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# Pipeline Safety Management Systems

## Utah Department of Commerce

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

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# PHMSA PSMS Advisory Bulletin

- In response to an NTSB recommendation, PHMSA issued ADB-2025-01 in March of this year.
- Advisory Bulletins are non-binding, but PHMSA agrees with NTSB that all pipeline operators should be encouraged to implement PSMS voluntarily to improve pipeline safety.

# API Recommended Practice 1173

- The American Petroleum Institute's (API) Recommended Practice (RP) 1173 establishes a pipeline safety management systems – (PSMS) framework for pipeline operators.
- RP 1173 is a voluntary industry standard that PHMSA encourages operators to adopt.
- PSMS focuses on continuous pipeline safety improvement and allows flexibility for unique operations and environments.

# PHMSA Safety Initiative Goals

Continue to pursue and foster non-regulatory approaches to effect continuous improvement in safety, such as Safety Management Systems, Safety Culture, and incentivizing regulated entities to move beyond mere compliance with regulations by adopting and institutionalizing voluntary, meaningful, comprehensive programs that will advance safety.

# “Plan – Do - Check – Act”

- Plan: establish the objectives and processes necessary to deliver results
- Do: execute the plan designed in the previous step
- Check: review the results compared with established objectives
- Act: take actions to continuously improve process performance, including corrective actions on significant differences between actual and planned results, analyze the differences to determine their root causes, and determine where to apply changes that will include improvement of the process or product

# Strong Safety Culture

- Defined by DOT as the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands
  - Communication
  - Personal responsibility
  - Continuous education
  - Safety consciousness
  - Prioritization of safety
  - Mutual trust
  - Fairness and consistency
  - Safety training availability

# NTSB Recommendations for a PSMS

- Proactively address safety issues
- Document safety procedures with adherence by personnel
- Treat errors as system deficiencies - not punish or intimidate employees
- Require senior company management to commit to operational safety
- Identify personnel responsible for safety initiatives and oversight
- Implement non-punitive methods for employees to report safety hazards
- Continuously identify and address risks for safety-critical aspects
- Regularly evaluating operations to identify and address risk

# Management System Elements

- Leadership and Management Commitment
- Stakeholder Engagement
- Risk Management
- Operational Controls
- Incident Investigation, Evaluation and Lessons Learned
- Safety Assurance
- Management Review and Continuous Improvement
- Emergency Preparedness and Response

# Management System Elements

- Competence, Awareness and Training
- Documentation and Record Keeping
- What not How
- Continuous Improvement

# Leadership Commitment Advances Safety

- Involvement of leadership at all levels is essential
- Leadership has more visible role in demonstrating the safety culture
  - Evaluate the PSMS maturity to set specific goals in areas of concern
  - Checks actual progress against targets
  - Assess & develop safety culture; safety incentives
- Brings rigor to asset protection/safety
  - Preparing all levels of employees to recognize and respond to risks
  - Learns from past incidents and operates with what could go wrong

# Stakeholder Engagement

- Stakeholders must be identified and listed, including contractors and excavators.
  - Stakeholders are the employees, the persons who work and live along the pipeline and pipeline facilities, the regulators, and emergency response organizations.
    - Establish dialogue with stakeholders; it's a 2-way street
    - May use public events, social media and other methods
- Safety performance data should be shared with those in proximity to the pipeline facilities.

# Engagement Advances Safety

- Internal: focus on employee engagement, involvement and learning
- External: focus on moving from awareness to dialogue to help identify and control risk and share performance
- Supports processes to identify and resolve concerns about transparency on safety matters

# Risk Management

- Builds upon the risk management in IMP
- Risk identification & threat assessment: ask “what can go wrong?”
- Define “safe operating conditions” for your system (e.g., State MOP/MAOP safe range)
- Review risk at least annually (review to include top management)
- Responsiveness to employee-identified risk builds/improves the safety culture
- Identification of operational risks above & beyond regulatory requirements
- Preventive & mitigative measures developed

# Operational Controls

- Operating procedures
  - All employees have STOP WORK authority if procedure may cause an unsafe condition
- System integrity
  - Apply quality control for the life cycle of pipeline
- Management of change
  - Potential risks must be identified for each change
- Use of contractors
  - Communicate SMS requirements to contractors
  - Greater certainty that activities are performed as expected
  - Greater certainty that there is an intentional commitment to safety
  - Employee understanding that following procedures is important
  - Employees can confidently STOP WORK and identify unsafe activities

# Investigations and Lessons Learned

- Must have procedures for incidents and near-misses
- Track corrective and preventative actions
- Communication of the investigation
  - Internally (required)
  - Externally (recommended)
- Re-evaluate past incidents/accidents & look for patterns
- Evaluate external events & learn from them
- Ensures the right information is gathered from events
- Is used to improve the risk management process
- Sharing of lessons learned within the organization builds the safety culture
- Uses the incidents of others to prevent their occurrence within the organization

