Risk Control Management; a case to develop a comprehensive, and operational management system across your business
Objective

By the end of this talk:

- Risk-based MS
  - Drivers, elements, features, operational

- Information management solutions

- Awareness of where you are - need to be
Contents

- Typical MS
- Flaws
- Drivers
- What is Risk-based?
- Needed features
- Control-SCE-Barrier
- Benefits of Bowtie
- Information Solutions
Risk Management

- The Risk value chain
- The right receptors
- Poor risk and safety = cost
- Intrinsic to sound business
- Not going away
- What is new in +50 yrs.?
## Typical RM Systems

### Different element names, same principles

<table>
<thead>
<tr>
<th>OSHA PSM</th>
<th>SEMS</th>
<th>ANSI/AIHA Z10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Participation</td>
<td>Policy, practice and Procedures</td>
<td>Management leadership and</td>
</tr>
<tr>
<td><strong>Hazard Analysis</strong></td>
<td>Safety Information</td>
<td>employee participation</td>
</tr>
<tr>
<td>Training</td>
<td><strong>Hazard Analysis</strong></td>
<td>Planning</td>
</tr>
<tr>
<td>Pre-Startup Safety Review</td>
<td>Management of Change</td>
<td>Implementation and operation</td>
</tr>
<tr>
<td>Hot Work Permit</td>
<td>Operating procedure</td>
<td>Evaluation and Corrective</td>
</tr>
<tr>
<td>Incident investigation</td>
<td>Safe work Practice</td>
<td>actions</td>
</tr>
<tr>
<td>Audits</td>
<td>Training</td>
<td>Management Review</td>
</tr>
<tr>
<td>Safety Information</td>
<td>Quality Assurance and Mechanical integrity</td>
<td></td>
</tr>
<tr>
<td>Procedures</td>
<td>Pre-Startup Review</td>
<td></td>
</tr>
<tr>
<td>Contractors</td>
<td>Emergency Response and Control</td>
<td></td>
</tr>
<tr>
<td>Mechanical Integrity</td>
<td>Investigation on Incidents</td>
<td></td>
</tr>
<tr>
<td>Management of Change</td>
<td>Audits</td>
<td></td>
</tr>
<tr>
<td>Emergency Planning</td>
<td>Records and Documentations</td>
<td></td>
</tr>
<tr>
<td>Trade Secrets</td>
<td></td>
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</tr>
</tbody>
</table>

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MS flaws

- Static manuals and procedures
- Not integrated
- Lose accountability
- Failure to apply your own Safety and Risk
- Failure to control specific risk
- Lack of understanding of valid barriers
- Outdated or disperse documentation
Drivers

- Sound business
- Regulation vs. de-regulation
- HSE MS
- Contractor & 3rd parties
- Monitor vital signs
- Lagging Indicators: HP incident, Accident, Audit finding
Risk Dimension

Emergency Response

Facility, Hazards

Performance

Risk

MS

Risk Dimension

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**What is Risk-based?**

- Risk dimension, flat list vs. Risk “rules”?
- Tailored to the company
- Identified hazards and assessed risk
- Identified/linked risk in system components
- Assigned accountability
- Maintained awareness
- Ongoing check, report, improve
Features

- Major accident events/hazards oriented
- Condensed risk relevant info
- Controls-SCEs-Barriers identified
- Connection to integrity management
- Consistency, accessibility (search, filter)
- Information management
- Agile, attractive interface
- Workforce engagement
Controls-SCE-Barriers-

Defined as a hardware, that if fail cause or contribute substantially to an accident event or its purpose is to limit the effect of a major accident event.

To be valid barriers:

- Independent, Auditable
- Defined functional criteria
- Testing functional criteria
- Reliability
- Resilient to change
- Practical drills
Benefits of Bowtie Diagram

- Illustrative, visual
- Relevant data for controls
  - Type – hierarchy, Criticality
  - Efficiency, Owner
  - Performance
- Customizable views
- Add-on features: investigation, audit
Risk-based MS Solutions

...(Must be) tailored to your needs
RB MS Solutions

- Low: not organized
  - No structure defined
- Medium: electronic library
  - Spreadsheet, iSafetyCase
- Full enterprise: Intelex, Enablon, ProcessMap
  - Data collection and parsing, progress reporting
  - Sampling, auditing
  - KPIs dashboard
Overview

