EHS Professionals Look to Overcome Pandemic Challenges

Featured Articles

- COVID solutions for EHS
  - Safety data management
  - Ventilation best practices
- TRI reporting corrections
- Ensuring PHA consistency
- Permitting flexibility with PALs
- Preparing for H&S audits
As we all look for solutions to overcome the new barriers created during this time, seemingly ordinary people shine with determination and innovation. With so many factors presenting challenges to our economy, our clients’ business operations, and our families, we are seeing people step up to face these challenges in some of the most valiant ways. Healthcare workers on the front lines of this pandemic and scientists tirelessly working on vaccines are usually the most recognized heroes—as well they should be.

We also understand and recognize the added pressures that the pandemic places on EHS and operations professionals – like you – who are responsible for keeping employees safe in facilities that remain in operation or are re-opening with new requirements. You must now prepare for and maintain a whole new level of health and safety measures in addition to your traditional compliance and safety responsibilities.

In this issue of EHS Quarterly, we are sharing innovative tools and processes for keeping employees safe and facilities in compliance by leveraging technology solutions to track and document the added health and safety requirements. Additionally, you’ll find information on facility ventilation best practices to protect employees from airborne viruses, and how to prepare for health & safety audits.

Even amid these new health and safety responsibilities, standard EHS compliance requirements remain in place. With that in mind, this issue also includes regulatory information on major source permitting, TRI back reporting, and process hazard analysis.

At Trinity, we continue to provide our clients with the highest quality technical expertise and responsive service in new remote ways in order to protect their business and support them in overcoming these new challenges. Please reach out if we can be of assistance.

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EHS Professionals Leading the Way on COVID-19

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Never before has the “H” in “EHS” been as important as during the 2020 COVID-19 crisis response. During the past several months, this pandemic turned our lives upside down. “Social distancing” is now part of our regular vocabulary. Businesses are challenged by the uncertainty in financial markets, concerns about future growth and sustainability, and, most importantly, the health and safety of employees. Concerns from employees, shareholders, regulators, the community, and other stakeholders regarding pandemic response efforts has caused many companies to look in a single direction — to the Environmental, Health, and Safety (EHS) manager.

EHS professionals are spearheading efforts to develop the plans, processes, and tools to meet this challenge. Although they find themselves inundated with new pandemic response responsibilities, many EHS managers are also still responsible for ensuring day-to-day compliance with EHS regulations, with a limited staff that is stretched thin.

Many EHS managers are reporting limited capacity, often finding themselves trying to "drink from a firehose," while others are using the "downtime" to focus on their company's pandemic response. Either way, EHS is leading the charge. As we have supported clients through this time, we’ve observed that successful pandemic EHS efforts have two elements in common: creating a thorough pandemic response plan and adapting EHS digital solutions to pandemic management.

**Pandemic Response Plans**

Many companies need to promote health and safety while maintaining operations. The first element of a successful response is developing a Pandemic Response Plan (hereafter referred to as "Plan"). The purpose of the Plan is to establish the basic requirements to address health concerns caused by pandemic diseases, such as COVID-19. Associated best practices for Plan preparation are outlined below.

**Important Elements of an Effective Pandemic Response Plan**

1. Pandemic Response Plans should be based on current, reliable information from the U.S. Centers for Disease Control and Prevention (CDC) and Occupational Safety and Health Administration (OSHA).
2. The plan should be an evergreen document that will change based on further information provided by the CDC, OSHA, and orders issued by local authorities for infectious disease control.
3. Companies should also customize their plan with site-specific health, safety, or operational information and needs.

**Plan in Action: Pandemic Action Teams**

In addition to developing plans, many organizations are formalizing a Pandemic Action Team. This cross-functional team should manage ongoing pandemic-related risks, decisions, and implementation. The Pandemic Action Team should include a representative from each key stakeholder (e.g., customer engagement, workforce, supply chain, etc.) because the team is making decisions across the entire company.

Further, the Pandemic Action Team should be led by someone within upper management, such as the CEO or COO, to provide senior leadership and who has a thorough understanding of the business operations and the ability to approve team plans and actions. The figure above provides an example overview of the team’s responsibilities.

The Pandemic Action Team should focus on the following key tasks with clearly assigned roles and responsibilities:

1. Identify pandemic-related hazards for risk assessment and control measures to protect all workers at their workplace and business activities.
2. Define process and control measures to prevent or stop the spread of infectious disease at the workplace.
3. Communicate people-related issues for the well-being of all stakeholders.
4. Assign proper resources to implement and monitor control measures.
5. Verify the effectiveness of the control measures and update/improve the process as information evolves.
6. Review the responsibilities and areas of purview, and select a team that can fill those roles or who will know the expert to call in.

**Strategies for Reopening Safely**

As a majority of the workforce has been ordered to stay home to slow the spread of the virus, EHS professionals are continuously monitoring CDC and OSHA guidance for new or changing recommendations. With re-opening orders defined by individual states, the Pandemic Action Team (including EHS support) should be closely monitoring reopening guidance provided by the CDC as well as state and local public health authorities.

Many EHS professionals have expressed great concerns regarding the “new normal” of increased guidelines and regulatory requirements to reopen the workplace. The complicated reopening guidelines and regulatory requirements add a level of complexity and uncertainty to reopening workplaces to employees. To identify considerations for reopening, we suggest Pandemic Action Teams reference the CDC guidance for businesses and workplaces to guide efforts to bring staff back to the workplace while protecting vulnerable employees. 1

For example, the CDC Resuming Business Toolkit is designed to assist employers in slowing the spread of COVID-19 and lowering the impact in their workplace when reintegrating employees into business settings. The Toolkit includes useful materials such as: a restart readiness checklist to help make returning to work and resuming business operations as safe


Leadership Pandemic Action Team

- EHS Plans & Compliance Monitoring
- HR Employee Health, Safety & Training
- BD Customers & Public
- Facility Operations Cleaning & Sanitization
- Procurement Contractors & Supply Chains
- IT All Work Activities & Communications

Strategies for Reopening Safely

- **Facility Operations**
  - Cleaning & Sanitization

- **Procurement**
  - Contractors & Supply Chains

- **IT**
  - All Work Activities & Communications

- **EHS**
  - Plans & Compliance Monitoring
Finding that now is the time for a systematic evaluation of compliance requirements face a real challenge to manage. Unfortunately, companies without EHS software for extended and adapted to address pandemic response needs. Digital tools to enable EHS business processes is now being implemented in many commercial EHS software providers quickly adapted their traditional EHS capabilities to address key challenges such as:

- Return to work screening
- Exposure and infection reporting
- Workplace sanitation inspections
- Job hazard analysis/PPE
- Work at home ergonomics

EHS software providers are offering some of these pandemic response solutions at reduced introductory rates, and some a free trial version. Choosing the right tool for your facility is a big decision with many factors.

Seeking expertise from experts who understand your facility's needs beyond the pandemic as well as the technology options available is invaluable. When selecting a program, it's important to identify and implement a solution that achieves stated objectives, is deployed on time and within budget, and has a high utilization rate.

How Pandemic Response Efforts are Supported by Digital Solutions

Managing risk to allow for an orderly, safe, and efficient return to work is a priority for many organizations. Timelines for phases, regulations, requirements, and data are constantly changing, which can make these new regulations overwhelming. Nonetheless, organizations must figure a way to systematically capture, track, and report on the health status of employees, contractors, and visitors.

Digital solutions have been used to specifically support pandemic response efforts. We will examine a selection of successful examples where a robust information management system has benefited companies during this time.

For positive or potentially positive employees, companies may want to engage in contact tracing to determine who has been in contact with the employee. Utilizing EHS software can help identify potentially exposed employees based on job duties if contact tracing is not available. Based on data from HR systems, EHS applications can help organizations identify possible contacts of a positive or potentially positive employee.
EHS Scope is Growing and EHS Professionals Will Meet the Challenge

EHS professionals have been tasked with a set of ongoing challenges as they have had to manage the demands of a global pandemic. Strategic planning in the approach of how to manage changing policies and regulations has brought new tools to light and allowed for creative solutions to be developed to help solve these new problems. Moving forward, these efforts should be considered a proof-of-concept that can grow and change with an organization as we all work to adapt to a long-term Pandemic Response protocol. Companies need to make decisions to invest in tools that can help care for employees while maintaining accurate records and data.

