETIME	LOCATION	LOCATION	NRC_RPT_	NRC_RPT_DATETIME	COMMO
2	3/10/2010	2010	20100001	15751	SUPPLEME	22610	MAGELLAN PIPELINE C	MAGELLAI	TULSA	OK	74172	2/16/2010 7:42	41.94352	-88.2335			REFINED
3	3/16/2010 17:43	2010	20100002	15002	ORIGINAL	31672	CHAPARRAL ENERGY, I	701 CEDAF	OKLAHOM	OK	73114	3/1/2010 11:50	37.10847	-100.8			CO2 (CAI
4	3/17/2010 10:38	2010	20100003	15003	ORIGINAL	32035	LDH ENERGY PIPELINE	13430 NOI	HOUSTON	TX	77040-601	2/22/2010 10:38	32.22471	-101.404			HVL OR C
5	3/18/2010	2010	20100004	15368	SUPPLEME	1845	BUCKEYE PARTNERS, L	FIVE TEK F	BREINIGS\	PA	18031	2/19/2010 6:50	40.6086	-74.2399	931649	2/19/2010 7:23	REFINED
6	3/18/2010 14:26	2010	20100005	15005	ORIGINAL	300	PLAINS PIPELINE, L.P.	333 CLAY S	HOUSTON	TX	7.72E+08	2/21/2010 12:45	31.13284	-101.19			CRUDE O
7	3/19/2010 14:48	2010	20100006	15006	ORIGINAL	31684	PHILLIPS 66 PIPELINE L	600 NORTI	HOUSTON	TX	77079	2/22/2010 10:56	47.71696	-117.356			REFINED
8	3/19/2010 15:35	2010	20100007	16030	SUPPLEME	32109	ONEOK NGL PIPELINE I	100 WEST	TULSA	OK	74102	2/23/2010 23:30	41.21235	-95.8301	932159	2/24/2010 7:40	REFINED
9	3/22/2010 9:49	2010	20100008	15887	SUPPLEME	32109	ONEOK NGL PIPELINE I	100 WEST	TULSA	OK	74102	2/25/2010 4:50	36.6659	-97.8846	932256	2/25/2010 7:00	HVL OR C
10	3/22/2010 18:59	2010	20100009	15095	SUPPLEME	18718	SUNOCO PIPELINE L.P.	525 FRITZ1	SINKING S	PA	19608	2/20/2010 6:30	32.4785	-94.8679	934710	3/22/2010 8:32	CRUDE O
11	3/24/2010 15:55	2010	20100010	15010	ORIGINAL	2552	COLONIAL PIPELINE C(	1185 SAN(	ALPHARET	GA	3E+08	2/25/2010 10:00	35.48354	-80.7357			REFINED
12	3/24/2010 18:04	2010	20100011	16222	SUPPLEME	15774	ENBRIDGE PIPELINES (	1100 LOUI	HOUSTON	TX	77002	3/1/2010 9:16	47.68857	-95.4173	932646	3/1/2010 10:40	CRUDE O
13	3/30/2010 18:41	2010	20100012	15228	SUPPLEME	2552	COLONIAL PIPELINE C(	1185 SAN(	ALPHARET	GA	30009-473	3/4/2010 5:30	30.16801	-93.34	946244	7/1/2010 16:26	REFINED
14	3/31/2010 11:52	2010	20100013	16090	SUPPLEME	15156	SINCLAIR TRANSPORT,	550 EAST S	SALT LAKE	UT	84102	3/8/2010 11:01	39.36359	-93.4597	933306	3/8/2010 12:11	REFINED
15	3/31/2010 14:40	2010	20100014	15090	SUPPLEME	12470	MID - VALLEY PIPELINE	525 FRITZ1	SINKING S	PA	19608	3/1/2010 8:10	32.48325	-94.8303	932647	3/1/2010 11:41	CRUDE O
16	3/31/2010 16:17	2010	20100015	15015	ORIGINAL	4906	EXXONMOBIL PIPELINI	P.O.BOX 2	HOUSTON	TX	77252	3/4/2010 23:00	30.17319	-90.7877			HVL OR C
17	4/1/2010 9:27	2010	20100016	15378	SUPPLEME	32109	ONEOK NGL PIPELINE I	100 WEST	TULSA	OK	74102	1/1/2010 7:15	38.6707	-97.7812			HVL OR C
18	4/1/2010 13:35	2010	20100017	15017	ORIGINAL	11733	LOOP LLC	111 VETER	METAIRIE	LA	70005	1/25/2010 11:07	29.47	-90.2544	929655	1/26/2010 1:20	CRUDE O
19	4/1/2010	2010	20100018	15018	ORIGINAL	31174	SHELL PIPELINE CO., L.	777 WALK	HOUSTON	TX	77252	1/27/2010 15:30	29.8916	-93.9897	929832	1/27/2010 17:18	REFINED
20	4/1/2010 17:56	2010	20100019	15640	SUPPLEME	30829	ENTERPRISE CRUDE PII	P.O. BOX 2	HOUSTON	TX	7.73E+08	3/15/2010 10:00	32.652	-103.139			CRUDE O
21	4/2/2010 9:16	2010	20100020	15190	SUPPLEME	31618	ENTERPRISE PRODUCT	1100 LOUI	HOUSTON	TX	77002	3/3/2010 22:20	28.10406	-90.7924	932926	3/3/2010 23:50	CRUDE O
22	4/2/2010	2010	20100021	15721	SUPPLEME	11169	ENBRIDGE ENERGY, LI	1100 LOUI	HOUSTON	TX	77002	1/8/2010 23:38	48.99555	-97.5255	928066	1/9/2010 3:21	CRUDE O
23	4/6/2010 15:12	2010	20100022	15101	SUPPLEME	18718	SUNOCO PIPELINE L.P.	525 FRITZ1	SINKING S	PA	19608	3/9/2010 11:25	32.48248	-94.8391			CRUDE O
24	4/6/2010	2010	20100023	15225	SUPPLEME	18718	SUNOCO PIPELINE L.P.	525 FRITZ1	SINKING S	PA	19608	3/9/2010 14:15	32.06839	-96.4708			CRUDE O