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Facility Description

The facility is a healthcare facility, located in Houston, Texas. The facility is a multi-story complex providing diverse healthcare services to the general public. This diverse activities provide diverse risks, the main activities providing risks includes:
- Emergency Rooms
- Laboratory
- Maternity
- General Surgery
- Specialist Physician appointments
- Administrative offices
- Chemical Storage

<table>
<thead>
<tr>
<th>Document</th>
<th>Contact Person</th>
</tr>
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<tbody>
<tr>
<td>Safety Management System</td>
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<tr>
<td>[link]</td>
<td>[email]</td>
</tr>
<tr>
<td>Emergency Communication</td>
<td>[link]</td>
</tr>
<tr>
<td>[link]</td>
<td>[email]</td>
</tr>
</tbody>
</table>
## Hazard Register

### Risk Control Management Tool - Hazard Register

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Description</th>
<th>Location/Source of Hazard</th>
<th>Top Event</th>
<th>Consequences (hazard/risks)</th>
<th>Risk Potential</th>
<th>Hazard Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZ1</td>
<td>Nuclear waste</td>
<td>Laboratory, storage</td>
<td>Exposure to</td>
<td>Health risks related to chemical hazards</td>
<td>High</td>
<td>Low, Low</td>
</tr>
<tr>
<td>HAZ2</td>
<td>Interconnected</td>
<td>Laboratory, storage</td>
<td>Toxic effects to personnel</td>
<td>Potential for contamination</td>
<td>Low</td>
<td>Medium, Low</td>
</tr>
<tr>
<td>HAZ3</td>
<td>Interconnected</td>
<td>Laboratory, storage</td>
<td>Loss of containment</td>
<td>Physical impact to personnel leading to multiple hazards</td>
<td>Low</td>
<td>Medium, Low</td>
</tr>
</tbody>
</table>

**Colored Cells are the Risk Categories:**
- **Low Risk**
- **Medium Risk**
- **High Risk**

**Frequency of Scenario**
- **High Frequency**
  - **Low Severity**
  - **Medium Severity**
  - **High Severity**

**Severity of Consequences**
- **High**
- **Medium**
- **Low**
## Risk Assessments

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Risk Description</th>
<th>Risk Probability</th>
<th>Risk Impact</th>
<th>Risk Potential</th>
<th>Risk Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse</td>
<td>Material Handling</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Warehouse</td>
<td>Storage Solutions</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Laboratory, Kitchen</td>
<td>Food Safety</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Laboratory, Kitchen</td>
<td>Asbestos</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Laboratory, Kitchen</td>
<td>Infectious Disease</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Office Space</td>
<td>Acoustic Noise</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Office Space</td>
<td>Lighting</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
<tr>
<td>Office Space</td>
<td>Physical Hazards</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>USA</td>
</tr>
</tbody>
</table>

**HEALTHCARE FACILITY**

**HEALTH RISK ASSESSMENT (HRA)**

ERM

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Tie to BowtieXP
Competency Description
iSafetyCase

Transferred paper based HSE Case into iSafetyCase source code to host online

- Consistent format easily identifies compliance gaps
- Links facility HSE Case information together
- Hyperlinks sections, appendices, databases, and supporting documents together for easy navigation and quick referencing
- Navigation bars, TOC, customizable views
Search engine to find document titles or text within supporting pages of a HSE Case

Export PDF function allows for traditional delivery, if needed

Ability for any personnel to view and comment on one document
  - Capturing personnel engagement and involvement
  - Comment fields allow for discussions on topics

Remedial actions for leadership
What else can iSafetyCase do?

Host and manage all HSE Cases on iSafetyCase

■ Assign global content to “corporate” tier to create a template: ongoing updates apply automatically to all assets
■ Tiered info: Corporate, regional, Asset
■ New asset HSE Cases only require asset-specific work
■ Customized home page
■ More engaging presentation focused on MAH Management
■ Bowtie Viewer
■ Training and verification modules
■ Videos, 3D animations
Linking Information Together

In text references link to native drawings, studies, etc., in the iSafetyCase database or hyperlink to other HSE Case parts.
Operationalizing HSE Case: Filtering Critical Information
The Right Approach

- Anchored in *your* MS
- Commensurate with Risk
- Sound, quality content
- Gaps uncovered and fixed
- Integral solution info hub
- Bowties as central feature
- Allows visualization, training, verification
- Integrated document MS
- Conversant with integrity management system - SCE
- Self-maintained, evergreen
- Usable and popular
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For further information, please contact:

Charles Schalkwyk
Charles.Schalkwyk@erm.com
Partner-in-Charge

Yaneira Saud
Yaneira.Saud@erm.com
Technical Director