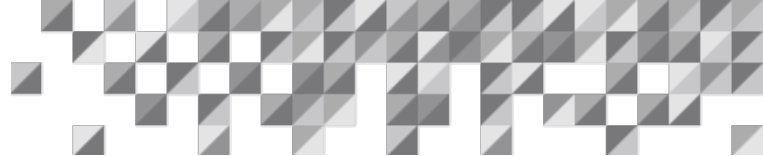# Effectively Manage Operating Procedures using Process Safety Enterprise®

An ioMosaic White Paper

Date: July 1, 2024

Overview

Process Safety Enterprise® (PSE), a cloud-based platform, helps manage operating procedures, 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 operating procedures.
- Reporting and Dashboard/KPI: Provides real-time insights into activities.
- Operating Procedure Workflow: Guides users through initiating new or updating existing operating procedures and conducting the annual procedure certification.

A case study highlights the consequences of inadequate operating procedures. It emphasizes how a process to ensure thorough and current operating procedures could have helped to prevent this disaster.

Introduction

Operating procedures are central to the Occupational Health and Safety Administration (OSHA) Process Safety Management (PSM) 29 CFR 1910.119 standard. They provide clear instructions for safely conducting activities in each covered process consistent with the process safety information. The procedures describe each operating phase, the operating limits, safety and health considerations, and the safety systems and their functions.

Effective operating procedure processes should include the activities above and track them to completion. Training should also be tracked for the various operator levels, such as blenders and reactor operators. All relevant operating procedures should be included in the training along with the other required topics, such as a process overview, emergency operations, and safe work permits. Testing and on-the-job observations should verify that the trainees have received and understood the training and adhere to the required procedures. This workflow can help companies comply with the PSM requirements of the 29 CFR 1910.119 standard.

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 operating procedures effectively. This white paper delves into
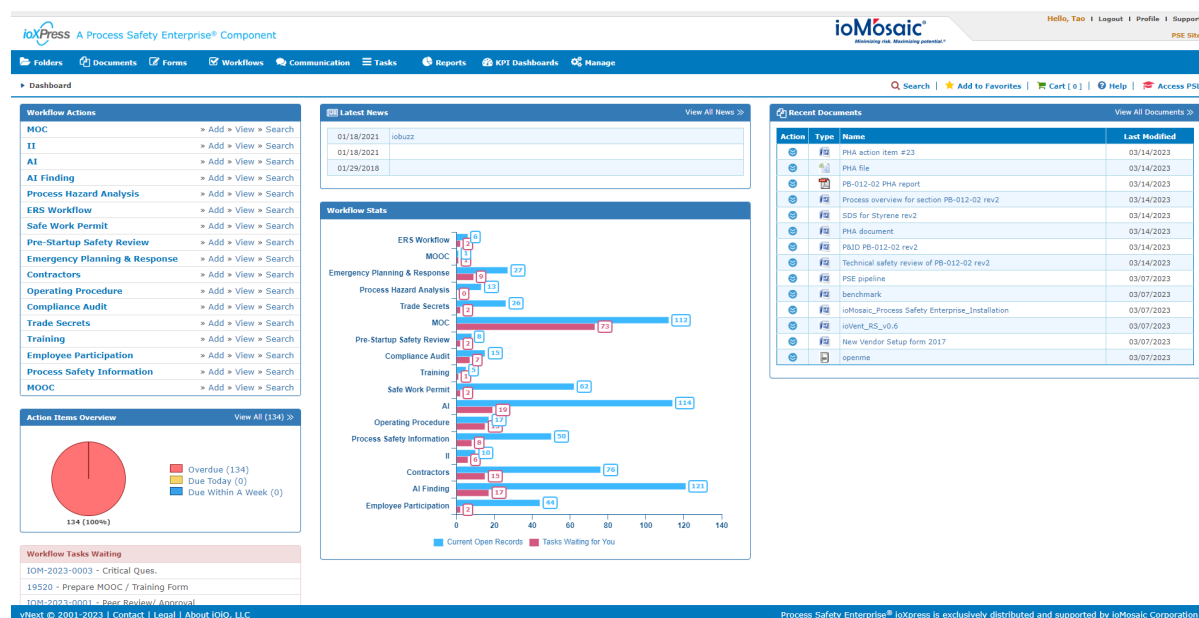
the key features of the Operating Procedure workflow and how it benefits companies seeking to improve and elevate their systems to manage the hazards of the covered process.

