



# Effectively Manage Process Safety Information using Process Safety Enterprise<sup>®</sup>

An ioMosaic White Paper

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## Overview

Process Safety Enterprise® (PSE), a cloud-based platform, helps manage Process Safety Information (PSI), ensuring compliance with OSHA's PSM standard. This white paper details the key features of PSE, including:

- Document Control System: Easily stores and retrieves documents
- Intelligent Form Builder: Creates customizable forms
- Action Tracking System: Manages all tasks related to PSI
- Reporting and Dashboard/KPI: Provides real-time insights into activities
- PSI Workflow: Guides users through compiling, reviewing, updating, approving, and documenting the required Process Safety Information (PSI).

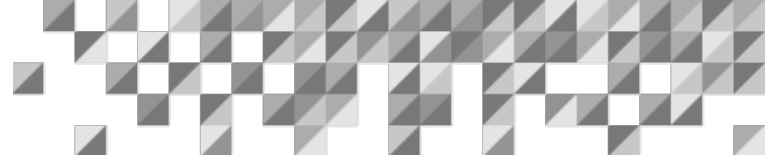
A case study highlights how PSE, which facilitates developing, executing, and maintaining a safety management system that includes PSI, could have helped to mitigate or prevent this disaster.

## Introduction

Process Safety Information (PSI) is the foundation of the Occupational Health and Safety Administration (OSHA) Process Safety Management (PSM) 29 CFR 1910.119 standard. The standard requires compiling specific information (PSI) in section "d" for the regulated highly hazardous chemicals, process technology, and process equipment. Operating procedures in section "f" must be consistent with the compiled PSI, and routine updates are required as a result of Management of Changes (MOCs) in section "l."

Businesses often encounter challenges in compiling and tracking this information, as it involves the intricacies of gathering, generating, or referencing the relevant information, putting it into a usable format, and then keeping it up-to-date as changes occur. This information will be used extensively in the PSM program to identify and manage hazards within the Process Hazard Analyses (PHAs). The operating procedures will then include the known hazards, consequences of deviations, and steps to avoid or mitigate them.

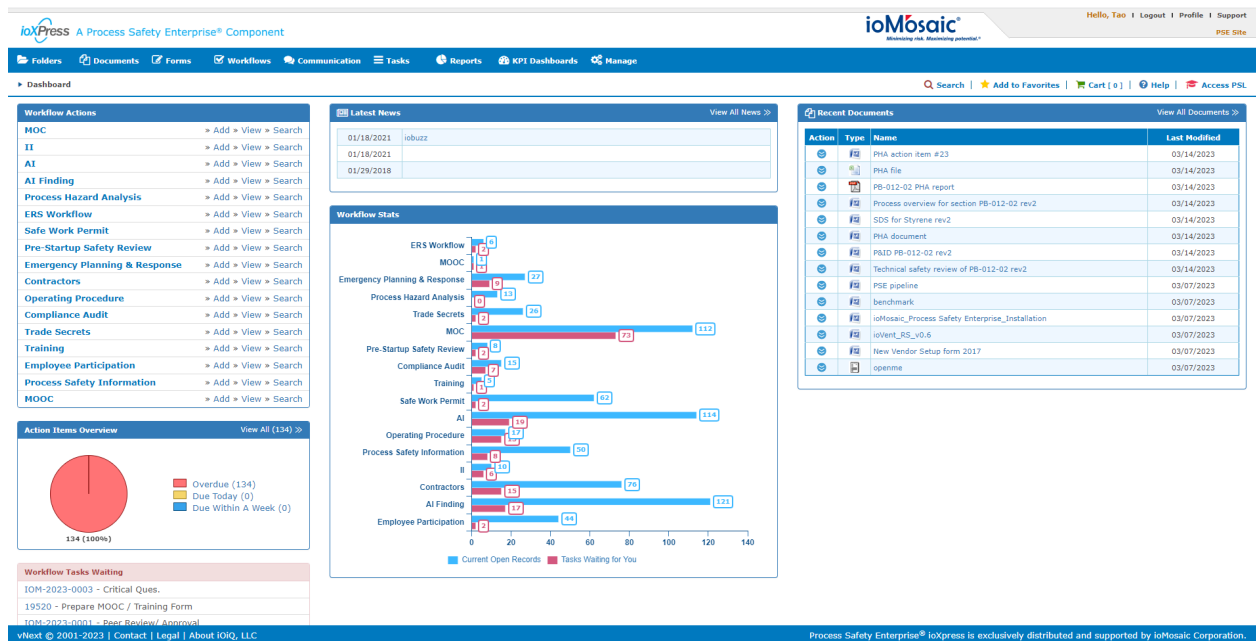
Compiling this crucial PSI demands considerable time and resources. Overlooking, inadequately defining, or failing to update any of this information risks the safety of employees, plant assets, the community, and the environment. Moreover, the lack of thorough PSI could cause an accident, leading to production interruptions.



