DEPARTMENT OF VETERANS AFFAIRS
Washington DC 20420

December 6, 2013

The Honorable Carolyn N. Lerner
Special Counsel
U.S. Office of Special Counsel
1730 M Street, NW, Suite 300
Washington, DC 20036

RE: OSC File No. DI-13-3174

Dear Ms. Lerner:

I am responding to your letter regarding allegations made by a whistleblower at the VA Pittsburgh Health Care System (hereafter, the Medical Center) in Pittsburgh, Pennsylvania. The whistleblower alleged that the Medical Center engaged in conduct that may constitute a violation of law, rule or regulation, gross mismanagement, a gross waste of funds, and a substantial and specific danger to public health and safety. The whistleblower claims that management instructed employees to purge the water system of Legionella bacteria in an improper manner, failed to supervise construction activities, neglected required maintenance, failed to correct defective construction, and failed to conduct inspections for asbestos. The Secretary has delegated to me the authority to sign the enclosed report and take any actions deemed necessary under 5 United States Code § 1213(d)(5).

The Secretary asked the Under Secretary for Health to review this matter and to take any actions deemed necessary under the above law. He, in turn, directed the Office of the Medical Inspector (OMI) to conduct an investigation, which included a site visit to the Medical Center on August 19-22, 2013. In its investigation, OMI did not substantiate any of the whistleblower's allegations, but made eight recommendations to the Medical Center for process improvements in physical plant maintenance, construction, and remediation. OMI found no violation of law, rule or regulation, gross mismanagement, a gross waste of funds, or a substantial and specific danger to public health and safety. Findings from the investigation are contained in the report, which I am submitting for your review.

Thank you for the opportunity to respond.

Sincerely,

Jose D. Riojas
Chief of Staff

Enclosure

Office of the Medical Inspector

Report to the
Office of Special Counsel
File Number DI-13-3174

Department of Veterans Affairs
Pittsburgh Healthcare System
Pittsburgh, Pennsylvania

Veterans Health Administration
Washington, DC

Report Date: October 22, 2013
TRIM 2013-D-1063

Any information in this report that is the subject of the Privacy Act of 1974 and/or the Health Insurance Portability and Accountability Act of 1996 may only be disclosed as authorized by those statutes. Any unauthorized disclosure of confidential information is subject to the criminal penalty provisions of those statutes.

Executive Summary

The Under Secretary for Health requested that the Office of the Medical Inspector (OMI) investigate complaints lodged with the Office of Special Counsel by (b) (6) (hereafter, the whistleblower) at the Department of Veterans Affairs (VA) Pittsburgh Healthcare System, Pittsburgh, Pennsylvania (hereafter, the Medical Center). The whistleblower, a heating, ventilation, and air conditioning (HVAC) mechanic/inspector at the Medical Center, consented to the release of his name, and alleged that the Medical Center engaged in conduct that may constitute a violation of law, rule or regulation, gross mismanagement, a gross waste of funds, and a substantial and specific danger to public health and safety. He alleged that Medical Center management has neglected the maintenance of critical infrastructure, failed to properly address unsafe conditions that pose health and safety hazards to patients and staff, and failed to adequately manage construction projects performed by contractors, allowing construction to interfere with patient care. OMI conducted a site visit to the Medical Center University Drive (UD) campus on August 19-22, 2013.

Summary of Allegations

The whistleblower's allegations are as follows:

1. Following an outbreak of Legionnaires' disease at the Medical Center in the fall of 2012, managers instructed employees to conduct thermal eradication and water chlorination procedures in an improper manner that posed a safety hazard to employees and patients;

2. Management has failed to properly supervise and coordinate construction activities to prevent the disruption of surgical procedures and patient care;

3. Management has neglected the maintenance of various systems and failed to address ongoing problems with equipment, including an open sewage tank that overflows and causes raw sewage to accumulate on the floor in close proximity to the cancer radiation therapy clinic;

4. Management has failed to correct the faulty installation of two underground water storage tanks that are necessary to comply with water capacity standards. While the tanks remain inoperable, management has awarded additional contracts for other large projects to the contractor responsible for the faulty installation; and

5. Management failed to conduct required inspections to detect the presence of asbestos, which resulted in exposing facilities and maintenance service employees, including the whistleblower, to unsafe levels of asbestos [in the crawl space at UD].

Conclusions

- OMI did not substantiate the allegation that Medical Center managers instructed employees to conduct thermal eradication and water chlorination procedures in an improper manner that posed a safety hazard to employees and patients. Although, for this event, the participation of the Safety Manager would not have altered the process or outcome, the Safety Manager is a valuable asset and a resource for evaluating any safety risks to employees, and for making recommendations on the appropriate use of protective equipment.

- OMI did not substantiate that management has failed to properly supervise construction activities to prevent the disruption of surgical procedures and patient care.

- OMI did not substantiate the occurrence of a leaking asbestos contamination shower, but did find that a water leak from new plumbing caused dripping in the kitchen area with wet ceiling tiles. There was no harm or threat to patient or employee safety.

- OMI did not substantiate the allegation that management neglected the maintenance of various systems and failed to address ongoing problems with equipment, including an open sewage tank that overflows and causes raw sewage to accumulate on the floor in close proximity to the cancer radiation therapy clinic.

- OMI confirmed that after a heavy rain in 2010, the storm and sanitary drain pit overflowed, but found no evidence to indicate that raw sewage accumulated in the cancer radiation therapy clinic, and no report of harm or threat to the safety of either Veterans or employees. There is, however, an occasional odor.

- The project to relocate the storm and sanitary drain lines is still in the design approval phase. After the overflow in 2010, the Medical Center proceeded to implement interim solutions, and to plan for long-term corrective action.

- The repair to a pipe in the mechanical room of the air conditioning shop was not made, as of the OMI site visit, although a work order currently exists and parts were on order.

- The whistleblower volunteered for the Quality and Patient Safety office HVAC design project, and earned overtime while working on the project. There is no evidence to suggest that work orders or preventive maintenance was delayed by this project. There is no evidence to suggest that the project should have been contracted out in order to preserve normal duty hours for maintenance workers, as voluntary overtime hours were used for the project.

- OMI did not substantiate the allegation that management failed to correct faulty installation of two underground water storage tanks that are necessary to comply

with water capacity standards. While OMI did substantiate that the tanks are currently inoperable, negotiations to resolve the problem are ongoing, and completion of the project is expected by December 2013. Additional contracts for large projects have been awarded to Addvetco, the contractor responsible for the water tank installation, and OMI could find no violation of law, rule or regulation in these actions. The Medical Center did not make entries into the Contractor Performance Assessment Reporting System (CPARS) on the contractor, Addvetco.

- OMI did not substantiate the allegation that management failed to conduct required inspections to detect the presence of asbestos, which resulted in exposing the Facilities and Maintenance Service employees, including the whistleblower, to unsafe levels of asbestos [in the crawl space at UD]. Based on our review of the rules and guidance applicable from 1984 through 2013, the Medical Center at UD has complied with the requirements for conducting asbestos-containing building materials surveys.

- In April 2013, when asbestos was discovered in the UD crawl space soil, the Medical Center complied with all Occupational Safety and Health Administration (OSHA) regulations necessary on the advisement of employees of the potential exposure, and placing these employees in a medical surveillance program. Testing in April 2013, revealed that asbestos air sampling results were below OSHA permissible exposure levels.

Recommendations

The Medical Center should:

1. Include the Safety Manager on the Incident Command System team for any event where employees may have concerns about safety, personal risk, and the need for personal protective equipment.

2. Continue to implement the design, contracting, and engineering plans associated with the Medical Center's analysis and action plan for the operating room power outage.

3. Re-examine project #646-12-105, UD, for the relocation of the storm and sanitary drain pit to determine whether it can be prioritized for earlier completion.

4. Address and fix the occasional odor emanating from the storm and sanitary drain pit.

5. Follow-up and report on the work order (W/O P130809-005) for location 2A131-1-UD to determine the status of completion.

6. Develop a plan to make timely use of the CPARS for contractor performance.

7. Continue to follow Veterans Health Administration Directive 2010-036, *Asbestos Management Program*.

8. Continue asbestos medical surveillance on those individuals identified as working in the UD crawl space.

Summary Statement

OMI's investigation and review of its findings did not find violations or apparent violations of statutory laws, mandatory rules, or regulations.

I. Introduction

The Under Secretary for Health requested that the Office of the Medical Inspector (OMI) investigate complaints lodged with the Office of Special Counsel by (b) (6) (hereafter, the whistleblower) at the Department of Veterans Affairs (VA) Pittsburgh Healthcare System, Pittsburgh, Pennsylvania (hereafter, the Medical Center). The whistleblower, a heating, ventilation, and air conditioning (HVAC) mechanic/inspector at the Medical Center, consented to the release of his name, and alleged that the Medical Center engaged in conduct that may constitute a violation of law, rule or regulation, gross mismanagement, a gross waste of funds, and a substantial and specific danger to public health and safety. He alleged that Medical Center management has neglected the maintenance of critical infrastructure, failed to properly address unsafe conditions that pose health and safety hazards to patients and staff, and failed to adequately manage construction projects performed by contractors, allowing construction to interfere with patient care. OMI conducted a site visit to the Medical Center University Drive (UD) campus on August 19-22, 2013.

