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The Oil Pipeline Industry Had an Idea . . .

Learning from PPTS 1999-2005

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Allegro Energy Consulting

Presented to

PHMSA's R&D Forum, 2007

Allegro Energy Consulting
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February 7, 2007
New Orleans, LA

Today's Presentation

- **Why the Pipeline Performance Tracking System**
- **What have we learned?**
- **How do we learn from it?**
- **The basics of the data**
- **Some new lessons – and surprises – from the data**

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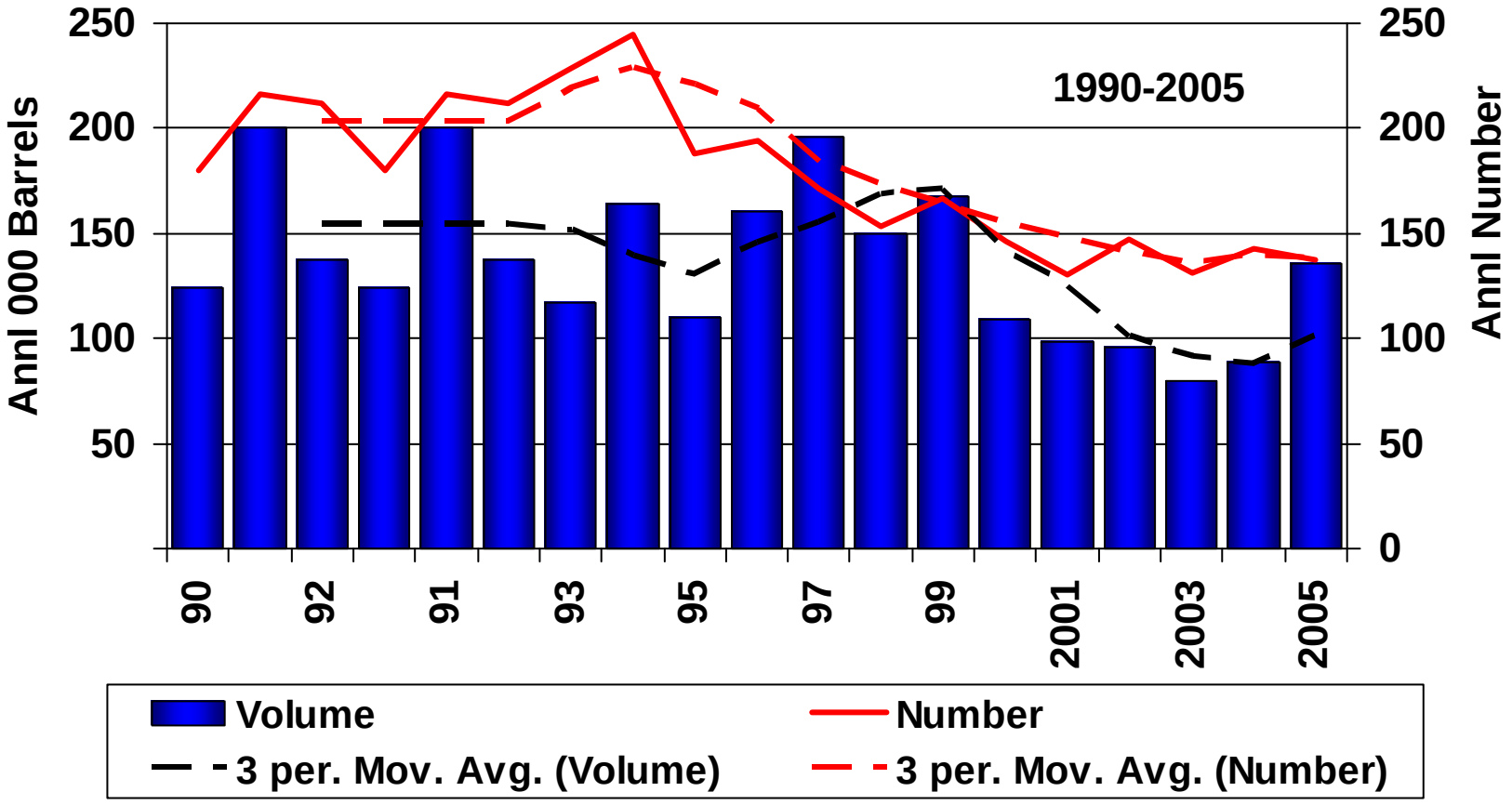
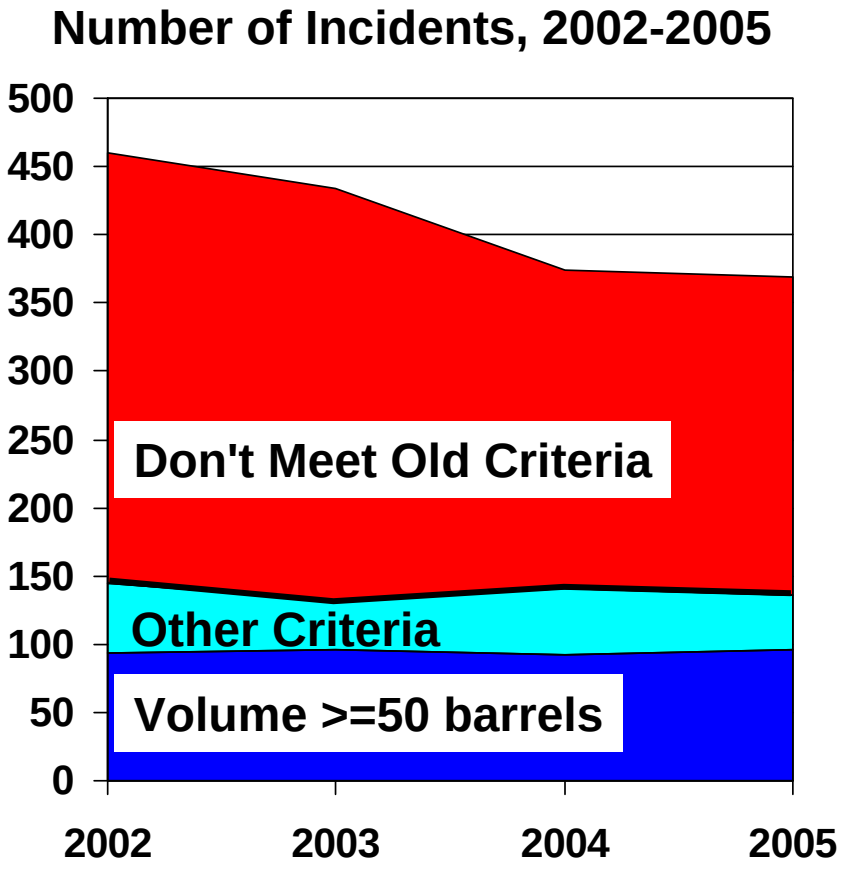
The Oil Pipeline Spill Record: What the Public Sees



Source: PHMSA Form F 7000-1, from http://ops.dot.gov/stats/lq_sum.htm.
Results for 2002 - 2005 reflect incidents reportable under criteria in place prior to February 2002, i.e., 50 bbls liquid, 5 bbls HVL, death, injury, fire, explosion, $50K damages.