For businesses serious about implementing a comprehensive PSM compliance system, ioMosaic offers the Process Safety Enterprise® (PSE) (Figure 1). PSE is a cloud-based platform enabling easy ongoing management of process safety data, helping businesses achieve compliance, manage risk, and remain competitive. Unlike any other system available in the market today, PSE is a centralized web-based application that integrates all PSM elements and workflows, making it THE ultimate solution for managing PSI effectively. This white paper delves into the key features of the PSI workflow and how it benefits companies seeking to improve and elevate their systems to manage the hazards of various work practices.

We recommend a [PSM Essentials eLearning course like the one offered by Process Safety Learning®](#) to help you better understand the requirements of the PSM standard.

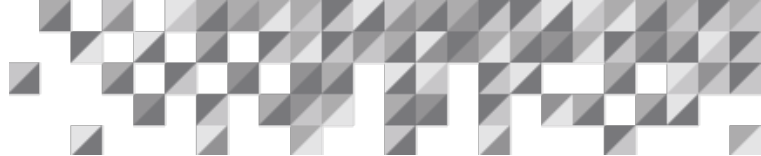
Figure 1. Process Safety Enterprise® (PSE)



Source: ioMosaic Corporation – PSE

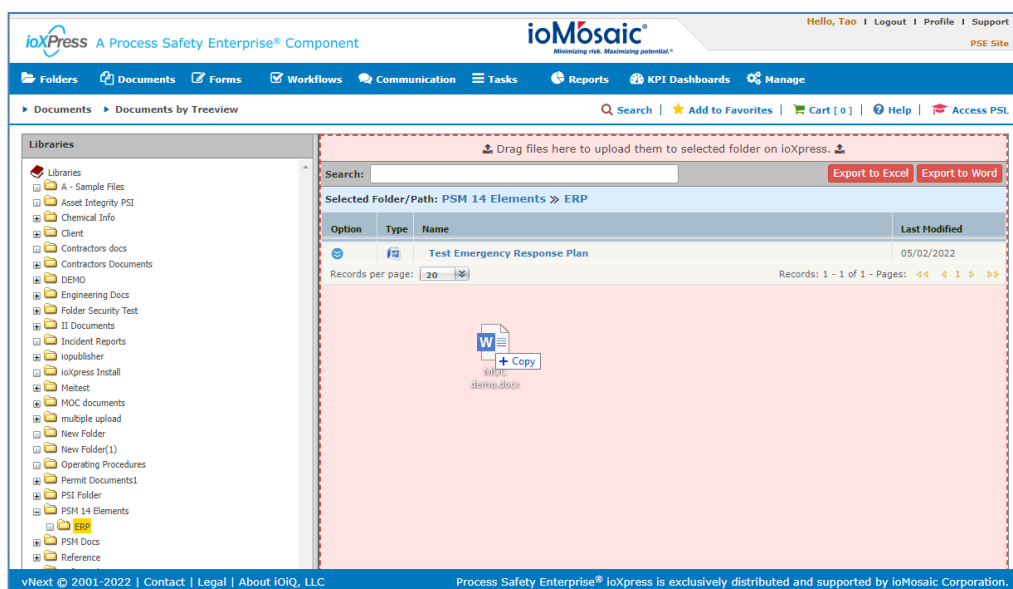
## Document Control System

The document control system of PSE's platform is a key component for facilitating easy access to all critical process safety data. It allows users to easily access and add documents using a simple drag-and-drop (Figure 2) feature. This action quickly organizes documents into folders for easy retrieval. Its advanced search function indexes all documents with full text, allowing users to find necessary information quickly. An embedded document viewer feature not only enhances



accessibility but also bolsters security measures. By granting users view-only permissions, they can view documents as images, preventing unauthorized downloads and eliminating the need to log into their computers for access. This document control component is an effective tool for managing various types of data, including but not limited to compiled Process Safety Information (PSI) documents, engineering data, equipment forms, procedures, records, pictures, videos, animation, and reports. This component further ensures that all stakeholders have easy access to vital information related to PSI stored in a centralized location.