For a consultation to discuss Pandemic Response Plans or how EHS Digital Solutions can help manage your COVID-19 response, please contact the authors or call 800.229.6655.

Related Training

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EPA Terminates Temporary Policy on COVID-19 Implications for Enforcement and Compliance

On March 26, 2020, U.S. EPA issued the temporary policy, “COVID-19 Implications for EPA’s Enforcement and Compliance Assurance Program” addressing EPA’s exercise of enforcement of environmental legal obligations during the COVID-19 pandemic. In essence, the temporary policy defined situations arising from pandemic response that could qualify certain noncompliance for enforcement discretion.

However, over the course of the last five months, federal and state guidelines have relaxed restrictions1 that were previously impeding regulatory compliance, thereby reducing the circumstances in which the temporary EPA policy applied.

In light of these developments, EPA added a provision in the temporary policy effectively terminating it as of August 31, 2020. Following is the provision from the temporary policy:

VI. Termination

This temporary policy terminates in its entirety at 11:59 PM Eastern Daylight Saving Time, August 31, 2020. This means that the EPA will not base any exercise of enforcement discretion on this temporary policy for any noncompliance that occurs after August 31, 2020.

In addition, the EPA may terminate this temporary policy (i.e., indicate it does not apply to future noncompliance) on a state or national basis, in whole or in part, at any earlier time, taking into account changing conditions in a state or region of the country, including as appropriate the expiration or lifting of “stay at home” orders in a state, the status of federal and/or state COVID-19 public health emergency guidelines, and/or other relevant factors or considerations.

In order to provide fair and sufficient notice to the public, the EPA will provide notification at least seven days prior, if it terminates this temporary policy prior to August 31, 2020, either nationally or at a more local level, in whole or in part.

Nothing herein limits the ability of the EPA to exercise enforcement discretion on a case-by-case basis regarding any noncompliance, including noncompliance caused by the COVID-19 public health emergency, before or after the temporary policy is terminated. This includes the situation in which a person or entity makes a reasonable attempt to comply with guidance from the Centers for Disease Control and Prevention or other agencies regarding actions suggested to stem the transmission and spread of COVID-19, which the person or entity reasonably deems applicable to its circumstances.

Despite termination of the policy, enforcement discretion may still be available through alternative federal or state provisions. Facilities seeking enforcement discretion related to the COVID-19 pandemic should contact their EPA regional office and applicable state or local agency to determine next steps.

1 White House, Guidelines for Opening Up America Again; Centers for Disease Control and Prevention, Activities and Initiatives Supporting the COVID-19 Response and the President’s Plan for Opening America Up Again (May 2020); Executive Order on Regulatory Relief to Support Economic Recovery (May 18, 2020).
C
learly, the COVID-19 pandemic, caused by the SARS-CoV-2 virus, has had sustained, far-reaching, and devastating impacts on global health, economies, and innumerable aspects on daily life. Six months after it began to widely proliferate, we are still learning about the virus with thousands of scientific papers and a large number of clinical trials underway. However, we can minimize the spread of the virus if we DO know about the virus and essential concepts regarding infectious disease are appropriately applied.

Viral Transmission

In the case of SARS-CoV-2, the reproductive rate or average number of new infections caused by each patient is 2-5, and, 10% of the infected persons cause approximately 80% of the cases. This can be caused by direct exposure to large droplets (e.g., being coughed or sneezed on by an infected person) as well as prolonged exposure to small particles. Key contributors to the spread are being indoors and prolonged exposure. Hot or cold temperatures that drive people indoors can exacerbate the problem, particularly when it is combined with close proximity to other (potentially infected) people.

Risk Mitigation

There has been some controversy over the use of face coverings such as masks and face shields to reduce airborne transmission of SARS-CoV-2. Early reluctance to require the use of masks was largely related to their scarcity and in order to ensure their availability to medical professionals. Furthermore, while use of masks can be helpful, and they are generally recommended for this virus by infectious disease experts, they are just one piece of a “hierarchy of controls” that must be applied to control the spread of the virus. Avoiding or preventing exposure, such as staying at home, avoiding other people, and social (physical) distancing (i.e., maintaining at least six feet between individuals) are some of the most effective measures since these reduce exposure which leads to lower transmission.

Of course, complete social isolation is not always possible or desirable. Where workplaces are concerned, key additional considerations include surface cleaning and the use of ventilation-related measures. Which controls are most appropriate depends on the facility type and relevant risk factors. The hierarchy of controls helps us to focus on the most effective controls first.

While viral particles can be spread through the heating, ventilation and air conditioning (HVAC) system, these systems can also be configured to minimize the spread by paying attention to several important operational aspects. Ventilation systems should be optimized to supplement response strategies in accordance with the hierarchy of controls based on risk and building design. Essential aspects include the following:

- Ventilation rates and directional airflow – Outside air delivery is the key, and air changes per hour should be optimized according to room size and number of occupants. Within the facility, air should move from clean to dirty areas by negatively pressurizing air flow to reduce the flow from areas that may have more of the airborne virus, and by optimizing the delivery rate of outside or “fresh” air. Meeting or exceeding ASHRAE standard 62.1 (Ventilation for Acceptable Indoor Air Quality) is considered a best practice minimum.

- Air filtration – Enhanced air filtration practices can provide additional value, particularly when there is not a large volume of outside air per person being delivered to the occupied space. In the U.S., ASHRAE Minimum Efficiency Reporting Values (MERV) are generally used to indicate filtration effectiveness. MERV-13 or higher or HEPA filtration are considered best practices. At MERV-13, 70% of small particles and 90% of large particles will be filtered out (whereas HEPA approaches 100% for both sizes - but most systems will not be able to accommodate HEPA filters unless designed for it). Single space, portable HEPA filtration can be helpful – particularly in small, contained areas. In addition to high filtration efficiency, it is also critical to ensure proper seating of and/or sealing around filters to minimize air bypass.
Keep in mind that regardless of the ventilation efficacy, viral exposure can still occur when in proximity to infected individuals – always consider the full hierarchy of controls. Furthermore, a few other measures that may be considered include:

- Minimize exposure on elevators: limit occupancy (ideally to one person), and consider portable HEPA filters
- Install plexiglass barriers as needed to enhance physical separation (some consideration may need to be given to the impact of barriers on air flow, particularly for floor-to-ceiling/complete separation)
- Small or contained office areas – utilize portable HEPA filters to enhance filtration

For assistance with mitigation of viral exposure or other health and safety risks in the workplace, contact Brent Altmose at baltemose@trinityconsultants.com or 610.438.8306.

The article is based on a review of scientific literature, as well as guidance from the following individuals and organizations:

- Dr. Mark Cunningham-Hill, MB ChB FFOM FACOEM
- Centers for Disease Control and Prevention (CDC)
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Federation of European Heating, Ventilation, and Air-Conditioning Associations (REHVA)

**Related Training**

**Complimentary Webinar: Optimizing Ventilation for COVID-19**

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Air purification – Ultraviolet light can be used to inactivate microorganisms and limit their ability to grow and multiply, however, due to the speed that the air flows through the HVAC, the UV light will likely be ineffective. (It can be used for surface decontamination but is hazardous to skin and eyes so safety goggles and gloves are essential if people are exposed to UV light) Other novel air purification approaches include photocatalytic oxidation, bipolar ionization/corona discharge, ozone, vaporized hydrogen peroxide, pulsed xenon/pulsed UV near and far UV. These approaches currently lack scientifically rigorous, peer-reviewed studies and can pose their own hazards.

