

Walkaround Inspection

A walkaround inspection was conducted on February 10, 2014 at 12:45 pm by Ms. White with Corporal Bossi. The range was shut down for monthly cleaning by a company contracted to do the cleaning so there were no employees working inside the range. The employer indicated that the range is cleaned once each month as well as the High Efficiency Particulate Air (HEPA) filters changed. This IH observed 16 booths where officers remained stationary while shooting, a track system allowing the targets to move, and a baffle system along the wall down range to stop and collect ammunition that had been fired. The instructors stood behind the officers to observe them. Corporal Bossi explained that the ammunition used in the range has a full metal jacket and a lead free primer and lead exposure would only occur once the bullet hit the baffle system. It was also indicated that the department began converting to a new firearm in January 2014 and was expected to last through July. Because of this conversion, as many as 24 police officers each day were each required to shoot 300 rounds in order to qualify for the new firearm. Instructors at the range also qualified new recruits who were required to shoot more than officers returning to requalify for their firearms. Retirees brought their own ammunition and were also requalified once each month by the instructors. Air intake vents were installed in the ceiling behind the booths which had a brown substance deposited on them. Corporal Bossi stated the vents have rusted from moisture in the outside air coming through the vents. Exhaust vents were also installed down range above the baffle system. Some of these vents were open while others were closed. Corporal Bossi indicated that there were plans to renovate the range by replacing the ventilation system and the baffling system and removing the floor tile but he was unsure of the timeline. Tile was observed on the floor from inside of the booths back to the wall behind the booths. Employees stated that to their knowledge the floor tile did contain asbestos based on the age of the building. Some of the tiles were broken but most of the floor tiles were intact. The condition of the floor down range was observed, which appeared to have been chipped from bullets striking the floor over the years. The floor down range past the booths did not contain any floor tile and was a concrete floor. According to employees interviewed, the range floor was painted by an instructor about 8 years ago with a garage floor paint purchased from Home Depot. When asked, the employee who painted the floor indicated that there was no paint left over. Ms. White was not able to obtain a Safety Data Sheet (SDS) for the paint because there was no identifying information available. Another employee indicated the range floor was not painted prior to that. The baffle system was observed and employees explained that sometimes the baffles move from their position due to improper welding. An employee indicated that any ammunition that does ricochet would not have the velocity to travel the 75 feet from the baffle back to firing line. This IH did not observe the baffles moving while onsite. There was an outdoor range onsite however, Sergeant Thomas Stetson, Range Master, stated that shooting had been done inside since November or December 2013 because of the weather.

On February 11, 2014 Ms. White returned to the site with Mr. Mike Penn, MOSH Chief of Compliance, and Ms. Dawn Windham, MOSH Region II Industrial Hygiene Supervisor. During this visit, MOSH personnel observed the set up of the range, obtained air velocity measurements at different booths and down range, and looked at the air handler on the roof of the range.

Ms. White returned to the range for air and noise monitoring on February 19, 2014 and repeated air monitoring on March 6, 2014 and April 1, 2014. Refer to the sampling section for results. Air velocity measurements were repeated inside the range. On February 19, average air velocity down range was 33 feet per minute (fpm). Readings were also taken at booth numbers 5, 10, and 15. The respective average air velocities were 42 fpm, 83 fpm, and 107 fpm. On March 6, the average air velocity down range was 37 fpm. The National Institute of Occupational Safety and Health (NIOSH) recommends airflow along the firing line be between 50 and 75 fpm.

On March 12, 2014 Ms. White and Mr. Penn met with Mr. John Schatz, Baltimore County Property Management Maintenance Supervisor; Officer Jessica Ables, Baltimore County Police Safety Officer; Captain John Campbell, Commander of Baltimore County Police Training Academy; Sergeant Thomas Stetson, Range Master; and Corporal Bossi to discuss the results of the air monitoring from February 19 and March 6. Ms. White and Mr. Penn explained that employee exposures on February 19 were over the OSHA Action Limit (AL) for lead, 30 ug/m³, with the exception of one being slightly over the Permissible Exposure Limit (PEL), 50 ug/m³. It was also explained that the employee exposures on March 6 were all significantly over the OSHA PEL. Mr. Penn discussed the requirements in the OSHA lead standard (29 CFR 1910.1025) that the employer would need to follow if employees were to continue to have exposure to lead at levels at or above the PEL. Sergeant Stetson stated that with the warmer weather, shooting would be done at the outdoor range primarily with the exception of low light qualifications consisting of 30 rounds requiring about one hour inside the range. Representatives of the Baltimore County Police Department indicated that the plans to renovate the indoor range were still ongoing and that decisions were pending on the results of the air monitoring performed by MOSH.

