R.I.S.K.

PROJECT CASE STUDY

Risk Integrity Safety Knowledge, Inc.

Risk Ranking Matrix Guidance

The Challenge

A Risk Ranking Matrix is a key part of your process safety program. It is used when conducting risk assessments like PHAs and DHAs. The risks uncovered in the assessment are assigned a numeric value to allow you to understand if the risk is high or low so you can address the highest risks first.

Your matrix represents your company's risk tolerance, unique to your site and company. There is not a universal matrix. A new facility setting up a PSM program or a newly merged company needs a risk matrix that reflects the new company. It is important to know what questions to ask so that your matrix fully reflects your company's risk tolerance since that is what you will use when deciding how to invest to reduce your risk.

Client Descriptions
Companies Food Processing, Refining
Project Location US and non US
Industry Food, Oil & Energy
Annual Revenues $1.5M to $4B
Employees 200 to 4,000 employees
RISK, Inc. Solution Advise & Develop Risk Matrix

The Solutions in Three Cases:

Case 1: We conducted a PSM audit for a new facility and saw that their matrix would benefit from further development. They had an older 4x4 matrix lacking the ability to differentiate between different severities. They also did not have a well-defined environmental, offsite, or asset element to their matrix. Talking with our client about our audit findings led to a discussion of their risk ranking matrix. We uncovered that, despite another consultant working with them to facilitate a recent PHA, they were not provided any further guidance on improvements to the risk ranking matrix that would result in clearer recommendations in future PHAs. We helped them transition to a newer matrix that better reflected their risk tolerance and defined environmental, offsite and asset elements.

Case 2: When a new company took ownership of a refinery, they needed to establish PHA procedures including a new risk matrix. One of the key tasks in developing the risk matrix was gaining an understanding of the acceptable risk tolerance for the site and company. We facilitated a one day session with key stakeholders to identify acceptable risk criteria to be included in the new matrix, such as rankings for employee/personnel injury, public impact and offsite environmental impact.

Once the risk criteria were identified, we developed the matrix and associated definitions for consequence severity, likelihood, as well as a legend of suggested actions to be taken according to risk level. The matrix and associated definitions were documented in a brief risk ranking matrix report sent to the stakeholders for review and comment. Comments from the initial and a second review were used to update the matrix.

The new matrix was validated by performing a mock PHA to ensure clarity of use and better understanding of the

impacts of the new matrix. The mock PHA was conducted on a sample set of scenarios from a recent PHA (under the previous ownership) to allow a comparison of existing risk ranked items to the ranking under the new matrix.

We performed a post session evaluation, issued a brief report providing side by side comparisons of the risk ranking, and held a conference call to discuss the comparison and the impacts of the new matrix. The risk ranking matrix documentation report was finalized following the test PHA and sent to the client along with an implementation plan for the new matrix.

Case 3: We worked with a Brazilian site of an international company that wanted to better assess their risks. One of the key tasks in developing the risk matrix is gaining an understanding of the acceptable risk tolerance for the site and company. We provided information based on globally accepted standards regarding risk criteria to assist the site with identifying their risk tolerance given their non-US location. Risk criteria to be defined included frequency and severity to base the risk ranking matrix on, as well as rankings for employee and personnel injury, public impact and offsite environmental impact.

We explained that with higher risk tolerance typically more safeguards are needed to meet the acceptable levels, and with lower risk tolerance fewer safeguards are needed. Safeguards such as alarms need maintenance so the number of safeguards will affect maintenance efforts. Providing an understanding of the relationship between risk and safeguards helped them achieve a matrix to best fit their needs.

Once risk criteria was identified, we developed the matrix and associated definitions for consequence severity and likelihood, as well as a legend of suggested actions to be taken according to risk level. The matrix and associated definitions were documented and sent to the site team for review and comment. RISK revised the matrix based on feedback from the site. We also developed a standard HAZOP template for them using the new risk ranking matrix.

The Result:

In all cases, the new risk ranking matrix provided greater confidence to the site teams that they were identifying risk with more clarity. They balanced the need for lowering risk with right sized safeguards without driving up maintenance costs.

Do you need help improving or developing your risk matrix?

Contact us at info@psmrisk.com

Call us at 510-828-7228 to talk about your needs