

Florida Cause of Leak Study

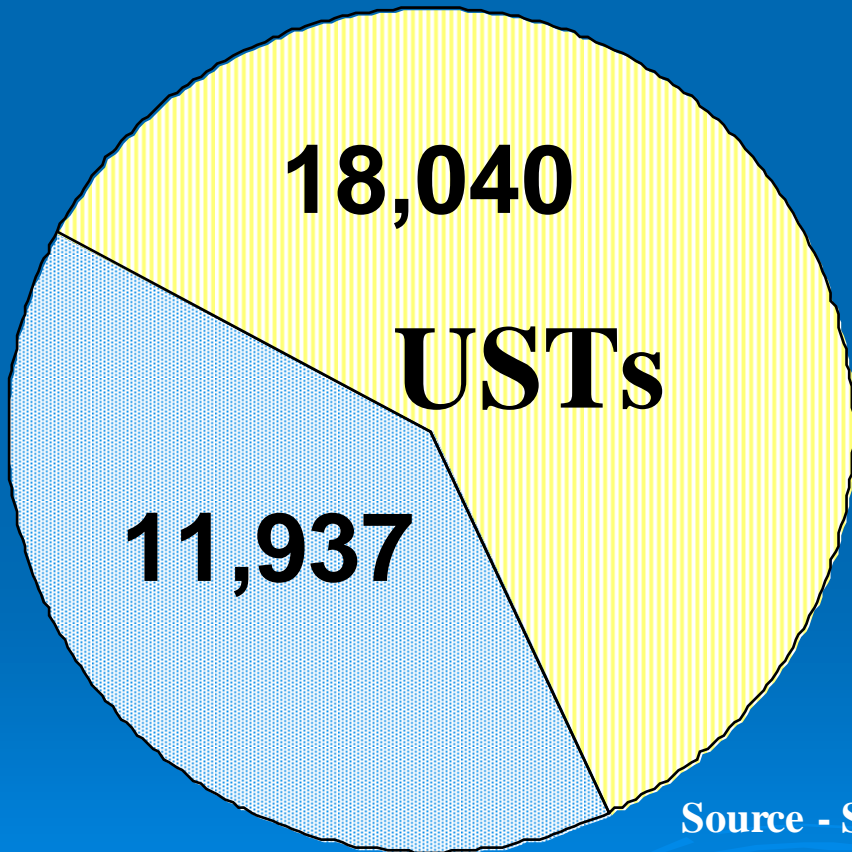


Background Info – Florida's Tanks Program

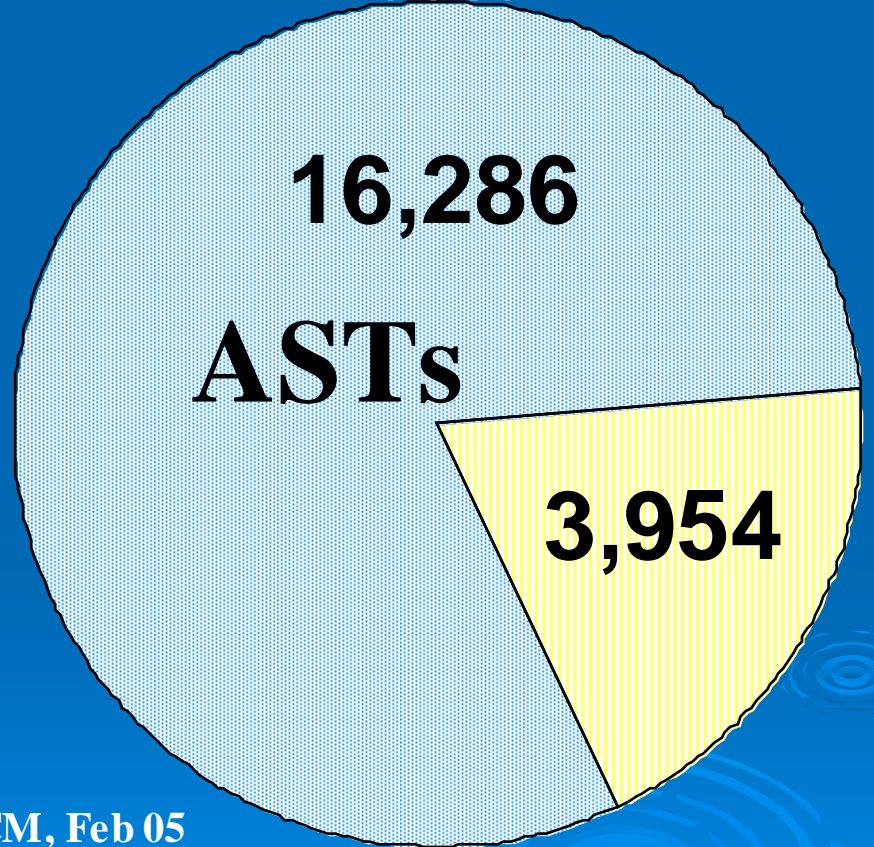


2005

Single-wall USTs
60%



ASTs with
Secondary Containment
80%



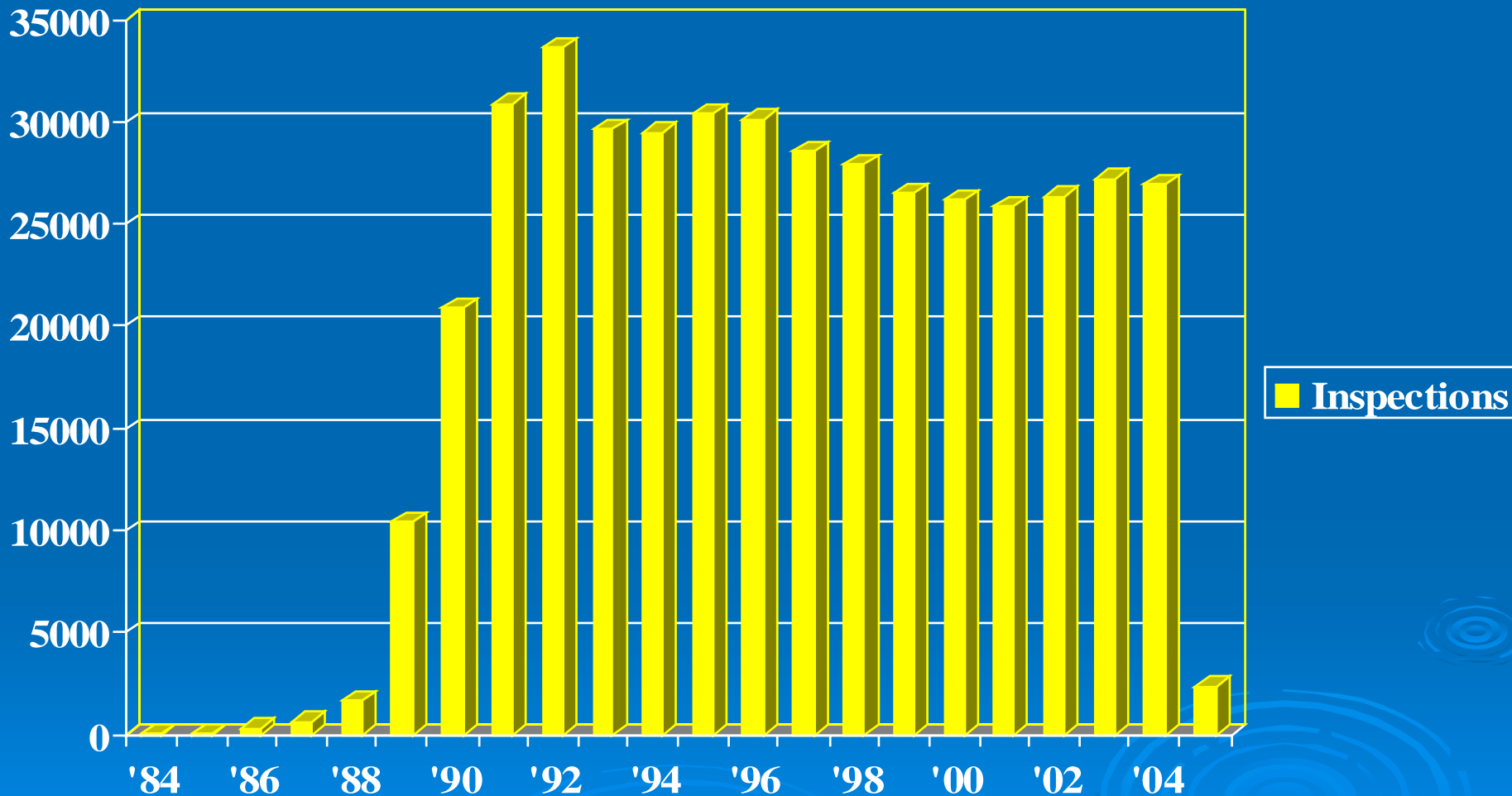
Source - STCM, Feb 05

Double-wall USTs - 40%

Single-wall ASTs - 20%

Total Facility Inspections Performed in Florida

Source: STCM, Feb 05

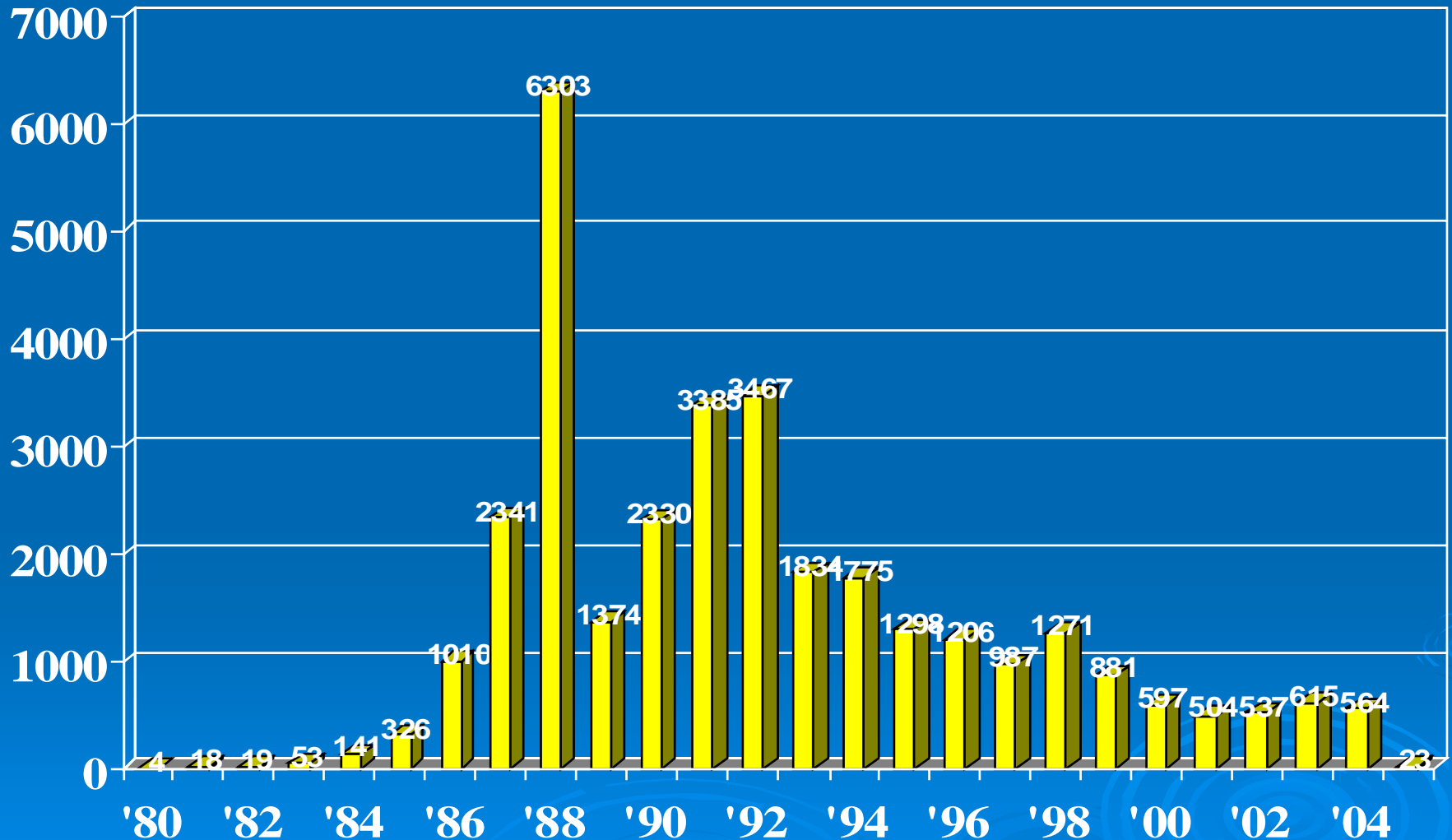


436,121 Total Inspections Performed

Petroleum Discharge Report Forms Received

Discharges

Source: STCM, Feb 05

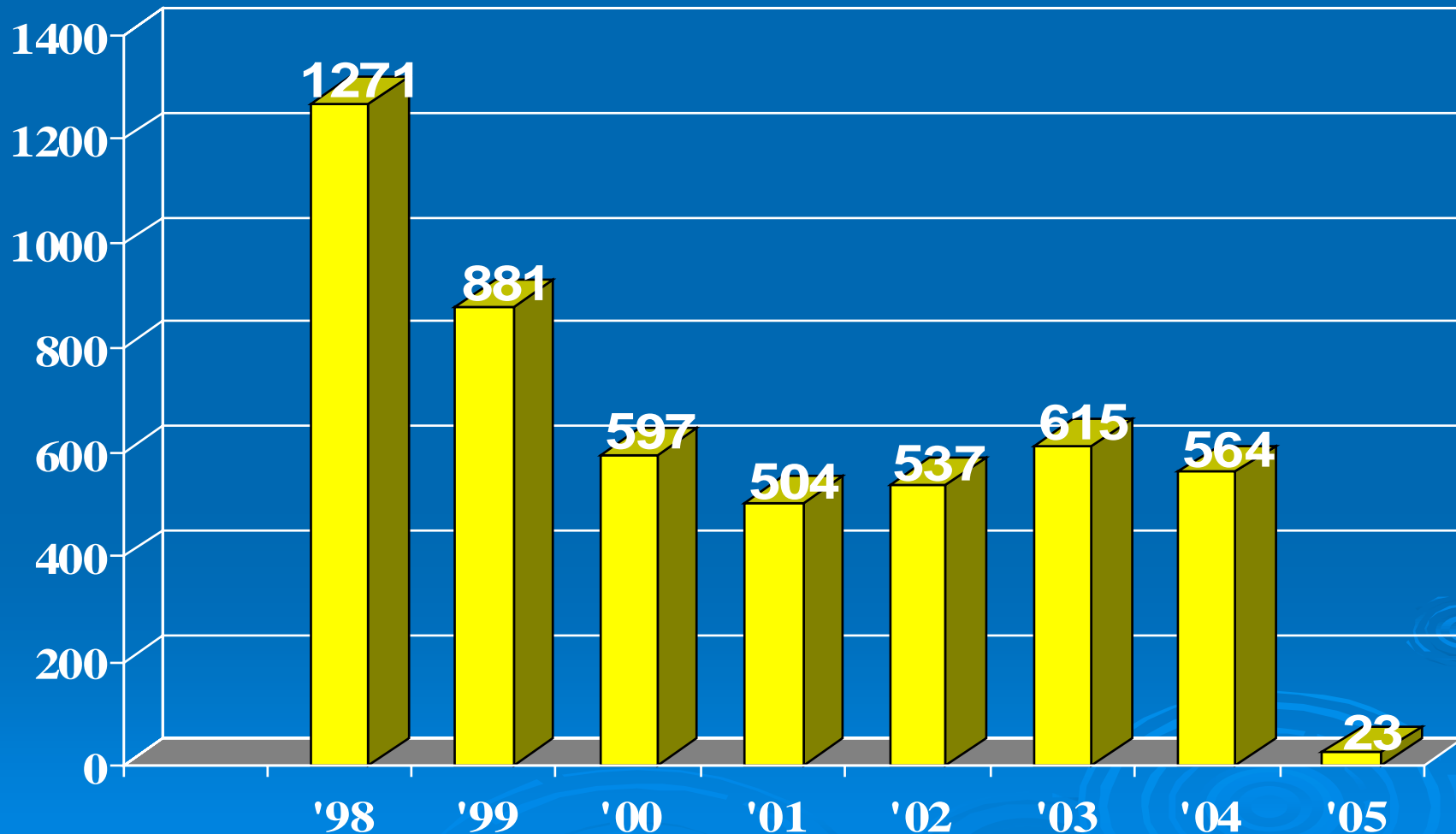


32,769 Total Discharge Report Forms Received

Post-1998 Petroleum Discharge Report Forms Received

■ Discharges

Source: STCM, Feb 05



4992 Post-1998 Discharge Report Forms Received

Summary - Florida Cause of Leak Study



- Florida Identified Reported Releases (1995-2002)
- Florida Contracted with County Inspectors to Review Release Sites and Document Information
- Completed Forms Sent to EPA for Data Entry & Analysis
- Various Quality Control Steps
- Current Status - EPA Report is ready for Peer Review



Methodology

Invalid Files Include:

- Releases from Bare Steel UST Systems
- Release From Non-Compliant Component
- Release of Old UST/AST Found at Closure
- Unknown Sources



A tall, white, cylindrical lighthouse stands on a grassy hill. The lighthouse has a black lantern room at the top. The hill is covered in green grass and some trees. In the background, the ocean is visible under a clear blue sky.

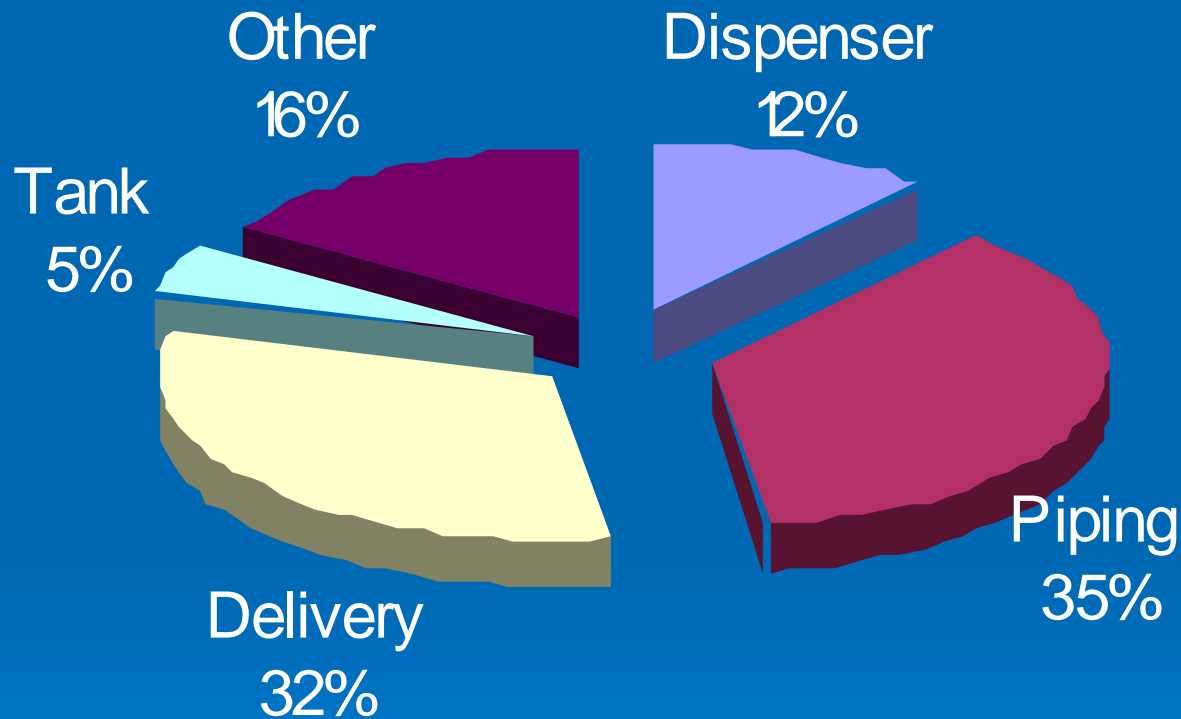
Size of Study

- 2280 Release Files Reviewed
- 642 Valid Release Files
 - 512 UST Releases
 - 130 AST Releases

