

Identifying Target Facilities for Audits Based on Risk Factors

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Introduction

There are several approaches corporations use to define their annual EHS audit schedule. Traditional approaches have included a fixed rotational approach and auditing target sites on a fixed timing schedule (i.e. once /3 years or once/5 years). This time-fixed approach requires companies to ‘right-size’ their audit resources based on the physical expanse of their operations. This approach can be demanding on resources and might not create value-added results. With ever-increasing demands on company resources, there is growing interest in a risk-based approach in selecting corporate sites to be audited. A risk based audit approach allows companies to understand the current risks and the effectiveness of the current in-place controls at their sites that are present the most risk. Additionally, a risk-based approach allows management to ‘target’ their resources to specific operations to assess and evaluate risk.

For a corporation with varied facility operations and processes, a fixed audit rotation schedule might not adequately reveal current risks or reveal them in a timely way. A physically large site, with complex processes, employing hundreds of employees and having multiple environmental permits, may present a significantly greater risk level when compared to a physically small site of twenty employees, with simple process and few environmental permits or impacts. The fixed rotation schedule would apply the same amount of resource (i.e. a 2 week audit once every 3 years) to both sites. When a corporation has tens or hundreds of sites around the world, or has operations that vary significantly site to site, auditing based on risk versus a fixed rotation audit schedule can be an effective way to successfully apply the company’s EHS auditing resources in identifying and evaluating risk.

Over the last 5 years a corporate assessment team has developed a risk-based audit site-selection process. The process has been found effective in leading to assessment of sites that have presented EHS risk to the corporation. In addition, the risk based audit approach has created additional benefits including; creating an organizational focus on EHS risk versus strictly compliance, prioritizing efforts and resources based on risk, creating effective site self-assessments. This risk based focus approach has continued to improve sustainability and accountability. As sites and corporations continue to drive down injury incidents and rates a risk based approach defines where resources should be applied. It’s important to remember that the absence of injury does not mean the absence of risk.

Defining Risk-based Auditing

Before designing a process to identify audit sites based on macro EHS risk factors, it is important to understand the definition of auditing. Webster defines Audit as...

1. a formal examination of an organization's or individual's accounts or financial situation
2. a methodical examination and review

With this definition in mind, a logical definition of EHS auditing can be:

1. a formal and methodical examination and review of an organization's EHS situation

When determining which sites to audit, a traditional calendar-based (or frequency based) auditing method can be used. With a calendar-based auditing system, each site within an organization is audited based on a set frequency (i.e., sites audited once every three years). This method is very simple, and no other factors need be considered. There are however “Pros” and “Cons” to this methodology.

Advantages to a calendar based audit system include:

- Over time, management gets an independent view of the entire organization.
- Each site receives predictable independent assessment and input of their status/risks.
- Each site receives individual corporate ‘face time’.
- Ease of planning.
- Ease of budgeting.

There are, however, disadvantages to a calendar-based audit approach including:

- An equal amount of resource is applied to both *high* risk and *low* risk facilities.
- Audit resources must be right-sized to the organizational size to complete the entire audit cycle in reasonable time frame (once/yr, once/3 yrs, once/5 yrs etc).
- Current corporate understanding of EHS risk may be out-dated due to time spent auditing low risk, well controlled sites.

An alternative approach to EHS auditing that can yield a more current view of corporate EHS risk is a risk-based audit approach. A risk-based approach targets audit sites where current EHS risk resides. Once sites are selected, a risk-based audit (beyond regulation compliance auditing) is conducted to identify and evaluate risk levels and controls.

Risk-based auditing can be defined as an independent and objective examination of an organization's, facility's, or a process' inherent risk, in which subjects are chosen for auditing by comparing measurable likelihood and impact metrics that represent risk.

Risk-based auditing is about auditing where the most risk seems to reside in order to create the most meaningful view of risk level. Sites within the organization are audited based on a

predefined set of risk factors. (i.e. sites with more risk are audited more frequently than sites with less risk). Like calendar-based auditing, risk-based auditing has 'Pros' and 'Cons'.

Advantages of a risk-based audit system include:

- Allowing for a 'lean' audit group, which can still achieve the audit plan goals.
- Increased chance of exposing risks.
- Providing management with a more current view of where the highest organizational risk resides.
- A current risk view allows leadership to manage/resource based on risk.

There are, however, potential disadvantages to a risk-based audit approach including:

- Some sites (lower risk sites) will have longer periods between audits.
- Sites cannot rely on predictable recurring assessment input from an independent group.
- A flawed risk analysis to select sites (choice of bad risk factors) might lead to some existing high risk (and within organizations) becoming less visible.
- Audit site selection is more complex and time consuming.
- Budgeting is more difficult/less predictable due to a less rigid on-site visit schedule (especially true when planning overseas travel).