To help you better understand the requirements of the PSM standard, we recommend a PSM Essentials eLearning course like the one offered by Process Safety Learning®.

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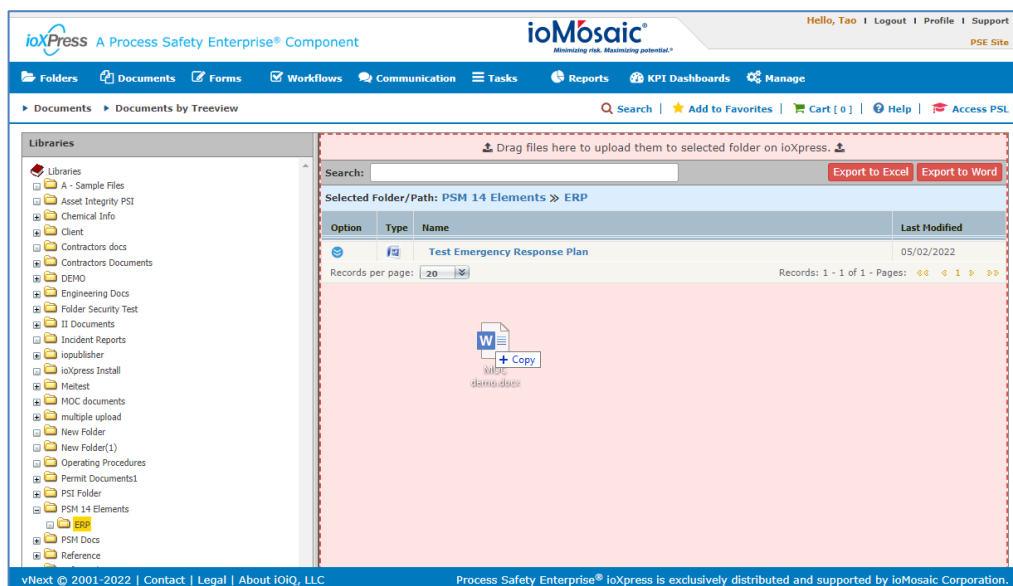
Figure 1. Process Safety Enterprise® (PSE)

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 Operating Procedures, PHAs, Process Safety Information (PSI), records, pictures, videos, animation, and reports. This component further ensures that all stakeholders have easy access to vital information related to operating procedures stored in a centralized location.
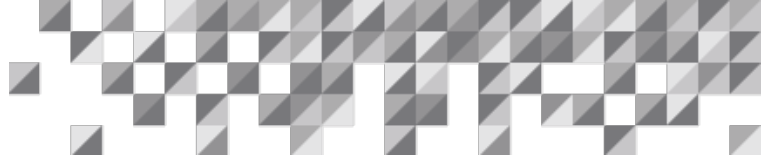
Figure 2. Drag and drop feature to add document(s)

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 forms for Operating Procedure workflow.

The ability to customize forms for unique operating procedure practices ensures that all necessary data is captured accurately and consistently. Moreover, this feature allows 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 your operating procedure process by capturing data accurately and efficiently.
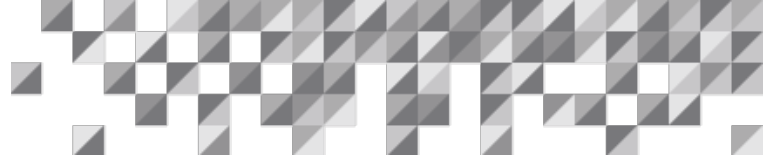
Figure 3 shows an Operating Procedure workflow form for the Safety Manager's Approval of the updated or reviewed procedures. Approvals could be required from various roles at a particular site.

