

# Historical Observations

40 year evolution of the U.S. LDAR (Leak Detection and Repair) industry to effectively control fugitive emissions

1970's → 1980's → 1990's → 2000's

Development	Research	Rules	Reassessment	Consent Decree
Elements	<ol style="list-style-type: none"> <li>1. Component Emission</li> <li>2. Emission Equations</li> <li>3. Develop LDAR Process</li> </ol>	<ol style="list-style-type: none"> <li>1. Regulations</li> <li>2. Emission Reduction Targets</li> <li>3. Start To Implement</li> </ol>	<ol style="list-style-type: none"> <li>1. Low Emission Reduction</li> <li>2. Poor Quality Monitoring</li> <li>3. Increase Enforcement</li> </ol>	<ol style="list-style-type: none"> <li>1. Negotiated Enforcement Agreements</li> <li>2. 3rd Party LDAR Auditing</li> <li>3. Biannual Audit</li> </ol>
Monitored Component %	0	10-20	60-80	90-95
End User Perception	"We have emissions"	"I need a program"	"Am I in regulatory compliance today?"	I need a well designed program to achieve compliance and maximize stakeholder value"
	Identify Problem	Develop Rules	Compliance Audit	Program Review



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# ***Enforcement Alert***

Office of Regulatory Enforcement

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## **Proper Monitoring Essential to Reducing 'Fugitive Emissions' Under Leak Detection and Repair Programs**

**1999**

- Low-cost LDAR – Per Component Pricing
- Limited technical enforcement 80's, early 90's
- LDAR evaluation by U.S. National Enforcement Investigations Center (NEIC)
- Valves Monitored
  - NEIC = 47,500
  - Refinery = 170,700
- Higher leak rates (3x - 5x)
- 60% leaks missed 1 cm from sealing point

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- a. LDAR Program Reviews (3<sup>rd</sup> Party)
  - b. Negotiated Enforcement Agreements

# Typical LDAR Gaps

- Inventory: failure to include sealing points / process units
- Failure to conduct monitoring at required frequency
- Failure to follow monitoring procedures
- Failure to correctly calibrate monitoring instruments
- Incorrect / expired calibration gasses
- Repairs not done within specified timeframes
- Failure to follow Delay of Repair (DOR) requirements
- Not including newly installed components
- Failure to submit reports or maintain records

China Will Experience Similar Program  
Implementation Challenges

# China Situation

## Similarities + Differences

### Observations

- China rapidly developed requirements
- Rapid growth in LDAR industry
- Significant cost concerns

Learning Phase

Similar to 1980's United States

### China LDAR

- Simpler + More Comprehensive
- Focus on all components (HL's, Connectors)
- Use sealing point photos versus tags