Small and Large Releases in PHMSA Data

- "Pipeline Statistics" page
- Only those releases that meet the pre-2002 criteria: >=50 barrels, e.g.
- Larger spills haven't declined sharply in PPTS either.
- Like PPTS, PHMSA shows a decline in the smaller spills.
- Some differences in asset coverage, maintenance exclusion

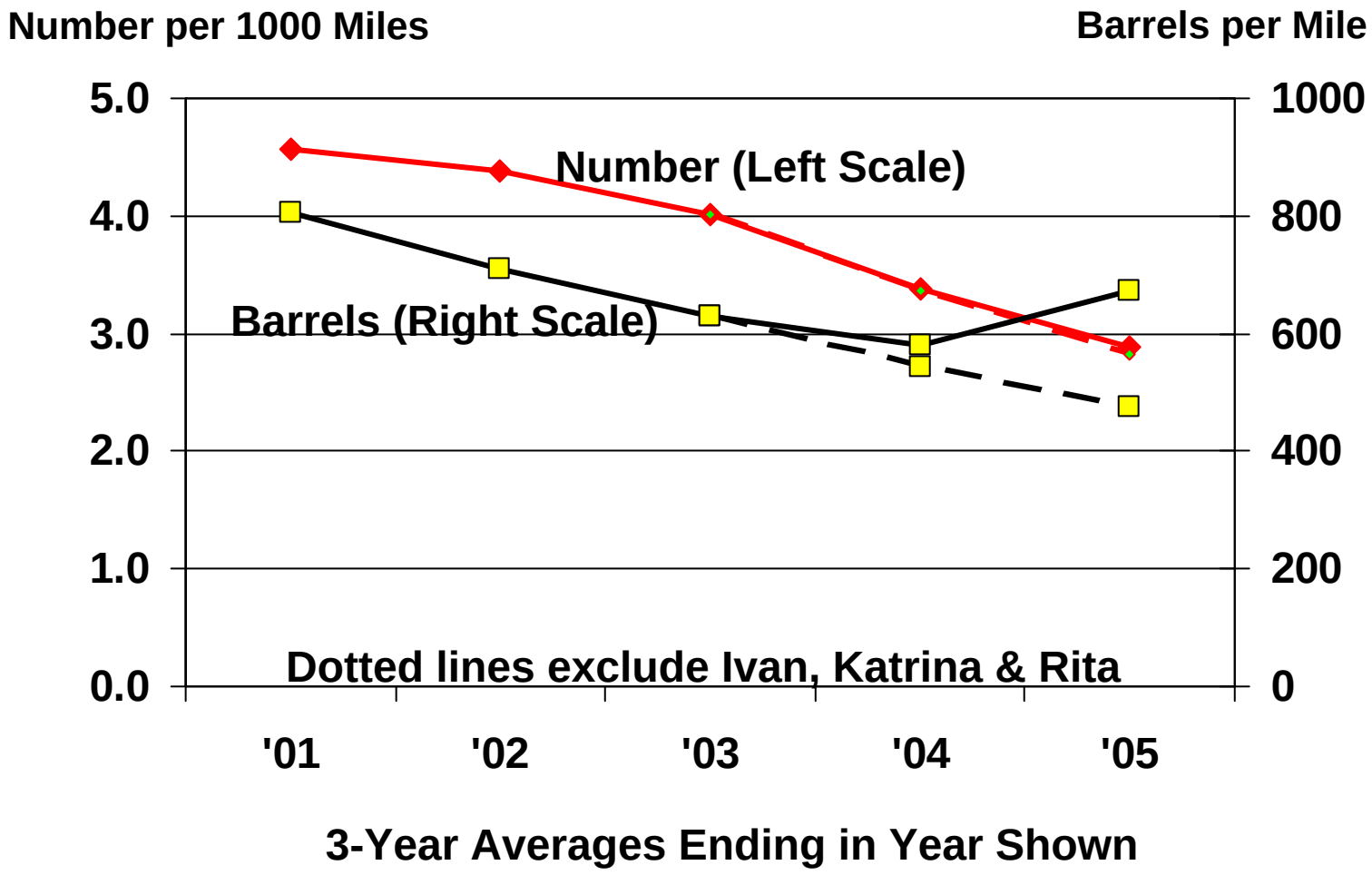


What is the Pipeline Performance Tracking System?

- **"PPTS": voluntary; open to all liquids pipeline operators**
- **No membership req'd, no fee imposed**
- **Industry-run and maintained**
- **Collecting info since 1999**
- **Records spills of 5 gallons or more on land, all spills to water (compare old OPS @ 50 barrels)**
- **In 2005, PPTS participants operated about 85% of OPS miles and total barrel-miles**

1. Measure 2. Learn 3. Manage 4. Improve

The PPTS Record Per Mile, 1999-2005



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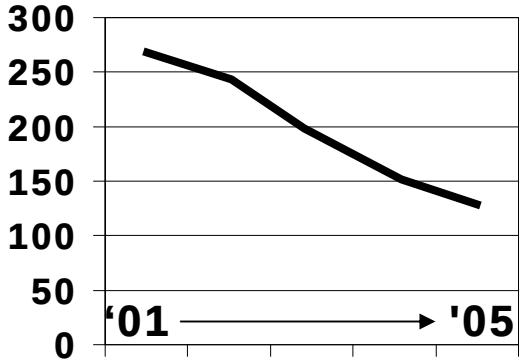
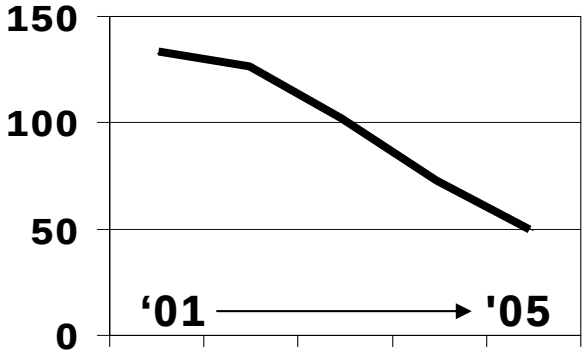
Onshore Pipe Incidents, '99-'05