AST Results

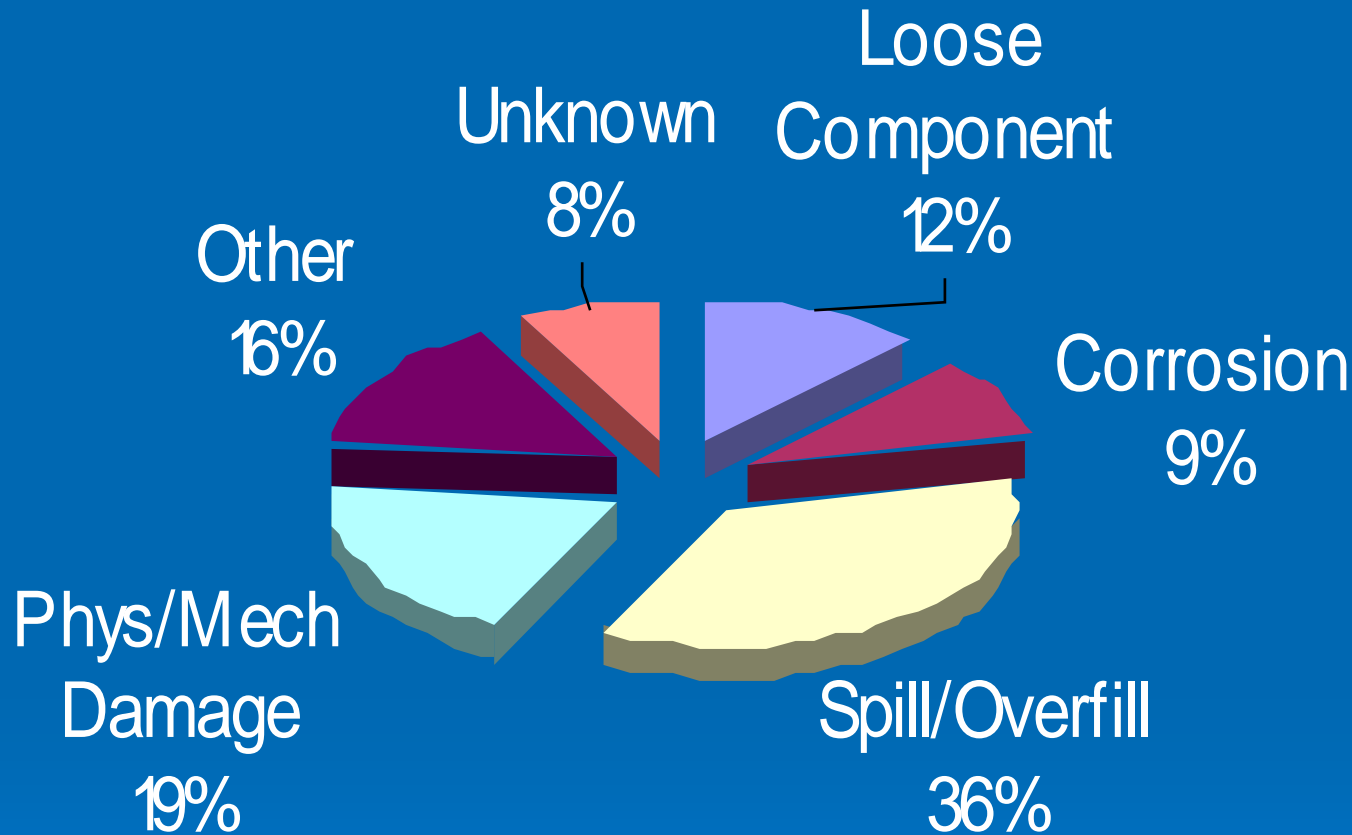


Sources of Releases



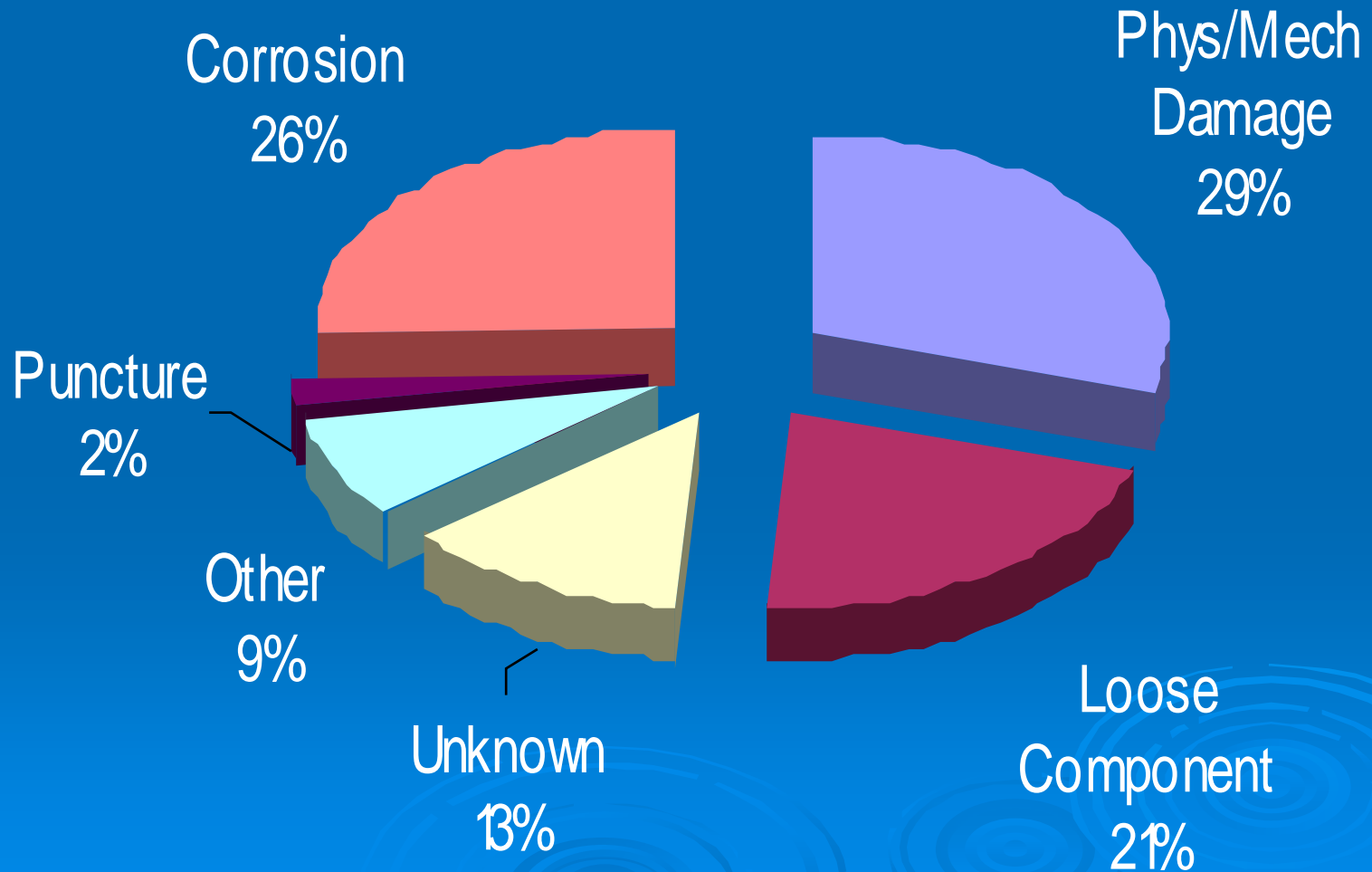
Other Sources Include: Fuel Filters, Outlet Valve, and Human Spilling

Causes of Releases

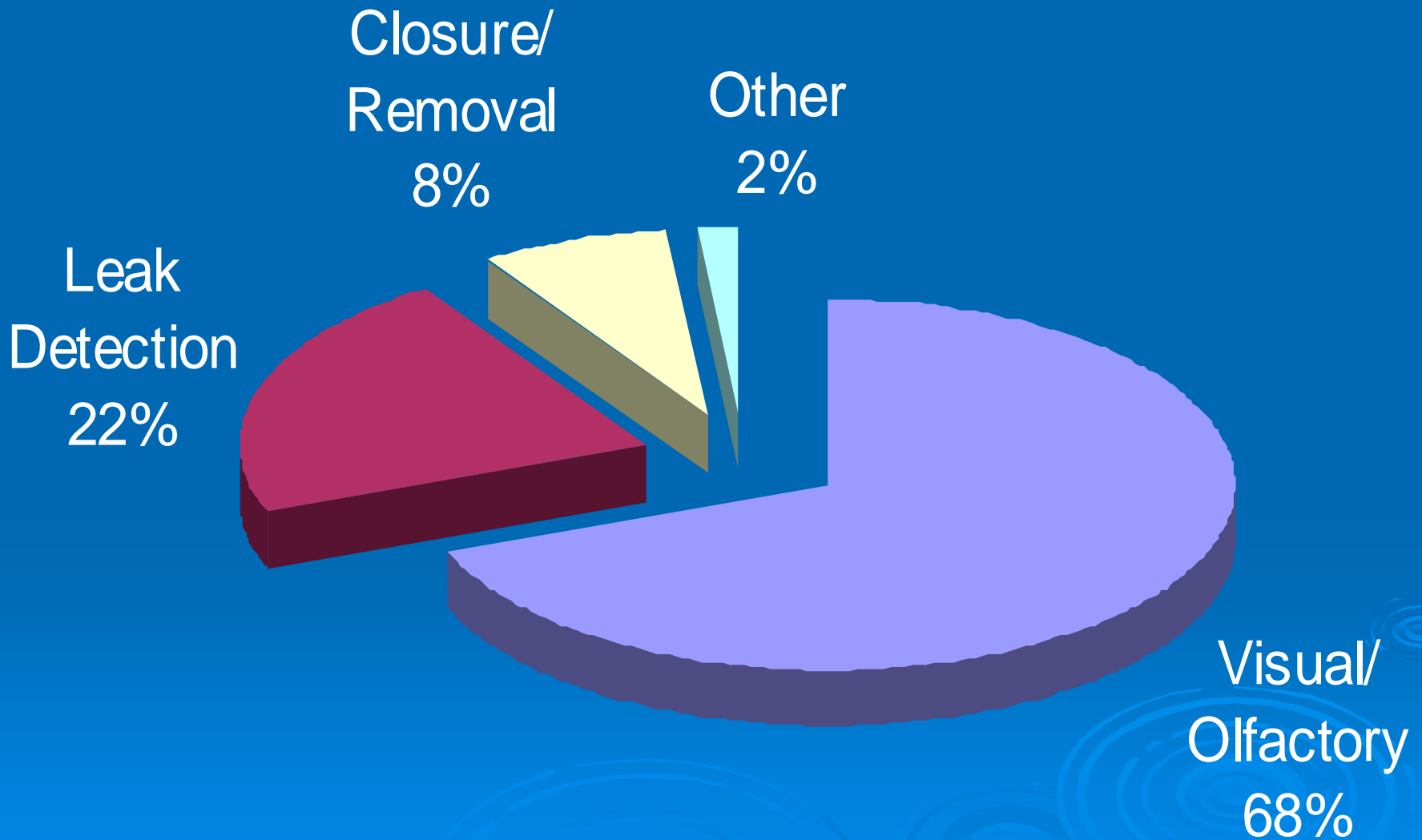


Other Causes Include: Vandalism, Valve Failure, Contractor Accident, Other Human Error