II. Facility Profile

The Medical Center is a three-campus, integrated health care system that serves Veterans in the tri-state area of Pennsylvania, Ohio, and West Virginia. The UD campus serves as the acute care facility and has 146 operating beds distributed among medicine, surgery, neurology, and critical care, and 78 inpatient behavioral health beds. The Medical Center supports five community-based outpatient clinics, and has academic affiliations with the University of Pittsburgh School of Medicine, the School of Dental Medicine, and various allied health programs. The Medical Center is undergoing a major construction initiative consolidating the three campuses into two, adding more than 208,000 square feet of new construction, and a new research building to the UD campus.

III. Allegations

The whistleblower's allegations are as follows:

1. Following an outbreak of Legionnaires' disease at the Medical Center in the fall of 2012, managers instructed employees to conduct thermal eradication and water chlorination procedures in an improper manner that posed a safety hazard to employees and patients;

2. Management has failed to properly supervise and coordinate construction activities to prevent the disruption of surgical procedures and patient care;

3. Management has neglected the maintenance of various systems and failed to address ongoing problems with equipment, including an open sewage tank that overflows and causes raw sewage to accumulate on the floor in close proximity to the cancer radiation therapy clinic;

4. Management has failed to correct the faulty installation of two underground water storage tanks that are necessary to comply with water capacity standards. While the tanks remain inoperable, management has awarded additional contracts for other large projects to the contractor responsible for the faulty installation; and

5. Management failed to conduct required inspections to detect the presence of asbestos, which resulted in exposing facilities and maintenance service employees, including the whistleblower, to unsafe levels of asbestos [in the crawl space at UD].

IV. Conduct of Investigation

An OMI team consisting of (b) (6) Deputy Medical Inspector; (b) (6) (b) (6) Clinical Program Manager; and two VA subject matter experts, (b) (6) Energy and Operations Engineer; and (b) (6) (b) (6), Occupational Safety and Health Manager, conducted the site visit. OMI also consulted with (b) (6) Program Director for the VA National Infectious Diseases Service, and (b) (6) VA Associate Director for Procurement Policy. OMI conducted a telephone interview with the whistleblower on Friday, August 9, 2013, and a face-to-face interview with him on Tuesday, August 20, at the Medical Center. For both interviews, the whistleblower was accompanied by one of the local union presidents, (b) (6). OMI reviewed relevant policies, procedures, reports, memorandums, and additional documents as listed in Attachment A. Entrance and exit briefings were held with Medical Center leadership. OMI toured the following areas at the UD site:

- Loading dock construction site where a conduit was cut, resulting in a power loss to the surgical area;
- Outside water storage tanks;
- Basement mechanical room with storm and sanitary drain access;
- Basement radiation therapy suite;
- Kitchen;
- Basement: east and west water tanks (locations for introduction of chlorine into the water system for hyperchlorination);
- Nuclear medicine construction area; and
- Building crawl space.

OMI interviewed the following individuals during the site visit; some elected to be accompanied by either a union representative/president or by the Assistant General Counsel of the American Federation of Labor-Congress of Industrial Organizations (AFL-CIO) from Washington, DC:

- (b) (6) Air Conditioning Mechanic and Inspector
- (b) (6) Housekeeping Aide
- (b) (6) Plumber/Maintenance Mechanic
- (b) (6) Painter/Mechanic
- (b) (6) Maintenance Mechanic
- (b) (6) Carpenter

- (b) (6) Electrician
- (b) (6) Electrician
- (b) (6) Plumber
- (b) (6) Painter
- (b) (6) Maintenance Mechanic
- (b) (6) Motor Vehicle Operator
- (b) (6) Maintenance Mechanic
- (b) (6) Electrician
- (b) (6) Pipefitter
- (b) (6) Maintenance Worker
- (b) (6) Mason
- (b) (6) Pipefitter
- (b) (6) Pipefitter
- (b) (6) Carpenter/Maintenance Mechanic
- (b) (6) Maintenance Mechanic
- (b) (6) Electrical Worker
- (b) (6) Industrial Hygienist
- (b) (6) Safety and Occupational Health Specialist
- (b) (6) Occupational Health Program Leader
- (b) (6) Infection Preventionist
- (b) (6) Infection Preventionist
- (b) (6) Infection Preventionist
- (b) (6) Chief Logistics Officer
- (b) (6) Operating Room Nurse Manager
- (b) (6) Maintenance and Repair Supervisor (prior to July 2013)
- (b) (6) Supervisory Engineer of Maintenance and Repair
- (b) (6) Engineer
- (b) (6) Supervisory Engineer of Operations and Utilities Systems
- (b) (6) Vice President of Facilities Management Service, Chief Engineer
- (b) (6) Associate Director
- (b) (6) Contract Specialist
- (b) (6) Supervisory General Engineer
- (b) (6) Assistant Chief, Facilities Management Service
- (b) (6) Supervisor, Environmental Management Service
- (b) (6) Housekeeping Aide
- (b) (6) Utility Systems Operator Repair Supervisor
- (b) (6) Occupational Safety and Health Specialist, Emergency Preparedness Coordinator

The Office of General Counsel reviewed OMI's findings to determine whether there was any violation of law, rule, or regulation.

OMI **substantiated** allegations when the facts and findings supported that the alleged events or actions took place. OMI **did not substantiate** allegations when the facts

showed the allegations were unfounded. OMI **could not substantiate** allegations when there was no conclusive evidence to either sustain or refute the allegation.

V. Background

In 1977, the Centers for Disease Control and Prevention (CDC) identified *Legionella pneumophila* as the cause of an outbreak of pneumonia (later called Legionnaires' disease) in Philadelphia at a convention hosted by the American Legion. Presently, more than 34 species of *Legionella* have been identified, and 20 are known to have links to diseases in humans, with *L. pneumophila* as the species causing Legionnaires' disease and Pontiac fever. *Legionella* is considered to be one of the top three causes of sporadic, community-acquired pneumonia.[1] In the United States, the CDC receives reports of about 1,000 cases each year, but estimates that more than 25,000 cases occur annually, causing over 4,000 deaths.[2]

Legionnaires' disease is considered an opportunistic infection, often attacking individuals with chronic illness or those with weakened immune systems.

L. pneumophila bacteria are found in many water systems, including lakes, rivers, and streams. It can be found in the biofilms of environmental waters, with algae, heat, and other water organisms providing conditions to promote growth.[3] In domestic or community water systems, *Legionella* growth is promoted in temperatures ranging from 68-122 degrees Fahrenheit (F) in stagnant waters and sediments that encourage the growth of microflora. These water sources include those where industrial processes remove heat (e.g., cooling towers, condensers), hot water systems, spas and whirlpools, sprinkler systems, and where water remains stagnant and is then aerosolized. *Legionella* requires water to exist.[4]

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[1] United States Department of Labor. Occupational Safety & Health Administration. OSHA Technical Manual (OTM, Section III: Chapter 7, Legionnaires' Disease, p. 1. https://www.osha.gov/dts/osta/otm/legionnaires/pdf.html.

[2] United States Department of Labor. Occupational Safety & Health Administration. OSHA Technical Manual (OTM, Section III: Chapter 7, Legionnaires' Disease, p. 1-2. https://www.osha.gov/dts/osta/otm/legionnaires/pdf.html.

[3] Biofilm: Biofilm forms when bacteria adhere to surfaces in moist environments by excreting a slimy, glue-like substance. Sites for biofilm formation include all kinds of surfaces: natural materials above and below ground, metals, plastics, medical implant materials—even plant and body tissue. Wherever you find a combination of moisture, nutrients, and a surface, you are likely to find biofilm. http://www.biofilm.montana.edu/node/2390.

[4] United States Department of Labor. Occupational Safety & Health Administration. OSHA Technical Manual (OTM, Section III: Chapter 7, Legionnaires' Disease, p. 2. https://www.osha.gov/dts/osta/otm/legionnaires/pdf.html.

VI. Findings

Allegation 1

Following an outbreak of Legionnaires' disease at the Medical Center in the fall of 2012, managers instructed employees to conduct thermal eradication and water chlorination procedures in an improper manner that posed a safety hazard to employees and patients.