3-Yr Average Ending Year Shown

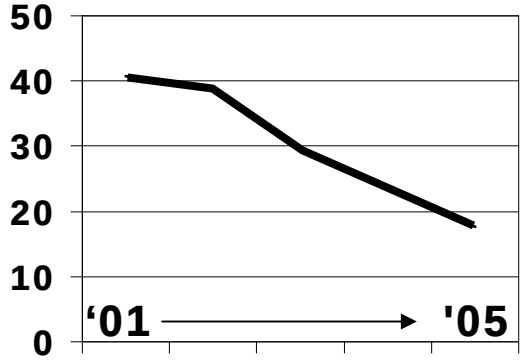
TOTAL, ALL CAUSES



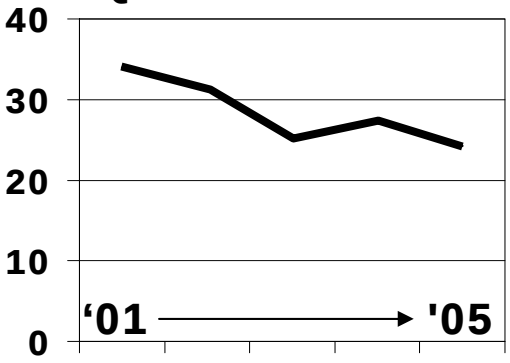
CORROSION



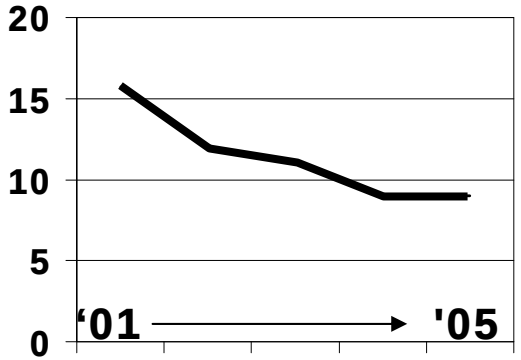
THIRD PARTY



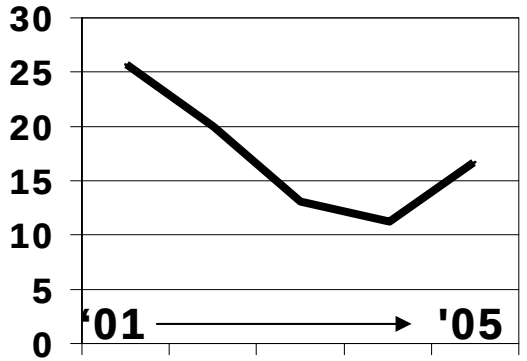
EQUIP./NON-PIPE



OPERATOR/OPER'N



MAT'L/SEAM/WELD

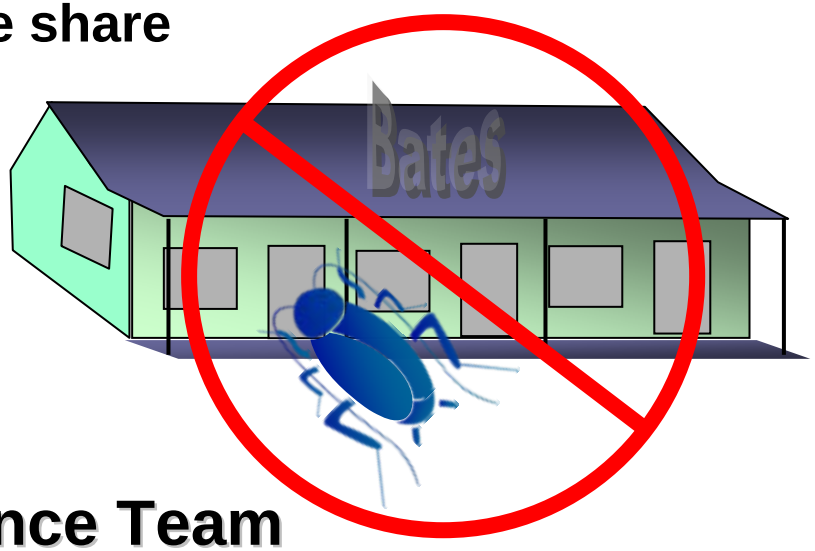


PPTS Participants Use PPTS

- **To measure operator/Industry performance**
- **To allocate $**
  - ✓**Maintenance**
  - ✓**IMP**
  - ✓**R&D**
- **To direct regulatory/advocacy effort**
- **To find new approaches to keeping people and communities safe**

Data Mining Highlights

- **Operator Advisories (www.api.org/ppts)**
  - ➛ **Causes/locations with a large share**
  - ➛ **Consequences**
  - ➛ **New perspective via PPTS**
  - ➛ **Guidelines for reporting**
- **Reports and Fact Sheets**