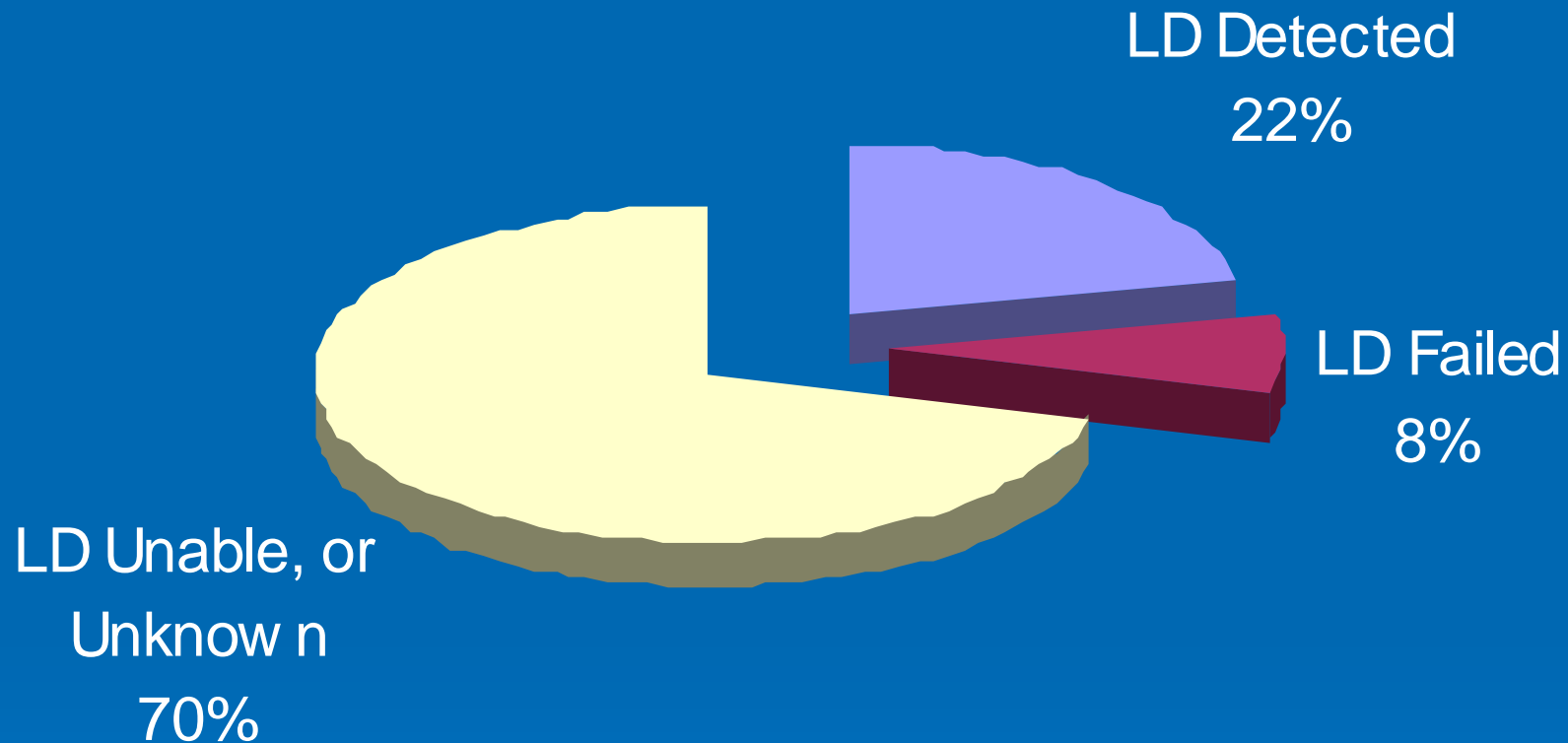
Causes of Piping Release



Method of Detection



Success of Leak Detection



LD Unable, or Unknown: Either the release came from a part of the system that a LD system was not designed to detect, or the inspector could not determine whether LD failed to detect.

A construction site showing a large excavation pit. In the background, there are several large white cylindrical tanks on a concrete pad, with a white tent-like structure in front of them. A white utility truck is parked on the left. The foreground and middle ground are filled with dirt. Numerous black pipes are laid out in a curved path across the site. In the lower foreground, there is a large pile of light blue pipes and several grey pipes. A date stamp '4.13.2004' is visible in the bottom right corner.