In a time when many organizations are being asked to accomplish more with less resources, a risk-based auditing approach allows companies to target their audit resources where their risk resides, enabling corporate officers to continue to meet their fiduciary responsibilities

In order to do this type of audit, it is important to carefully identify and score the factors that will identify risk and sort out what /where/ when to go audit.

Understanding Facility Risk Ranking Factors

This risk-based audit site selection process incorporates several 'Likelihood and Impact' risk factors. These factors can be macro in nature or can be very company/ or site-specific. It is important to select factors that are meaningful. It is also important that these factors allow for relative ease of gathering and allow for meaningful comparison of potential EHS risk in the company's audit universe (comprehensive site list). There must be a balance between the time spent in carefully determining where audits should take place and the time reserved for the actual audit activity. When determining which factors to use, consideration must be given to the following factor characteristics:

- Factor represents some aspect of risk
- Factor is quantifiable and comparable
- Factor metrics are relatively easy to gather

Each company must determine the factors that are the most meaningful available risk metrics for the types of operations represented in the facilities to be considered. These can be divided into 'Likelihood' (input or 'leading') factors, representing inherent risk, and 'Impact' (output or 'trailing') factors, the measurable events that a site experiences as a result of their

inputs. The selection process then considers ‘Pass-through Gates’ that can automatically move a facility to the top of the risk-based targeted site list.

Many of these factors are often already tracked at a site, business unit, and/or company level and are often readily obtained. Examples of these factors include:

Likelihood Factors:

- Employee population-size– Large employee populations are more difficult to manage.
- Site internal EHS system audit scores – Site’s self-assessment of their level of EHS systems implementations/effectiveness.
- Turnover in key site positions – Turnover in the site Manager or EHS Safety leader can lead to knowledge or program gaps.
- Human-machine interface complexity – The amount of time and how employees must interface with the process/machinery creates varying levels of risk exposure.
- Site environmental impact/complexity – Air, Industrial Waste Water, Soil, Chemicals, Waste Streams, Permits.

Impact Factors:

- OSHA Recordable Incident Rate – The rate at which the sites are experiences injuries
- Lost Time Case rate – The rate at which the sites are experiencing last time cases
- Non-conformities/Citations – The regulatory or internal EHS non-compliance issues/citations that the sites have experienced.

Methodology to Evaluate Risk Levels

Once the risk factors have been identified, a methodology to compare the various sites comprising the company’s audit universe must be defined. One methodology, EHS risk ‘stacking’, is a comparison of the relative EHS risks within the audit universe. Risk stacking is a methodology used to identify the potential higher EHS Risk sites/operations though a quantitative comparison of risk factors. Therefore, a risk weighting of each defined risk factor must be quantitatively defined. Once weighting values are defined, a comparison of these factors for each potential audit site is made, resulting in a stacking ranking of the facilities (within the company audit universe) in order of potential EHS risk relative to each other. Risk weighting (or stacking) is not about defining ‘good’ or ‘bad’, but rather identifying which sites are ‘more risky’ versus ‘less risky’ relative to each other.

Preparing an EHS Risk Heat Map

With the potential EHS risk stacking (ranking) completed, an EHS Risk Heat Map can be constructed. The total scores could be looked at as a one-dimensional spectrum, but here you see how they have been heat mapped with Impact factors versus Likelihood factors. A heat map is often a useful tool in making final selection of sites to be audited. There are often other factors that can and should be considered to ensure a comprehensive view of risk. These additional factors are called pass-through gates, and used in conjunction with the heat map they give information beyond the pure risk ranking to help target the sites to visit.

Defining the Value of Pass-through Gates

Some factors will automatically move a site to the top, or drop it to the bottom, of the target site list. An example of such a factor is a site that has never received a corporate audit. Until an independent view is gained, the risk picture of the facility remains unclear. The first audit will establish a risk baseline. Therefore, never having been audited might be defined as a 'pass-through gate'. Regardless of where a site's risk level is numerically calculated, if it has never been independently audited, it moves to the top of the assessment list.