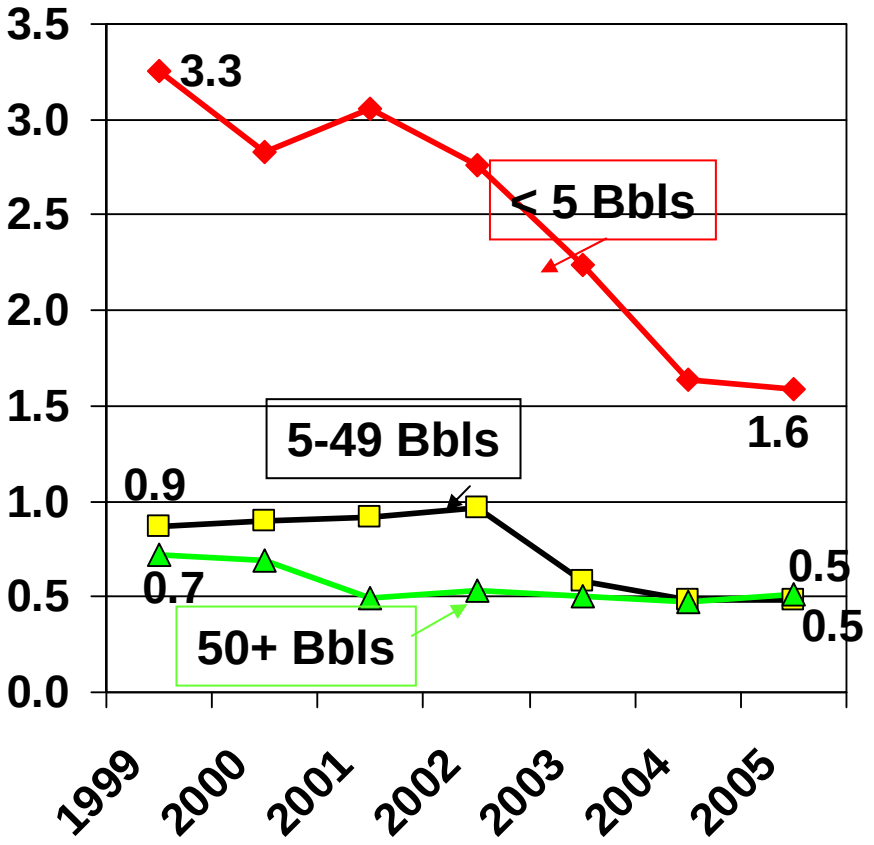
- **Also, Performance Excellence Team**

The data doesn’t go in and not come out!

Number of Releases by Spill Size

- 4.8 per 1000 miles in 1999, 2.6 per 1000 miles in 2005, a 47% decline
- 2/3 are less than 5 barrels (but share dropping)
- 15% are 50 barrels or larger (old OPS threshold)
- Number of releases of 50 barrels or more has remained flat since 2001, while small spills declined. Spills of 5-49 barrels have also flattened.

Number per 1000 Miles, 1999-2005



Excludes incidents on unregulated gathering systems; excludes releases from hurricanes Ivan, Katrina and Rita

Updated 1106

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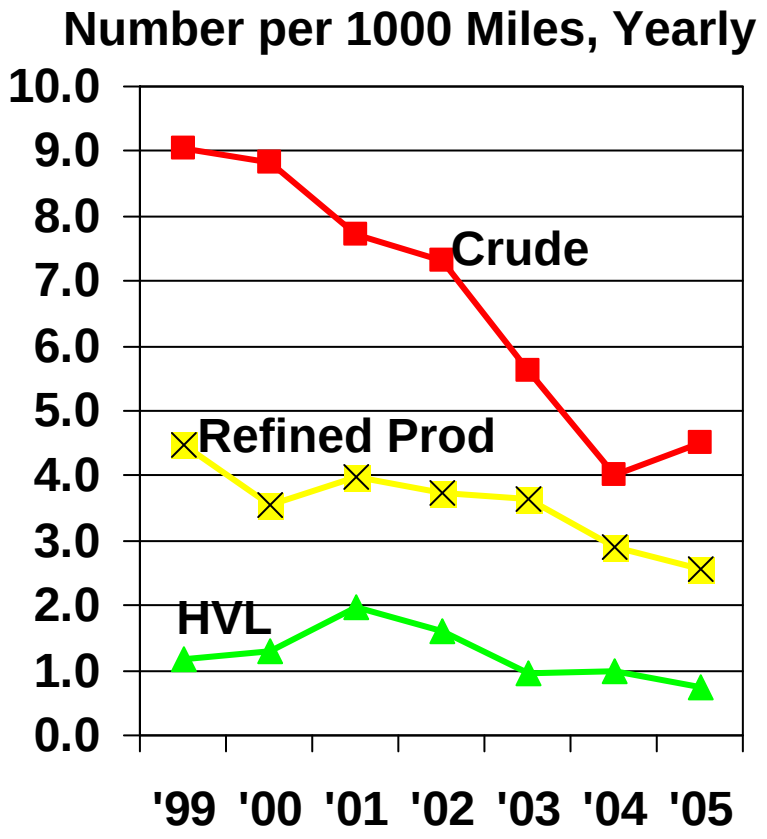
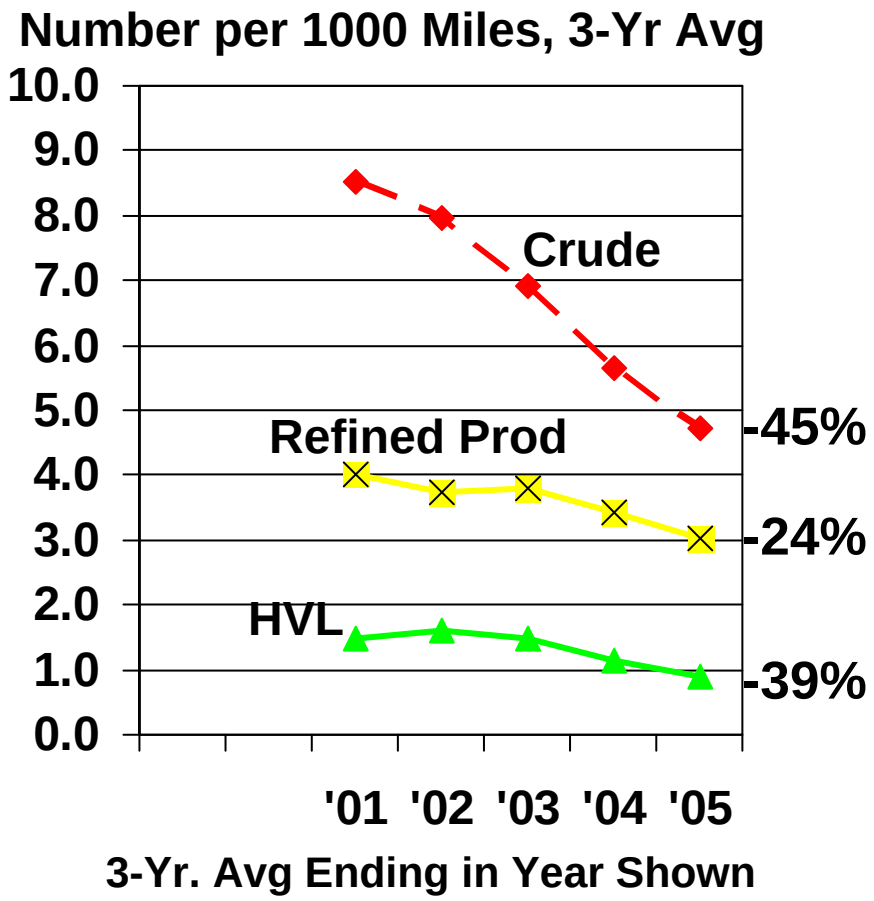
Releases by Commodity; Number of Incidents per 1000 Miles