**Figure 2. Drag and drop feature to add document(s)**



Source: ioMosaic Corporation – PSE

## Intelligent Form Builder

PSE also includes an intelligent form builder for efficient data capture and linking to documents in a central digital library. This dynamic form builder enables users to create practical, customizable PSI forms.

The ability to customize forms for unique PSI documents ensures that all necessary data is captured accurately and consistently. Moreover, this feature allows for easy data export to an Excel format, making data analysis and sharing even more seamless. Implementing a customizable form builder like the one in PSE streamlines compiling PSI by capturing data accurately and efficiently.



Figure 3 shows an example of a portion of the form for updating PSI.

**Figure 3. Example of a PSI Form for Updates**

SPECIFIC UPDATES					
Requested updates are completed * <input type="checkbox"/>					
SECTION REVIEWS and UPDATES AS NEEDED					
Summary of PSI Reviews	Name of Reviewer	Review Completed	Are Updates Necessary	Completed PSI Review Form	
<a href="#">Add New Row</a>					
*Are there any PSI Sections Requiring Updates? * <input type="radio"/> Yes <input checked="" type="radio"/> No					
UPDATED PSI FILES					
List of PSI Sections Requiring Updates	Name of Section	Is Information Available	Permanent Folder	Comments/Reason for Lack of Information	Temporary/Update Folder
<a href="#">Add New Row</a>					
Comments					

Source: ioMosaic Corporation – PSE

## Process Safety Information (PSI) Workflow

PSE is the only process safety platform integrating all of OSHA's Process Safety Management (PSM) elements using visual workflows. This single enterprise platform includes workflows for PSM's 14 elements, action tracking modules, and document control. The Training workflow can be used to require and track training for PSI awareness and development. The PSI workflow facilitates creating the required information, tracking its location and the responsible person, updating the PSI as needed, and approving the changes.

The final step of the workflow ensures that all PSI updates are stored in the proper location so that the tracking table automatically picks up the new version.

Figure 4 illustrates the PSI workflow steps. Completed steps are in blue, Inactive steps in light gray, Not applicable steps in dark gray, and Ready steps are in green. The workflow can only be closed once all required steps are completed.

The PSI workflow within PSE ensures hazardous activities are identified and managed per the OSHA standards and guidelines.

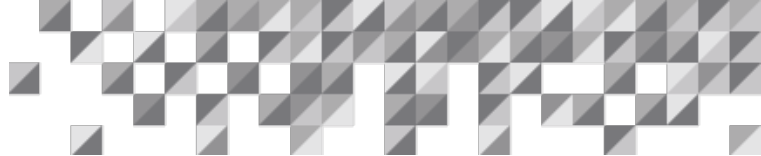
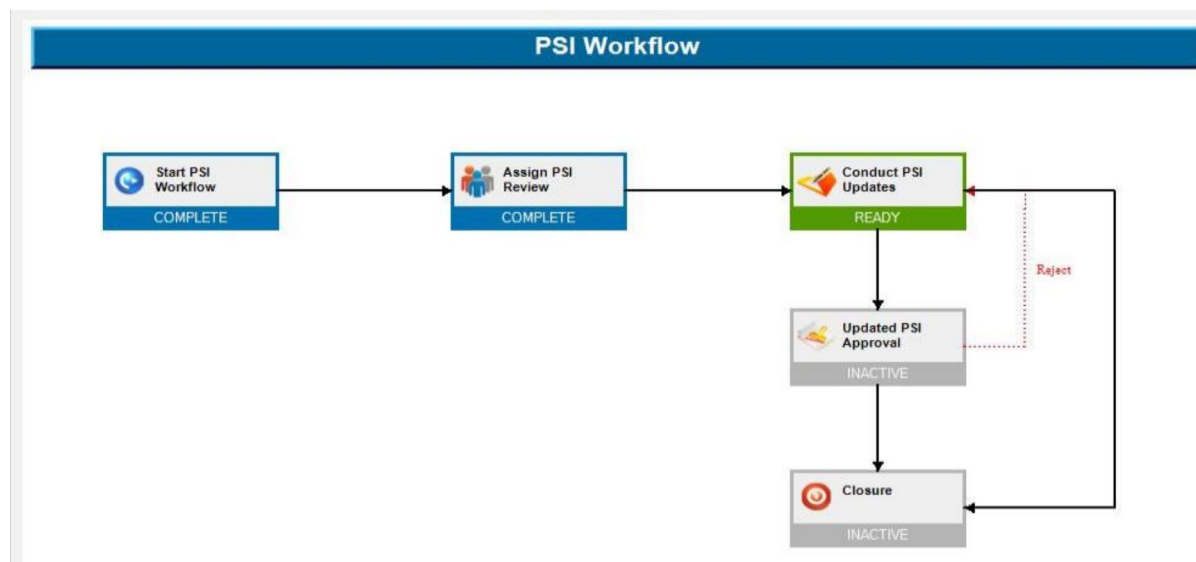