Overfills and Piping

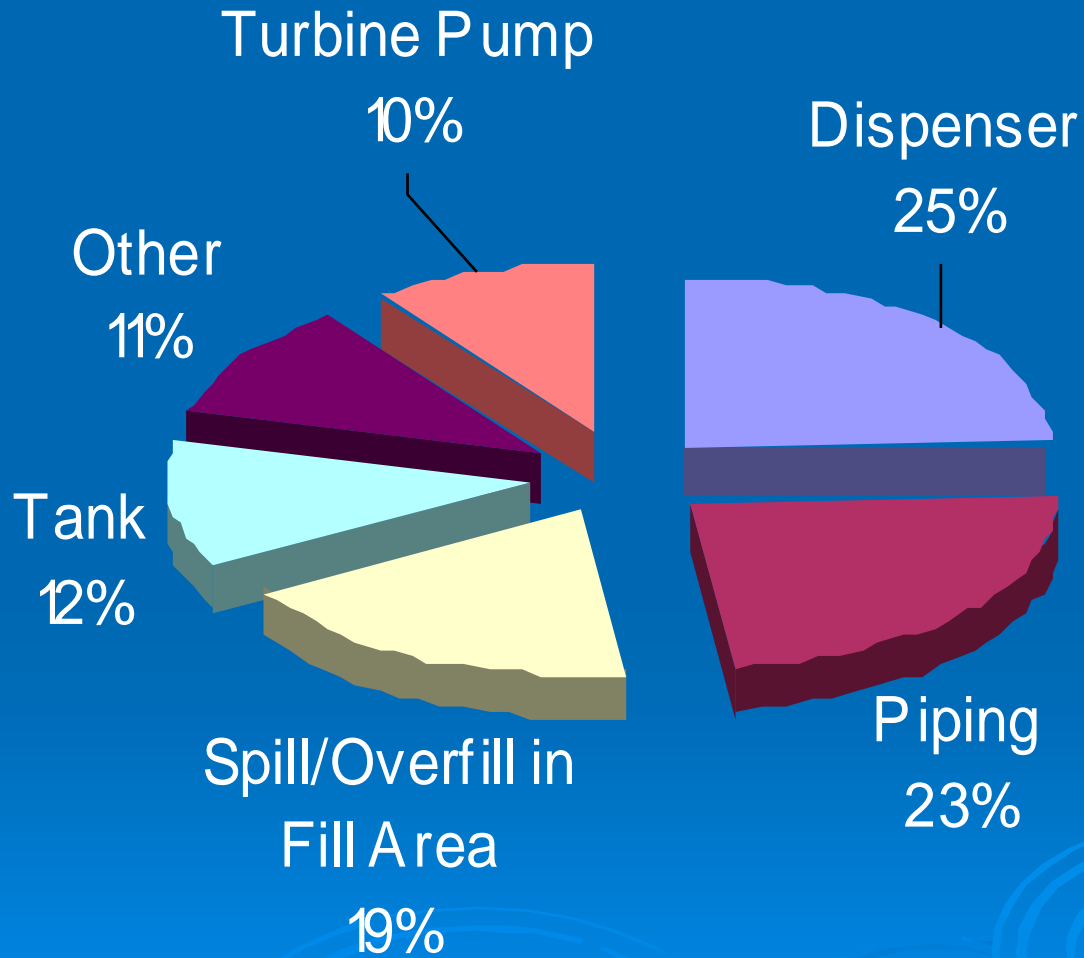
4.13.2004

UST Results

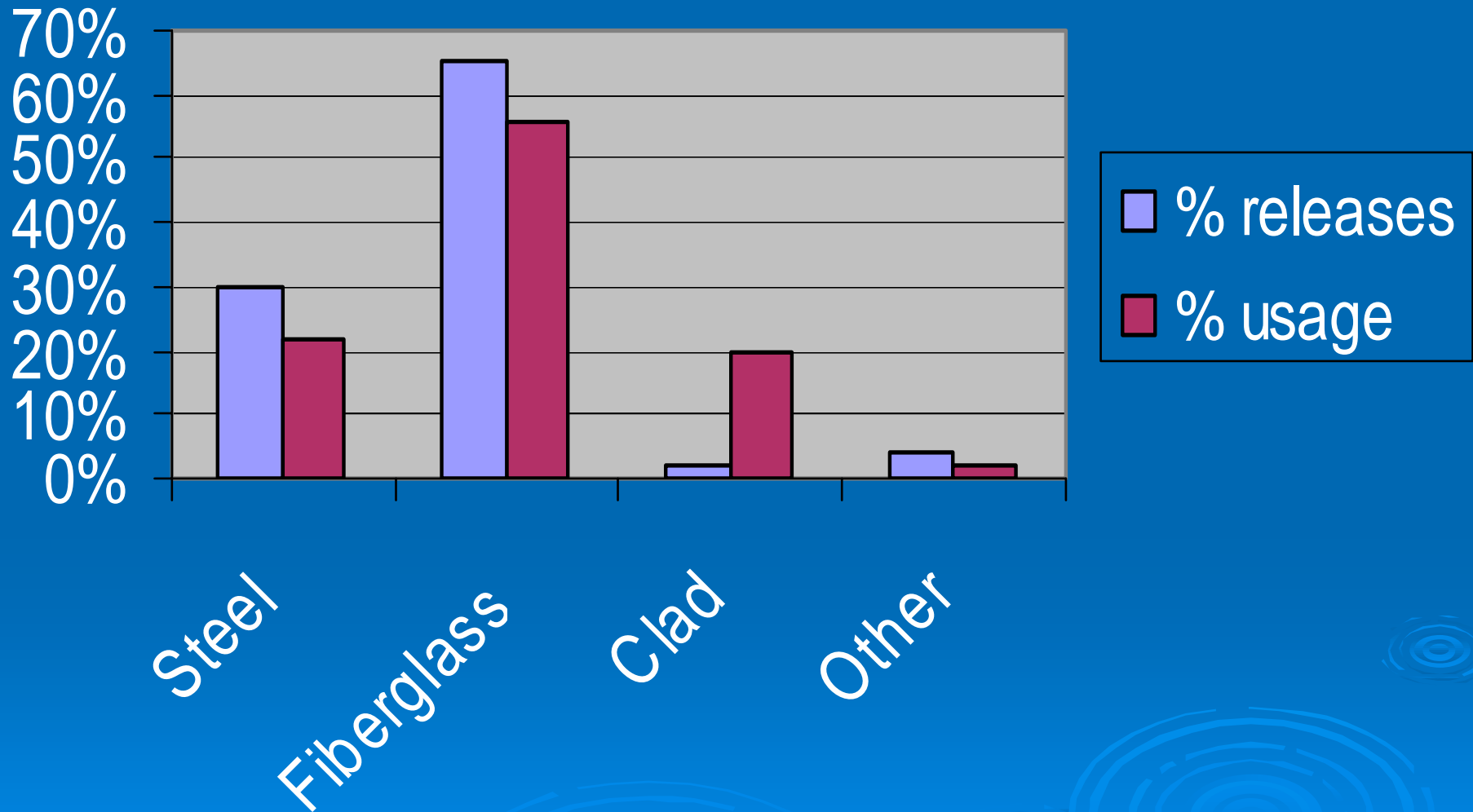


8.18.2004

Sources of Releases - USTs

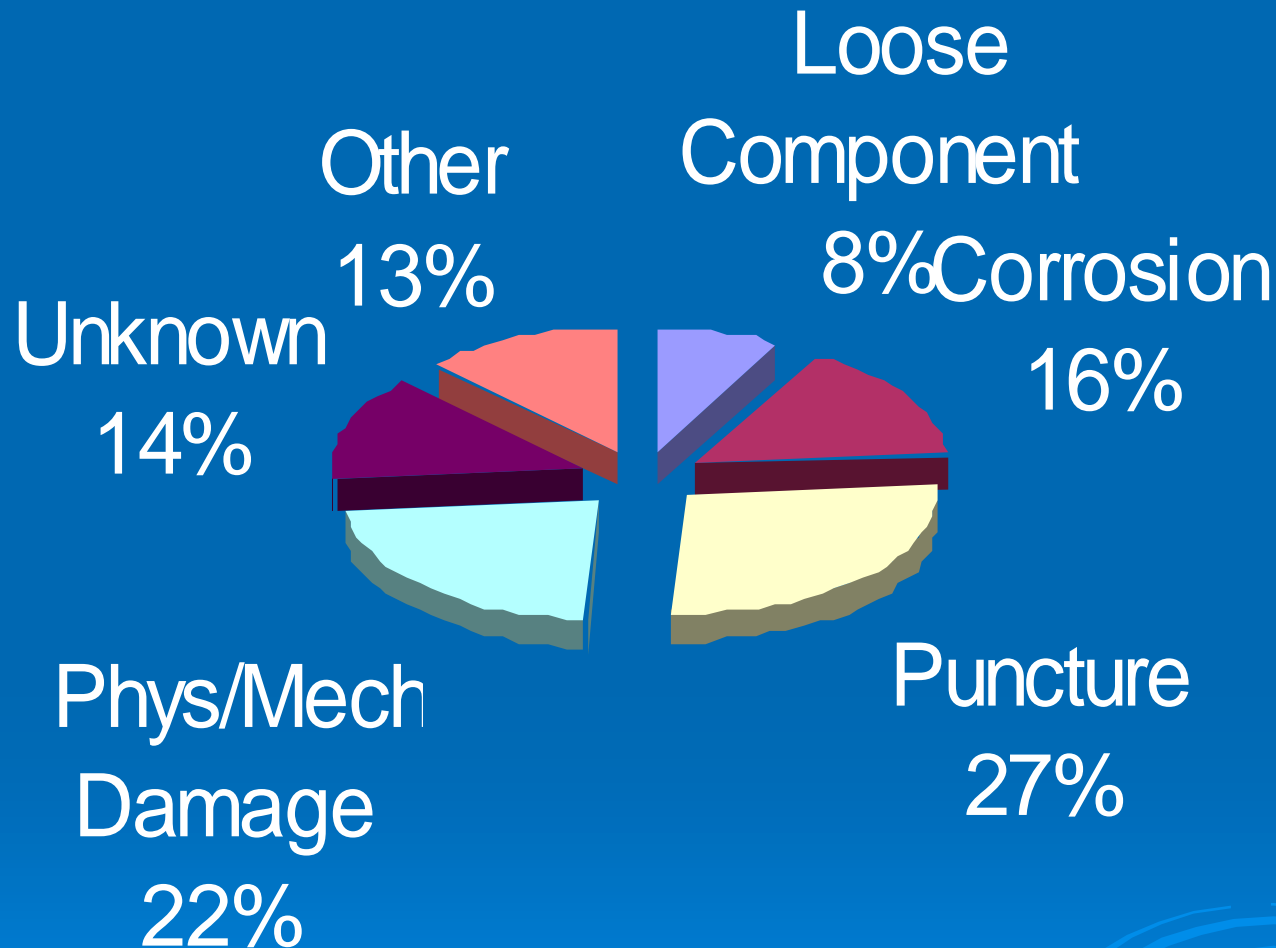


- Tank Usage Versus Releases -



Clad Tanks Had Relatively Fewer Releases

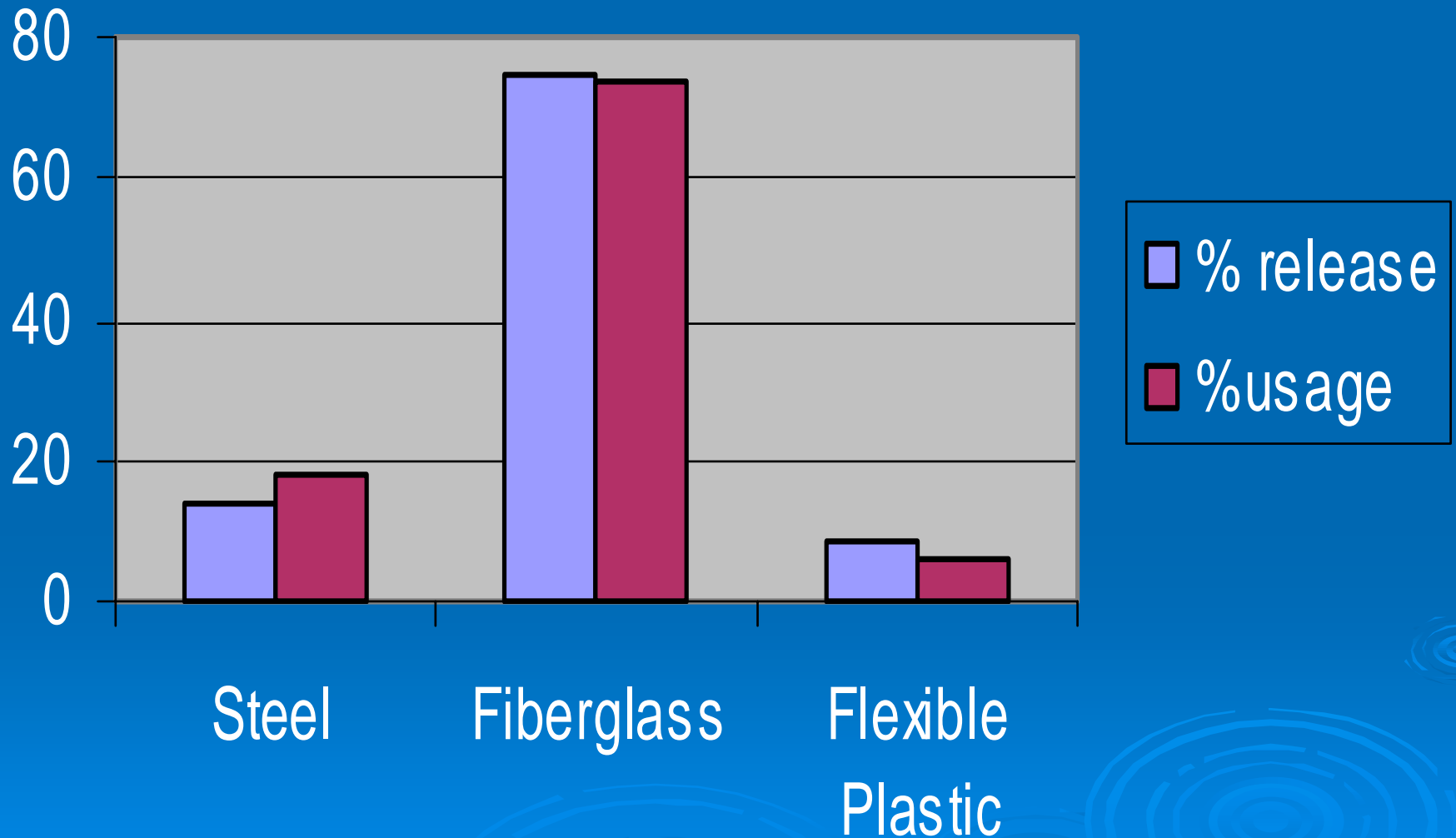