Excludes incidents on unregulated gathering systems;
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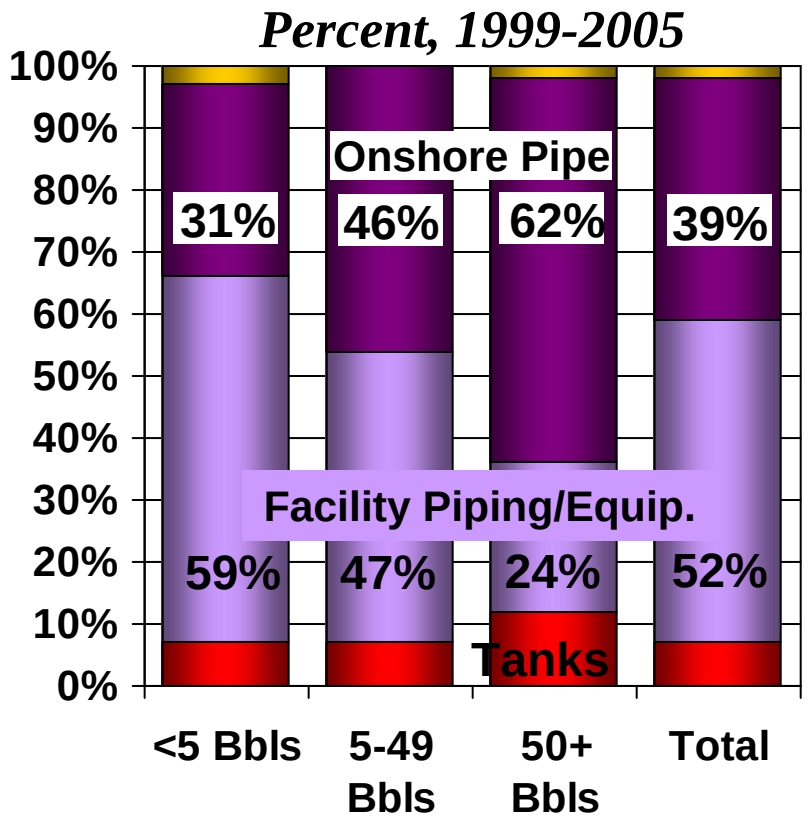
It's About Risk: System Location, Number of Releases by Spill Size

- 508 per year; 2/3 less than 5 barrels; 15% are 50 barrels or larger
- Location: Facilities piping & equipment: 52%; Onshore pipe: 39%
- Location by size: Facilities piping & equipment: 24% of 50+ bbls; Onshore pipe: 62% of 50+ bbls



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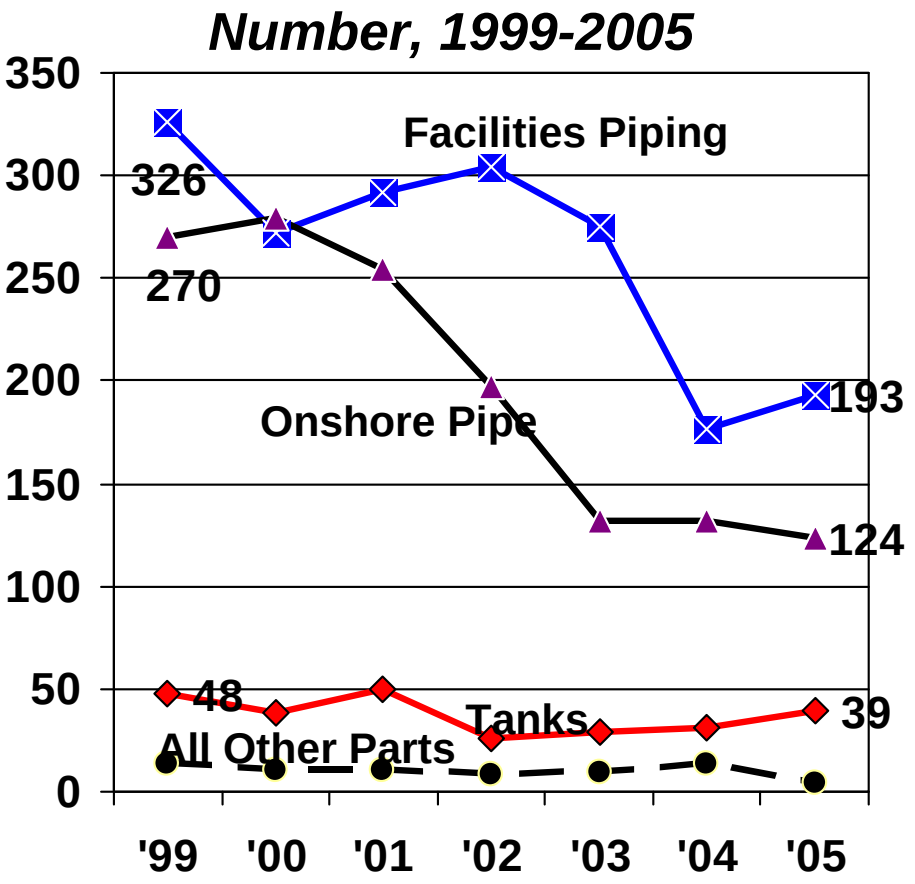
Focus on Risk, #2: System Part, By Year

- Releases from facilities piping account for 52%; from onshore pipe, 39%; from tanks and offshore pipe [and cavern], 9%.
- Thru 2003, onshore pipe releases had fallen, and facilities releases were ~flat.
- Since then, facilities down, and onshore pipe ~flat.



