

## Asset Integrity Programs Frequently Overlook Small Items

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The identification of major items to be included in an Asset Integrity program is relatively straightforward, but the small, often missed items are not. Small parts can cause serious incidents. 'The Devil is in the Details' aptly describes the role small and auxiliary items play in your asset integrity system.

### Components That Are Often Overlooked

It is quite common to find restrictive orifices, valves, static mixers, and flexible joints or bellows in pipelines. They've each been placed for a specific purpose. For example, a valve may have been placed to isolate a line that was taken out of service. Identification of these small and common items that should be included in your asset integrity system — like the valve — can be a daunting task. They are easily overlooked, as the main focus is usually on equipment and piping.

### Learning from History

On June 21, 2019, a massive fire erupted triggering several large explosions at the Philadelphia Energy Solutions (PES) refinery. PES estimated that 5,239 pounds of hydrofluoric acid were released from piping and equipment during the incident, a highly toxic chemical. [According to the U.S. Chemical Safety and Hazard Investigation Board report](#), the root cause of the incident was a corroded pipe elbow in the refinery's alkylation unit that had not been inspected since it was installed in 1973. The pipe elbow had corroded to a thickness of 0.012-inch, a value representing less than 7% of the PES default retirement thickness of 0.180-inch.

### PES Compliance Violations

As a result of the incident, [OSHA issued 10 compliance violations](#) to the PES refinery. These included failure to address equipment deficiencies, lack of asset integrity written procedures, and an absence of asset integrity inspections.

**OSHA Violation 1** - Process Safety Information pertaining to the hazards of the highly hazardous chemicals in the process did not contain the corrosivity data information.

**OSHA Violation 2** - The employer did not document that equipment complies with Recognized and Generally Accepted Good Engineering Practices (RAGAGEP).

**OSHA Violation 3** - The Process Hazard Analysis did not address engineering and administrative controls applicable to the hazards and their interrelationships such as

appropriate application of detection methodologies to provide early warning of releases.

**OSHA Violation 4** - The Process Hazard Analysis did not address the consequences of failure of engineering and administrative controls.

**OSHA Violation 5** - The Process Hazard Analysis did not address the hazards related to facility siting.

**OSHA Violation 6** - The employer did not establish or implement written procedures to maintain the ongoing integrity of process equipment.

**OSHA Violation 7** - The employer did not perform inspection and tests on process equipment.

**OSHA Violation 8** - The employer's inspection and testing procedures did not follow Recognized and Generally Accepted Good Engineering Practices (RAGAGEP).

**OSHA Violation 9** - The employer did not correct deficiencies in equipment that were outside acceptable limits in a safe and timely manner when necessary means were taken to assure safe operation.

**OSHA Violation 10** - The employer did not establish or implement written procedures to manage changes to process chemicals, technology, equipment, and procedures, and changes to facilities that affect a covered process.

## Optimize Asset Integrity

[Watch a demo](#) of Process Safety Enterprise® asset integrity module equipment forms and see one way you can optimize your asset integrity program.

## Questions?

ioMosaic can provide you with guidance on identification, inspection frequency, documentation, and deficiency resolution of critical equipment that not only satisfies the regulatory requirements but includes all items, including small, often overlooked items. For more information, please contact us at **1.844.ioMosaic** or submit a ticket to our online support center. We would love to hear from you.

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