Temperature and relative humidity control – Dry air (<40% RH) causes the droplets to evaporate more quickly and stay airborne longer. However, humidification has not been proven to be particularly effective at reducing viral load for SARS-CoV-2. Furthermore, the high temperatures needed to inactivate the virus are not compatible with personal comfort (one study found that temperatures of over 130 ºF for more than an hour was needed to personal comfort (one study found that temperatures

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The term “TRI back reporting” refers to revising or correcting previous Toxic Release Inventory (TRI) reports required by Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA). The term “revisions” in this context, refers to changes that improve the accuracy of the data initially reported because of previously unavailable information or procedures. Similarly, the term, “corrections” in this context, refers to any other changes to the reporting that do not meet the definition of revision. Said differently, revisions imply it was impossible to submit the revised data at the time the initial TRI report was prepared, whereas TRI corrections indicate the facility filed an incomplete or inaccurate TRI report (i.e., there was an error).

While revisions do not typically result in EPA enforcement action, EPA commonly addresses corrections with monetary penalties. EPA established a self-disclosure policy to encourage facilities to voluntarily discover and fix violations of federal environmental laws and regulations, including EPCRA and associated TRI reporting requirements. This policy allows for significant penalty reductions for qualifying facilities. This article examines the differences between TRI revisions and corrections, and how facilities can take advantage of EPA’s self-disclosure policy for TRI back reporting assessments.

**Revisions vs. Corrections**

EPA does not provide a comprehensive list of changes that constitute revisions under the TRI program; rather, EPA emphasizes that revisions are based on previously unavailable information or procedural changes that improve the accuracy of the data. EPA states that revisions should be submitted as soon as possible to ensure any potential data quality issues are resolved and the facility’s desired data are reflected in the public database as soon as possible (EPA Q&A #822).

The primary benefit for revising previous TRI reports is to ensure that EPA and third parties are using a facility’s data correctly in their toxic release assessments. EPA’s toxic screening program—including the Risk Screening Environmental Indicators (RSEI) scoring procedure—and potential scrutiny that a facility may receive from citizens or environmental groups were examined in an online article, Chemica lReporting and Compliance Basics: Many Changes to Manage, TRI Reporting Updates (May 2020).

**Defining Corrections**

As TRI corrections are enforceable, significantly more EPA guidance exists for defining enforceable errors. Pages iii, 1, and 8 of EPA’s Toxic Chemical Release Inventory Reporting Forms and Instructions (Revised 2019 Version) describe four kinds of errors which may result in enforcement actions and in penalties:

1. Errors caused by not using the most readily available information; for example, not using monitoring data collected for compliance or other purposes with other regulations in calculating releases
2. Omitting a major source of emissions
3. A mathematical or transcription or typographical error which seriously compromises the accuracy of the information
4. Other errors which seriously affect the utility of the data, particularly errors in release reporting for which the facility has no records showing the derivation of the release calculation, and cannot provide a sufficient explanation of the report.
Further, EPA’s Enforcement Response Policy for Section 313 of the Emergency Planning and Community Right-to-Know Act (1986) and Section 6607 of the Pollution Prevention Act (1990) [Amended 1996, 1997, 2001, and 2017] details circumstances that may result in civil administrative actions and EPA’s policy for determining associated penalties. EPA describes six scenarios that may result in enforcement actions.

1. Failure to report in a timely manner
2. Data quality errors
3. Failure to respond to a Notice of Noncompliance (NON)
4. Repeat violations
5. Failure to provide supplier notification, and incomplete or inaccurate supplier notification
6. Failure to maintain records and failure to maintain records according to a standard in the regulation.

EPA also details actions that constitute data quality errors and significant release estimation errors for non-PBT chemicals, see Figure 1, that require a facility to correct previous TRI submittals:

▶ Failure to calculate or provide reasonable estimates of releases or off-site transfers
▶ Failure to identify all appropriate categories of chemical use, resulting in error(s) in estimates of release or offsite transfers
▶ Failure to identify for each waste stream the waste treatment or disposal methods employed, and an estimate of the treatment efficiency typically achieved by such methods, for that waste stream
▶ Failure to use all readily available information necessary to calculate as accurately as possible, releases or off-site transfers

Collectively, EPA’s TRI reporting instructions and Enforcement Response Policy provide insight into what qualifies as a correction to a previous TRI report. The guidance suggests that essentially any change that is not administrative in nature (e.g., public contact information, facility address, etc.) and is not the result of previously unavailable information or changes to procedures that improve the accuracy of the data ultimately qualify as a TRI correction and may be enforceable.

Trinity identified common problems in TRI Reporting in anticipation of the 2019 TRI report that provides examples of errors that trigger TRI back reporting.

EPA’s Self-Disclosure Policy
EPA’s Self-Disclosure Policy (formally referred to as Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations) outlines the procedures for facilities to voluntarily discover, disclose, correct, and prevent violation of Federal environmental laws and regulations, including EPCRA and TRI reporting requirements. On May 15, 2018, EPA announced a renewed emphasis on encouraging facilities to pursue the Self-Disclosure Policy, highlighting the following elements of the policy:

▶ Failure to provide the annual quantity of the toxic chemical which entered each environmental medium
▶ Failure to provide the annual quantity of the toxic chemical transferred off-site
▶ Failure to provide information required by §6607 of the Pollution Prevention Act of 1990 and by any regulations promulgated under §6607 of the Pollution Prevention Act of 1990
▶ Under the requirements of §6607 of the Pollution Prevention Act of 1990, claiming past or current year source reduction or recycling activities which are not in fact implemented by the facility. This does not apply to activities which the facility may estimate for future years
▶ A facility’s Form R reporting demonstrates a pattern of similar errors or omissions as manifested by the issuance by EPA of NONs for two or more reporting years for the same or similar errors or omissions

Benefits of Self-Disclosure
EPA’s Enforcement Response Policy states that penalties assessed on or after January 15, 2017, for violations that occurred after November 2, 2015, are subject to a statutory maximum penalty of $54,789 per violation per day. The primary incentive for pursuing the Self-Disclosure Policy is reducing civil penalties as follows:

▶ Reduction of 100% of gravity-based penalties if all nine of the policy’s conditions are met. EPA retains its discretion to collect any economic benefit that may have been realized as a result of noncompliance.
▶ As of May 15, 2018, EPA had received over 10,500 disclosures and sought to recover the economic benefit component in less than 1% of the disclosures.

Use this chart to determine if your facility needs to correct a previous TRI report due to a significant release estimation error resulting from either a miscalculation, failure to use all readily available information (such as monitoring data or emission factors), or failure to make a reasonable estimate.

<table>
<thead>
<tr>
<th>Difference Between Reported Releaes or Transfers vs. Corrected Releases or Transfers</th>
<th>% Change in Releases or Transfers That Triggers a Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤2,500 lbs</td>
<td>&gt;50%</td>
</tr>
<tr>
<td>&gt;2,500 lbs and ≤20,000 lbs</td>
<td>&gt;25%</td>
</tr>
<tr>
<td>&gt;20,000 lbs</td>
<td>≥15%</td>
</tr>
</tbody>
</table>

Calculate the percentage difference based on the amount actually reported: 42% \(\frac{17,000 - 12,000}{12,000} \times 100\%\) = 42%

Reference column 2 to find the % change that triggers a correction based on the position in column 1: >25%

Percentage difference of 42% is >25%, so a correction triggered

Facility needs to complete TRI Back Reporting

EPA implemented the eDisclosure online reporting system on December 9, 2015 to automatically process self-disclosed civil environmental violations.