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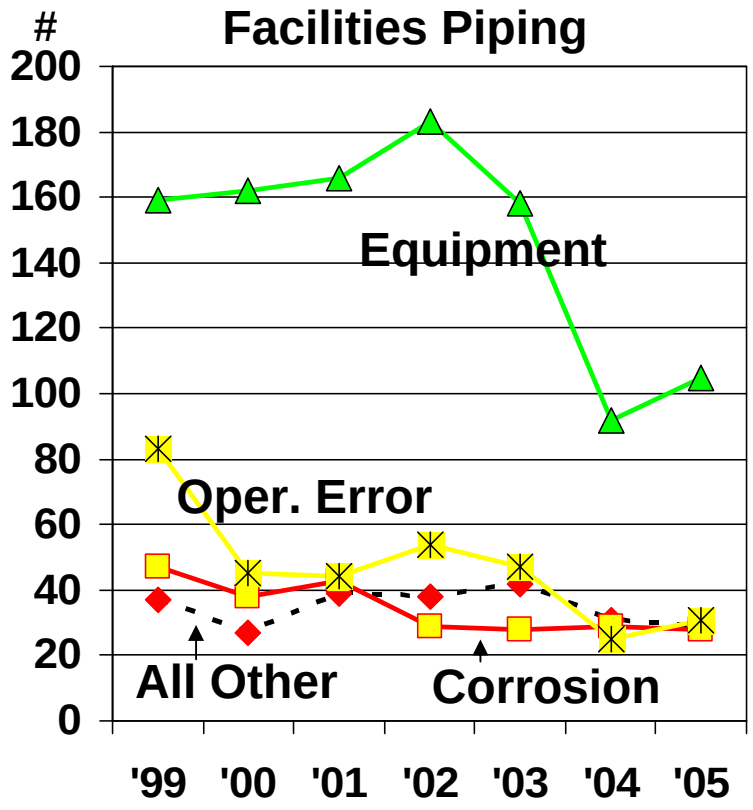
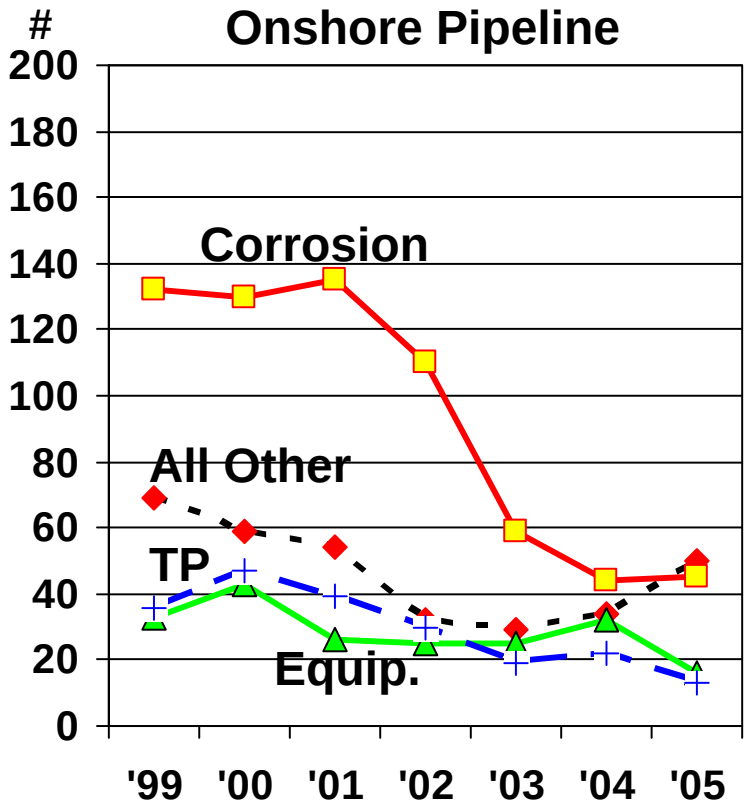
Facilities and Onshore Pipe, by Cause, Year-by-Year





Assessing Consequences: Deaths and Injuries

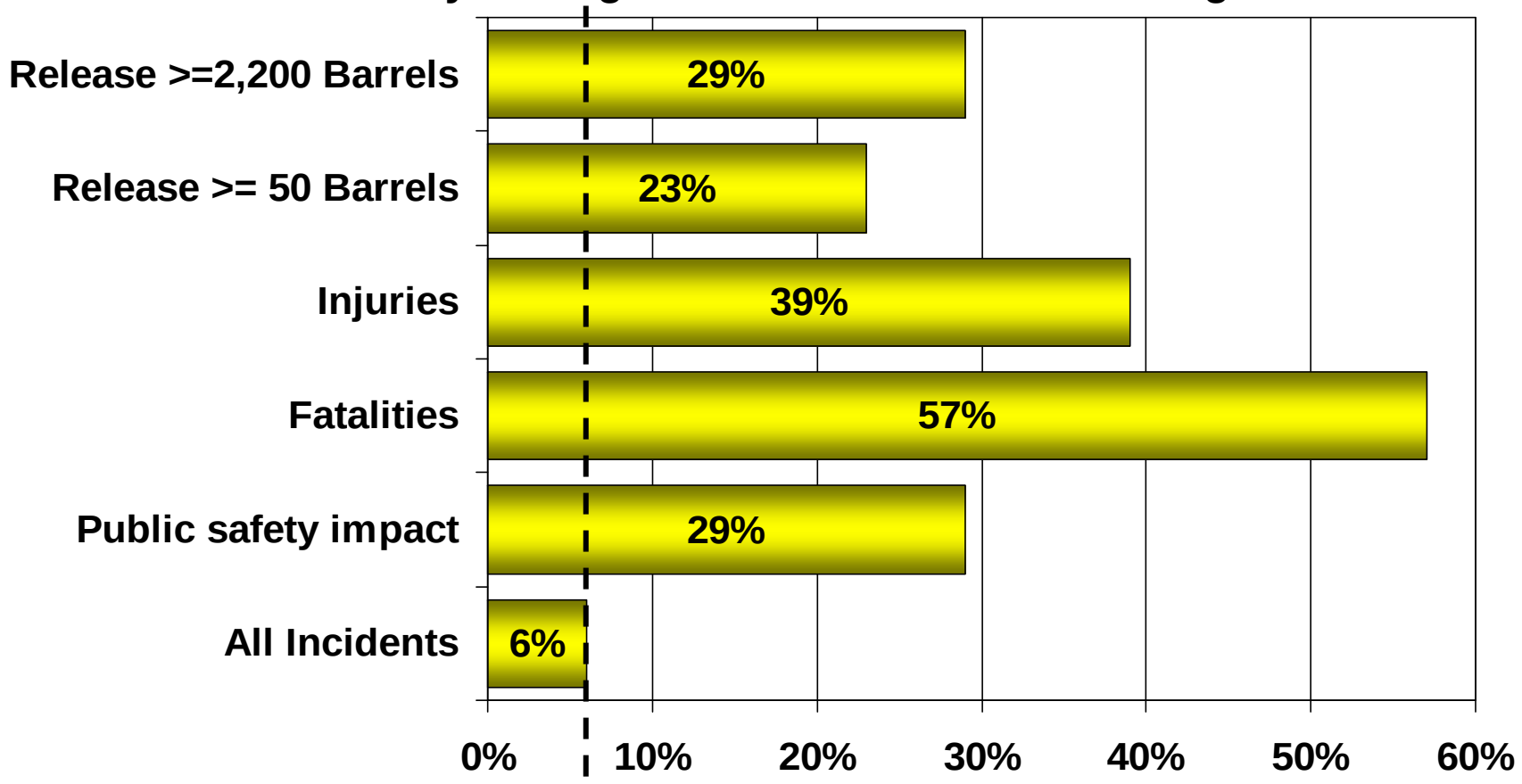
	Cause	Incidents (#, '99-'05)	Empl.	Contr.	Other	Total
			(# People)			
Fatalities	Third Party Damage	4	0	0	10	10
	Operator Error	2	0	2	0	2
	Other	1	1	0	0	1
	Total	7	1	2	10	13
Injuries	Third Party Damage	7	0	0	16	16
	Operator Error (incl. excavation)	5	4	6	0	10
	Pipe mat'l/seam	2	1	0	2	3
	Corrosion	1	0	0	1	1
	Equipment Malfunction	1	0	0	1	1
	"Other failure" in a Tank	1	1	0	0	1
	Other Cause	1	0	1	0	1
	Total	18	6	7	20	33