Figure 3. Example of an Approval Form within the Operating Procedure Workflow

Source: ioMosaic Corporation – PSE

Operating Procedure Workflow

PSE is the only process safety platform that integrates all of OSHA's Process Safety Management (PSM) elements using visual workflows in a single enterprise system. This workflow includes PSM's 14 elements using workflows, action tracking modules, and document control. The Training workflow can be used to require and track training for the different operator job functions. The PHA and PSI workflows provide easy access to critical information that must be stated or referenced within the operating procedures. PSE workflows allow companies to create and manage operating procedures and document the required PSI, related activities, approvals, action items, and annual certification.

The Operating Procedure workflow establishes steps for creating, updating, reviewing, and annually certifying operating procedures. It also tracks team members' comments, required approvals, and the closure of all action items related to the workflow. This workflow (and all PSE workflows) is easily customized to meet the specific needs of any company.

PSE's Operating Procedure workflow includes checklists for new procedures to ensure all required information is referenced or included for the pertinent operating phases, operating limits, and health and safety information.

Annual certification must acknowledge that all operating procedures are accurate and current. Conducting and tracking the annual certification and routine operating procedure reviews is managed on a customizable form that can initiate the workflow.

Figure 4 illustrates the Operating Procedure 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.

This Operating Procedure workflow within PSE ensures that current and accurate operating procedures are created and managed to comply with the OSHA standards and guidelines.
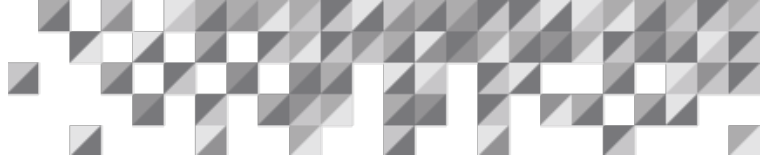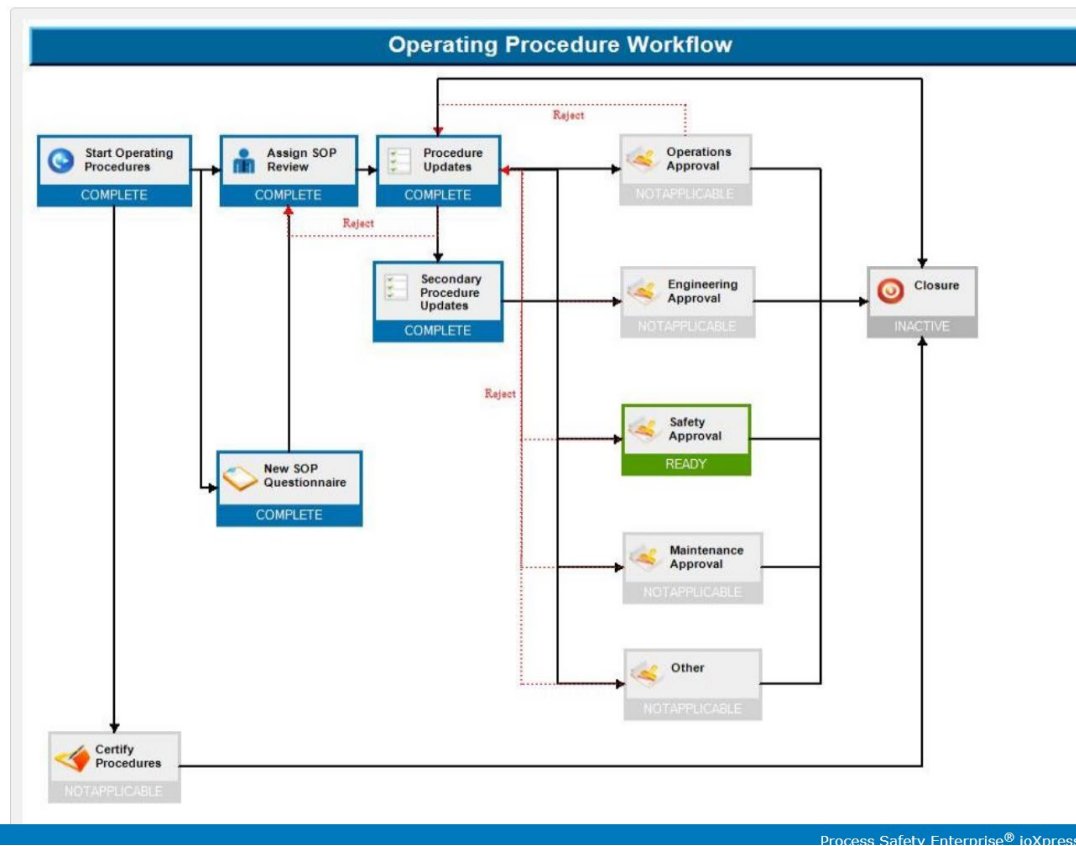
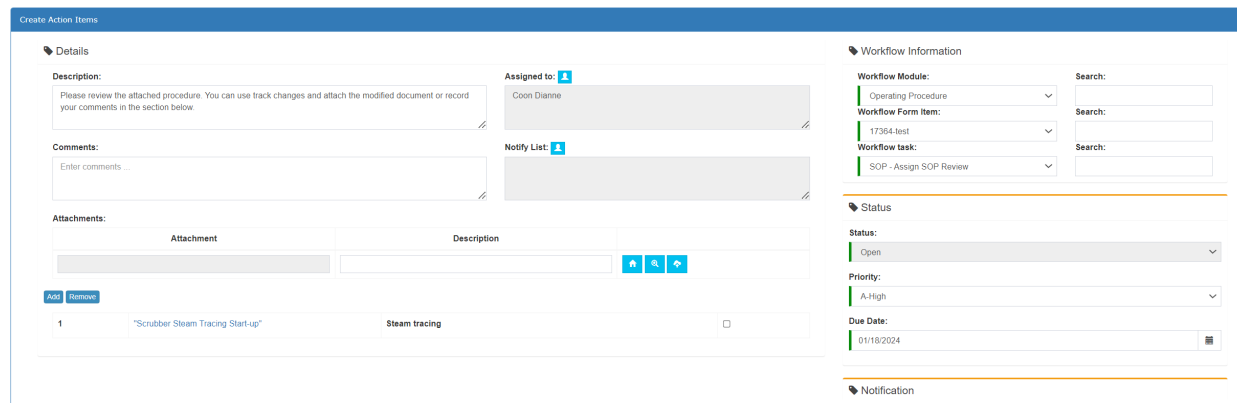Figure 4: Example of Operating Procedure Workflow