Findings

At the request of the Medical Center and the Pennsylvania Department of Health, the CDC conducted an Epi-Aid investigation at the Medical Center on November 7-16, 2012, to identify cases of Legionnaires' disease, complete an environmental risk assessment for *Legionella*, conduct environmental sampling, and recommend interventions to prevent ongoing disease transmission.[5,6]

Although the Medical Center's *Legionella* risk reduction program included disease surveillance, environmental testing, and the use of a copper-silver ionization system for the control of *Legionella* in potable water, the Epi-Aid investigation identified additional health care associated cases of Legionnaires' disease and *Legionella* colonization of the Medical Center's potable water system.[7,8]

On day 8 of the Epi-Aid, the CDC recommended the Medical Center implement short-term remediation to its potable water system that included:

- Hyperchlorination to greater than or equal to 2 parts per million (ppm) at all distal sites and flushing at all points of use, and/or
- Superheating and flushing of the potable water system to 160-170 degrees fahrenheit (F) for a minimum of 10 minutes.[9]

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[5] Epi-Aids are requests for epidemiological assistance from the CDC within the United States and throughout the world. Requests to assist with emergency responses, investigate infectious and environmental disease outbreaks, and quantify impact of diseases are examples of Epi-Aid responses. http://www.cdc.gov/nceh/eis/epi_aid.html.

[6] Department of Health & Human Services. Public Health Service. Centers for Disease Control and Prevention. Epi-Aid Trip Report: *Legionnaires' disease among patients at a Veterans Affairs Healthcare System in Pennsylvania, 2011-2012 (Epi-Aid 2013-011).*

[7] Copper-silver ionization is a recognized approach to controlling Legionella in hot water systems. Positively charged copper and silver ions form electrostatic bonds with negatively charged sites on the Legionella cell wall, creating stress and leading to weakening of the cell wall and cell death. Liu, Z., Stout, J. E., Tedesco, L., Boldin, M., Hwang, C., Diven, W. F., and Yu, V. L. (1994). Controlled evaluation of copper-silver ionization in eradicating *Legionella pneumophila* from a hospital water distribution system. *The Journal of Infectious Diseases, 169*, pp. 919-922.

[8] Potable: safe to drink, suitable for drinking. Retrieved from www.merriam-webster.com/dictionary/potable.

[9] Department of Health & Human Services. Public Health Service. Centers for Disease Control and Prevention. Epi-Aid Trip Report: *Legionnaires' disease among patients at a Veterans Affairs Healthcare System in Pennsylvania, 2011-2012 (Epi-Aid 2013-011)*, p. 22.

In response to the CDC's recommendations, the Medical Center shut down their potable water system on November 14, 2012, and instituted water conservation efforts. The Incident Command System (ICS) was activated to oversee the project.[10] A call center was initiated to provide information to staff and Veterans, followed by notification of the press, congressional offices, and union officials. Town hall meetings were held to provide awareness and to respond to employee questions.

The ICS Organizational Chart included the Agency Director, the Incident Commander (Deputy Director), and representatives from Public Affairs, Communications, the Office of Information and Technology, the VA Police, and Safety/Emergency Preparedness. For this incident, OMI learned that the Emergency Management Program Manager was a member of the ICS team, although the Safety Manager was not.

Facilities Management Service (FMS) plumbing supervisors and staff attempted to superheat the water system on November 14, 2012, to 160 degrees F, although this proved unsuccessful as temperatures registered at distal flushing sites were reported to be 110–125 degrees F, insufficient for thermal eradication. Medical Center leaders and engineering experts decided to move forward with hyperchlorination efforts. FMS and Environmental Management Service (EMS) staff members from both the UD and Heinz campuses were solicited for voluntary overtime in an effort to create a large cadre of teams for the hyperchlorination effort.

On November 15, 2012, three VA engineering supervisors met with representatives of a recognized water consulting firm, Tetra Tech, Inc., to request their assistance in implementing water system hyperchlorination activities. Tetra Tech recommended the following protocols be used to complete the process:

- The disinfection exercise would follow the Occupational Safety and Health Administration (OSHA) Technical Manual Protocols for Legionnaires' Disease (Section III: Chapter 7), with specific focus on shock (or hyper) chlorination.
- Given the need for real-time analytical results and in consideration of the shock application to execute the disinfection activities, it was decided to use chlorine test strips for the field measurement of free chlorine in the water distribution system.[11]
- The quantity of chlorine needed in the campus' two 30,000-gallon (each) water storage tanks to maintain a minimum free chlorine concentration of 10 ppm

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[10] Incident Command System (ICS): an ad hoc Medical Center group composed of critical staff from the Director's Office, Safety and Emergency Management, Public Affairs, Communications, Information Technology, and VA Police, with the goal to oversee and manage critical events.

[11] Free chlorine: When chlorine is added to water, some of the chlorine reacts first with organic materials and metals in the water and is not available for disinfection (this is called the *chlorine demand* of the water). The remaining chlorine concentration after the chlorine demand is accounted for is called *total chlorine*. Total chlorine is further divided into: 1) the amount of chlorine that has reacted with nitrates and is unavailable for disinfection which is called *combined chlorine* and, 2) the *free chlorine*, which is the chlorine available to inactivate disease-causing organisms, and thus a measure to determine the potability of water. CDC Fact Sheet: Chlorine Residual Testing. http://www.cdc.gov/safewater/publications_pages/chlorineresidual.pdf.

would be calculated and the method to deliver the chlorine to the storage tanks would be identified.

- The qualified Tetra Tech field analysis specialists who would assist the Medical Center's staff in executing the disinfection activities would be identified and mobilized.[12]

Tetra Tech recommended that the most safe and appropriate chlorine delivery method was the addition of household bleach to the water storage tanks. They calculated the quantity of bleach required for the 60,000 gallons of water held in the Medical Center water storage tanks to be a minimum of 25.2 gallons of 6.5 percent bleach, recommending that additional bleach be added to achieve a free chlorine concentration of 10 ppm, and to account for any uneven distribution or mixing. Tetra Tech recommended AquaChek™ Pool and Spa Test Strips to measure the free chlorine in the water at distal outlets (see Appendix B for image). Tetra Tech assigned three field analysis specialists to be present on site in support of VA staff in the remediation process and to confirm/record all data from the event.

On November 16, 2012, managers from FMS and engineering gathered team leaders (plumbers, pipefitters, and supervisors) and about 35 volunteer staff from FMS, engineering, and EMS, in the FMS conference room at the Medical Center. OMI confirmed, through interviews with staff, that managers provided an overview of the hyperchlorination process and described the tasks to be performed by the volunteers. Staff members reported they were instructed on the use of the AquaChek test strips, and advised to use the instructions and color comparison charts on the back of the strip containers. Team members were advised that they might smell the odor of chlorine, as an indicator to use the test strip to measure the elevated water chlorine levels, although OMI received no reports that staff were told to get close to a faucet or water outlet to sniff the chlorine. One or two persons reported correcting a colleague(s) when he/she was leaning over to sniff the chlorinated water. When the Medical Center ran out of strips, more were purchased from community sources.

The instructions on the AquaChek test strips indicate that the user should: "Dip strip & remove; Wait 15 seconds; Compare," (see Attachment B). Through interview, OMI learned that some individuals dipped the strip in flowing water at the faucet and others preferred to dip the strip into a cup of water. For this specific test strip, OMI could not find a manufacturer's statement that one method was preferable or superior. Tetra Tech provided no observations or concerns in their report about faulty test strip dipping.

The process implemented by the Medical Center from November 16–18, 2012, follows the guidance provided by the Tetra Tech on-site experts and is reflected in their report.

1. A total of 34 gallons of household bleach (6.5 percent sodium hypochlorite) was added to the Medical Center tanks (east water storage tank, AE-152, and west water storage tank, BW-223) by a staff plumber who wore gloves and a face shield, and was held in place at the top of each storage tank by a harness. The opening at the

[12] Water Distribution Systems Disinfection Exercise Report: VA Pittsburgh Health System, University Drive and H. J. Heinz Campuses, Pittsburgh, PA. January, 2013. Tetra Tech, Inc.

top of the tank was about 18 inches in diameter. The water volume in the tanks had been previously reduced by at least a third, and the bleach was poured from the opening in the top of the tank. Chlorine vapors are heavier than air, so any fumes would collect in lower areas of the tank, and chlorine would be immediately diluted on contact with the tank water.[13] After adding the bleach, Tetra Tech confirmed tank concentrations of >10 ppm free chlorine.

2. The hyperchlorinated water was then flushed through the Medical Center hot and cold water distribution systems by Tetra Tech and VA maintenance staff, and tested at selected distal outlet sites to confirm elevated chlorine concentrations of >10 ppm. The water outlets were turned off and signs placed to avoid water use by patients and staff.

3. For 24 hours, potable water use by VA staff was discontinued. Showers were not used and bottled water was supplied for drinking and treatments.

4. After 24 hours, distal water samples were assessed again and results recorded by both Tetra Tech and VA staff. After obtaining satisfactory sampling results of 2-10 ppm, the hyperchlorinated water was flushed from the Medical Center's water distribution system. Tetra Tech verified free chlorine levels for a minimum of 110 distal sites.