Figure 4: Example of PSI Workflow



Source: ioMosaic Corporation – PSE

## Action Tracking System

PSE features a comprehensive action item management system (Figure 5). It tracks all tasks related to each process safety management workflow, such as PSI. This feature ensures that all action items are managed within the platform, reducing or eliminating the risk of overlooked or forgotten tasks. An additional feature, the 'Automatic Reminders,' enforces all tasks to be completed on time.

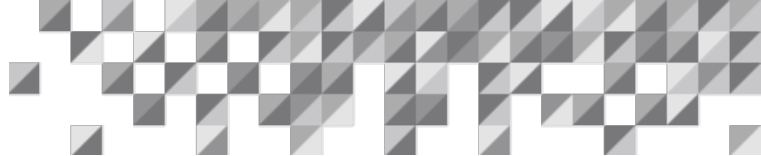
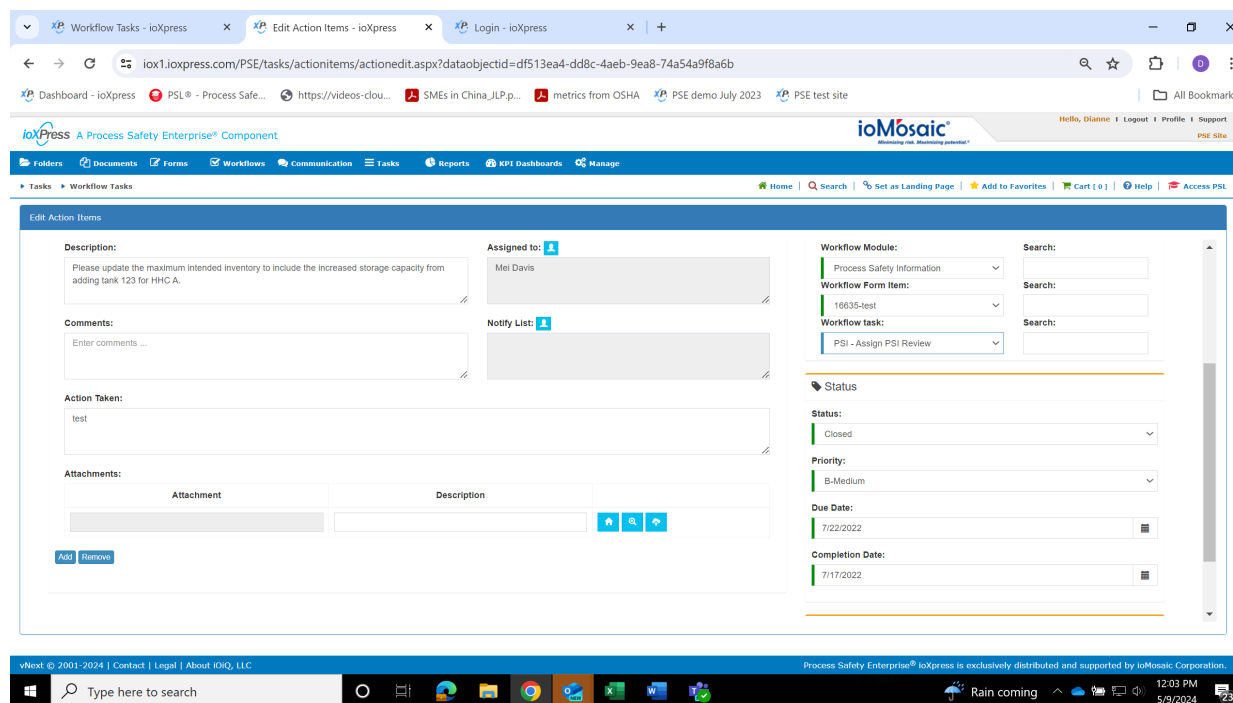