Differentiate to Understand

- **Risk**
  Consequences
  Causes
  Examples:
  Facilities versus right-of-way
  Facilities releases are numerous but generally small and away from the general public
  Grouping “equipment failures” with “material/weld failures gives the wrong impression
  Leak detection mechanisms are focused on ROW

How do I compare?
One Operator's Use of PHMSA Data

Initiated by the top exec
Designed by COO
Updated monthly
Posted to web
Watched by company's top management
Company versus industry
Number and volume per mile and per barrel-mile

Releases from Onshore PL ROW

12 Month Rolling Average through September 30, 2012

	12 Month	3 YR Avg	12 Month	3 YR Avg	12 Month	3 YR Avg	12 Month	3 YR Avg
	RATES (Miles)				RATES (Bbl-Mi)			
	Number per 1,000 Miles		Barrels Spilled per Mile		Number per Bn Bbl-Mi		Barrels Spilled per Bn Bbl-Mi	
Company Total	0.154	0.150	**0.436	0.163	0.004	0.004	**11.327	4.326
*Industry (US)	0.503	0.460	0.915	0.562	0.022	0.020	40.662	23.204

Failures involving onshore pipelines that occurred on the ROW, including valve sites, in which there is a release of the liquid or carbon dioxide transported resulting in any of the following: (a) Explosion or fire not intentionally set by the operator. (b) Release 5 barrels or greater. (NOTE: PHMSA does not record system location for releases less than 5 barrels.) (c) Death of any person; (d) Personal injury necessitating hospitalization; (e) Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000. Not included: natural gas transportation assets.

Company total excludes non-DOT jurisdictional CO2 Gathering and Crude Gathering for compatibility with industry comparisons
Data averaged over 3 years for compatibility with other entries.

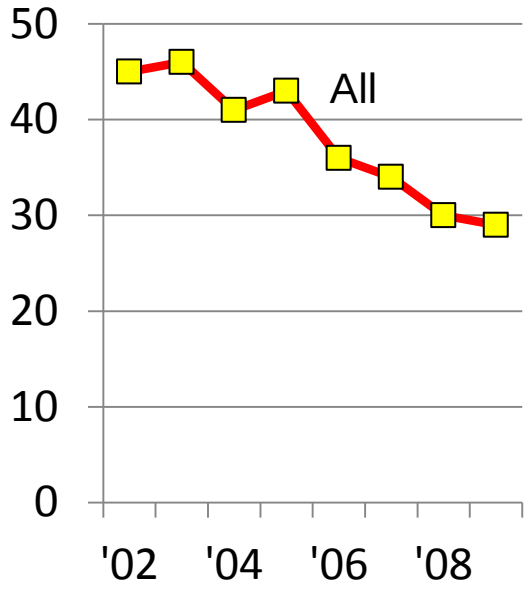
*Industry averages are for calendar year 2010 because PHMSA only collects infrastructure data once a year.