Where Are People Getting Hurt or Killed? Deaths and Injuries by System Part

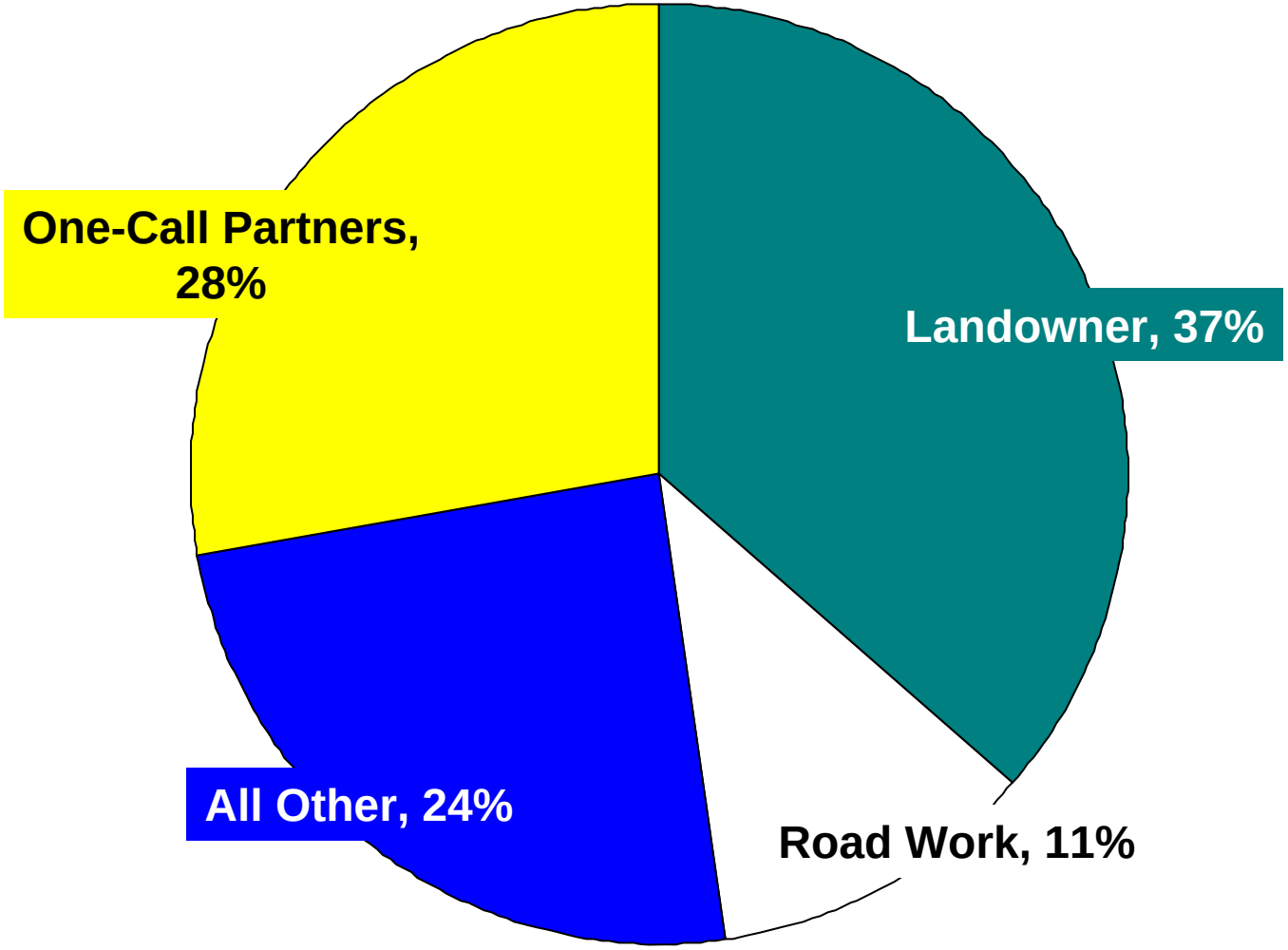
	Cause	Incidents (#, '99-'05)	Empl.	Contr.	Other	Total
			(# People)			
Fatalities	Facilities Piping	1	1	0	0	1
	Onshore Pipeline	6	0	2	10	12
	Grand Total	7	1	2	10	13
Injuries	Aboveground Storage Tank	1	1	0	0	1
	Cavern/belowground	1	1	0	0	1
	Facilities Piping	3	2	6	0	8
	Onshore Pipeline	13	2	1	20	23
	Grand Total	18	6	7	20	33

Why Focus on Third Party Damage? Disproportionate share of consequences

Total incidents, '99-'05: 3,581; Total from Third Party Damage: 230



Who Does the Damage?



