Lesson Learned Statement:

Systems and facilities which have been shutdown for a long period of time without the benefit of an on-going inspection and maintenance program will likely develop deficiencies such as leaking valves, broken pipes, missing parts, and other changed conditions. A shutdown process system deteriorated causing a hazardous impact to demolition activities. When process facilities are shutdown, the surveillance and maintenance operations should include the process systems as well as the building. Systems that processed hazardous material, such as fluorine, may still contain hazardous conditions with relatively small residual contents. Residual materials should be removed from facilities as part the operation to shutdown the facility. Residual materials remaining in process systems should be characterized and monitored if they can not be completely removed when a facility is shutdown.

Discussion:

On December 13, 2000 an odor was detected indicating a possible fluorine release in or near the K-1302 fluorine storage facility. The Park Shift Superintendent (PSS) was notified of the unknown odor. Measurements taken in the vicinity of the building by the Industrial Hygienist personnel shortly after the odor was reported showed levels of fluorine and Hydrofluoric Acid (HF) in the range from 1 to 3 parts per million. All non-essential workers within the area were quickly evacuated after the results of sampling had been verified. It was not known at the time of discovery that residual materials, over a period of time, created a corrosive environment that deteriorated the process system causing it to release part of its contents. The HF leaked from a corroded weld in a process line connected to a tank that had been labeled empty.

Analysis:

After the Fluorine Storage Facility was shut down in the Mid 80's, it was thought to have been purged and emptied according to the most recent safety documentation dated 1991. There were no records available of the work plans or procedures used to perform the purging of the tanks. The K-1302 facility was included in a surveillance program that utilized routine building inspections. However, the process system was not inspected or maintained as part of the building inspection program. Unmonitored residual materials remained in the process lines and tanks. The facility and the process system were beyond the end of their useful life and are included in a demolition subcontract.

Recommended Actions:

- The status of deactivated facilities should be verified through examination of detailed
records and/or actual field inspection; this is especially important for older process facilities, which used or contained hazardous materials or energy.

- Process facilities must have organizations and individuals clearly assigned responsibility for those facilities; this responsibility includes verification of facility status and residual hazardous materials contained of process systems, lines, and tanks.

**Originator:**

Pacific Western Technologies, ltd.; Sam Howard; (865) 241-1777

**Validator:**

Carl Witherspoon, PWT; (865) 574-9907

**Contact:**

Joanne E. Schutt, (865) 483-0554

**Name Of Authorized Derivative Classifier:**

Sam Howard

**Name Of Reviewing Official:**

J. F. Preston

**Priority Descriptor:**

Yellow / Caution

**Keywords:**

fluorine, Hydrofluoric Acid, Fluorine Release, shutdown, process tank

**References:**


Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please use the "Comment" link at the bottom of this page notify the Lessons Learned Web Site Administrator of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.

**DOE Function / Work Categories:**

Environmental Protection - Releases
Maintenance - Facility
ISM Category:
Analyze Hazards

Hazard:

Personal Injury / Exposure - Airborne Materials
Personal Injury / Exposure - Hazardous Material (General)
Personal Injury / Exposure - Toxic Material

End of Lesson!