Risk Based Inspection Prioritization

Sacramento, California
November 17, 2016
Inspectors are Busy

Inspector Daily Duty Balance

- Emergency Situations
- Spill or Release
- New Well
- Non-Routine Inspections
- Well Control Problems
- Complaints
- Centralized Tank Batteries
- Shut in Wells
- Waste Disposal Sites
- Routine Inspections
- Producing Wells
- UIC Wells
- Temporary Abandonments
- Communications eMail and Phone
- City Council Meeting
- County Commissioners
- Other Assignments
- Local Citizens Meeting
- Agency Training
- Well plugging
- Remediation Evaluation
- Pre-Drill Onsite
- Scheduled Inspections
- Mechanical Integrity Test(s)
- Cement Job
- Emergency Responders Training
- Remediation Evaluation
- Other Assignments
- Agency Training

Inspector Schedule
Risk Based Inspection Prioritization

Draft concept document created based on detailed conversations with the agency personnel and management in Michigan and Utah.

The concept document needs to continue to be improved through discussion and review by feedback from the review states and other agencies.
Many Parts to Risk Analysis

Risk Analysis

Impact Agents
- Dust
- Emissions
- Waste Water
- Product
- Fear
- Noise
- Light

Operation
- Exploration
- Site Construction
- Drilling
- Completion
- Production
- Re-Work
- Recompletion
- Plugging
- Reclamation

Evaluation

Aggravating Factors
- Age of Equipment
- Accelerated Degradation
- Operator Compliance
- Soil Type
- Proximity to Humans
- Sensitive Habitat

Mitigating Factors
- Best Management Practices
- Operations Standards
- Public and Govt Outreach
- Conservation Stewardship

Priority Scale

Receptor
- Air
- Soil
- Ground Water
- Surface Water
- Human Health/Safety
- Wildlife
- Flora

Cause
- Spill/Release
- Uncontrolled Event
- Truck Traffic
- Natural Disaster
- Equipment Failure
- Venting
- Ground Water Turbulation
- Fire/Explosion
### Risk Based Inspection Location Evaluation

<table>
<thead>
<tr>
<th>Process</th>
<th>Initial Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose of Location</strong></td>
<td>Evaluate Location Use, Fluids Stored Onsite, Piping Moving Fluids, Engines and Motors, Monitoring or Observation</td>
</tr>
<tr>
<td><strong>Sensitive Receptors</strong></td>
<td>Evaluate Sensitivity of Receptors, Air, Soil, Ground Water, Surface Water, Humans, Wildlife, Flora</td>
</tr>
<tr>
<td><strong>Operations</strong></td>
<td>Evaluate Operational Impacts, Exploration, Site Construction, Drilling, Completion, Production, Re-Work, Re-completion, Plugging, Reclamation, Product Storage, Waste-Fluid Storage, Waste Treatment, Compression, Pigging</td>
</tr>
<tr>
<td><strong>Aggravating Factors</strong></td>
<td>Evaluate Aggravating, Age of Equipment, Accelerated Degradation, Operator Compliance History, Soil Stability, Precipitation, Proximity Humans, Sensitive Habitat</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Establish Inspection Priorities, Frequency, Timing, Notice Requirements, Management Priorities, Precipitation, Proximity Humans, Sensitive Habitat</td>
</tr>
</tbody>
</table>
Analysis and Implementation

Inspection Prioritization

Product has Corrosive Properties
- CO2 Present in the gas
- H2S Present in the oil or gas
- Brines present in the fluid stream
- Corrosion inhibitors are not used
- Corrosion inhibitor tanks are not filled
- Operator has poor compliance history
- Operator lacks test experience

Product Erosion
- Product flow velocity is high
- Sand is present in the oil
- Excessive bends in flow lines
- Soil moisture content high
- Annual precipitation

Wellsite Age
- Material age
- Soils are very alkaline
- Soils are acidic
- Flow lines intersect coals
- H2S Present in the oil or gas

Operator Compliance
- Soils are conductive
- Soils are corrosive

Witness Routine Flow line Tests
Agency Commitment

- Data inputs
  - Manual evaluation as well as automated
  - Identify triggers and automate those

- Staff adjustments
  - Shift in field inspector prioritization
  - Start small to create success

- Communication
  - Agency, Operator, Land Owners, Local Govt
Project Next Steps

- Distribute document to agencies that have an interest or wish to evaluate project
- Create application design diagram showing process sequence and system requirements
- Define system requirements
- Document agency business process changes
- Identify processes that may require rule changes or policy implementation.
Inspections are Public Interest

- Spending a little more time ends up saving time in the long run.
- Detailed statistical information will help tell the story of efficiency and agency needs.
- Documented and timely field presence will provide basis for positive agency image.
- Transparency is being demanded.
Questions