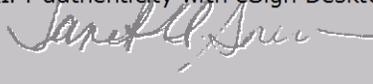




February 22, 2016

**MEMORANDUM FOR:** LINDA M. MALONE  
VICE PRESIDENT NETWORK OPERATIONS

E-Signed by Janet Sorensen   
VERIFY authenticity with eSign Desktop  


**FROM:** Janet M. Sorensen  
Deputy Assistant Inspector General  
For Revenue and Resources

**SUBJECT:** Management Alert – Safety Concern at a U.S. Postal  
Service Facility (Report Number HR-MT-16-001)

This management alert presents a safety concern at a U.S. Postal Service Facility in Pontiac, MI (Project Number 16RG002HR001). This issue came to our attention during our review of safety concerns at the facility (16RG002HR000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Monique P. Colter, director, Human Resources and Support, or me at 703-248-2100.

Attachment

cc: Corporate Audit and Response Management

## Introduction

This management alert presents a safety concern of the methane detection system observed at the U.S. Postal Service Michigan Metroplex Processing and Distribution Center (Metroplex), located in Pontiac, MI (Project Number 16RG002HR001). This review was initiated based on safety concerns expressed to us in a complaint which identified five employee deaths during a 14 month period (16RG002HR000). We have not correlated these deaths to the safety concern at this time, but are continuing work in this area. However, we are reporting this issue with the methane detection system for your immediate action.

The Metroplex is built on a site previously used as a vehicle manufacturing plant that included a foundry.<sup>1</sup> This site is considered a brownfield. Brownfields are former industrial or commercial sites where future use is affected by environmental contamination. Brownfield sites are converted into usable space under the supervision of the U.S. Environmental Protection Agency (EPA). The EPA has specific guidelines and regulations that must be followed to properly assess, safely clean up, and sustainably reuse brownfields.

Before the Metroplex site was developed into useable space, the landowner commissioned environmental studies to determine which contaminants were present and what remediation was necessary to remove or contain such contaminants. Light non-aqueous phase liquid (LNAPL)<sup>2</sup> was one contaminate found in multiple underground locations throughout the site. As part of the decomposition process organisms underground break down LNAPL and produce colorless and odorless methane gas.

When the Postal Service built the Metroplex, a gas venting system was installed under the foundation and inside the building. The purpose of the venting system is to prevent the buildup and accumulation of methane gas underneath the building by actively capturing the gas and venting it away from the building. Additionally, a methane detection system (MDS) was installed with sensors strategically placed in various enclosed spaces within the facility. The MDS was designed to detect and alert personnel of any seepage and accumulation of methane gas inside the facility.

Methane gas is extremely flammable and may form explosive mixtures with air when levels reach certain concentrations known as "lower explosive levels" (LEL). Control of the explosion hazard is achieved by ventilation. In the case of the Metroplex, ventilation occurs through the gas ventilation system, which is built under the foundation and into the structure of the building. The LEL is also used as a percentage reading on the main control panel of the MDS. The system was designed and calibrated to detect and measure methane gas and shows the relative concentration of the atmosphere to the

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<sup>1</sup> A foundry is defined as a workshop or factory casting metal.

<sup>2</sup> LNAPL is a groundwater contaminate made up of a group of organic substances that are relatively insoluble in water and are less dense than water. LNAPLs tend to spread across the surface of the water table.

LEL. An LEL reading of 100 percent on the main control panel would indicate the concentration of the methane gas is combustible.

The detection system was built with a color coded light indicator warning system:

- **Red:** Danger - methane detected at 20 percent LEL.
- **Amber:** Warning - methane detected at 10 percent LEL.
- **Blue:** Malfunction - a detector sensor malfunction occurred.

The initial warning level for the detection of methane gas on the MDS is set at 10 percent LEL. When a sensor in the system detects methane gas at a range of 10 to 19 percent LEL the amber light on the main control panel is illuminated. The light will remain illuminated until the level drops below the 10 percent LEL warning level and the MDS is manually reset. The higher danger level for detection of methane gas on the MDS is set at 20 percent LEL. When methane is detected at 20 percent LEL or higher, the red light on the main control panel is illuminated until the level falls below the threshold and the system is manually reset.