- EPA saw an increase of more than 75% in the number of annual self-disclosures in the first two years after the launch of eDisclosure
- EPCRA disclosures (including TRI Reporting) represented 57% of the total disclosures during the first two years of the online program.
- On August 1, 2008, EPA published the Interim Approach to Applying the Audit Policy to New Owners which provides additional flexibility to new owners who self-disclose violations.
- EPA announced it was in the process of developing a New Owner Clean Air Act Audit Program specifically for the oil and natural gas sector. EPA finalized this program on March 29, 2019.
Policy Conditions for Self-Disclosure

The nine audit policy conditions, as summarized by EPA, include:

1. Systematic discovery of the violation through an environmental audit or the implementation of a compliance management system
   a. “Environmental Audit” is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirements
   b. “Compliance Management System” encompasses the regulated entity’s documented systematic efforts, appropriate to the size and nature of its business, to prevent, detect and correct violations through a variety of mechanisms (see Section II.B of EPA’s Self-Disclosure Policy for the full definition)

2. Voluntary discovery of the violation was not detected as a result of a legally required monitoring, sampling or auditing procedure

3. Prompt disclosure in writing to EPA within 21 days of discovery or such shorter time as may be required by law. Discovery occurs when any officer, director, employee, or agent of the facility has an objectively reasonable basis for believing that a violation has occurred or may have occurred.

4. Independent discovery and disclosure before EPA or another regulator would likely have identified the violation through its own investigation or based on information provided by a third-party

5. Correction and remediation within 60 calendar days, in most cases, from the date of discovery

6. Prevention of recurrence of the violation

7. Repeat violations are ineligible (i.e., the specific (or closely related) violations have occurred at the same facility within the past 3 years or those that have occurred as part of a pattern at multiple facilities owned or operated by the same entity within the past 5 years); if the facility has been newly acquired, the existence of a violation prior to acquisition does not trigger the repeat violations exclusion

8. Certain types of violations are ineligible such as those that result in serious actual harm, those that may have presented an imminent and substantial endangerment, and those that violate the specific terms of an administrative or judicial order or consent agreement

9. Cooperation by the disclosing entity is required

Self-Disclosure Qualifications

All self-disclosed violations pursuant to EPA’s Self Disclosure Policy must be submitted through EPA’s eDisclosure program (an electronic reporting program within EPA’s Central Data Exchange (CDX) portal), with the exception of new owner disclosures. EPA currently allows for two categories of disclosures:

1. Category 1 disclosures (100% gravity-based penalty mitigation)
   a. Include:
      i. Violations of EPCRA (including TRI violations) that meet all nine audit policy conditions
      ii. EPCRA violations that meet all Small Business Compliance Policy conditions (generally applicable to businesses with 100 or fewer employees)
   b. Does Not Include:
      i. Chemical release reporting violations under section 304 of EPCRA or section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) commonly referred to as “Reportable Quantity releases”
      ii. Violations of EPCRA with significant economic benefit as defined by EPA

2. Category 2 disclosures (75% gravity-based penalty mitigation) include:
   a. All non-EPCRA violations
   b. EPCRA violations where the disclaimer can only certify compliance with audit policy conditions 2-9 (i.e., discovery was not systematic)
   c. EPCRA and CERCLA violations excluded from Category 1 above

TRI report corrections qualify for a Category 1 disclosure assuming that all nine audit policy conditions are met, including systematic discovery. Common examples of “systematic discovery” for TRI reporting include conducting third party audits of a facility’s TRI program that typically require developing a new or revised calculation procedure for both the threshold determination and the release and waste transfer determination.

Category 1 disclosures are frequently associated with discovering errors in existing TRI calculation workbooks due to inaccurate data, conversion factors, formulas, or assumptions, or incomplete data. Where a spreadsheet error is suspected but not confirmed, seeking outside expert assistance to audit or prepare a new TRI compliance management tool can be the difference in qualifying for a Category 1 disclosure (100% penalty mitigation) rather than a Category 2 disclosure (75% penalty mitigation).

Self-Disclosure Process

There are four key concepts and deadlines associated with pursuing an eDisclosure for a TRI back reporting effort:

- “Discovery Date” – this is the date that the facility has discovered there was a violation for reporting
- “Voluntary Disclosure” – due within 21 days of “Discovery Date” – this is submitted via EPA’s eDisclosure program through the online CDX program
- Submittal of corrected TRI Reports within TRI-MEWeb – back reporting is due within 60 days of the “Discovery Date”
- “Compliance Certification” – due within 60 days (most cases) of the “Voluntary Disclosure”, this is also submitted in EPA’s eDisclosure program

Defining the discovery date is critical as all other deadlines for reporting are either directly or indirectly established by the discovery date. The 60-day timeline for correcting and submitting the TRI reports is the most challenging deadline, especially if TRI corrections are triggered for reports dating back five years. Close coordination between all involved parties (facility staff, corporate staff, consultants, legal counsel, etc.) is key for successful TRI back reporting and eDisclosure projects.

Recordkeeping plays a Critical Role in TRI Back Reporting

TRI records must be retained for at least three years from the submission date of a TRI report pursuant to 40 CFR 372.10(a); however, the statute of limitation for EPA to file an EPCRA enforcement case is five years (28 U.S.C. 2462).

Case Study: RY2019 vs. RY2018 Release Data

Failure to use the most readily available information is one of the most common errors that trigger TRI Back Reporting. Common examples include not using the most current stack test data, stormwater or wastewater monitoring data, throughput data, or Safety Data Sheet.

Reporting the same release value (e.g., stack air emissions) each reporting year may not be appropriate as facility production data (and inherently, environmental releases) varies year to year.

Trinity compared common release data for the 21,248 reporting facilities filing reports for both reporting years 2019 and 2018 to determine how many facilities reported the same release information for these two years (data excludes facilities that reported “0 lbs” or “N/A” for both years’ releases).

Overall, 28.6% of reporting facilities reported identical fugitive, stack, and/or water release values on their 2019 and 2018 TRI reports.
In Conclusion

TRI reports are challenging to prepare and highly visible. TRI back reporting is becoming commonplace as EPA and third-party scrutiny of TRI data continues to rise. EPA remains committed to improving its technology for publishing and analyzing TRI data.

The focus on TRI reporting is highlighted through EPA’s recent updates to guidance documents, addition of chemicals to the TRI list, new TRI search engine to navigate submitted data, and advanced procedures for flagging suspicious reporting data within TRI-MEweb (e.g., automated error checking prior to form submittals, automated Data Quality Questions, etc.).

EPA’s self-disclosure policy provides an exceptional opportunity to correct previous TRI reports while avoiding associated penalties for previously filing inaccurate or incomplete TRI reports. This complex analysis may require significant attention and time from responsible staff, but it is ultimately worth consideration given the enforcement mitigation options available for responsible self-disclosure and overall responsibility for correctly representing TRI data to EPA, interested third-parties, and the public.

For assistance with TRI Back Reporting, please contact the authors or call 800.229.6655.

Related Training

Complimentary Webinar: TRI Back Reporting
Access anytime on demand

On August 4, 2020, the U.S. Environmental Protection Agency (EPA) finalized the memorandum Guidance on Plantwide Applicability Limitation Provisions Under the New Source Review Regulations. This memorandum is intended to provide additional guidance and respond to stakeholder questions on the Plantwide Applicability Limit (PAL) provisions found in the federal New Source Review (NSR) regulations.

The PAL mechanism was introduced to allow existing stationary sources to accept site-wide emissions limits for NSR regulated pollutants, thus avoiding major NSR permitting through continuous compliance with the PAL. The last decade, stakeholders have raised several implementation questions about PALS which EPA attempts to answer with this new guidance.

What is a Plantwide Applicability Limit (PAL)?

A PAL is an optional permitting mechanism available to existing major sources under the NSR regulations that allows facilities operational flexibility within the bounds of continuous compliance with a site-wide emission limit for a particular NSR regulated pollutant. The PAL regulations, PALS are pollutant-specific in nature (i.e., a facility may accept a PAL for a single NSR regulated pollutant or multiple PALS for multiple NSR regulated pollutants). Without a PAL, each non-exempt project at a major stationary source must be reviewed for applicability of major NSR permitting.

With a PAL, a facility can conduct various projects without the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major NSR permitting as long as facility-wide actual emissions remain below the risk of assessing or triggering major 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the facility since the baseline actual emissions period. A facility can establish PALs for multiple pollutants or a single pollutant and can request a PAL at the time of a project as a major NSR permitting avoidance strategy or at any time to achieve flexibility for future projects.