After successful hyperchlorination from November 16-18, the Medical Center initiated a chlorine drip into the main water system to maintain levels at 1-2 ppm throughout the system. The Medical Center reported that the point-of-use, micron antibacterial filters were purchased and were being installed for inpatient units and inline filtration products placed in behavioral health unit shower heads.[14] Water use restrictions were lifted on November 30, 2012.

Although all EMS and FMS personnel receive annual fit testing and instructions on the use of personal protective equipment (PPE), OMI learned there was no Safety Manager present at the briefing to provide any guidance on employee safety risk during the remediation process. OMI consulted VA National Infectious Diseases Service (NIDS) about employee risk for exposure to *Legionella* during the remediation process. NIDS found no report of cases of Legionnaires' disease in employees conducting remediation procedures to address *Legionella* in building water systems in their review of the guidance from CDC and the National Institute for Occupational Safety and Health , and a review of the literature from Google Scholar and PubMed.

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[13] CDC Facts about Chlorine: If chlorine liquid is released into water, people may be exposed by touching or drinking water that contains chlorine. They also may be exposed by breathing air that contains chlorine, although chlorine gas is heavier than air, so it would settle in low-lying areas. http://www.bt.cdc.gov/agent/chlorine/basics/facts.asp.

[14] Point-of-use filter: one that is inserted to a faucet or water outlet at the point of water usage, such as into the head of a shower.

NIDS also conducted a review on employee use of personal protection when conducting remediation procedures for *Legionella*: CDC guidelines for prevention of healthcare-associated Legionnaires' disease, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) *Guideline 12-2000 – Minimizing the Risk of Legionellosis Associated with Building Water Systems*, *CDC Guidelines for Preventing Health-Care Associated Pneumonia (2003)*, *CDC Guidelines for Environmental Infection Control in Health-Care Facilities (2003)*, and the *OSHA Technical Manual on Legionnaires' Disease*.[15] There was no written guidance found specifically relating to employee protection when conducting remediation procedures of the potable water system. The OSHA Manual does contain guidance on using PPE for maintenance and cleaning of suspect cooling towers, and the Medical Center has a policy, FMS-027, *Maintenance and Cleaning of Air-Conditioning Cooling Towers, SOP and Competency Checklist (06/20/13)*, to ensure compliance with PPE use in this case. In addition, the Medical Center Safety Department and supervising engineers conducted an inspection in February 2013, of UD sites where intermittent local hyperchlorination occurs, using Liquichlor 12.5% Solution®, confirming the on-site presence of spill kits, eyewash stations, face shields, aprons, gloves, Material Safety Data Sheets (MSDS), and the proximity of a shower station.[16]

OMI conducted more than 30 interviews with employees who participated in the water superheating and/or hyperchlorination activities in November 2012, and did not find anyone reporting any untoward signs of contact with hyperchlorinated water, such as eye or nose irritation. The employee health physician reported that one individual presented to employee health after hyperchlorination, reporting a water splash to the eye, with no reported sequelae.

Of persons interviewed, OMI learned that most reported familiarity with *Legionella* prevention and remediation activities, and few expressed concern about any risks. All interviewees reported they received an explanation of the tasks and were offered opportunities to ask questions at the briefing event prior to the remediation activities.

All individuals confirmed the use of "do not use" signs over water faucets and showers, and the removal of the signs after 24 hours by EMS staff.

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[15] CDC MMWR Recommendations and Reports. March 26, 2004/53(RR03); 1-36. *Guidelines for Preventing Health-Care Associated Pneumonia, 2003*; American Society for Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE), *Guideline 12-2000 – Minimizing the risk of Legionellosis Associated with Building Water Systems*; CDC and Healthcare Infection Control Practices Advisory Committee (HICPAC), 2003, Guidelines for Environmental Infection Control in Health-Care Facilities; OSHA Technical Manual. Section III: Chapter 7, Legionnaires' Disease. January 20, 1999. https://www.osha.gov/dts/osta/otm/legionnaires/pdf.html.; CDC, Legionella (Legionnaires' Disease and Pontiac Fever), http://www.cdc.gov/legionella/index.html.

[15] Liquichlor 12.5% Solution® contains 12.5 percent sodium hypochlorite. The MSDS comments that respiratory protection is not normally needed since the volatility and toxicity are low, but if vapors, mists, or aerosols are generated then a NIOSH-approved respirator should be worn. Goggles and gloves are recommended. Boots, aprons, or protective suits are not normally needed. http://www.hillyard.com/images/msds/MSDSOMETO12NSF.pdf.

During a subsequent hyperchlorination remediation in February 2013, a different brand of chlorine test strip was used, causing some confusion among staff about whether to dip the strip in flowing water or into a cup of water. The problem was resolved by replacing the new test strip with the brand previously used, AquaChek.

The Medical Center currently has a contract with Phigenics, LLC, that performs 68-80 water quality tests per day. The Medical Center uses inline chlorine analyzers, and high or low alerts are sent to FMS and Medical Center leaders multiple times per day. If a high or low chlorine alert is received, a work order is automatically generated, and a staff member goes to the location of the alert to test and conduct a local flush of the line, if necessary, in an attempt to maintain a chlorine level of 1-2 ppm. This information produces periodic reports for review and to generate system improvements.

OMI reviewed the MSDS for regular household bleach (sodium hypochlorite 5-10 percent), produced by The Clorox Company™. Under *Section IV, Special Protection and Precautions,* it states that:

> ...No special protection or precautions have been identified for using this product under directed consumer use conditions...recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure...use general ventilation to minimize exposure to vapor or mist; wear safety goggles...use rubber or nitrile gloves if in contact [sic] liquid, especially for prolonged periods.[17]

Except for the few individuals who poured 6.5 percent household bleach into the potable water system and wore gloves and face shields, employees engaged in flushing activities reported no exposures to full strength bleach.

Conclusion

- OMI did not substantiate the allegation that Medical Center managers instructed employees to conduct thermal eradication and water chlorination procedures in an improper manner that posed a safety hazard to employees and patients. Although, for this event, the participation of the Safety Manager would not have altered the process or outcome, the Safety Manager is a valuable asset and a resource for evaluating any safety risks to employees and for making recommendations on the appropriate use of protective equipment.

Recommendation

The Medical Center should:

1. Include the Safety Manager on the ICS team for any event where employees may have concerns about safety, personal risk, and the need for PPE.

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[17] Material Safety Data Sheet: Clorox-regular bleach. The Clorox Company©, August, 2009.

Allegation 2

Management has failed to properly supervise and coordinate construction activities to prevent the disruption of surgical procedures and patient care.

Findings

On May 2, 2013, a power outage occurred at about 5:15 p.m. in the Operating Room (OR) area of the hospital, causing a power loss to ORs #6 and #7, where cases were in progress. One case was a liver transplant and the other was a vascular surgery procedure.

The power outage was caused by the accidental cutting of a power conduit by a contractor's laborer, working on a construction project to build additional storage and office space in the loading dock area. The conduit was cut on the load side of automatic transfer switches (ATS), which prevented emergency power from being established in the ORs after the power loss.[18] A VA mechanic heard the motor of a nearby air handler powering down and immediately called the Boiler Plant Operator, and the Chief and Assistant Chief of FMS. The Chiefs went to the construction site and located the severed conduit about 3 feet behind the exposed edge of a ceiling panel. Two off-duty electricians were contacted by the Boiler Plant Operator, one arriving on site at 5:45 p.m. and the other at 6:40 p.m. They determined that the critical circuit feeding the OR was not damaged, but, because circuit breakers feeding the emergency critical main (ECM) panel had been interrupted, the electricians needed to determine the safety of re-engaging the circuit breakers. After the situation was assessed to be safe, normal power was restored by the electricians at approximately 7:00 p.m.

During the event, emergency power, OR high-intensity lighting, and the heating/air conditioning to the ORs were interrupted. The OR charge nurse contacted the Patient Care Coordinator (PCC), who contacted the boiler plant operator. Ventilators automatically converted to battery power, although patients were hand-ventilated (with bag valve masks) for about 20 seconds by the anesthesiologists.[19] Equipment that was routinely plugged into the emergency outlets was placed into the normal power plugs, which were still functioning. While normal room lighting remained on, high-intensity OR lighting was out, and, therefore, battery-operated head lamps, monitors, halogen lights, and suction units were obtained from nearby rooms. All equipment and lights were wiped down with disinfectant before moving into the ORs. Staff implemented paper records for documentation. The liver transplant and vascular surgery cases were continued with brief interruption. Infection Control followed the patients and no surgical

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[18] Automatic transfer switches (ATS): when normal power for the emergency power outlets is interrupted, the transfer switch takes power from the emergency generator and feeds the rest of the emergency power hospital circuits.