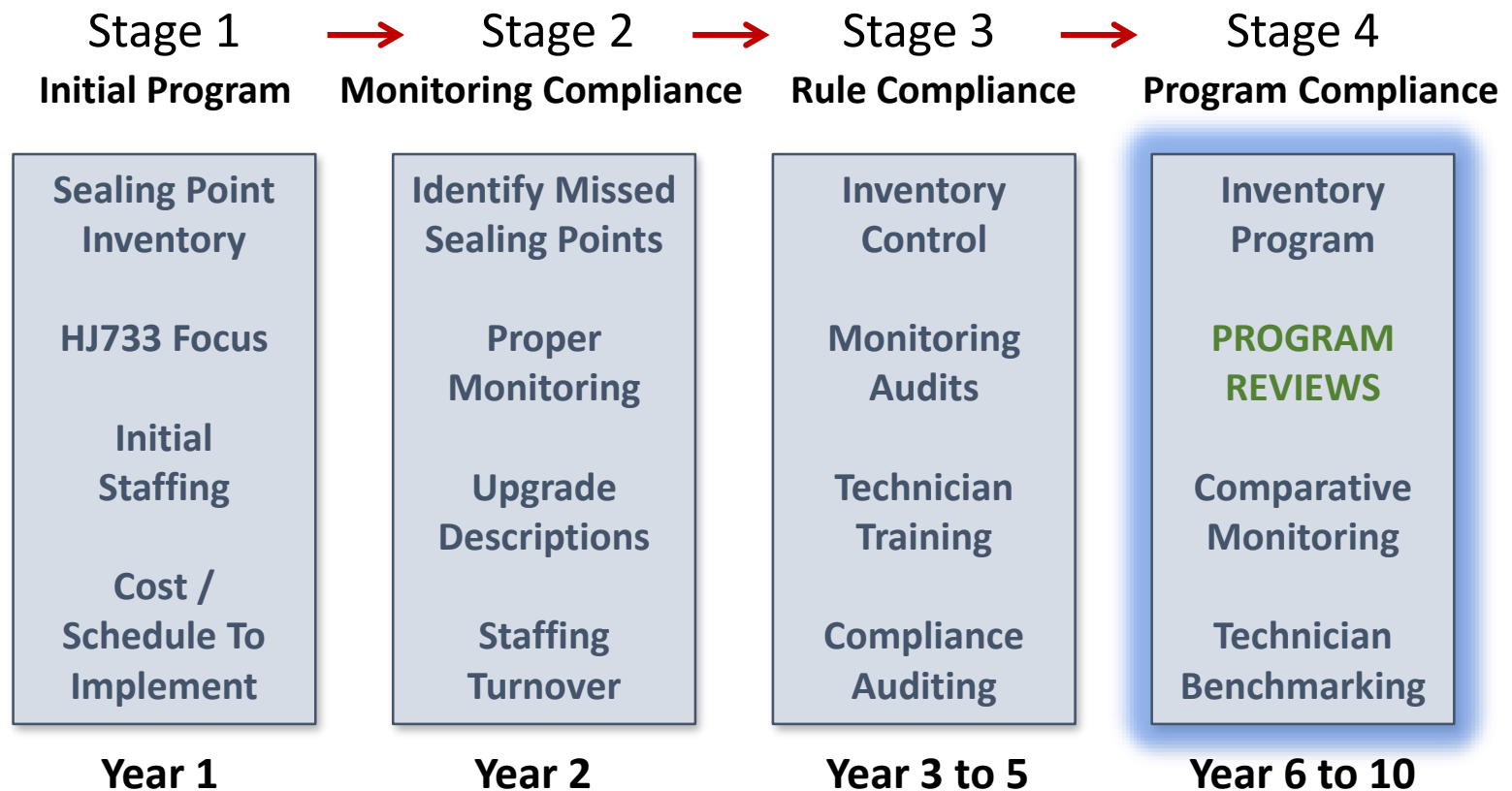
### China Challenges

- Priority: LDAR Price over Quality / Performance **SAME AS U.S.**
- LDAR company qualification
- Transition in LDAR enforcement process

Industry Must Prepare For New Enforcement Process

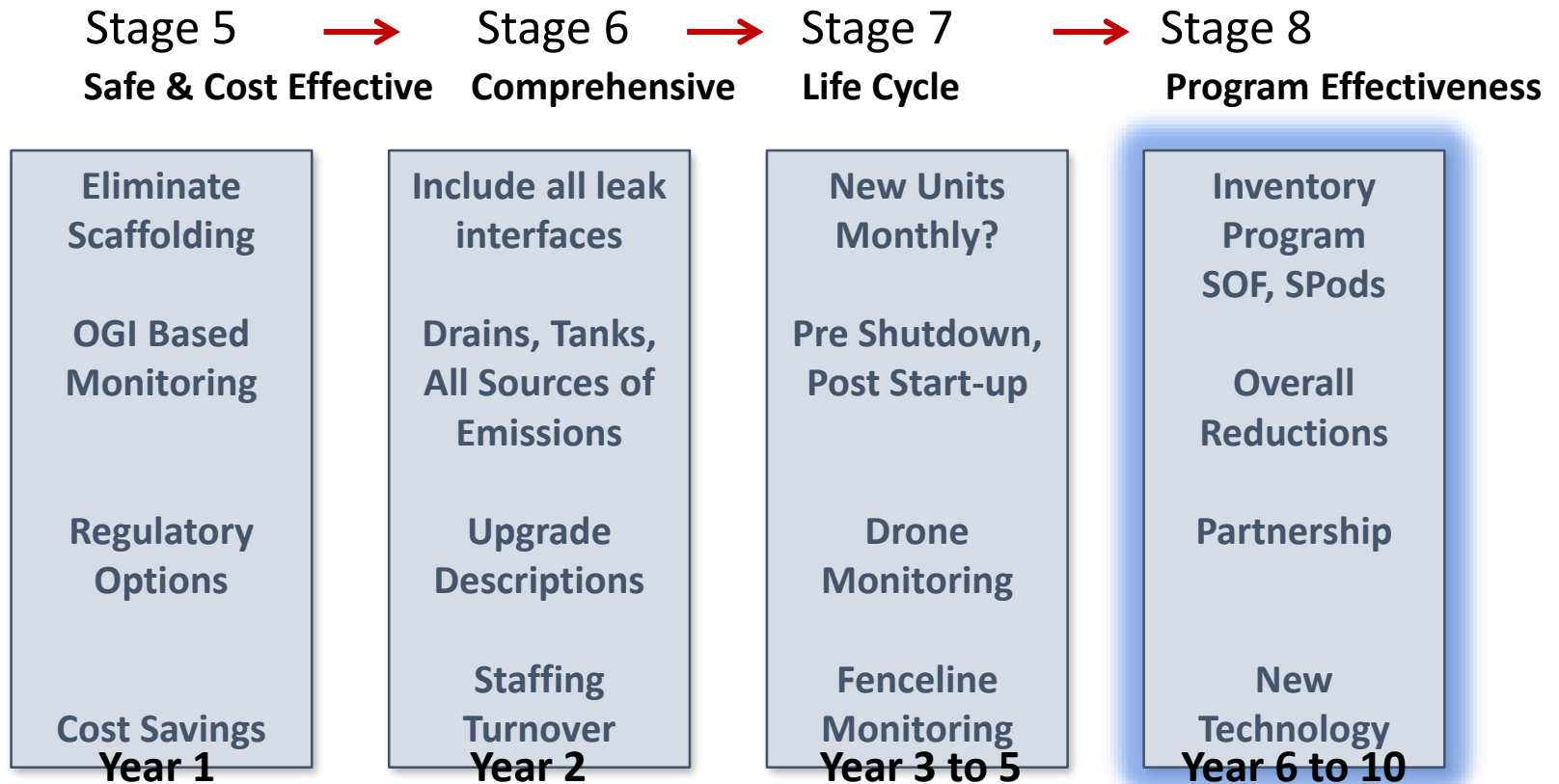
# LDAR Program Effectiveness

Journey To Effective Sustainable LDAR Program ...



# LDAR 2.0

Journey To Effective Sustainable LDAR Method 21 and OGI Program ...



# Question?