PALs can be used for attainment or nonattainment pollutants and are typically available in state permitting regulations. The PAL level is established in a PAL permit issued by the NSR permitting authority and, under federal regulations, the permit term is 10 years.

To ensure the PAL is practically enforceable, the permit will include monitoring, recordkeeping, and reporting of actual facility-wide emissions of the PAL pollutant(s) in total on a 12-month rolling basis.

**Stakeholder Comments Addressed by EPA Finalized Memo**

**PAL Reopening**

The first stakeholder issue addressed by EPA in this memorandum is concern over the reopening provisions. Specifically, the ability to reopen a PAL permit to “reduce the PAL if the reviewing authority determines that a reduction is necessary to avoid causing or contributing to a NAAQS (National Ambient Air Quality Standard) or PSD (Prevention of Significant Deterioration) increment violation, or to an adverse impact on an air quality-related value, that has been identified for a Federal Class I area by a Federal Land Manager and for which information is available to the general public.”

EPA’s response to this stakeholder concern stresses that this provision is expected to “rarely be invoked” as “EPA does not believe that a PAL permit reopening would be the selected mechanism to address such issues in most cases.” EPA is not aware of any reviewing authority making use of this reopening provision.

**PAL Expiration**

If a facility with a PAL decides not to renew the PAL and let it expire, the PAL level is to be allocated among existing emission units at the facility. Stakeholders were concerned about the lack of specific criteria for how the PAL emissions would be allocated.

While the memorandum does not provide specific criteria for distributing the PAL, EPA clarifies that the distribution can range from a single emission limit across all emission units to a combination of emission limits on individual emission units, or groups of emission units that add up to the PAL level. 1

The specific distribution must be proposed by the facility in an application to the reviewing authority and “EPA expects that in most cases the reviewing authority will accept the source’s proposed distribution.” EPA notes that one issued PAL permit did expire without being renewed, but no details were provided as to the distribution of the PAL level for that facility.

**PAL Renewal**

Another area of concern was the ability of the reviewing authority to re-evaluate and potentially lower the PAL level during renewal of the PAL permit. This uncertain area of the PAL permit regulations has historically been cited as disadvantageous to those considering PALs. The PAL regulations require the reviewing authority to “consider lowering” the PAL if, at PAL renewal, baseline actual emissions plus the significant emission rate are lower than 80 percent of the PAL level.

While the memorandum supports the rationale for including this provision in the regulations, EPA also stresses that the facility is required to propose and support a new PAL level in the renewal application and that this “provision does not preclude renewing the PAL at the current level or at a level higher than baseline actuals plus the significant level.” EPA also states that reviewing authorities should exercise restraint in lowering PALs to avoid penalizing sources for reducing emissions. In addition, the memorandum provides examples from the 2002 rule preamble of circumstances in which a PAL adjustment may not be appropriate on a case-by-case basis, showing the use of differing operating scenarios and market conditions to defend the PAL level.

**PAL Termination**

Stakeholders also questioned the lack of provisions for terminating PAL permits. EPA upholds previous guidance that PAL termination be handled on a case-by-case basis as the circumstances for each termination request are likely specific to the situation.

**PAL Monitoring Requirements**

The PAL regulations require monitoring of 12-month rolling total emissions of each PAL pollutant. To address stakeholder concerns, EPA states in the memorandum that continuous emission monitoring systems (CEMS) need not be installed for PAL compliance and are typically used for PAL monitoring only when the CEMS is already installed for compliance with other requirements. EPA also provides additional guidance on emission factor adjustment and validation testing which lack clarity in the regulations.

When monitoring data is missing, the PAL regulations require that maximum allowable emissions be used instead unless the facility’s PAL permit provides other missing data procedures. This default regulatory position can be highly detrimental to those operating with a PAL.

The memorandum provides examples from a PAL permit issued by EPA Region 3 to demonstrate types of missing data procedures that can be included in PAL permits. Missing data procedures should be proposed by the facility in a PAL application or renewal application.

**Baseline Actual Emissions for Replacement Units**

The last stakeholder comment addressed by EPA in the memorandum is the inclusion of replacement units in baseline actual emissions calculations. Under NSR reform, a replacement unit has a specific definition ensuring it is akin in design and operation to the unit being replaced. If a unit meets the replacement unit definition then it is treated as an existing emissions unit in determining NSR applicability (i.e., it has baseline actual emissions that could be included in the PAL).

EPA clarifies in the memorandum that the treatment of replacement units in terms of NSR applicability is also applicable to setting or renewing PALs.

**Key Takeaways**

Overall, EPA’s new guidance provides some long-overdue formal clarification regarding some aspects of PAL permits.

If you might be thinking about a PAL, Trinity has assisted several clients with applying for, renewing, and complying with PALs. Our state Air Quality Permitting courses cover state-specific PAL regulations where applicable.

For assistance with PAL permitting or compliance consultation on the EPA guidance, please contact the author or call 800.229.6655.

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1 EPA 40 CFR 52.21(aa)(10)(iv)
2 EPA 40 CFR 52.21(aa)(10)(vi)

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Related Training

- **NSR/PSD Compliance Workshop**
  - Sep 15-16
  - St. Louis, MO

- **Nov 10-11**
  - Phoenix, AZ
The Cause of PHA Inconsistencies

Patrick Fisher, PHA Facilitator — Calgary, Canada

In the last EHS Quarterly issue, we began a series on process hazard analysis (PHA) inconsistencies with “Impacts of PHA Inconsistencies” which addressed safety, operability, and cost. We are continuing this series with a focus on the root causes of inconsistency in PHAs. The fictional case of RT Industries that we introduced in the first article illustrated two causes that contributed to the inconsistency between the three PHAs: inaccurate information, and varying staff experience.

As described previously, RT Industries is a fictional chemical manufacturer trying in earnest to comply with the Occupational Safety and Health Administration’s (OSHA) process safety management (PSM) regulations. Recently, an incident occurred at a competitor’s site that makes a chemical that is very similar to RT’s product. Out of an abundance of caution, RT’s Vice President of Operations tasked teams to review the most recent PHAs for related units.

Three independent PHA teams at three different RT Industries facilities previously conducted hazard and operability studies (HAZOPS) involving nearly identical scenarios, with similar chemicals and processes. Although the scenarios and chemicals were nearly identical, the analysis initiated by the vice president revealed that the recommendations from the three independent HAZOPS were completely different.

In this example based on real situations, inaccurate process safety information led to a lack of source material consistency between the PHA teams. Beyond that, the difference in personal experience of the PHA team members impacted the likelihood and severity determination of the consequences, which then affected the risk ranking. Exactly how did these situations cause inconsistency in the PHAs? How could these inconsistencies happen? To answer these questions, we must examine each one independently.

**Cause #1: Inaccurate Process Safety Information**

Access to accurate and verified process safety information (PSI) is paramount to PHA consistency. OSHA 29 CFR 1910.119, the Process Safety Management standard, requires a company to compile PSI and provide it to personnel and the PHA team. OSHA provides guidance on the type of information to include in PSI records, which generally includes piping and instrumentation drawings (P&IDs), process chemistry, equipment, information technology, and other documentation “pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process.”

While the information should be the same across different sources within your facility—i.e., the maintenance database, the nameplate, the P&ID—the information may not always match. It could be a small discrepancy such as the title of the piece of equipment being recorded differently in two different data systems, or it could be more serious like different Maximum Allowable Working Pressure (MAWP) designations for the same vessel.

For example, a P&ID may display an out-of-date value of MAWP if there was an inspection of the vessel and a subsequent de-rating of the MAWP. If the management of change (MOC) does not capture the change correctly in all the places where the MAWP is captured, the Inspection Data Management System (IDMS) could provide the correct lower MAWP, but the out-of-date P&ID would then indicate an older, higher value.