Source: ioMosaic Corporation – PSE

Action Tracking System

PSE features a comprehensive action item management system (Figure 5) that tracks all tasks related to each process safety management workflow, such as operating procedures. This feature ensures that all action items are managed within the platform, reducing or eliminating the risk of overlooked or forgotten tasks. Additionally, the automatic reminders ensure that all tasks are completed on time.

Figure 5. Operating Procedure Review Action Item

Source: ioMosaic Corporation – PSE

Reporting and Dashboard/KPI

PSE's dashboard (Figure 6) capabilities are an invaluable 'must-have' asset for any data-driven enterprise solution looking to increase performance and productivity. With 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 faster decisions based on real-time data.

Moreover, PSE's reporting and dashboard capabilities provide real-time visibility into operating procedure activities, allowing organizations to identify trends and areas of concern. This capability enables the timely resolution of recommendations, 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.
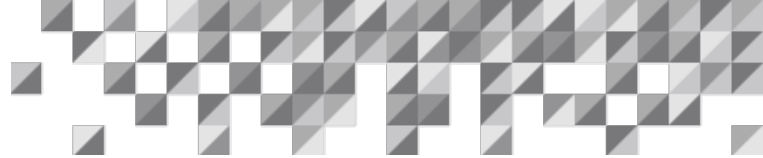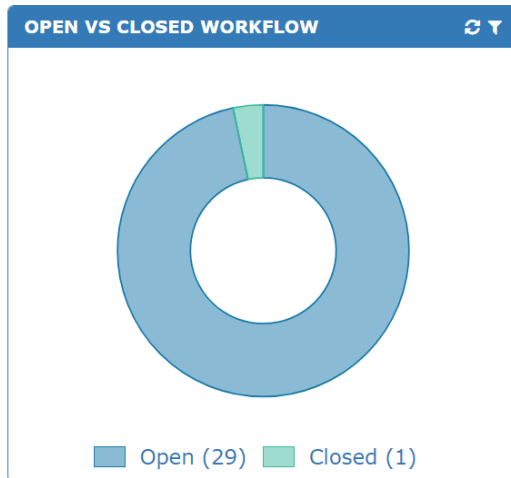
Figure 6. Dashboard/KPI