The Postal Service took over maintenance of the MDS in October 2014 from the vendor that installed the system. The three Postal Service building equipment mechanics authorized to perform maintenance on the MDS received training from the vendor. If the system fails or needs repair that Postal Service personnel cannot resolve, the mechanics are required to contact the vendor.

## Summary

Based on our observations and review of the system log book,<sup>3</sup> the MDS at the Metroplex has not been functioning properly since March 2015. Maintenance personnel repeatedly replaced the sensors and stated the continuous flashing amber warning light, which detects methane at 10 percent LEL, was due to sensor malfunction and not the buildup of methane gas. However, if the system was operating as designed, the blue indicator light, which is designed to flash when there is a sensor malfunction, would have been illuminated during our observation. Additionally, the amber light flashed when the screen on the main control panel showed 0 percent LEL, which further indicates that the full system may not be functioning properly.

According to the vendor hired to perform system maintenance and recalibrate the MDS and its components, he has repeatedly recommended the Postal Service resolve his claims of methane buildup. Specifically, the vendor recommended the Postal Service modify the system to include a ventilation of the pipes that release the methane gas into the atmosphere. On January 15, 2016, management stated they have taken action by issuing an emergency contract for an industrial hygienist to evaluate the methane levels at the facility. According to a report detailing the results of the evaluation, the methane

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<sup>3</sup> A MDS log book is maintained to record maintenance of the system and record incidents when there is a change in status of the detection system.

level was low and there is no immediate health or safety concerns identified with regard to the methane levels in the facility.

Postal Service managers are required to demonstrate a commitment to providing safe and healthy working conditions. If methane builds up in enclosed spaces, the health and safety of employees may be at risk and could result in medical complications. Unmitigated accumulations of methane gas may increase risks to the health and safety of employees and could lower productivity and employee morale.

### **Methane Detection System**

Based on our observations and review of the MDS log book, the methane detection system has not functioned properly since March 2015. Maintenance personnel documented in the log book attached to the MDS that 10 warnings (amber light flashings) occurred between March and July 2015. The LEL percentages, when annotated on the log book, ranged between 6 to 18 percent. According to the log book, the sensor was replaced in March 2015. A vendor's invoice totaling over \$2,000 shows that the vendor replaced the same sensor and recalibrated the system in September 2015, 6 months later. The vendor also provided maintenance personnel three sensors so that they could replace the sensors themselves.

In addition, we observed the amber light flashing on the main control panel on October 21, 2015, while the panel showed an LEL of 0 percent (see [Figure 1](#)). The panel indicated the warning level was cleared and the system could be reset. However, if the system was operating as designed, during our observation, the blue indicator light, which is designed to flash when there is a sensor malfunction, would have been illuminated. Additionally, the amber light flashed when the screen on the main control panel showed 0 percent LEL, which further indicates that the system was not functioning properly.

When we asked maintenance personnel about the amber flashing light, we were told that the sensor was malfunctioning and personnel were waiting for the vendor to provide parts. To support their comment, they provided documentation of an invoice showing the recent replacement of the sensor and recalibration of the system on September 14, 2015. However, there was no indication on the invoice showing that the vendor concluded:

- The current sensor was malfunctioning,
- Ordered additional parts, or
- Had any outstanding services to perform at the site.

**Figure 1 – Methane Detection System Main Control Panel**

Source: U.S. Postal Service Office of Inspector General (OIG) photograph.

Upon further inquiry in January 2016, the vendor who routinely performed system maintenance and recalibrated the MDS and its components advised us that he repeatedly recommended the Postal Service resolve his claims of methane buildup. According to the vendor, when the LEL reaches the warning level of 10 percent, the Postal Service should validate the methane issue and if the issue cannot be confirmed, determine how the warning system malfunctioned and make the needed repairs. The vendor also stated they provided several proposals and recommendations to the Postal Service to resolve his claims of methane buildup. The vendor also recommended the Postal Service modify the system to include a ventilation of the pipes that release the methane gas into the atmosphere. At the time the warning lights were activating, the facility officials did not conduct an independent validation as the vendor recommended.

