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**Summary Ignition analysis of 2010 OPS Incident Reports  
for petroleum liquid pipelines compared to natural gas pipelines**

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The Office of Pipeline Safety publishes incident reports filed to them by hazardous liquid pipelines and natural gas pipelines. This report summary analyzes the most recent file available for 2010. The OPS creation date for both the Distribution Pipeline Incident file and Hazardous Liquid Pipeline file is November 18 2010. You can download the raw data file from OPS.

This summary compares the reported incidents of PETROLEUM based Hazardous Liquid Pipelines against reported incidents of Natural Gas Pipelines.

In order to make a meaningful comparison of petroleum liquid incidents as compared to natural gas incidents, certain incidents were deleted. In the Hazardous Liquids incidents, reported incidents of liquids other than petroleum (ie ammonia, etc) were deleted. Incidents of buried pipe, offshore or underwater pipe were also deleted. Therefore, the Hazardous Liquids incidents used for comparison were all above ground or exposed in ground petroleum based liquid pipeline incidents. The same deletion criteria was used for incidents involving natural gas pipelines. Any underground, inside building and under water natural gas pipeline incidents were deleted. There were some natural gas incidents with fatalities and injuries but did not involve ignitions or explosions so these were deleted for comparison purposes.

Here is the summary analysis of the fatalities, injuries, ignitions and explosions from Flammable Petroleum Liquid pipeline incidents as compared to Natural Gas pipeline incidents for the same time period. The abbreviated tables listing the OPS report number used for this summary are at the back of this report for your review. Missing report numbers in the backup list indicate incidents deleted based upon the criteria above. You can view these missing incidents by downloading OPS's 2010 Incident File. The number under each heading indicates the number of reported OPS incidents in which there were fatalities, injuries, ignition or explosion.

	# of OPS Incidents	Incidents w/ Fatality	Incidents w/ Injuries	Incidents w/ Ignitions	Incidents w/ Explosion
<b>FLAMMABLE LIQUID</b>	88	0	0	2	0
<b>NATURAL GAS</b>	<b>48</b>	<b>3</b>	<b>8</b>	<b>41</b>	<b>8</b>

***If ignition sources randomly occur in pipeline environments, what can explain the observation that natural gas pipeline incidents have a higher probability of igniting with injuries while flammable petroleum liquid pipelines with almost 100% certainty will not ignite?***

Logic says if any ignition sources are randomly present, the flammable liquids should ignite sooner and have a higher incidence of ignitions since they have lower auto-ignite points. Diesel/fuel oil ignites at 494F. Gasoline vapors ignite at about 536F. Crude oil vapors ignite at about 800-1000F (depending upon composition). Natural gas ignites at 1076F. Yet the chances that liquid fuels spilled will ignite appear to be virtually zero based upon these OPS Incident Reports despite the fact liquid fuels have ignition points significantly LOWER than natural gas. Therefore, randomly present ignition sources in or near pipeline right of ways can't explain why the natural gas leaks did ignite and why the flammable liquids didn't. There must be another ignition source.

As gas industry research has consistently shown, natural gas escaping under pressure creates friction at the point of exit. This friction creates static electricity at the point of leak. Natural gas leaks can be self-igniting since they create their own ignition source during leaking – static electricity. This analysis of OPS Incident Reports provides strong

empirical evidence of that phenomenon. The risk of internal generated static igniting that leaking gas pipe is profoundly genuine based upon these incident reports.

These incident trends will continue unless currently used anti static technology is replaced.

The minimum first step in preventing and reducing static ignitions in your system involves a simple 5 second spraying of IGT's Aerosol Static Suppressor for external static dissipation on any gas pipe surface your workers might have an intentional or unintentional release of natural gas. Our state of the art topical anti stat is specifically formulated for the natural gas distribution industry to quickly and easily immediately eliminate on contact any static our spray encounters – without grounding, wrapping and other clumsy procedures. Our easy to use aerosol can be used in virtually any field situation where gas might accidentally be released (which soapy burlap cannot) dramatically reducing the possibility of an ignition.

However, while our IGT Aerosol will effectively eliminate any exterior static present in field conditions, until the interior gas pipe static issue is addressed this ignition problem will continue. Our Ionix Gas Static Suppression Cartridges have been proven in lab tests as well as by actual gas distributor use in their systems to eliminate interior pipe static. Simply install our cartridge at your city gate and your system is static free to burner tip.

Please see our web site [www.IonixGasTechnologies.com](http://www.IonixGasTechnologies.com) for information about our exterior and interior static suppression products.

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