- Causes of Tank Releases -



Primary Cause of Steel Tank Release – Corrosion

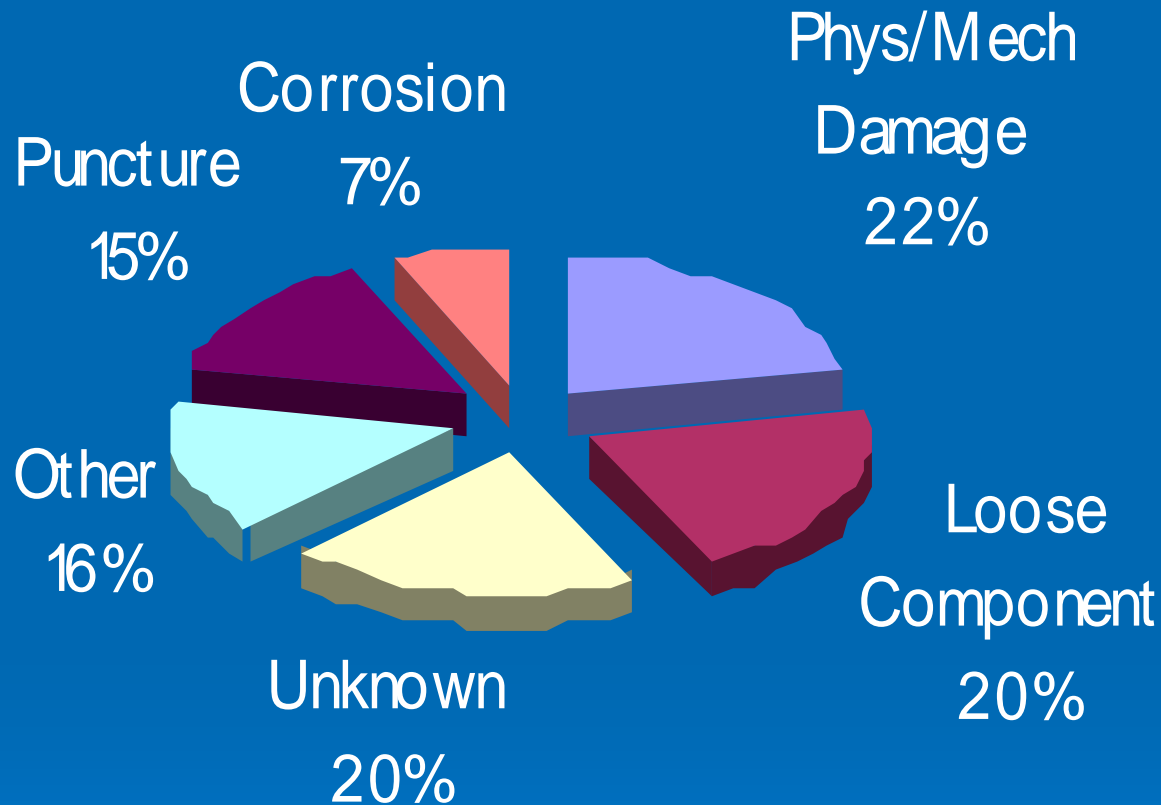
Primary Cause of Fiberglass Tank Release - Puncture

- Piping Usage Versus Releases -



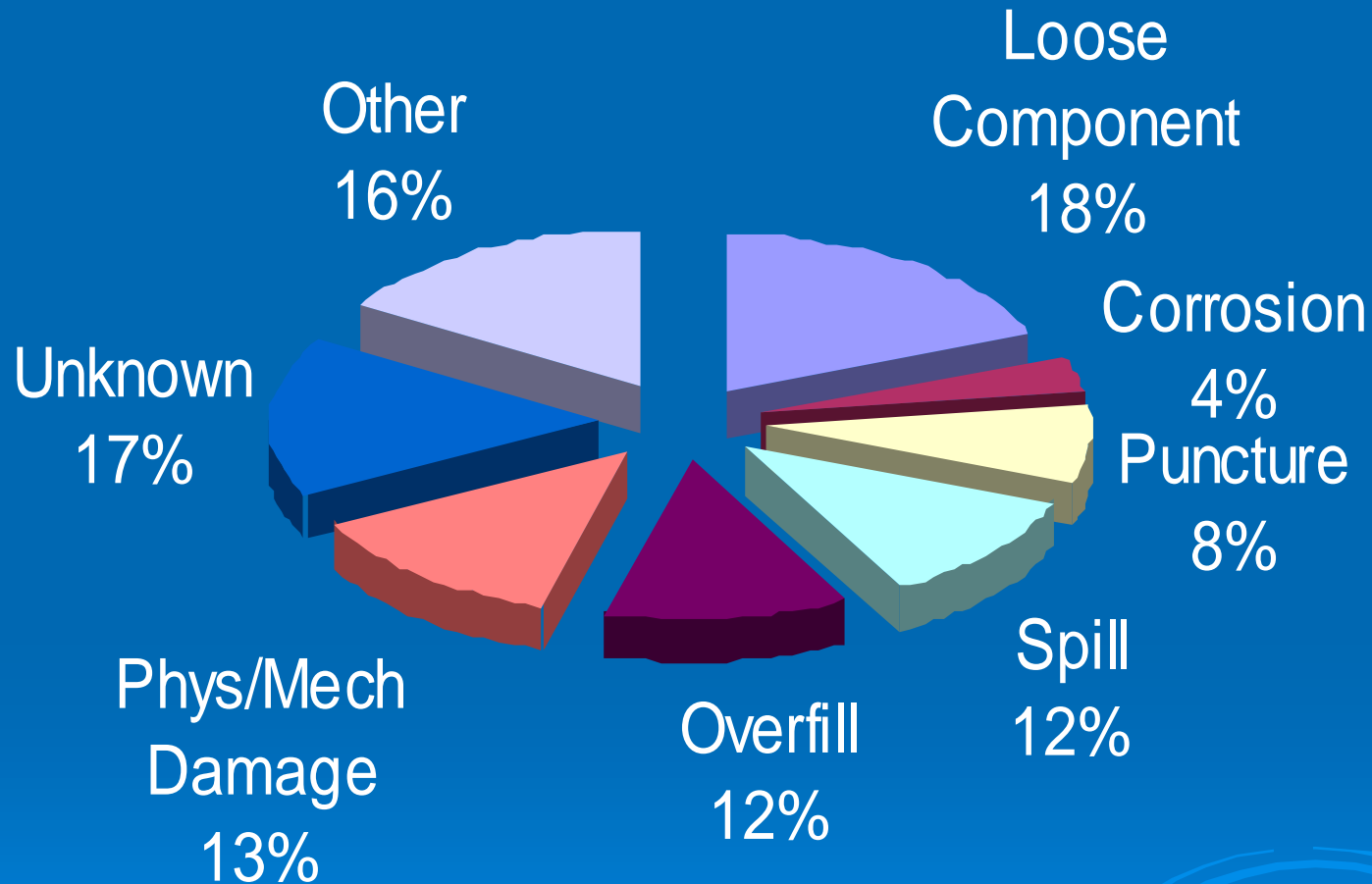
Further Analysis Required to Determine Statistical Significance