# Safety Assurance

- Audit to determine conformity with the SMS
- Evaluation of:
  - Risk management to assess effectiveness
  - Safety culture & SMS maturity
- Reporting and feedback to employees
- Establish and maintain key performance indicators (KPIs)
  - Leading (risk reduction, improvements evident due to SMS)
  - Lagging indicators (track fatalities, injuries, etc.)
  - Validation that risk management is systematic and disciplined
  - Evaluates the openness of the organization and trust of the employees in the organization
  - Enhances safety culture

# Management Review

- The SMS must be reviewed annually to determine the extent to which goals and objectives have been met
  - Management review output
  - A summary of the effectiveness of the SMS
  - Opportunities for improvement and action items
  - Identification of resources
  - Continuous improvement (evaluation of new technology)
  - Defines opportunities and obtains authorization for continuous improvement activities
  - Sets safety as a priority
  - Enhances the safety culture

# Emergency Preparedness & Response

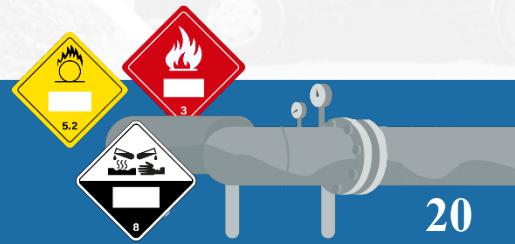
- Must have procedures for responding effectively to a pipeline incident/accident
- Procedures must be accessible and communicated to all employees and contractors
- Use of unified command/incident command structure
- Identification of safety, health, and environmental protection processes
- Critiques of drills for lessons learned and improvements

# Competence, Awareness and Training

- Ensure the appropriate level of competence for personnel involved in the SMS
- Training provided:
  - Elements of the SMS and the impact on their job requirements
  - New or changing risks and opportunities to improve processes and procedures
  - Potential consequences of failure to follow processes or procedures
  - Builds trust and confidence
  - Defines competencies
  - Skill sets are refreshed
  - Confidence is improved

# Documentation and Records

- Must have a document control procedure
  - Are reviewed and approved prior to use
  - Identify changes and revision status
  - Are available / accessible to those performing an activity
- Obsolete documents are not used
- "If something is not documented, it was not done"
  - Ensures procedures are up to date
  - Minimizes confusion
  - Reduces operational errors
  - Enables accurate reporting and tracking of data, which is the basis of learning and improvement

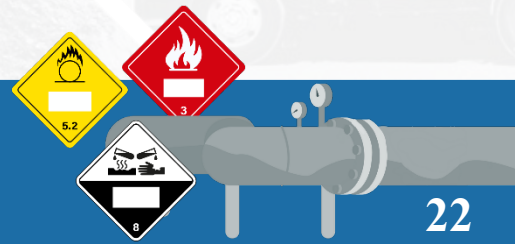


# How Do I Get Started?

- Top management interest/commitment
  - This cannot be driven from the bottom up
  - Benefits must be clear, or commitment will vanish
- Decide how API RP 1173 integrates with your operations
  - Already using an industry recognized management system? If yes, implementation would be incorporation of the RP into the existing management system with additions specific to pipelines.
  - If no, develop an implementation plan.
- Regulatory process safety management system (OSHA, PSM, EPA)

# How Do I Get Started?

- External stakeholder issues
  - Have communication problems with external stakeholders
  - Encourages open discussion for building relationships and understanding
  - Can increase the stakeholders' confidence in your safe operation (transparency)
  - Hopefully, you can hear about a concern before you learn about it in the news media
  - Train the organization
  - Specific to the role
  - The results of gap analysis and action plan to close gaps

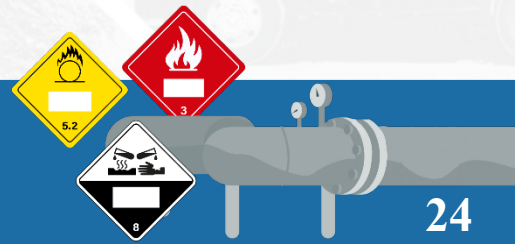


# How Do I Get Started?

- Develop a S.M.A.R.T. Action Plan
  - Specific: Clear goals, not broad generalities
  - Measurable: Progress can be measured
  - Assigned: A person, not a team
  - Realistic: Resources are available and dedicated to the task
  - Trackable: Deadlines are assigned, and progress is monitored

# What Actions Should I Do First?

- Concentrate on the continuous improvement elements:
  - Leadership and management commitment
  - Stakeholder engagement
  - Safety assurance
  - Management review
- For:
  - Risk management
  - Operational controls
  - Audit and evaluations
- Address any noncompliance



# When will I be finished?

- You will never be finished
  - Continuous improvement process
  - Look for possible improvements and evaluate their impact for improving the safety management system

# Thank You



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