[19] A bag valve mask, abbreviated to BVM and sometimes known by the proprietary name Ambu bag or generically as a manual resuscitator or "self-inflating bag," is a hand-held device commonly used to provide positive pressure ventilation to patients who are not breathing or not breathing adequately. http://en.wikipedia.org/wiki/Bag_valve_mask.

site infections were reported. The vascular patient was discharged on May 4, 2013, and the liver transplant patient was routinely moved to the Intensive Care Unit following surgery. The liver transplant patient had a complicated posttransplant course and expired almost 2 months later, on June 30, 2013; a Medical Center review found no evidence that the power outage influenced the patient's outcome.

OMI reviewed the Infection Control Construction Permits, the Safety Hazard Analysis, the Surgical Service Contingency Plan, and the weekly safety reports, and found the necessary documents in place. OMI interviewed the OR Nurse Manager, who reported that the contingency plans were followed and patient safety ensured. She suggested that battery backup to the OR high-intensity lighting would reduce the need to bring portable lighting into the OR in a power failure.

The contracted vendor conducted its own investigation, taking administrative actions and making changes to their processes for ceiling removal. The vendor implemented training for employees involved with ceiling demolition.

OMI reviewed the Medical Center analysis of the incident, along with the immediate and planned action items to improve redundancy of power in the OR.

Because of the ceiling materials, the conduit was impossible to precisely locate on a blueprint, making the proximity of the conduit to the ceiling difficult to determine.

As an interim measure to support the OR, FMS instituted a call back roster for electricians to support the OR for emergency procedures. When the PCC is made aware of a pending emergency procedure, he/she is required to call boiler plant staff, who in turn call in an electrician. The electrician is required to be on site for the duration of the emergency procedure. In the event there is a power issue with the OR, the electrician will be the first responder to address the issue.

FMS submitted project #643-13-115 UD, *Upgrade Electrical Distributions for ORs,* which procured a design contract with an engineering firm to provide emergency power redundancy for the OR. The initial design phase includes an electrical metering study that will measure the usage of the electrical system in the OR over an average 2-week period.

The schematic design submitted by the design engineer was reviewed by FMS, and the design will relocate the main electrical panel and subpanels servicing the OR from the ground level to the second floor. This location minimizes the risk of future interruptions, and the new feeds will be run in protective conduit with visible paint/markings.

The normal/emergency feed will be backed up with an Uninterruptable Power Supply (UPS) installed prior to the main distribution panel. The UPS will provide 90 minutes of power redundancy for all nine ORs in the event of power loss. The UPS is a redundant system that provides temporary power while the generator is activated. In addition to the normal/emergency feed, a separate, redundant, normal feed will be run to the ATS for the OR sub panels. This system will automatically activate in the event of loss of the normal/emergency feed.

Ground fault protection will be installed on each of the branch circuits fed from the main distribution panel. In case of a ground fault similar to the trip that occurred in May 2013, only the circuit that experiences the fault will trip. The other circuits will remain unaffected.

The design contract is anticipated to be completed in 2-3 months. A construction contract will be immediately procured with construction expected to be completed by July 2014.

Additional Issue under Allegation 2

The whistleblower alleges that a contractor left water running in an asbestos abatement decontamination shower and it leaked, causing ceiling tiles to collapse into a patient food preparation area.

Findings

OMI toured the kitchen and the nuclear medicine construction site. During interview, we learned that in the afternoon of June 28, 2013, the Projects Section Supervisor was informed there was a leak in the kitchen cafeteria serving area, on a nonporous countertop near a support pillar, where employees go to order food or coffee. The Contracting Officer Representative (COR) for the nuclear medicine project (located on the first floor above the kitchen) was called to inspect the construction site for leaks. The project supervisor and the FMS Assistant Chief went to the kitchen to inspect, and found a slow drip on the counter, and wet ceiling tiles above and behind coffee dispensers. On the first floor construction site, no running water was found at the decontamination site. Upon further inspection at a location on the first floor at the support pillar continuous with the kitchen (the floor below), a slow leak was noticed at a hose bib.[20] The hose bib was turned off. The hose bib, pipe, and fittings were all new for the project plumbing. The hose bib was installed for the purpose of supplying water to the renovation project, and the length of hose ran to the asbestos decontamination shower (required during abatement), approximately 150 feet away from the leak source. The contractor cleaned up the area, replaced ceiling tiles, and replaced the washer on the hose bib. The kitchen countertop was cleaned; no food was affected by the water leak.

Conclusions

- The OMI did not substantiate that management has failed to properly supervise construction activities to prevent the disruption of surgical procedures and patient care.

- The OMI did not substantiate the occurrence of a leaking asbestos contamination shower, but did find that a water leak from new plumbing caused dripping in the

[20] A hose bib is a faucet constructed exclusively for hooking up to a hose.

kitchen area and wet ceiling tiles. There was no harm or threat to patient or employee safety.

Recommendations

The Medical Center should:

2. Continue to implement the design, contracting, and engineering plans associated with the Medical Center's analysis and action plan for the OR power outage.

Allegation 3

Management has neglected the maintenance of various systems and failed to address ongoing problems with equipment, including an open sewage tank that overflows and causes raw sewage to accumulate on the floor in close proximity to the cancer radiation therapy clinic.

Findings

On August 29, 2013, a site inspection was made by OMI, Medical Center engineers, and FMS supervisory staff to mechanical room, BW224, in the basement level of the UD building. The mechanical room houses a combination storm and sanitary line drain pit (about 4 feet wide and deep), with both lines exiting the pit underground, and leading to an exterior manhole. The final connection is made to the City of Pittsburgh's sanitary system. On observation, the pit was covered with metal plating in an area quartered off with yellow caution tape. Little to no odor was present. Staff removed the plating and visual review was made of the pit and piping system; no blockages or debris was observed and minimal odor detected.

After exiting BW224, we entered a hospital hallway to the radiation suite containing the TomoTherapy™ Treatment Room, BW258, where patients are treated with radiation therapy.[21] Documents reviewed by OMI indicate flooding of BW224 and BW258 on December 1, 2010, caused by significant rainfall (3 inches) that exceeded the capacity of the storm sewer system. No other flooding of this area has been documented since the 2010 incident, and, during employee interviews, the pipefitters and plumbers could not recall more than 1 or 2 incidents involving flooding of the pit during the past 4 years. No individual interviewed provided recollection of raw sewage collecting on the floor of the cancer radiation therapy clinic.

OMI toured the radiation suite on the basement level and spoke to random staff, querying any concerns with flooding or odor. Four staff reported they smelled an odor

[21] TomoTherapy™ is a newer form of radiation therapy that treats cancer with extreme precision. It significantly improves accuracy by imaging the target tissue immediately prior to treatment and making tiny, split-second adjustments for any patient movement or internal organ movement.

every few months, but it was intermittent and only occasionally was it a sewer smell. It did not cause a distraction from work, and they did not report any patient complaints about smell. Maintenance staff suggested that the odor might coincide with quarterly cleaning. They could not recollect flooding in the radiation suite.

After the December 2010 flooding, the Medical Center addressed the issue by installing shunt trip circuit breakers to protect TomoTherapy equipment, and contracted with a third party to clean the pit and clear any blockages on a quarterly basis. The Medical Center also installed a backflow prevention system in the drains in the basement radiation suite, including the TomoTherapy room. As a long-term solution, the pit will be entirely removed, separating the storm and sanitary drain lines. The Medical Center has submitted project *#646-12-105, UD, Separate Sanitary and Storm Drains, Phase 1*, with anticipation of design in FY 2015.

Additional Issue under Allegation 3

The whistleblower alleged that there was a leaking sewage pipe in the mechanical room of the air conditioning shop, and that a work order was created in May 2013 but the pipe had not been repaired.

Findings

OMI raised this concern with FMS leadership. A work order was originally submitted but there was a problem in obtaining the needed sections of pipe. A new work order (W/O P130809-005) was created for location 2A131-1-UD on August 21, 2013, with a notation that they were getting the sections and connections for 4-inch pipe.

Additional Issue under Allegation 3

The whistleblower alleged that he and three other mechanics were tasked with designing, engineering, and installing the HVAC system for a Quality and Patient Safety office suite. He alleged that the project is not yet complete and that it should have been performed by contracted professionals, and this task caused preventive maintenance on other systems to be delayed.

Findings

OMI found that between February and June 2013, FMS mechanics had an average monthly total of 536 preventive maintenance work orders with an average of 16 work orders taking greater than 30 days to complete. For the month of May 2013, 19 work orders exceeded the 30-day threshold for completion (3 work orders greater than the average).

During interviews, the Vice President of FMS and the Supervisory Engineer of Operations and Utilities Systems confirmed that the project design work for the Quality and Patient Safety office suite was completed in-house by the supervisory engineer with

assistance from the whistleblower. Both the whistleblower and supervisory engineer concurred that the whistleblower expressed an interest in the project and volunteered to assist in designing the HVAC system for the suite. The installation of the system was to be completed by FMS staff; however, the FMS Vice President indicated that work for the suite was completed by voluntary overtime, avoiding delays in work orders and preventive maintenance occurring during normal duty time. An OMI review of overtime records indicates that the whistleblower worked 263.25 hours of voluntary overtime from February through May 2013, on this design project.