- Causes of Piping Releases -



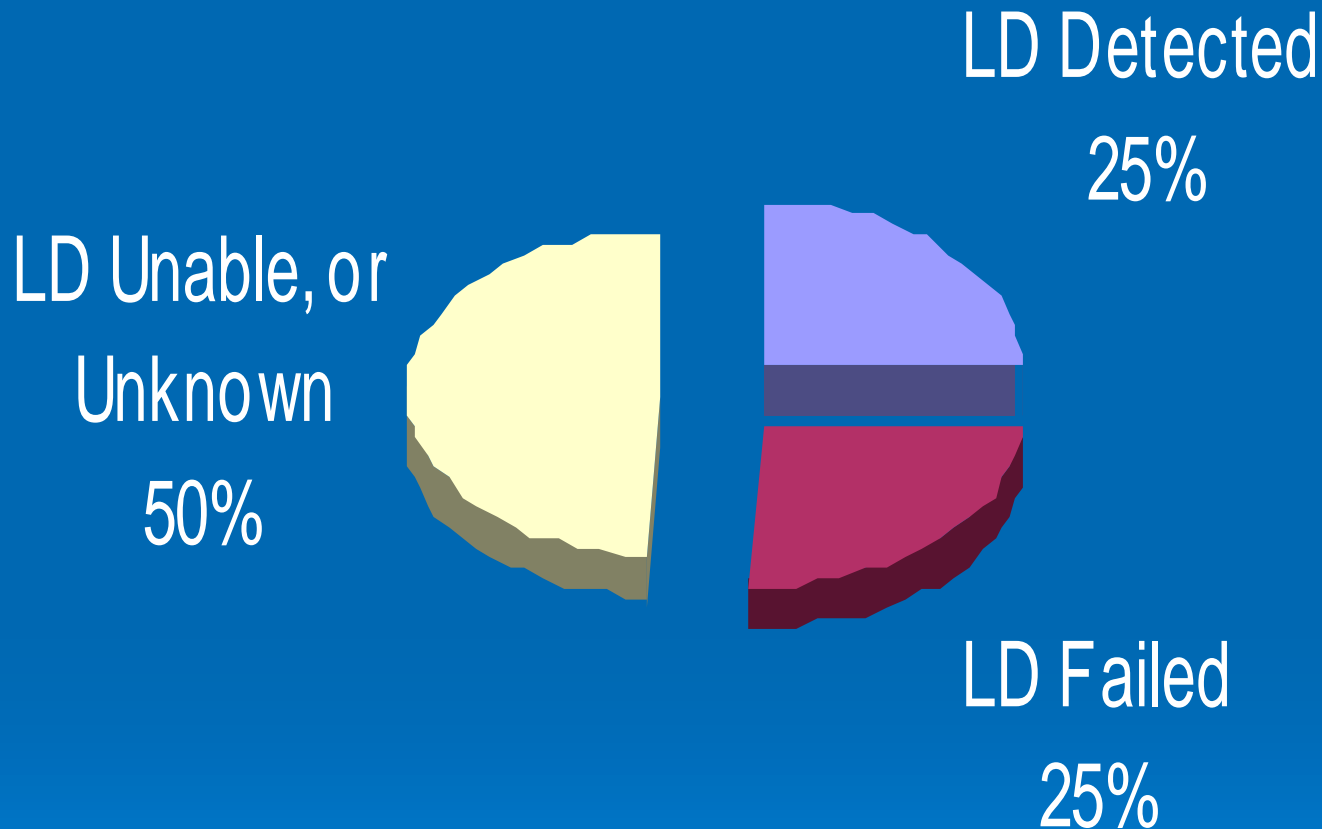
- Primary Cause of Steel Piping Release – Corrosion
- Primary Cause of Fiberglass Piping Release – Loose Component
- Primary Cause of Flexible Plastic Piping – Phys/Mech Damage

Summary of Causes - USTs



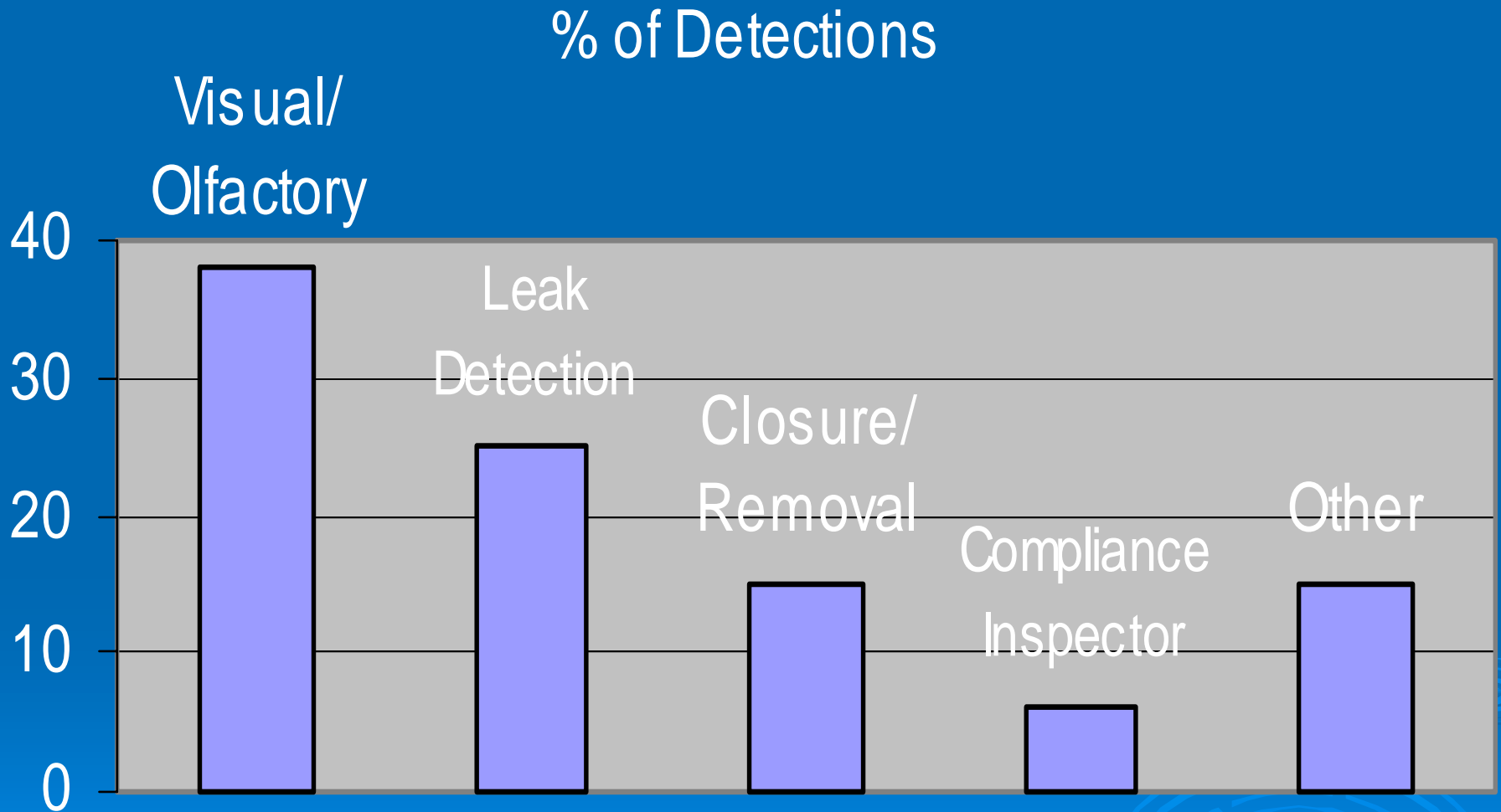
Other Releases Include: Delivery to Monitoring Well, Vehicle Accident, Improper Installation, Vandalism

- Success of Leak Detection -



LD Unable, or Unknown: Either the release came from a part of the system that a LD system was not designed to detect, or the inspector could not determine whether LD failed to detect.

- Method of Detection -



Other Methods Include: Unscheduled TTT/LTT, Dispenser Upgrades, Maintenance Inspections, Water in Tank

Piping, Dispensers & Spill Buckets





Florida Leak Autopsy Study

- Field-verified, Quality assurance
- County Tanks Inspectors Complete Forms
- Continuation of Florida Cause of Leak Study
- Data compared to Forms submitted by tank owners

	Material	Other Attributes	Ancillary Equipment
<input type="checkbox"/>	Galvanized Steel	<input type="checkbox"/> Sacrificial Anodes	<input type="checkbox"/> Spill Containment Bucket
<input type="checkbox"/>	Fiberglass	<input type="checkbox"/> Impressed Current System	<input type="checkbox"/> No Spill Containment
<input type="checkbox"/>	Composite	<input type="checkbox"/> Internal Lining	<input type="checkbox"/> Overfill Protection
<input type="checkbox"/>	Unprotected Steel	<input type="checkbox"/> Single Wall	<input type="checkbox"/> Ball Check Valve
<input type="checkbox"/>	Other Approved	<input type="checkbox"/> Double Wall (same material)	<input type="checkbox"/> Flow Shut-Off
<input type="checkbox"/>	Concrete	<input type="checkbox"/> Double Wall (different material)	<input type="checkbox"/> Tight Fill
<input type="checkbox"/>	Polyethylene	<input type="checkbox"/> Secondary Containment with a liner	<input type="checkbox"/> Alarm System
<input type="checkbox"/>	Unknown	<input type="checkbox"/> Other Approved (Tank Bladders, etc.)	<input type="checkbox"/> Remote Fill
<input type="checkbox"/>	Other (Specify)	<input type="checkbox"/> Compartmented	<input type="checkbox"/> No Overfill Protection
<input type="checkbox"/>		<input type="checkbox"/> External Liner	<input type="checkbox"/> Other (Specify)