**A single event caused the increase in Spilled per Mile and Spilled per Bn Bbl-Mi. An excavator struck our Pipeline without first performing a “Call Before You Dig (811)”. The line was well marked and was deeper than required by regulation. Since the line was in propane service, there was no impact to soil or groundwater. Without this single event, the total release statistics would be .066 Barrels Spilled per Mile and 1.720 Barrels Spilled per Bn Bbl-Mi, still far below industry average. Please call 811 to have potential lines marked for free before any excavation.

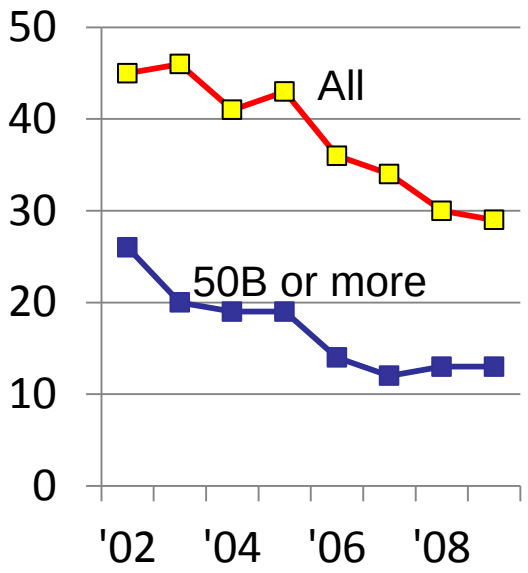
Topical Topics: Performance Trends by Vintage

"Time-Dependent Causes" (targets of ILI that worsen over time) involving failures of pipe, pipe seam, girth weld
PHMSA data, 2002-09

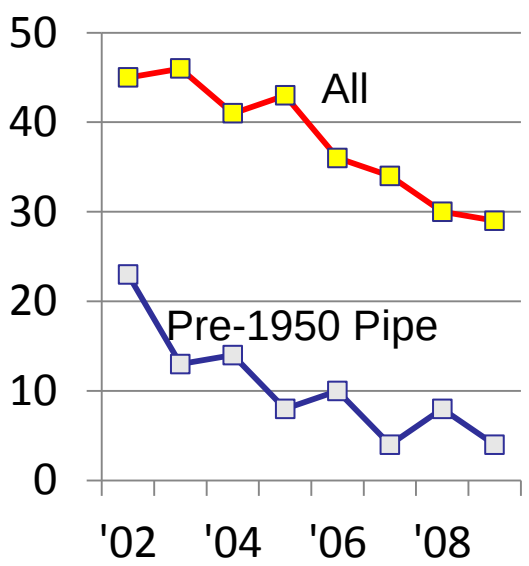
All Releases in Data Set: Down 37%



Releases of 50B or more: Down 50%



Releases from Pre-1950 Pipe Down 83%



PHMSA 7000-1; "Time-Dependent Causes": internal or external corrosion, failure of mat'l/weld for body of pipe, seam or girth weld; rupture of prev. damaged pipe; releases of 5 barrels or more or involving death, injury, fire, explosion or damages exceeding $50K

Topical Topics: Internal Corrosion

- **Do pipelines carrying Diluted Bitumen experience more failures related to internal corrosion?**
- **NO. There haven't been any releases caused by internal corrosion on U.S. pipelines carrying dilbit**
- **PHMSA data, record-by-record, 2002-2011**
  - 5 barrels or more (or other reason for reporting)
    - N.B.: Required detail **not available** for smaller volumes
  - Onshore pipeline including valve sites (no stations or facilities – different animals from line pipe)

Topical Topics: Internal Corrosion (#2)

- Remove incidents in states with no connection
- Check connections in other states
- Ask about incidents on pipelines that MIGHT have been exposed to dilbit: CO, WY, OK, KS
- Not one incident

Topical Topics: Leak Detection

- Must differentiate!
- Pipe v stations/facilities
- Small v large releases

Topical Topics: Leak Detection (#2)

People find small spills; CPM leak detection/SCADA find large spills