Likewise, a change in MAWP might be missed in the pressure relief system design documentation. When a team starts a PHA with the incorrect MAWP on the outdated P&ID and then reviews the other data sources, they are faced with multiple values for MAWP and will have to determine the correct value to use. Worse still, only one value may be noted and it may be incorrect.

The three PHA teams at RT Industries faced exactly this type of problem. Table 1 shows the different PSI data sources and data sets that should have been consistent but were not.

<table>
<thead>
<tr>
<th>Maintenance Database</th>
<th>P&amp;ID</th>
<th>Nameplate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-100 Vessel</td>
<td>V-100 Surge Vessel</td>
<td>V-100 Vessel</td>
</tr>
<tr>
<td>MAWP</td>
<td>1000psi</td>
<td>850psi</td>
</tr>
<tr>
<td>MDMT</td>
<td>-15F</td>
<td>-15F</td>
</tr>
<tr>
<td>Material</td>
<td>CS (Stainless Steel)</td>
<td>CS (Carbon Steel)</td>
</tr>
</tbody>
</table>

MAWP = Maximum Allowable Working Pressure  
MDMT = Minimal Design Metal Temperature

Furthermore, when personnel notice these types of inconsistencies in the data, they place less trust in the PSI. Verifying the accuracy of questionable or inconsistently recorded data adds another layer of work to the HAZOP team and slows down the PHA process. If the inconsistent data is crucial to the analysis, many times the team will wait for confirmation before moving forward, adding unnecessary time and cost to the process.

Many times, a PHA team in this situation ends up making a judgment based on their personal experience or what they know about the equipment in order to keep the process moving. This common tendency, while understandable, comes with its own risks to PHA consistency.

Table 1. PSI Values from Multiple Data Sources
How Personal Experience Impacts Likelihood Determinations

During the risk ranking process, the team reviews the scenario and makes two determinations—the likelihood of the consequence happening and the severity of that consequence. The company risk matrix is used to combine those two elements to produce the risk ranking.

“Likelihood” is generally understood in ratio terms of “once every X-year(s).” Most company risk assessment guidance includes a range of likelihoods for scenarios that might occur more commonly, such as “once every year (Frequent),” to extremely rare events, such as “once in 10,000 per year (Improbable).” Even if a PHA team contains decades of collective experience, there are going to be many scenarios that can happen on the left side of the chart, but not all of them. To assemble a PHA team with the level of experience to cover most of the events that could occur would be impossible.

An individual worker is more likely to experience the scenarios with a higher likelihood—“Likely” or “Frequent.” However, the target frequency for most scenarios reviewed during a PHA are on the left side between “once in 100 per year (Unlikely)” and “once in 10,000 per year (Improbable).” In other words, there is a discrepancy between what people will likely have personally seen in a typical career and the events being examined during a PHA.

It is important to note that during a 40-year career, an individual will see more events than just those which are “once in 100” (or “Likely”). They may see a variety of the events that can happen on the left side of the chart, but not all of them. To assemble a PHA team with the level of experience to cover most of the events that could occur would be impossible.

Instead, when a team has not seen a particular event or heard of that event occurring, many will risk rank the scenario lower because the risk does not feel as realistic. And, a team that has seen the event will risk rank it higher, possibly higher than is appropriate. Experience bias can affect the risk rank in either direction.

This is a major factor in the PHA inconsistencies at RT Industries (view the entire scenario in Part 1: Impacts of PHA Inconsistencies) one team had never experienced the event of concern, and the other two teams had, which led to very different risk rankings (Table 3). Teams One and Two ranked it high enough to trigger a Layer of Protection Analysis (LOPA) review, while Team Three’s analysis and lack of exposure to the scenario led them to a low risk ranking.

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<thead>
<tr>
<th>Event</th>
<th>Target Frequencies</th>
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<tbody>
<tr>
<td>Fatality</td>
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How Personal Experience Impacts Severity Determinations

Even if different teams agree on the “likelihood” of an event, personal experience can produce different severity determinations. Severity is generally based on the impact of the event on people present when it happens. It ranges from “first aid injury” to “fatality,” as seen in the risk matrix above (y-axis).

While severity seems like it should be straightforward to determine, it is more nuanced than some expect. Severity is often impacted by external factors that are difficult to control, such as ignition sources and personnel in the area at the time.

An individual worker is more likely to experience the scenarios with a higher likelihood—“Likely” or “Frequent.” However, the target frequency for most scenarios reviewed during a PHA are on the left side between “once in 100 per year (Unlikely)” and “once in 10,000 per year (Improbable).” In other words, there is a discrepancy between what people will likely have personally seen in a typical career and the events being examined during a PHA.

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As their personal history of incidents and events, either known or heard of that event occurring, many will risk rank the scenario lower because the risk does not feel as realistic. And, a team that has seen the event will risk rank it higher, possibly higher than is appropriate. Experience bias can affect the risk rank in either direction.

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Table 2. General Risk Matrix

Table 3. Risk Matrix that leads to decisions on LOPAs

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One team member may have worked at a petroleum storage facility for a very long time and experienced a tank overfill due to instrument error or human error. They likely learned through that experience that an overfilled tank event requires cleanup of the material from the tank dike and possibly little else. On the other hand, another team member may have experienced an event such as what occurred at the CAPECO facility in 2009, where a large amount of liquid overflowed a tank and ignited.

October 2009 – Tank Explosion & Fire (Caribbean Petroleum Corporation CAPECO, Bayamón, Puerto Rico)

According to the Chemical Safety Board (CSB), in 2009 nearly 200,000 gallons of gasoline rushed out of six vents in an overfilled tank at the CAPECO facility. With a light breeze that night, the escaped gasoline formed a low-lying vapor cloud that encompassed an area equivalent to 107 acres. The vapor cloud exploded, creating a pressure wave that damaged hundreds of homes and businesses up to 1.25 miles from the site. The fire propagated through the vapor cloud and ignited multiple subsequent tank explosions, registering as an earthquake 2.9 on the Richter scale.

After the explosion, fuel in the damaged tanks burned for over two days while emergency responders fought to control the fire and prevent other tanks from igniting. Local fire departments, assisted by an industrial firefighting company, took 66 hours to extinguish the fire after the explosion. As a result, 17 of the 48 tanks burned, according to the CSB report. Luckily, no one was killed (although three people did sustain minor injuries), but it very easily could have been a fatal incident.

The team member who has mostly experienced overfills with no consequence is less likely to relate to the potential impact of an incident like CAPECO simply because their experience indicates that this type of incident usually does not have a severe impact on personnel. On the other hand, the team member who has experienced an event like CAPECO will probably be concerned about significant and potentially fatal results.

It is important to be aware of the human tendency to generalize from our own experiences in the PHA process. In a PHA, the team is looking for the worst credible scenario. An EF tank overfill to a dike that does not ignite is certainly not the worst credible scenario, as was evidenced by CAPECO.
in 2009. However, even in that case there were no fatalities or major injuries when there easily could have been. The team must balance their experience carefully with the awareness that it could cause over- or underestimating documented severity.

Avoiding Inaccurate Information and Narrow Thinking

The root causes of PHA inconsistencies often boil down to inaccurate process safety information and differing personal experience.

In the end, a PHA team will have experienced some of the PHA events but not others. Their risk ranking will be affected by what they experienced, even if it’s not necessarily the worst consequence, causing the risk of the scenario to be over- or understated based on the team members themselves and not on data. One key to minimizing the inconsistency between PHA team results is to recognize where personal experience is informing the process and where it is limiting it.

It is also critically important to be aware of the duplicity of information within a facility. How many places does a vessel’s MAWP reside? Are they consistent? Are they accurate? This type of data “housekeeping” can be seen as a tedious task, but the ability to provide the PHA team (and anyone else relying on PSI) with verifiable, accurate, trustworthy technical information is crucial to enabling them to do the most thorough job possible.

For assistance with PHA Inconsistencies, please contact the author or call 800.229.6655.