Conclusion

- OMI did not substantiate the allegation that management neglected the maintenance of various systems and failed to address ongoing problems with equipment, including an open sewage tank that overflows and causes raw sewage to accumulate on the floor in close proximity to the cancer radiation therapy clinic.

- OMI confirmed that after a heavy rain in 2010, the storm and sanitary drain pit overflowed, but found no evidence to indicate that raw sewage accumulated in the cancer radiation therapy clinic, and no report of harm or a threat to the safety of either Veterans or employees. There is, however, an occasional odor.

- The project to relocate the storm and sanitary drain lines is still in the design approval phase. After the overflow in 2010, the Medical Center proceeded to implement interim solutions and to plan for long-term corrective action.

- The repair to a pipe in the mechanical room of the air conditioning shop was not made, as of the OMI site visit, although a work order currently exists and parts were on order.

- The whistleblower volunteered for the Quality and Patient Safety office HVAC design project, and earned overtime while working on the project. There is no evidence to suggest that work orders or preventive maintenance was delayed by this project. There is no evidence to suggest that the project should have been contracted out in order to preserve normal duty hours for maintenance workers, as voluntary overtime hours were used for the project.

Recommendations

The Medical Center should:

3. Re-examine project #646-12-105, UD, for the relocation of the storm and sanitary drain pit to determine whether it can be prioritized for earlier completion.

4. Address and fix the occasional odor emanating from the storm and sanitary drain pit.

5. Follow-up and report on the work order (W/O P130809-005) for location 2A131-1-UD to determine the status of completion.

Allegation 4

Management has failed to correct the faulty installation of two underground water storage tanks that are necessary to comply with water capacity standards. While the tanks remain inoperable, management has awarded additional contracts for other large projects to the contractor responsible for the faulty installation.

Findings

Project *#646-10-109 Install Water Storage Tank(s)* at the Medical Center is a contract for a Service-Disabled Veteran Owned Small Business (SDVOSB). The company selected to execute the design/build contract was Addvetco, Inc., an SDVOSB. A notice to proceed was signed by Addvetco on February 14, 2011, with an original projected completion date of October 12, 2011. The Contracting Officer (CO) for the project is Lynne Dickerhoff, and the COR was Corey Linen, originally assigned as technical support to the CO. Upon review of the contract file, OMI learned that the project scope changed from building above ground tanks to underground storage tanks, causing delays in the design phase. There were construction delays and workmanship issues, which resulted in the contractor's inability to complete the project in accordance with contract specifications.

During interviews, OMI learned that there was turnover of both project engineer and COR positions. The original COR left the project, and in a letter dated June 28, 2013, the Supervisory Project Engineer was delegated as the COR.

During the OMI site visit, the underground water storage project was unfinished, although the underground tanks were installed. Final inspection and acceptance of the project by the Medical Center and CO had not occurred. The problem deterring acceptance of a final product was the uneven, pocked lining in the water tanks. Pinholes in this lining represent areas that would be difficult to clean, encouraging the growth of harmful organisms. The applied lining of the tank requires a smooth surface for cleaning to retard the growth of biofilm.

Sherwin-Williams Company produced the original coating, and it was applied by Worldwide Industries. With the acknowledgement of deficiencies in the original coating, Worldwide Industries requested an expert from Sherwin-Williams to conduct a site visit and provide recommendations for correction. Sherwin-Williams' proposal included a plan to produce a monolithic, pinhole-free lining system in accordance with the contract documents and specifications. The old lining must first be removed. Work was scheduled to begin September 9, 2013, with completion due in the middle of December 2013, pending unforeseen delays due to weather.

Additional contracts have been awarded to Addvetco, the contractor responsible for the water tank installation. Addvetco has not received any VA contracting terminations and currently maintains good performance reviews by the CO. A discussion with the Associate Director of VA Procurement Policy provided OMI with information on contracting issues. While the CO, in this case, has not made entries into the CPARS for

Addvetco, she has completed three pre-award surveys (ratings prior to payment), and none of these reflect any concerns about the performance of Addvetco as a contractor. In order to prevent or restrict a contractor from obtaining a contract with VA, the government must use either determinations of nonresponsibility (made by a CO) or debarment and suspension actions (made by an agency board or official).[22] None of these actions have been taken on Addvetco, and a review of Federal Acquisition Regulation guidance does not suggest this is warranted.[23]

Present authority for awarding contracts lies with the VHA Chief Procurement and Logistics Officer, through the Service Area Office Directors. In 2005, and again in 2009, there were contracting realignments that moved contracting from the control of the Medical Center and Veterans Integrated Service Network (VISN) Directors to the VA Acquisition and Logistics Program under a Regional Operations model, thereby removing the ability of the Medical Center or VISN leadership to award contracts. "The regional model was selected because the model creates an oversight organization that improves controls, communications channels, and maintains the existing functionality of procurement organizations with the VHA."[24]

Conclusion

- OMI did not substantiate the allegation that management failed to correct faulty installation of two underground water storage tanks that are necessary to comply with water capacity standards. While OMI did substantiate that the tanks are currently inoperable, negotiations to resolve the problem are ongoing, and completion of the project is expected by December 2013. Additional contracts for large projects have been awarded to Addvetco, the contractor responsible for the water tank installation, and OMI could find no violation of law, rule or regulation in these actions. The Medical Center did not make entries into the CPARS system on the contractor, Addvetco.

Recommendation

The Medical Center should:

6. Develop a plan to make timely use of the CPARS system for contractor performance.

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[22] Federal Acquisition Regulation (FAR), March 2005, General Services Administration, Title 48: Federal Acquisitions Regulating System, Chapter 1.
[23] FAR 9. 104-3(b). *Satisfactory Performance Record;* Personal communication, *Awarding or Not Awarding a Contract,* Warren L. Ector, CPCM, VHA Associated Director, Procurement (Policy), September 6, 2013. VA Memorandum, Subject: Procedures for determining whether to terminate contracts with ineligible firms, May 8, 2013.
[24] VHA Executive Decision Memo, Subject: VHA Acquisition "To Be" Business Model Realignment, November 17, 2008. VA Memorandum, Subject: Veterans Health Administration Acquisition Realignment Implementation, January 27, 2009, p.1.

Allegation 5

Management failed to conduct required inspections to detect the presence of asbestos, which resulted in exposing facilities and maintenance service employees, including the whistleblower, to unsafe levels of asbestos [in the crawl space at UD].

Findings

In 1971, the Environmental Protection Agency (EPA) identified asbestos as a hazardous air pollutant, and in 1973, listed it among the airborne contaminants for oversight in the National Emission Standards for Hazardous Air Pollutants (NESHAP) of the Clean Air Act.[25] NESHAP required that asbestos inspections occur prior to building demolition and renovation activities. The EPA's Asbestos Hazard Emergency Response Act (AHERA) is a law under the Toxic Substances Control Act that required asbestos inspections be conducted in schools by an accredited Asbestos Building Inspector every 3 years.[26] In 1990, the Asbestos School Hazard Abatement Reauthorization Act (ASHERA) expanded the accreditation requirement to cover asbestos abatement projects in all public and commercial buildings in addition to schools.[27] OMI was not able to review an expired document, VA Circular 00-88-6, *Management, Abatement, and Removal of Asbestos in VA Facilities* (February 9, 1988), but did review VA Directive 7700, *Occupational Safety and Health* (July 8, 1998), which required VA follow AHERA and conduct triennial asbestos survey inspections. In 2003, VHA Handbook 7701.01, *Occupational Safety and Health*, provided for the requirements of triennial asbestos inspection surveys and updated the VHA program to conform to VA Directive 7700 (1998). In 2009, VA Directive 7700, *Occupational Safety and Health Program*, was revised, rescinding the requirement to conduct triennial asbestos survey inspections. Subsequently, VHA published the Asbestos Management Program Directive 2010-036 in August 2010, clearly stating that, "VHA policy designates the AHERA inspection records as the baseline facility survey with no triennial survey requirement."[28] This VHA policy and the current VHA Handbook 7701.01, *Occupational Safety and Health Program Procedure,* August 24, 2010, state that VA facilities are public buildings and must comply with ASHARA, NESHAP, and with OSHA, 29 CFR 1910.100, *Occupational Safety and Health Standards, Toxic and Hazardous Standards, Asbestos.*[29,30] These standards provide for the safe management of asbestos and the conduct of surveys for asbestos-containing building materials (ACBM).