Figure 5. PSI Action item



Source: ioMosaic Corporation – PSE

## Reporting and Dashboard/KPI

An effective dashboard (Figure 6) is an invaluable 'must-have' asset for any data-driven enterprise looking to increase performance and productivity. Well-designed dashboards featuring various widgets such as bar charts, pie charts, line charts, and tables provide a comprehensive overview of the PSM program from a single source. These dashboards allow business owners to make quick, informed decisions at a glance based on real-time data.

Moreover, the reporting and dashboard capabilities provide real-time visibility into PSI activities, allowing organizations to identify trends and areas of concern quickly. This capability enables timely corrective action, reducing the risk of incidents and non-compliance. PSE's robust reporting and dashboard/KPIs are essential tools for optimizing operations and mitigating potential risks.

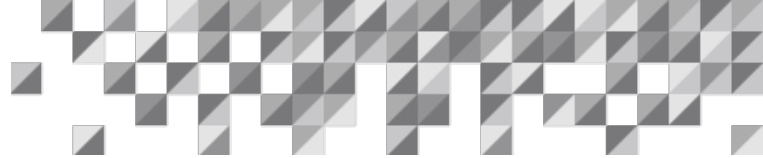
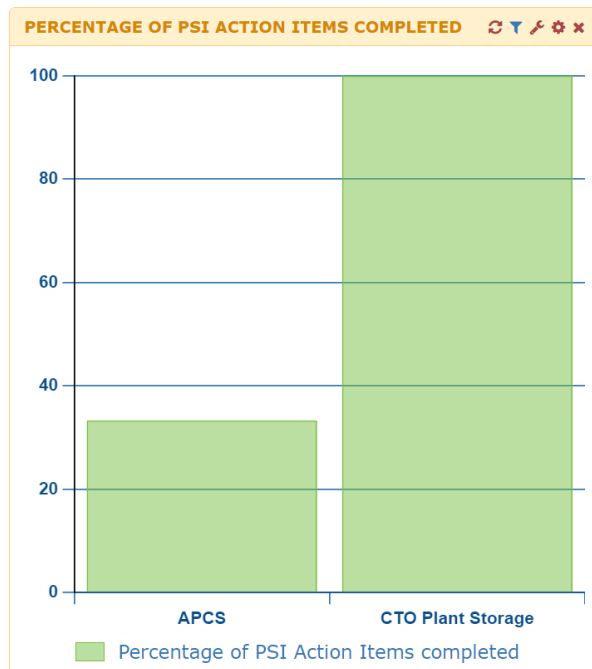


Figure 6. Dashboard/KPI



Source: ioMosaic Corporation – PSE

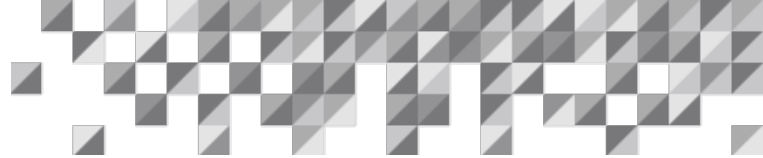
## Case Study – The Consequences of Not Managing Work Practices

### The Challenge

The US Chemical Safety and Hazard Investigation Board (CSB) investigated an explosion and fire at AB Specialty Silicones, LLC, that occurred on May 3, 2019, at the manufacturing facility in Waukegan, Illinois. An employee accidentally charged the wrong chemical into a tank that was incompatible with another chemical. The incorrect chemical was stored in an identical drum as the correct chemical, with the only differences being a small label and the bung type. The incompatible chemicals were mixed in the tank where they reacted together and foamed out of the tank. A fog was also created, which the CSB later determined was hydrogen gas.

Shortly after the gas was created, it ignited, causing a large explosion and fire. Four fatalities occurred, and the building was destroyed.





The CSB found that AB Specialty was not required to comply with the PSM or RMP standards, so they did not have a Safety Management System (SMS). An SMS would have required that Process Safety Information (PSI) be generated, including the impacts of inadvertent mixing. The program would have also required a Process Hazard Analysis, which would have identified the need for safety systems to monitor for hydrogen gas and alarm when it was detected. The SMS would have also taught the employees to evacuate if the detectors sounded. For the full CSB report, use this [link](#).