Florida Leak Autopsy Study

Four Page Form

Florida Leak Autopsy Forms 1 Jan 03 – 1 Mar 05

•859 Forms

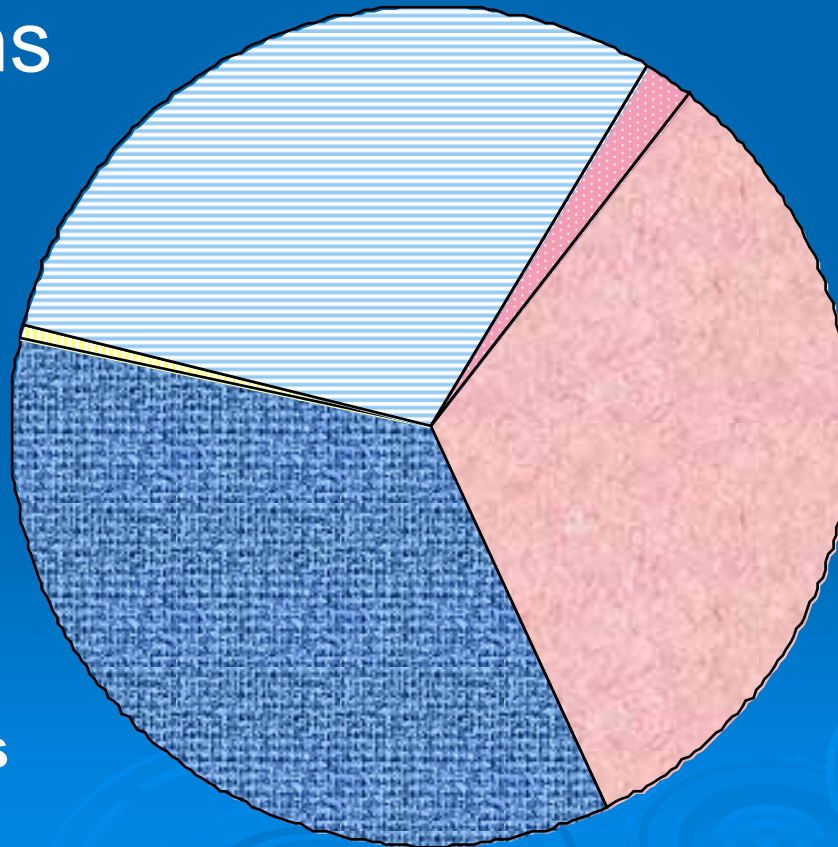
Forms under
investigation
1%

Valid UST
Discharges
34%

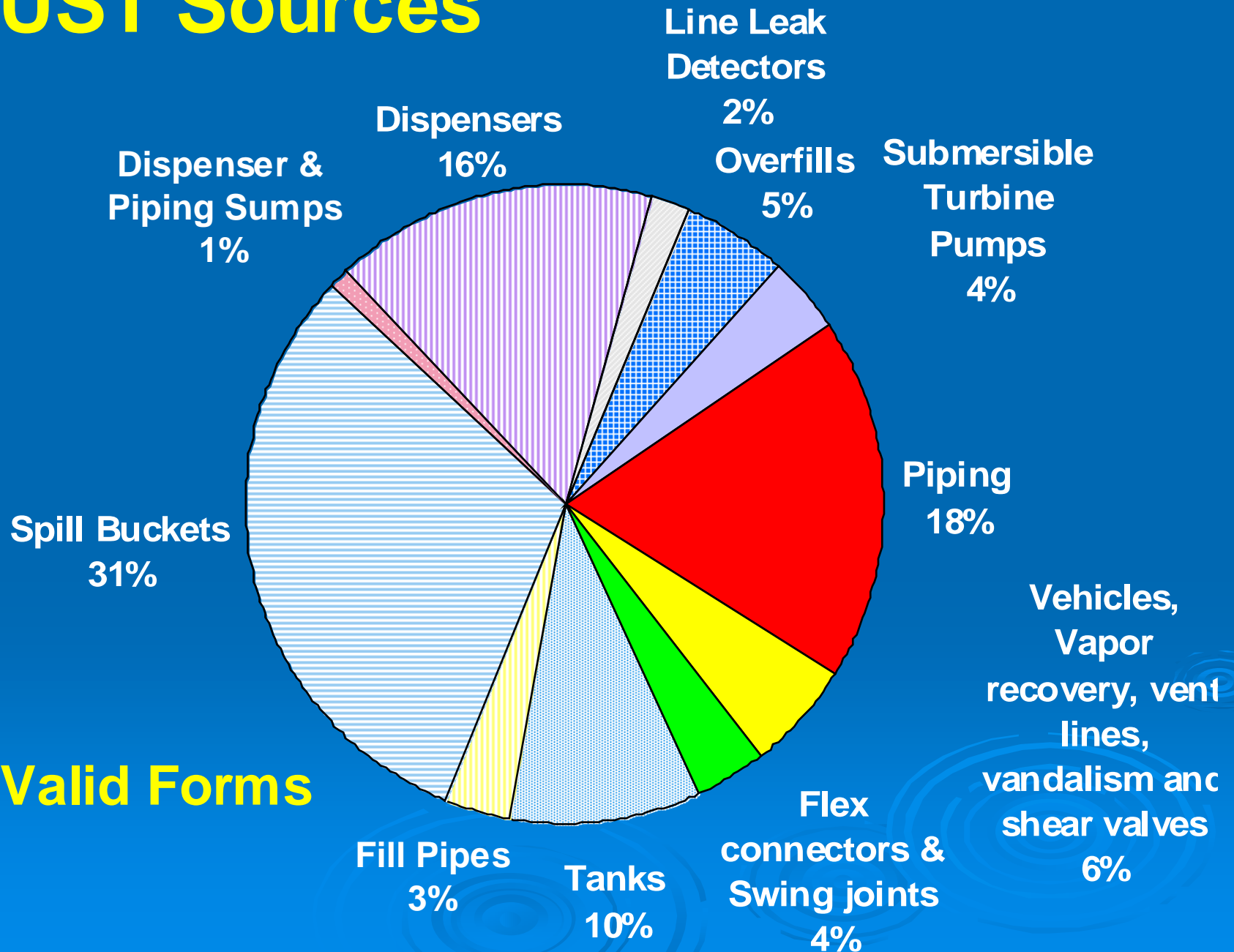
Valid AST
Discharges
30%

Invalid AST Forms
2%

Invalid UST
Forms
33%



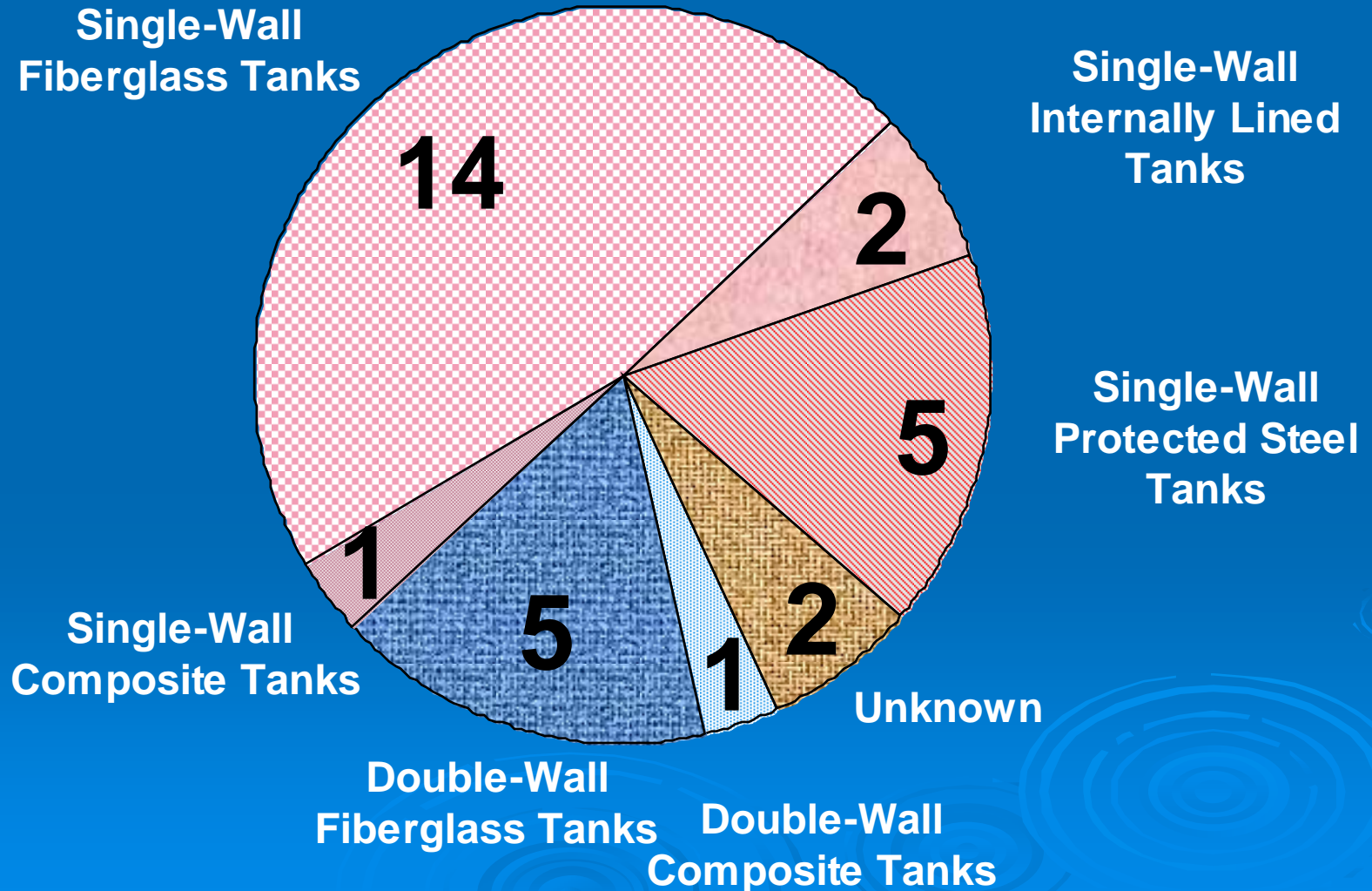
UST Sources



305 Valid Forms

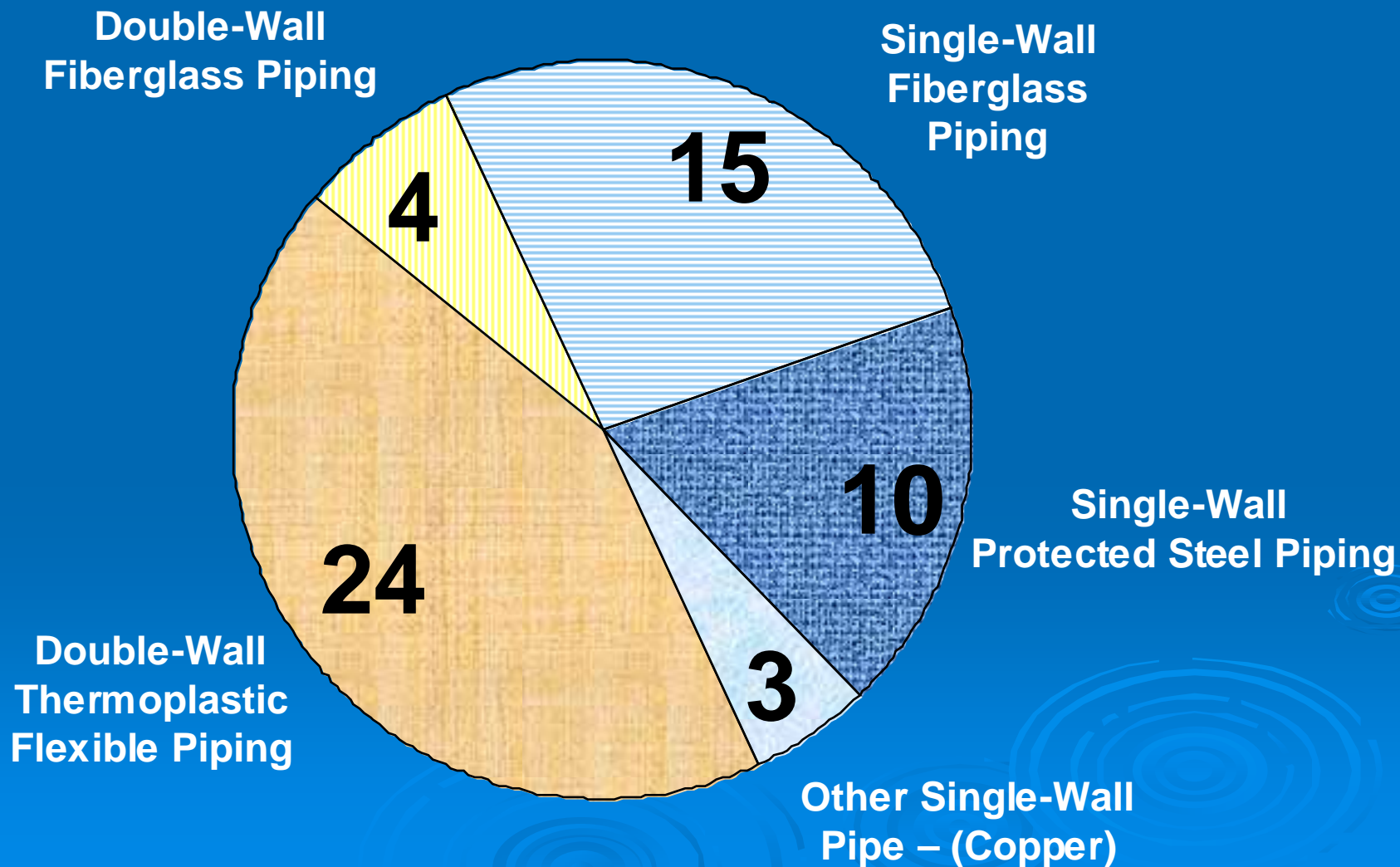
Tanks – 10%

Double-wall tanks – 2%

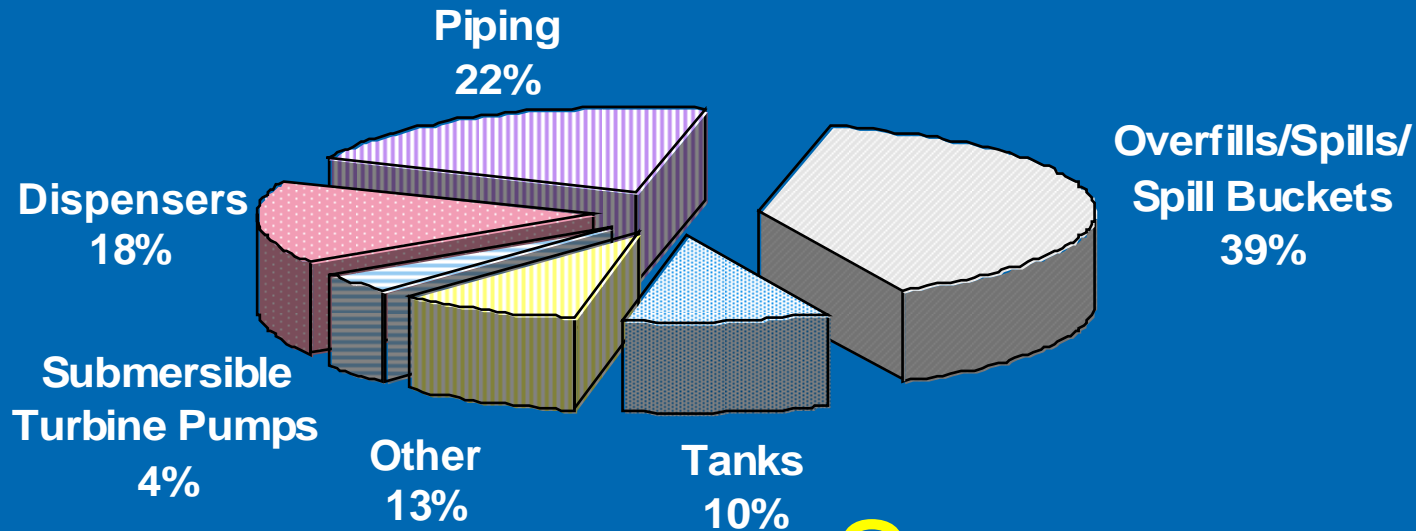