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[25] EPA, Clean Air Act, Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), April 6, 1973, 40CFR Part 61, Subpart M. http://www2.epa.gov/asbestos/asbestos-neshap.
[26] AHERA: Asbestos Hazard Emergency Response Act, (1984), 15 U.S.C. § 2641-2656. http://www.gpo.gov/fdsys/pkg/USCODE-2011-title15/pdf/USCODE-2011-title15-chap53-subchapII.pdf.
[27] ASHARA: Asbestos School Hazard Abatement Reauthorization Act of 1990 from the One Hundred First Congress of the United States of America. http://www2.epa.gov/asbestos/asbestos-school-hazard-abatement-reauthorization-act-1990-one-hundred-first-congress-united.
[28] VA Directive 700, Occupational Safety and Health, July 8, 1998; VHA Directive 2010-036, Asbestos Management Program, August 12, 2010.
[29] OSHA Standards, Occupational Safety & Health Administration, U.S. Department of Labor, 29 CFR 1910.1001, Asbestos. https://www.osha.gov/SLTC/asbestos/standards.html.

The Medical Center has records of ACBM surveys as early as 1984, using certified asbestos building inspectors. The ACBM survey for August 1984 was conducted by OccuSafe, Inc. Updates to the 1984 survey were found for the Heinz and Highland Drive campuses. OMI reviewed licensed asbestos building inspector reports for UD for 1998, 2001, 2006, 2009, 2011, and 2013. Each report cited reviews of the previous ACBM survey.

In 1984, the ACBM survey referenced the inspection of the UD crawl spaces, specifically pipe thermal system insulation (TSI).[31] The survey provides only one comment on the crawl space dirt, "...removal costs for dirt floor basements in which [ACM] may be mixed have not been estimated." On May 12, 1988, the VA Regional Industrial Hygienist recommended that the dirt floor should be either abated and/or encapsulated. OMI reviewed the abatement and encapsulation proposal, and a construction project list indicating that the removal efforts were completed by April 7, 1989.

OMI interviewed the retired industrial hygienist (1996-2012) and two maintenance workers who had originally been on the Medical Center Asbestos Abatement Team (disbanded in about 1999). According to those interviewed, there was some asbestos abatement and encapsulation of the crawl space dirt in the early 1990's, with clearance air monitoring. The retired industrial hygienist reported that crawl space soil and air samples, taken in 2001 and 2003, were negative.

Asbestos surveys performed by contracted asbestos building inspectors subsequent to 2006 do not identify issues in the crawl spaces. In 2006, the survey performed by Sciteck, Inc.™ reviewed locations from the previous surveys. There were no observations or review of the crawl space noted in the Sciteck survey. Decisions about what to survey are made by the certified building inspectors.

On April 29, 2013, the Medical Center performed soil sampling in the crawl spaces at the request of a new employee. A licensed building inspector was contracted to perform the sampling, and results of the sampling were positive for asbestos contamination in the soil. The union president and vice president were notified of the test results. On June 3, 2013, a private environmental consultant reported the analysis of the airborne fibers specimens collected in and around the crawl space. Of the 48 bulk samples collected in the UD crawl space, 22 were positive for ACM, and all of the

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[30] Asbestos abatement: Asbestos abatement and demolition projects involve the disturbance of asbestos containing materials (ACM). In asbestos abatement (which often precedes renovation), ACM is removed or stabilized in a manner which often involves the release of asbestos fibers. Asbestos demolition projects involve the controlled removal of all ACM or friable ACM from structures before they are demolished in order to minimize the generation of asbestos fibers during the demolition phase. OSHA Regional Notice, Occupational Safety and Health Administration, Department of Labor, Directive Number 11-05 (CPL 04-05), October 12, 2010. *Local emphasis program for the asbestos abatement industry.*

[31] Thermal System Insulation (TSI) ACM: Asbestos containing material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain and that contains more than 1 per cent asbestos. https://www.osha.gov/dte/library/asbestos/rev_asb.html.

14 air samples collected were negative for asbestos airborne fibers. The air sampling results were below the OSHA Permissive Exposure Limit (0.1 fibers per cubic centimeter 8-hour time-weighted average) and are less than the clearance air monitoring requirements of Allegheny County Health Department (0.01 fibers per cubic centimeter).

After the discovery of asbestos in the crawl space soil, employees with a history of working in the crawl space were notified, and health exams offered, in accordance with *OSHA Standards 29 CFR 1910.1001, Asbestos, and 29 CFR 1910.1200, Hazard Communication.*[32] All employees identified as working in the crawl space were offered a medical evaluation and placed in ongoing asbestos medical surveillance. OMI conferred with the occupational health physician, who described the meticulous notification and follow-up procedures for this surveillance effort.

Conclusion

- OMI did not substantiate the allegation that management failed to conduct required inspections to detect the presence of asbestos, which resulted in exposing the Facilities and Maintenance Service employees, including the whistleblower, to unsafe levels of asbestos [in the crawl space at UD]. Based on our review of the rules and guidance applicable from 1984 through 2013, the Medical Center at UD has complied with the requirements for conducting ACBM surveys.

- In April 2013, when asbestos was discovered in the UD crawl space soil, the Medical Center complied with all OSHA regulations necessary on the advisement of employees of the potential exposure, and placing these employees in a medical surveillance program. Testing in April 2013, revealed that asbestos air sampling results were below OSHA permissible exposure levels.

Recommendation

The Medical Center should:

7. Continue to follow VHA Directive 2010-036, *Asbestos Management Program.*

8. Continue asbestos medical surveillance on those individuals identified as working in the UD crawl space.

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[32] 29 Code of Federal Regulations (CFR), Part 1910-Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, §1910.1001 Asbestos. http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&rgn=div8&view=text&node=29:6.1.1.1.1.1.1.2&idno=29. 29 CFR, Part 1910-Occupational Safety and Health Standards, §1910.1200 Hazard communication. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099.

Attachment A

Documents and Resources Reviewed by the OMI

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2. AquaChek Free Chlorine Test Strips™, manufactured by the Hach Company, Elkhart, Indiana.

3. Carpenter, T., and Robinson, S. T. (2010). Response to a partial power failure in the operating room. *Anesthesia and Analgesia, 110* (6). 1644-1646. www.anesthesia-analgesia.org.

4. Department of Health & Human Services. CDC, Legionella (Legionnaires' Disease and Pontiac Fever), http://www.cdc.gov/legionella/index.html.

5. Department of Health & Human Services. CDC MMWR Recommendations and Reports. March 26, 2004/53(RR03); 1-36. *Guidelines for Preventing Health-Care Associated Pneumonia, 2003.* Atlanta: GA.

6. Department of Health & Human Services. Centers for Disease Control and prevention (CDC). 2003. *Guidelines for Environmental Infection Control in Health-Care Facilities: Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, Atlanta: GA.

7. Department of Health & Human Services. Public Health Service. Centers for Disease Control and Prevention. *Fact Sheet: Chlorine Residual Testing*, retrieved from http://www.cdc.gov/safewater/publications_pages/chlorineresidual.pdf.

8. Department of Health & Human Services. Public Health Service. Centers for Disease Control and Prevention. *Epi-Aid Trip Report: Legionnaires' disease among patients at a Veterans Affairs Healthcare System in Pennsylvania, 2011-2012* (Epi-Aid 2013-011).

9. Department of Veterans Affairs. Office of Inspector General. Report No. 13-01189-267, *Healthcare Inspection: Prevention of Legionnaires' Disease in VHA Facilities.* August 1, 2013, Washington, DC.

10. Department of Veterans Affairs. Office on Inspector General. Report No. 13-00994-180, *Healthcare Inspection: Legionnaires' Disease at the VA Pittsburgh Healthcare System, Pennsylvania.* April 23, 2013, Washington, DC.

11. Eichhorn, J. H., and Hessel, E. A. (2010). Electrical power failure in the operating room: A neglected topic in anesthesia safety. *Anesthesia and Analgesia, 110*(6). 1519-1521. www.anesthesia-analgesia.org.

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13. Lin, Y. E., Stout, J. E., and Yu, V. L. (2011). Controlling *Legionella* in hospital drinking water: An evidence-based review of disinfection methods. *Infection Control and Hospital Epidemiology, 32*(2). 166-173.