Source: ioMosaic Corporation – PSE

Case Study – The Consequences of Not Identifying and Managing Process Hazards

The Challenge

The US Chemical Safety and Hazard Investigation Board (USB) investigated an explosion that occurred at a refinery. The explosion occurred within the Electrostatic Precipitator (ESP), a pollution control device that removes catalyst particles using charged plates that produce sparks—potential ignition sources—during normal operation. The incident occurred when the company attempted to isolate equipment for maintenance while the unit was in an idled mode of operation; preparations for the maintenance activity caused a pressure deviation that allowed hydrocarbons to backflow through the process and ignite in the ESP. Explosion debris also narrowly missed Hydrofluoric Acid (HF) tanks. HF is a highly toxic chemical that can seriously injure or cause death at a concentration of 30 parts per million (ppm).

The CSB found that this incident occurred due to weaknesses in the refinery's process safety management systems, including operating procedures that lacked pre-established safe operating limits for the idled mode and criteria for unit shutdown and the reuse of a previous procedure deviation without a sufficient hazard analysis that confirmed that the assumed process conditions were still valid. Other PSM issues were also found, including a leaking safety-critical valve due to erosion and lack of proper maintenance. The final CSB report can be found at this link.

This disaster could have been prevented if the company had adequate systems to create operating procedures for each phase, including the idled and shutdown modes, a maintenance system that appropriately managed safety-critical equipment, and a process such as Management of Change to review prior deviations before reusing them to ensure they adequately address each of the known hazards.

Creating and maintaining current and accurate operating procedures for all operating phases within an electronic platform can improve procedure oversight and help prevent catastrophic accidents.

Our Approach

The Process Safety Enterprise® Operating Procedure 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 could have minimized or eliminated the 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:
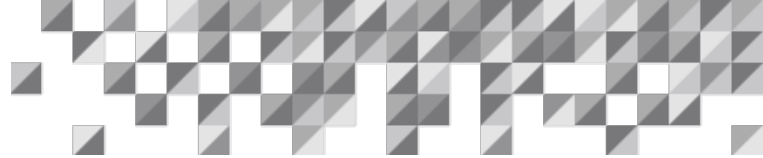
Developing a unique ID system to differentiate facilities and areas

- 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 questions or 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 creating, reviewing, and approving operating procedures are properly captured, accessible, and visible to employees.

The Benefits

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

The Operating Procedure workflow streamlines initiating, creating, reviewing, approving, annually certifying, and documenting operating procedures.

Finally, the PSE workflows have KPIs that track open workflows and the percentage of open or overdue workflows. The KPIs are graphed with interactive data, allowing you to drill down to the specific data. Reports can also be generated to view the status of all workflows.
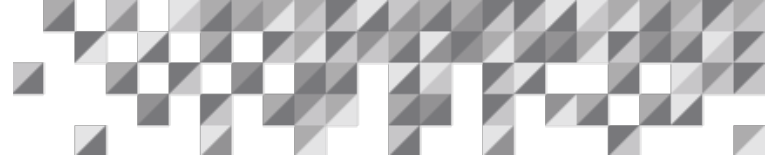
Conclusion

Managing operating procedures 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 in a timely manner.

PSE's customizable Operating Procedure workflow module provides an efficient process for managing operating procedures while capturing all necessary information in one centrally located platform. 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 for facility explosion

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