Piping – 18%

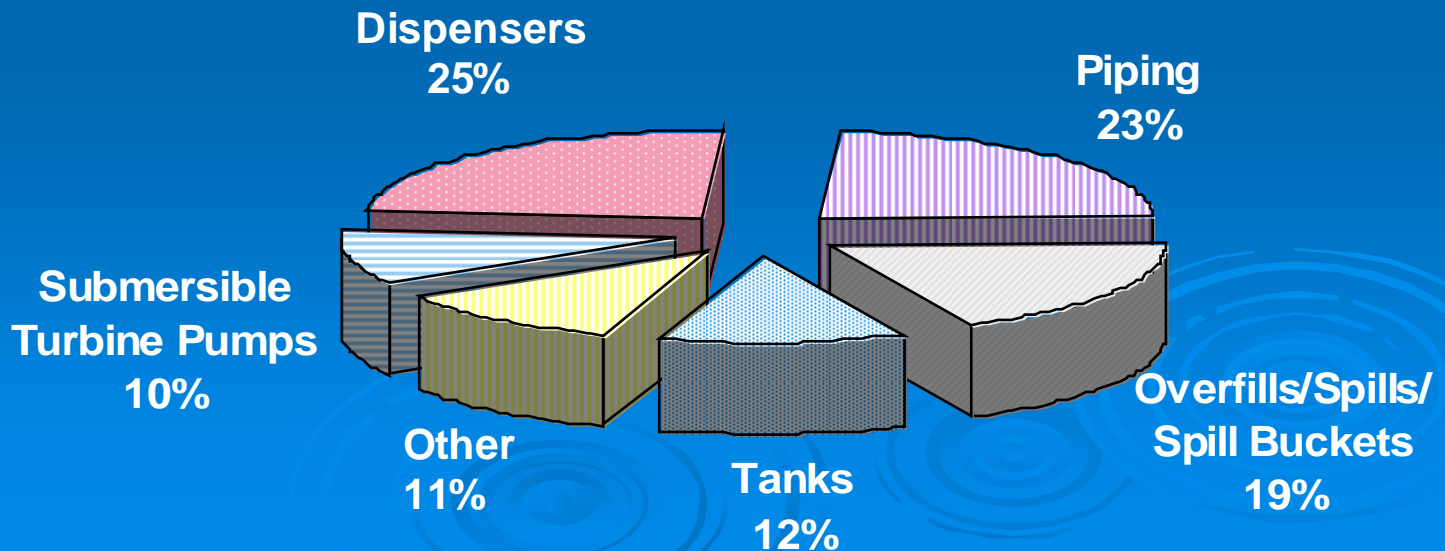
Double-wall piping – 9%



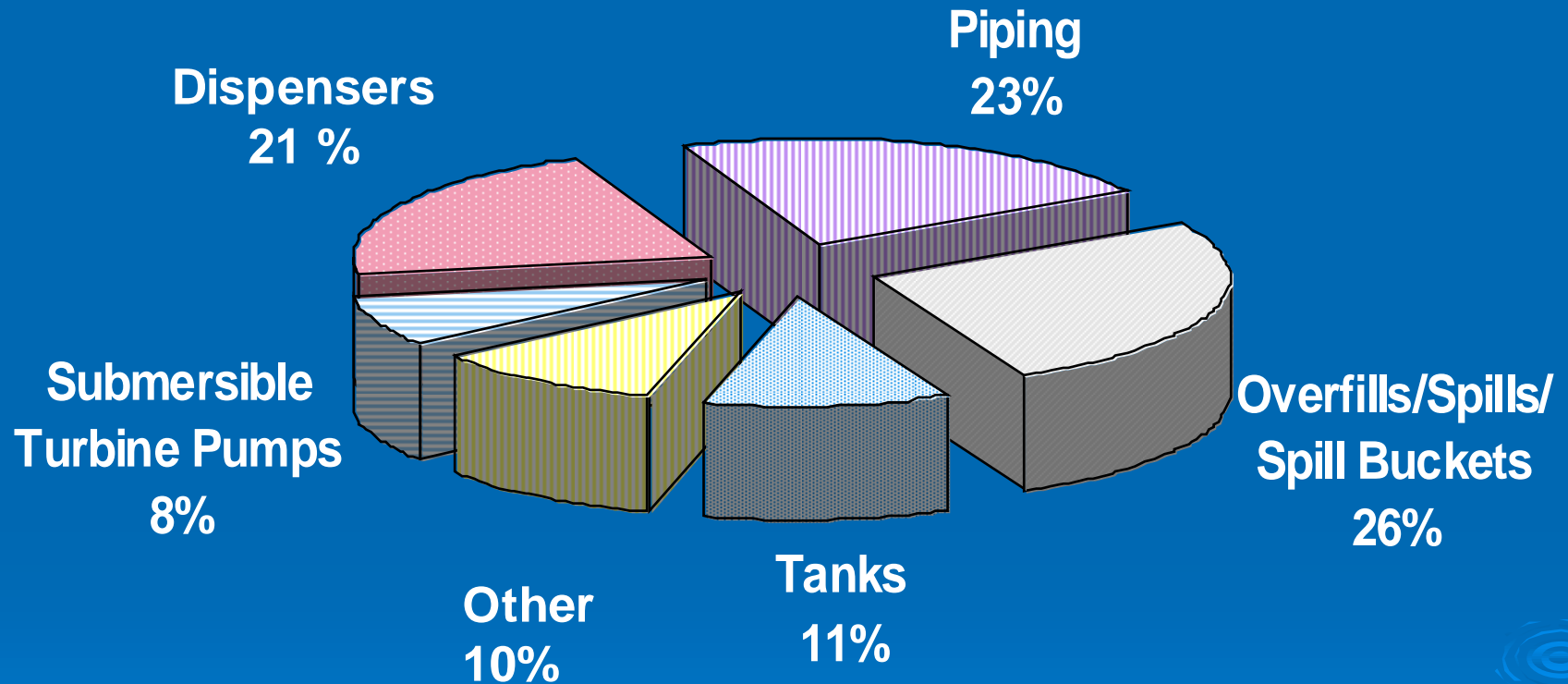
Sources - >2003



Sources - <2003



Combined Data



827 Valid UST Forms

A sunset over a beach with waves crashing on the shore. The sky is filled with orange and yellow clouds, and the water is a deep blue. The sand is visible in the foreground.

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Florida Department of Environmental Protection