The PHA Inconsistency Series will conclude in the next issue of EHS Quarterly with Strategies to Minimize PHA Inconsistencies.

Related Training

Webinar: How to Identify and Mitigate PHA Inconsistencies
Oct 15 | Online

Understanding and Application of RMP/PSM Requirements
Oct 7-8 | Houston, TX

Effective Remote PHA Facilitation

Facilitating remote PHAs present many unique challenges including maximizing team participation, tracking core team members, and ensuring that the conversation remains on-topic with minimal disruptions.

Teams and facilitators who have not previously conducted PHAs remotely face two notable challenges:

1. Ensuring effective team collaboration through available technology, and
2. Providing and presenting necessary information while maintaining meeting efficiency.

The Trinity/Provenance Consulting teams facilitate traditional co-located, remote, and combination PHAs. Our process leverages technology to optimize participation and effective information sharing, enabling a successful shift to effective and efficient remote PHAs.

This service and support has been vital during the pandemic response as facilities balance reduced on-site workforces with compliance requirements.

For further information on remote PHAs or how Trinity and Provenance can support your PSM/RMP program, please contact our process safety experts at 800.229.6655.

Common Findings in Health and Safety Compliance Audits

Robert A Large, CPEA, CHMM – Managing Consultant – Columbus, OH

Compliance audits have proven to be a highly effective risk management tool in Environmental, Health and Safety (EHS) programs. Health and safety auditing is an essential element of an organization’s risk management program as supported by the inclusion of review or audit processes in industry and ISO standards.

Many occupational health and safety standards require periodic and/or annual assessments to ensure program effectiveness, proper implementation of internal safety controls, adequate employee competency, and appropriate use of established plans. In this article, we will focus on the most critical health and safety standards outlined by the U.S. Occupational Safety and Health Administration (OSHA).

Having a good understanding of regulatory target areas (such as OSHA’s National Emphasis Programs) as well as commonly found audit gaps provides a solid baseline to configure audit focus areas. Common health and safety audit findings span all areas of OSHA’s general industry standards, as well as process safety management.

It’s important to identify the standards for which periodic and/or annual audits or inspections are required. For example, mandatory reviews are included in all of the following OSHA regulatory standards:

- 1910.119 – Process Safety Management (PSM)
- 1910.134 – Respiratory Protection
- 1910.146 – Permit-Required Confined Spaces
- 1910.147 – Control of Hazardous Energy (Lockout/Tagout)
- 1910.178 – Powered Industrial Trucks
- 1910.179 – Overhead and Gantry Cranes
- 1910.180 – Intermittent Use of General Industry Standards
- 1910.182 – General Industry Standards

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requirements, industry guidance, and agency enforcement directives and guidance, as well as the organization's corporate policies, procedures, and guidance. The audit may also be focused on a specific or set of regulatory programs, the elements of an overall management system program, and/or the health and safety requirements within a certain function, area, or process of a facility.

 Upon review of the annual OSHA inspection data, there are notable trends within the compliance audit and inspection findings which may inform decision-making regarding a facility's upcoming inspections or scheduled audits.

**Trending Compliance Audit Findings and Issues**

The following findings occur most often as indicated by OSHA's data and author's experience. It's crucial to understand what types of citations OSHA is prioritizing and what part of your program corresponds. These program areas are based on the general OSHA Safety and Health Program Audit Tool and include examples of where the citation will be found.

OSHA's Safety And Health Program Audit Tool focuses on these specific program areas. The "Program Area" column of the chart refers to these numbered sections.

- Section 1: Management Leadership
- Section 2: Worker Participation
- Section 3: Hazard Identification and Assessment
- Section 4: Hazard Prevention and Control
- Section 5: Education and Training
- Section 6: Program Evaluation and Improvement
- Section 7: Communication and Coordination for Host Employers, Contractors, and Staffing Agencies

While not a complete listing of all possible findings, this list in Table 1 provides some common types of non-compliance issues encountered at many facilities. Audit results, of

**Table 1. Common Findings by OSHA Audit Type with Audit Tool Program Area**

<table>
<thead>
<tr>
<th>OSHA Standard</th>
<th>Citation/Finding</th>
<th>Program Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking and Working Surfaces</td>
<td>Lack of adequate inspection programs for portable or fixed industrial ladders</td>
<td>1, 6</td>
</tr>
<tr>
<td></td>
<td>Lack of fall protection hazard assessments</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lack of competent person inspection of systems / components</td>
<td>6</td>
</tr>
<tr>
<td>Exits and Emergency Planning</td>
<td>Omission of Emergency Action Plans or plans lack the required elements addressing all foreseeable emergencies</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>No assignment of employees to support emergencies and evacuations</td>
<td>1, 7</td>
</tr>
<tr>
<td>Fire Prevention Planning</td>
<td>Failure to provide fire prevention plans or failure to update fire plans where new hazards/sources exist</td>
<td>1, 7</td>
</tr>
<tr>
<td></td>
<td>Failure to maintain required exits and emergency egress</td>
<td>1, 4, 5</td>
</tr>
<tr>
<td>Process Safety Management</td>
<td>Failure to identify and assess applicable site sources and processes such as chemical warehouses that exceed the plan thresholds of 10,000 lbs.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Failure to develop Mechanical Integrity (MI) Procedures</td>
<td>1, 3</td>
</tr>
<tr>
<td></td>
<td>Failure to conduct inspections</td>
<td>3, 6</td>
</tr>
<tr>
<td></td>
<td>Failure to correct deficiencies</td>
<td>6, 6</td>
</tr>
<tr>
<td>Personal Protective Equipment and Respiratory Protection</td>
<td>Failure to conduct inspections in accordance with recognized engineering practices (RAEAGEP)</td>
<td>3, 6</td>
</tr>
<tr>
<td></td>
<td>Lack of PPE hazard assessments or certifications that are current for site’s processes</td>
<td>1, 3, 6</td>
</tr>
<tr>
<td></td>
<td>PPE is in poor condition, is improperly worn, or is not worn when required</td>
<td>1, 2</td>
</tr>
<tr>
<td></td>
<td>Lack of employee training on the use, limitations, proper wear, or inspection of respirators that are used</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Employees have not been properly fit tested</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Emergency use respirators are not maintained and inspected monthly as required</td>
<td>4, 6</td>
</tr>
</tbody>
</table>