*PPTS classifies operator excavation as Operator Error, not Third Party Damage.
Also included in "All Other" is res/comm dev. (4%), waterway activity (2%) and rail (1%)

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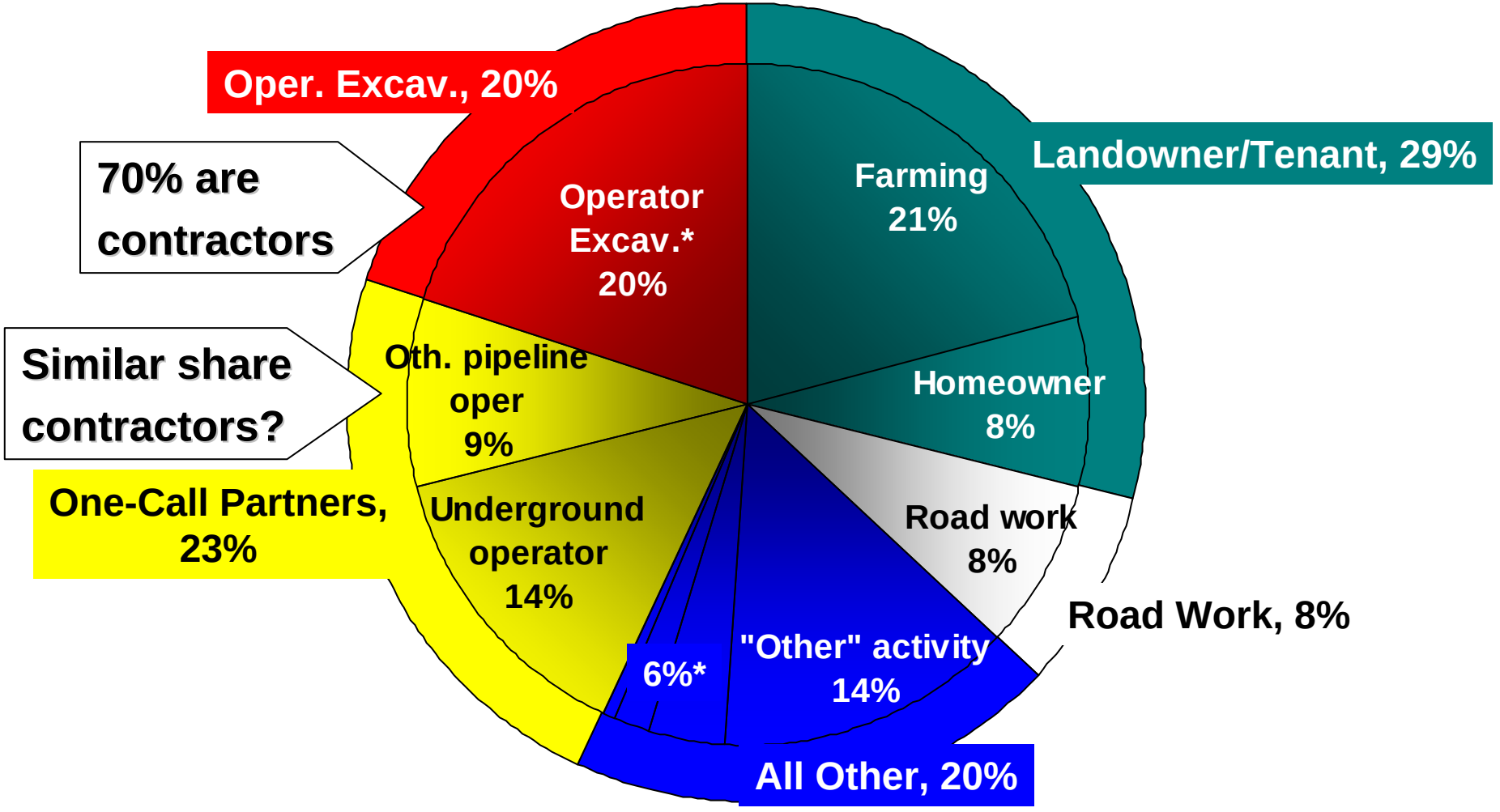
A Closer Look at Who Does the Damage: We Do.



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Also included in "All Other" is res/comm dev. (4%), waterway activity (2%) and rail (1%)

Capitalizing on PPTS: DIRT Module

- **For releases involving mechanical damage, new navigation to *D*amage *I*nfo *R*eporting *T*ool add-on**
  - **1st/2nd party from Operator Error section**
  - **3rd party from Third Party section**
  - **Mapped from PPTS + DIRT-only questions added**
  - **Mandatory for PPTS reporters**
- **For incidents involving contact w/no release, or threat of contact, newly reportable in DIRT add-on**
  - **Voluntary for PPTS reporters**
- **API uploads to DIRT periodically**
- **Available to DIRT *and* for PPTS analysis/QC**
- **Minimize duplication & error opportunity**

Key Elements in PPTS Success

- **Commitment**
  - **Pipeline Leadership**
  - **API/AOPL**
- **Care and Feeding (API's Commitment)**
  - **QC: Transparency, credibility**
  - **Program Software/Mechanics**
  - **Data Mining Team**
- **Learning**
  - **Data Mining Team**
  - **Lectures**
  - **Website**

Data Mining Team

- **Bukky Adefemi (API)**
- **Hazem Arafa (API)**
- **Kevin Badgett (Exxon Mobil)**
- **Tom Kelly (Colonial)**
- **Frank Gonzales (Buckeye)**
- **Dave Knoelke (BP)**
- **Peter Lidiak (API)**
- **Dan Mihalik (AOPL)**
- **Debbie Price (Shell)**
- **Tom Price (ConocoPhillips)**
- **Cheryl Trench (Allegro Energy Consulting)**
- **Marc Wolgamott (Koch Pipeline)**
- **Tressa Young (Marathon)**

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