A Safety Management System could have helped the company mitigate or avoid this disaster. The SMS would have required PSI, PHAs, emergency response procedures, and other safety elements. These processes and procedures could have helped them avoid the inadvertent mixing of incompatible chemicals or at least warned employees of the presence of hydrogen gas so they could evacuate quickly.

However, an existing SMS solely relying on individuals to execute the safety requirements and maintain the documentation can be prone to human error. Creating a documented program that relies on an electronic platform for key elements, such as PSI, PHA, and Emergency Response, can improve process safety oversight and employee and contractor safety. An electronic program can also reduce the risk of worker fatalities and injuries using appropriate hazard management.

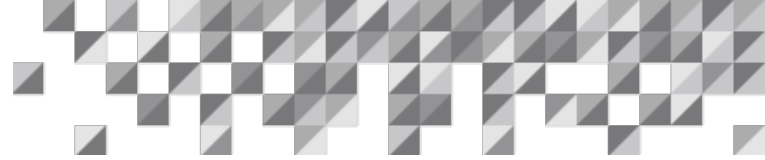
## Our Approach

Process Safety Enterprise® PSI Workflow is a cloud-based platform that provides a centralized database accessible and visible to all employees and contains a step-by-step guided workflow. This workflow, in combination with PHA and Emergency Response, could have minimized or eliminated the Waukegan incident referenced in the case study. Additionally, PSE can integrate multiple sites and various data into one uniform system (which would have further minimized the incident) by:

- Developing a unique ID system to differentiate facilities and areas
- Setting up sign-on access for users at all facility sites
- Identifying and developing consistent data definitions and Key Performance Indicators (KPIs)
- Standardizing search queries to ensure data quality
- Devising site-specific and corporate reporting capabilities

Customizable workflows are available within PSE and can assist with creating unique PSI forms.

PSE's built-in features, such as the automatic assignment of approvals, action item tracking, document linking, and email notifications, all contribute to ensuring the documentation and execution of PSI are properly captured, accessible, and visible to employees.



## The Benefits

For companies serious about their process safety compliance and PSI process, PSE is a user-friendly platform with workflows for document control that is scalable and affordable.

The PSI workflow streamlines developing, tracking, updating, and approving changes for crucial information that supports the covered process.

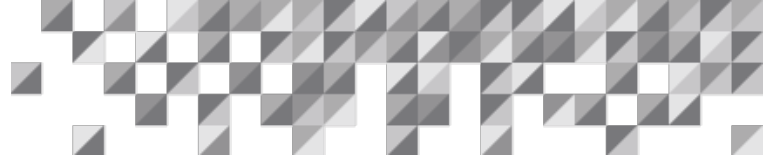
Finally, the PSE workflows have KPIs that track open workflows and the percentage of extended or renewed workflows. The KPIs are graphed with interactive data, allowing you to drill down to the specific data.

## Conclusion

Managing PSI effectively and consistently can be challenging; fortunately, Process Safety Enterprise® (PSE) provides an integrated solution that makes the process more efficient and effective. With its dynamic form builder, action tracking feature, and integrated workflows to standardize the process, companies reduce the risk of incidents and non-compliance.

PSE offers additional benefits, including enhanced collaboration, improved data management, and increased compliance with process safety regulations. With the reporting and dashboard capabilities, organizations can easily identify trends and potential areas of concern, gaining real-time visibility into all process safety-related activities. The automatic notification system sends reminders and alerts, ensuring items are addressed timely. This process ensures that all necessary information is captured in one centrally located platform.

PSE is the only product of its kind in the market today that provides an all-inclusive process safety compliance platform that makes compliance easy.



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## Useful Links

PSE [link](#) to software demo requests

PSE [link](#) to PSE overview

PSM Essentials Training [link](#)

CSB report [link](#)

Additional PSE White Papers:

[PSM Compliance Made Easy with Process Safety Enterprise®](#)

[Effectively Manage Mechanical Integrity with PSE](#)

[Effectively Manage Processes Chemicals Equipment and Personnel with PSE](#)

[Process Safety Enterprise® Asset Integrity Management Service \(AIMS\) and KPI Dashboard](#)