On January 15, 2016, management stated they have taken action by issuing an emergency contract for an industrial hygienist to evaluate the methane levels at the facility. According to a report detailing the results of the evaluation, the methane level was low and there is no immediate health or safety concerns identified with regard to the methane levels in the facility. They also stated they notified employees and unions of the risk and results of the evaluation. Management stated that their engineers are in the process of evaluating the system and they will follow-up to determine why there are repeated sensor failures.

It is important to ensure that methane levels never spike to an extent that causes harm to individuals. Methane is odorless and colorless. Methane gas can be inhaled when it enters and accumulates in a building. If methane builds up in enclosed spaces, the

health and safety of employees may be at risk and could result in medical complications.

## Recommendations

We recommend the vice president, Network Operations:

1. Complete a review of the methane detection system to resolve any issues.
2. Establish an ongoing process to independently validate the results of the methane detection system on a periodic basis.

## Management's Comments

Management agreed with the finding and recommendations and stated there were never health concerns regarding the employees at the Michigan Metroplex. Management also agreed there are sensors on the methane detection system that appear to be in need of repair. They further stated they are committed to providing safe and healthy working conditions for the employees and as noted in the report, a third party vendor conducted an evaluation on January 15, 2016, which found no immediate health or safety concerns regarding methane levels. Management stated the evaluation confirms that employees are not presently at risk of methane levels within the facility.

Regarding recommendation 1, management stated a qualified vendor will be contracted to evaluate the existing system and provide repairs and enhancements as needed to ensure methane issues are mitigated and the system is working properly. The implementation date is May 31, 2016.

Regarding recommendation 2, management stated a maintenance contract will be established with a qualified vendor to provide periodic evaluations of the system to ensure the system is working properly and that methane levels do not exceed the permissible levels. The implementation date is October 31, 2016.

See [Appendix A](#) for management's comments in their entirety.

## Evaluation of Management's Comments

The OIG considers management's comments responsive to both recommendations and the corrective actions should resolve the issues identified. All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. All recommendations should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

## Appendix A: Management's Comments



February 18, 2016

LORI LAU DILLARD  
DIRECTOR, AUDIT OPERATIONS

**SUBJECT:** Management Alert – Safety Concern at a U.S. Postal Service Facility (Report Number HR-MT-16-DRAFT)

Thank you for providing the Postal Service with the opportunity to review and comment on the subject draft audit report. Management maintains that there were never any health concerns in regards to our employees at Michigan Metroplex. Management concurs with the general findings in the report and that there are sensors on the methane detection system that appear to be in need of repair at the U.S. Postal Service Michigan Metroplex Processing and Distribution Center (P&DC), located in Pontiac, MI.

We are committed to providing safe and healthy working conditions for our employees. As noted in the audit, an evaluation was conducted on January 15, 2016, by The Louis Berger Group, Inc. which found that "no immediate health or safety concerns were identified with regard to methane levels in the facility". The report is attached and confirms that the employees at the Michigan Metroplex P&DC, located in Pontiac, MI are not presently at risk in regard to methane levels within the facility.

The recommendations in this draft report are addressed below.

**Recommendation 1:**

Complete a review of the methane detection system to resolve any issues.

**Management Response/Action Plan:**

Management agrees with this recommendation. A qualified vendor will be contracted to evaluate the existing system and provide repairs and enhancements as needed to ensure that potential methane issues are mitigated and the monitoring system is working properly.

- 2 -

**Target Implementation Date:**

May 2016

**Responsible Official:**

Vice President Operations, Great Lakes Area

**Recommendation 2:**

Establish an ongoing process to independently validate the results of the methane detection system on a periodic basis.

**Management Response/Action Plan:**

Management agrees with this recommendation. A maintenance contract will be established with a qualified vendor to provide periodic evaluations of the system to ensure the system is working properly and that methane levels do not exceed the permissible exposure levels.

**Target Implementation Date:**

October 2016

**Responsible Official:**

Vice President Operations, Great Lakes Area



Linda M. Malone  
Vice President  
Network Operations



Jacqueline Krage Strako  
Vice President  
Great Lakes Area Operations

Attachment

cc: David E. Williams  
Corporate Audit and Response Management