Pass-through gates can be defined as additional factors that are considered when finalizing the assessment schedule to create a more meaningful view of risk. Examples of pass-through gates include:

Some examples of pass-through gates, and the logic (and value) for them, are as follows:

- **Recent Audit**– If recently audited there may be a reduced benefit of retuning if there was not enough time for improvements to be implemented. Remember, our desired outcome is risk reduction, and this may already be adequately addressed.
- **Never Audited**– Go to the top of the audit list if site has never been audited, there is not independent measurement and understanding on baseline risk level.
- **Corporate Leadership Input** – Corporate Leadership might be aware of site-specific issues that could create risk, of which the audit team is not aware. This is an opportunity for leadership to raise risk concerns. Corporate Leadership might be aware of site-specific issues that remove risk (i.e. pending site closures). They may also flag sites that the company has identified as 'Focus Site' (those sites that have been targeted to have access to extensive additional resources to improve safety performance).
- **Business Unit Leadership Input** – Business Unit Leadership might be aware of site-specific issues that could create risk, that the audit team is not aware. Again, this is an opportunity for leadership to raise risk concerns.

As part of a risk-based targeting methodology, effective pass-through gates must be defined and can be specific to your organization. But remember, the intent is to make the risk-based stacking results more effective and meaningful. Therefore care must be taken when establishing and defining Pass-through gates

Consideration of Additional Audit Strategy Layering

After a numeric risk ranking of sites, the construction of a heat map and consideration of Pass-through gates, additional input is still required. If sites to be audited are selected only on a basis of risk value, the auditing results may create a view of risk that is incomplete for effective management of risk across a company. Some processes or sites by design contain more EHS risk, and these sites could all reside within a single business group. It is important that each Business Unit and region of the world has representation in the year's audit plan, if possible.

This provides company leadership a complete picture of risk (Business Unit risks, global region risks, and input factor risks). The numeric risk ranking process might not create a good cross sectional view of risk across various business groups or regions. If managers do not have a view of their risks, managing risk properly and efficiently is difficult.

Creation of a Final Risk-based Audit Plan

When constructing the EHS audit schedule, consider additional practical aspects. These additional considerations can help ensure key personnel are available at the site, interruptions from factors such as weather are minimized and audit travel costs are kept to a minimum. Some factors to consider include:

- National (International) Holidays – may affect audit dates for specific sites.
- Proximity of sites to one another- you may want to group selected sites within a geographic region and visit on one trip in order to reduce international travel (air fare) costs and use time more effectively (less time spent going to and coming from sites).
- Weather – some weather can obscure risks to physical conditions and environmental impacts on the site property. Severe weather can also affect travel schedules, thus affecting the entire calendar. When selecting audit dates choose dates during seasons of ‘good weather’ when you will be able to access the entire site.

But be cautious and remember, when choosing ideal weather dates to travel, it is critical to investigate and consider the affects of severe weather on site process that could create EHS risk. A sunny dry season may not allow you to discover a slip and fall hazard.

Exposing Site Risk

Now that the audit site has been selected to optimize the opportunity to find risk, the type of audit methodology must be selected. The type of audit or assessment that is conducted depends on the desired outcome, location of the site, and how far along the business unit or corporation is on its safety/ risk-elimination/ control journey. Commonly audits are some combination of these methods. Audit methods include:

- Compliance Audits – aimed at Meeting Regulatory Requirements.
- Implementation Assessments – aimed at Meeting Corporate Standards.
- Effectiveness Assessments – aimed at assessment of risk and risk control process (whether identified in regulations, corp. standards or neither). Are they known and effectively managed?
- Process Audits – Auditing (from a distance) a specific safety-related process or control at a group of facilities.
- Facility Self-Assessments – Risk identified and control maintained (or risk is brought back under control) through accurate self-assessment. The goal here is sustainable, measureable controls.

The results of the various audits and assessments conducted over time align with and can serve as input for the risk ranking process. It is critical to select an audit method that results in the desired view of risk.

Call to Action – Auditing, Measure the Change Desired

The measurement and tracking of data often reveals and defines what is important to your immediate supervisor and organizations. Therefore, site leadership and individuals often align their efforts to what is being measured and tracked. If you want your organization to effectively align its efforts (and the effective use of resources) to reduce EHS risk, start measuring and tracking risk through a risk-based audit process. To create your own Risk-based audit program, complete the following steps:

- Define your auditing ‘universe’.
- Define meaningful Input and Output risk factors.
- Create and document a scoring (risk-stacking) methodology.
- Collect, score, and analyze your data.
- Rank sites based on potential risk.
- Define and consider meaningful Pass-through gates.
- Layer other auditing strategies to provide various leadership groups with a view of risk.
- Create a final audit plan.
- Define measurement for selected sites– design the audit to create the change you want to see at each facility.
- Leverage the resulting audit data!

A risk based audit approach allows companies to understand the current EHS risks and the effectiveness of the current controls in place at the sites that present the most risk. The risk-based approach allows management to ‘target’ its resources to specific operations to assess and evaluate risk.