**OSHA Standard**

<table>
<thead>
<tr>
<th>Citation/Finding</th>
<th>Program Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confined Spaces/Permit-Required</td>
<td>Site has not been inventoried for confined spaces including those that are permit-required</td>
</tr>
<tr>
<td></td>
<td>Failure to post or inform employees about permit-required spaces</td>
</tr>
<tr>
<td></td>
<td>Failure to develop or implement procedures for providing or summoning emergency services for rescue during a permit-required entry</td>
</tr>
<tr>
<td>Control of Hazardous Energy</td>
<td>Failure to develop equipment-specific procedures for lock out/tag out of hazardous energy sources</td>
</tr>
<tr>
<td></td>
<td>Authorized and affected employees have not been determined and properly trained</td>
</tr>
<tr>
<td></td>
<td>Protective materials and hardware have not been specifically identified or are used for purposes other than lock out/tag out procedures</td>
</tr>
<tr>
<td></td>
<td>Failure to conduct periodic inspection of energy control procedures</td>
</tr>
<tr>
<td>Powered Industrial Trucks (PT)</td>
<td>Failure to provide rated equipment for process hazard operation areas such as electrically classified areas</td>
</tr>
<tr>
<td></td>
<td>Lack of pre-shift unit inspections</td>
</tr>
<tr>
<td></td>
<td>PTs have been modified, affecting the manufacturer’s certification or load rating</td>
</tr>
<tr>
<td>Hand and Portable Powered Tools</td>
<td>Failure to maintain required exits and emergency egress</td>
</tr>
<tr>
<td></td>
<td>In-house fabricated jacks or jack stands are not properly rated or marked</td>
</tr>
<tr>
<td></td>
<td>Tool retainers are not in place for pneumatic tools</td>
</tr>
<tr>
<td>Electrical/Hand and Portable Powered Tools</td>
<td>Lack of proper grounding for powered tools</td>
</tr>
<tr>
<td></td>
<td>Electrical equipment is not installed or used consistent with its listing and labeling (e.g. use of reversible power taps, multi-plug power strips between appliances and permanent power, daisy chaining these units)</td>
</tr>
<tr>
<td></td>
<td>Electrical installations lack proper grounding or conductors is frayed, cracked or in poor condition</td>
</tr>
<tr>
<td></td>
<td>Unused electrical raceways, gutter, junction box openings are not closed</td>
</tr>
<tr>
<td></td>
<td>Installed electrical installations such as panelboards, cabinets, etc. are not closed as required</td>
</tr>
<tr>
<td></td>
<td>Disconnecting means for motors, appliances, etc. are not properly marked and labeled as required or are not longer legible</td>
</tr>
<tr>
<td></td>
<td>Sufficient access and working space are not provided or maintained for all electric equipment safe operation and maintenance, as required</td>
</tr>
<tr>
<td>Toxic or Hazardous Substances</td>
<td>Failure to inspect, identify, or mark incombustible the presence of asbestos-containing materials</td>
</tr>
<tr>
<td></td>
<td>Lack of exposure assessments for toxic substances in employee work areas where metals or compounds containing beryllium, hexavalent chromium, or lead are used</td>
</tr>
<tr>
<td></td>
<td>Toxic or hazardous substances: Bloodborne pathogens</td>
</tr>
<tr>
<td></td>
<td>Lack of an Exposure Control Plan</td>
</tr>
<tr>
<td></td>
<td>Failure to provide or offer Hepatitis B vaccines to employees who are occupationally exposed after initial assignment</td>
</tr>
<tr>
<td>Hazard Communication</td>
<td>Failure to develop or implement procedures for providing or summoning emergency services for rescue during a permit-required entry</td>
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<tr>
<td></td>
<td>Failure to maintain the required safety data sheets for each hazardous chemical in the workplace</td>
</tr>
<tr>
<td></td>
<td>Failure to develop or update a Chemical Hygiene Plan, as required</td>
</tr>
<tr>
<td></td>
<td>Lack of initial monitoring for new hazardous substances as required for regulated substances in laboratory processes</td>
</tr>
</tbody>
</table>

1. OSHA Safety and Health Program Audit Tool: https://www.osha.gov/shpguidelines/docs/SHP_Audit_Tool.pdf
course, will vary based upon the applicable compliance obligations for each individual organization, the site’s location, and the scope of the audit.

As one would expect, many of these findings fall under the Hazard Identification and Hazard Prevention program areas; however, there are additional findings that should be considered. Often, audit findings do not include root cause analysis for an identified gap which may be needed to determine appropriate corrective actions including leadership responsibilities, employee requirements or training.

**Keys to Successful Program Management**

Ultimately, the success of a safety and health program depends on identifying hazards early when processes and equipment changes, ensuring employees are trained and aware of the requirements especially when employees or their roles and responsibilities change, and ensuring that controls (plans, programs, equipment, tools, etc.) are regularly reviewed, audited, and updated.

**Identifying hazards early after changes**

When changes occur to processes or equipment, it is imperative that these be evaluated for existing and new hazards. The appropriate method for identifying those hazards may vary (i.e. HAZOP, JHA or JSA exposure assessments, PPE hazard assessments) but the purpose is the same: identify the hazards so that they may be controlled and mitigate the risk to worker health and safety. Failure to conduct these assessments in a timely manner after process or equipment changes leaves creates opportunity for violations and incidents.

**Involving employees in changes to ensure awareness and training**

Employee awareness and training is critical to successful safety and health programs. Auditors evaluated training in several areas including emergency planning, personal protective equipment, respiratory protection, permit-required confined spaces, lockout/tagout, powered hand tools, electrical safety, toxic substances, and hazard communication. Companies with affects processes and equipment should review the employee education and training elements to identify gaps in the program. Regardless of the standard, ensure your program engages and involves employees.

**Reviewing controls regularly**

The final key element to successful health and safety programs is ensuring that controls (plans, programs, equipment, tools, etc.) are regularly reviewed/audited. Changes in personnel, equipment, technology, and procedures dictate that any hazard prevention controls be regularly reviewed to ensure they are still adequate for the risk mitigation required. Prioritize regular maintenance of the program by ensuring that time-based reviews/audits have the appropriate resources and are completed to the appropriate level and standard.

**Managing Your Health and Safety Program**

A well-crafted health & safety audit program addresses all applicable OSHA and state standards and considers areas of focus by OSHA and common findings during audits. Preparation for the H&S audit follow these general steps:

- Organize and have readily available records used to demonstrate compliance with the program areas being audited
- Emphasize availability of records (e.g. training) maintained or managed by non-EHS departments, such as Human Resources or outside vendors
- Assuring availability of personnel for interviews during the audit site visit. Interviews are a key element in auditing which allows the auditor to obtain first-hand knowledge regarding the implementation of H&S programs.
- Provide advanced information to auditors about site-specific safety requirements such as specific personal protective equipment requirements, and any COVID-19 site requirements and/or pre-visit restrictions

The management of EHS compliance programs is a dynamic process within any organization. It consists of the ever-changing interactions related to process controls, job task performance, and workplace conditions that occur across organizational functions such as senior leadership, middle management, line management, finance, production operators, engineering, and contractors. Periodic change in technology and personnel increases the complexity of these interactions.

**Robust Auditing Programs are Key to Effective Risk Management**

Within all these variables is the constant need for assessing system and enterprise business risks, including risks impacting employees. This risk assessment process should ensure that employees are exhibiting effective situational awareness of the risks, which can be a continual challenge given the variety of individual experiences and risk perceptions.

Time and time again, compliance audits have proven to be a highly effective risk management tool. Proper preparation and selection of highly skilled and experienced auditors will enhance the value of the overall process.

For assistance with Health and Safety Audits, please contact the author or call 800.229.6655.

**Related Training**

| EHS Audit Skills and Techniques | Sep 17 | Irvine, CA |
| Oct 29 | Albany, NY |

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Provide advanced information to auditors about site-specific safety requirements such as specific personal protective equipment requirements, and any COVID-19 site requirements and/or pre-visit restrictions.
Recently, Trinity Consultants acquired Vision Environment Australia (VE), an environmental consulting firm located in Gladstone, Queensland, Australia, that specializes in environmental monitoring related to water quality and marine ecology. VE is Trinity’s third acquisition in Australia recently, joining air and noise consultancies ASK Consulting Engineers and Air Noise Environment. The three business units will gradually transition to operate as Trinity Consultants Australia.

In 2008, Leonie Andersen and Felicity Melville co-founded the company, which began as a research project for the CQUniversity Gladstone. VE has since grown to include a team of highly qualified scientists and engineers with expertise in water quality management, ecology, and ecotoxicology. In addition, the VE team includes lab and field staff who manage its dedicated laboratory facilities, specialized field equipment, and commercial vessels that collect real time water quality data.

The VE team’s expertise includes the design and implementation of water quality and monitoring plans. These detailed plans include the use of telemetry, dredge monitoring and assessment, ecological health assessment of various marine species, assessment of marine pest incursions, ecological mapping, toxicity testing of effluents, and impact monitoring of acute environmental events.

VE’s collection, management, and analysis of high-volume environmental data is of particular importance to the success of client projects and protection of water quality. VE serves clients involved in commercial dredging and industrial organizations that potentially affect marine environments across Australia and New Zealand.

Dr. Andersen and Dr. Melville will continue to manage the day-to-day operations of providing technical expertise, client engagement, business development and staff development, while partnering with Operational Director of Trinity Consultants Australia, Brian Burdorf, to pursue expansion opportunities. VE will continue to operate out of its main offices and maintenance facility in Gladstone and field office in New Zealand.