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16. U.S. Department of Labor. Occupational Safety & Health Administration. OSHA Technical Manual. Section III: Chapter 7, Legionnaires' Disease. January 20, 1999. https://www.osha.gov/dts/osta/otm/legionnaires/pdf.html

17. VHA Directive 2008-010. *Prevention of Legionella Disease*, February 11, 2008.

18. VHA Directive 2010-036. *Asbestos Management Program*, August 12, 2010.

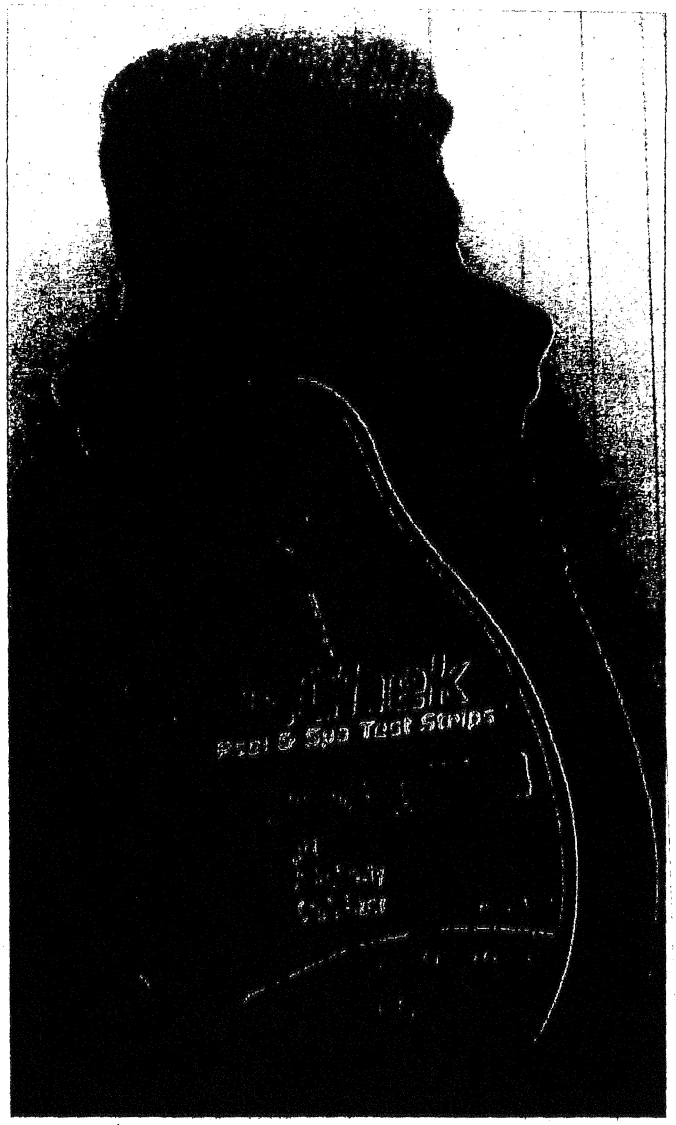
19. VA Handbook 7700.1, *Occupational Safety and Health*, July 8, 1998.

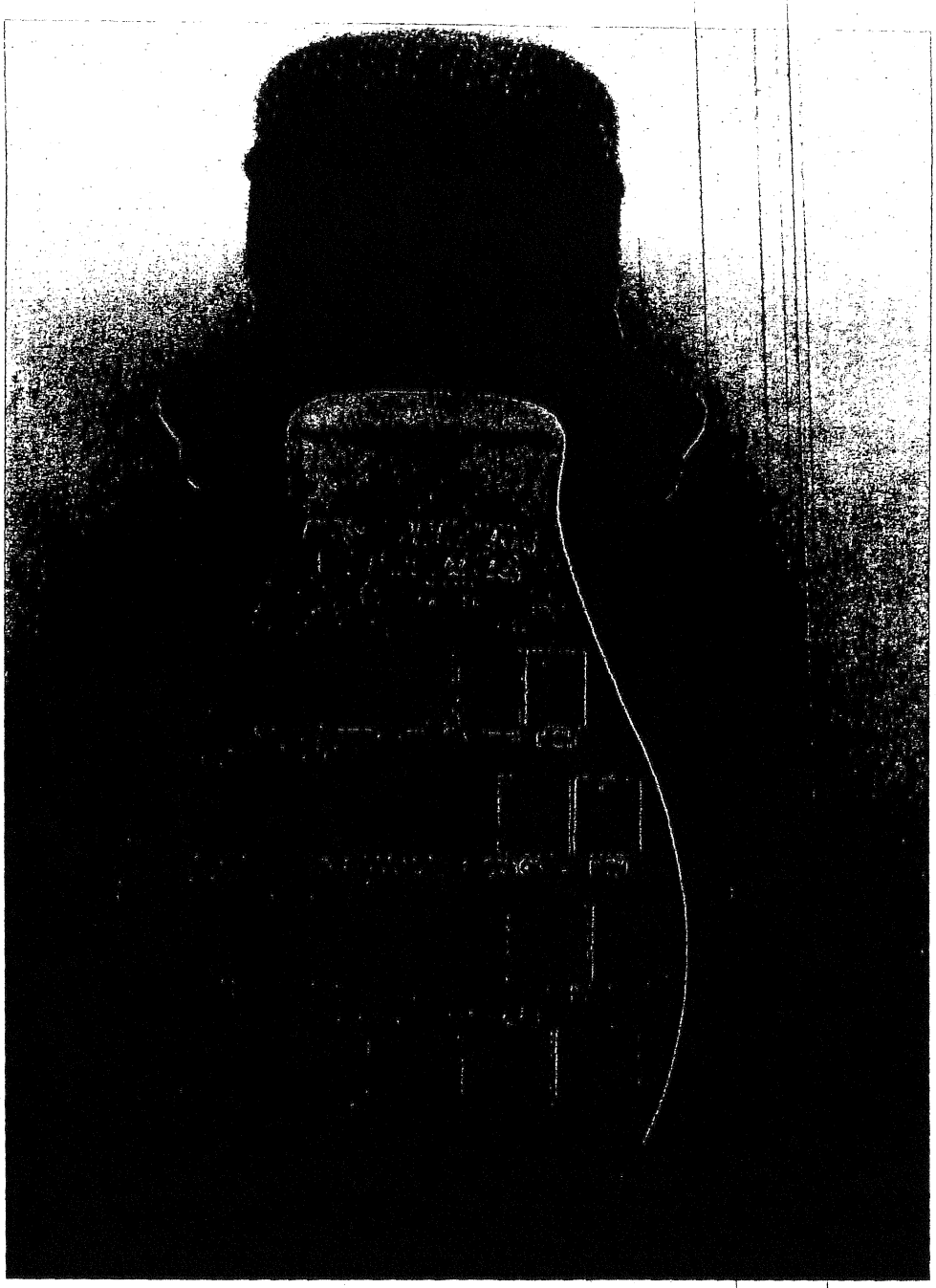
20. Water Distribution Systems Disinfection Exercise Report: VA Pittsburgh Health System, University Drive and H. J. Heinz Campuses, Pittsburgh, PA. January, 2013. Tetra Tech, Inc.

21. Various electronic and paper communications, meeting minutes, and performance documents.

Attachment B: AquaChek ™ Pool and Spa Test Strips

Hach Company, Elkhart, Indiana





Attachment C: Material Safety Data Sheet for Household Bleach

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	CLOROX REGULAR-BLEACH
Description:	CLEAR, LIGHT YELLOW LIQUID WITH A CHARACTERISTIC CHLORINE ODOR

Other Designations	Distributor	Emergency Telephone Nos.
Clorox Bleach EPA Reg. No. 5813-50	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300

II Health Hazard Data

DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Vapor or mist may irritate. Harmful if swallowed. Keep out of reach of children.

Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Under normal consumer use conditions the likelihood of any adverse health effects are low.

Medical conditions that may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease.

FIRST AID:

Eye Contact: Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, after first 5 minutes. Continue rinsing eye. Call a physician.

Skin Contact: Wash skin with water for 15-20 minutes. If irritation develops, call a physician.

Ingestion: Do not induce vomiting. Drink a glass/ut of water. If irritation develops, call a physician. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air. If breathing is affected, call a physician.

III Hazardous Ingredients

Ingredient	Concentration	Exposure Limit
Sodium hypochlorite CAS# 7681-52-9	5 - 10%	Not established
Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m[1] 2 mg/m[2]

[1]ACGIH Threshold Limit Value (TLV) - Ceiling

[2]OHSA Permissible Exposure Limit (PEL) – Time Weighted Average (TWA)

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.

IV Special Protection and Precautions

No special protection or precautions have been identified for using this product under directed consumer use conditions. The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.

Hygienic Practices: Avoid contact with eyes, skin and clothing. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use general ventilation to minimize exposure to vapor or mist.

Personal Protective Equipment: Wear safety goggles. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.

KEEP OUT OF REACH OF CHILDREN

V Transportation and Regulatory Data

DOT/IMDG/IATA - Not restricted.

EPA - SARA TITLE III/CERCLA: Bottled product is not reportable under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide <0.2% and sodium hypochlorite <7.35%) that are regulated under Section 304/CERCLA.

TSCA/DSL STATUS: All components of this product are on the U.S. TSCA Inventory and Canadian DSL.

VI Spill Procedures/Waste Disposal

Spill Procedures: Control spill. Containerize liquid and use absorbents on residual liquid; dispose appropriately. Wash area and let dry. For spills of multiple products, respondent should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.

VIII Fire and Explosion Data

Flash Point: None

Special Firefighting Procedures: None

Unusual Fire/Explosion Hazards: None. Not flammable or explosive. Product does not ignite when exposed to open flame.

IX Physical Data

Boiling point	approx. 212°F/100°C
Specific Gravity (H_2O=1)	~ 1.1 at 70°F
Solubility in Water	complete
pH	~11.9

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 08/09