Health Hazards

Noise

Exposure to high levels of noise can cause permanent hearing loss. Neither surgery nor a hearing aid can help correct this type of hearing loss. Short term exposure to loud noise can also cause a temporary change in hearing (ears may feel stuffed up) or a ringing in the ears (tinnitus). These short-term problems may go away within a few minutes or hours after leaving the noisy area. However, repeated exposures to loud noise can lead to permanent tinnitus and/or hearing loss. Loud noise can also create physical and psychological stress, reduce productivity interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals. Noise-induced hearing loss limits the ability to hear high frequency sounds, understand speech, and seriously impairs a person's ability to communicate. OSHA has an Action Level (AL) of 85 decibels (dB) for noise and a Permissible Exposure Limit (PEL) of 90 dB.

Instructors working in the range are subjected to high levels of noise from firearms discharging and subsequently striking objects inside range. Employees indicated that they did receive annual audiograms but did not receive hearing conservation training annually. This IH performed noise monitoring on February 19, 2014 by fitting two instructors with Quest NoisePro DL dosimeters. The instructors wore the dosimeters during their duration inside of the indoor range. After the lunch break, one employee did not return to the range and that employee's exposure was 91 dB after 109 minutes. The other employee's exposure was 95 dB after 220 minutes. The dosimeters have a +/- 2 dB error rate which suggests that the first employee was exposed to noise levels above the AL and the second employee was exposed to noise levels above both the AL and the PEL.

According to employees, they received audiograms annually. Ms. White requested to see these records multiple times but never received them. Ear plugs and ear muffs were required to be worn in the indoor and outdoor firing range. Instructors wore 3M E-A-Rsoft yellow neons with a Noise Reduction Rating (NRR) of 33 and 3M Peltor Powercom Plus Headband ear muffs with a NRR of 25. These two hearing protectors, when worn together properly, adequately reduce the noise levels employees are exposed to below the OSHA AL. Range staff also indicated some employees had received training on noise but not on an annual basis. The training program must consist of the effects of noise on hearing; the purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and the purpose of audiometric testing, and an explanation of the test procedures.

Lead

Lead overexposure is one of the most common overexposures found in industry and is a leading cause of workplace illness. Therefore, OSHA has established the reduction of lead exposure to be a high strategic priority. Lead is also a major potential public health risk. In general populations, lead may be present in hazardous concentrations in food, water, and air. Sources include paint, urban dust, and folk remedies. Lead poisoning is the leading environmentally induced illness in children. At greatest risk are children under the age of six because they are undergoing neurological and physical development. Instructors had exposure to lead dust when observing police officers firing handguns in the indoor and outdoor gun range. The OSHA Action Limit (AL) for lead is 30 ug/m³ and the Permissible Exposure Limit (PEL) is 50 ug/m³.

The OSHA lead standard requires employers to monitor their workplace for airborne lead to determine if employees are exposed at or above the AL. This had not been done previously so the employer utilized the monitoring done on February 19 by Ms. White as the initial determination. Ms. White requested to view blood lead level records for the range staff but, did not receive them. According to Corporal Bossi, annual training on lead had not been provided to employees. If an employer has employees exposed to lead above the PEL the employer must reduce their exposure below that or: implement engineering controls to reduce exposures below the PEL; develop and implement a written compliance program that includes a description of the operation where lead is emitted, a description of the specific means that will be used to comply with the standard, a report of technology considered in meeting the PEL, air monitoring data, a detailed schedule for implementation of the program (e.g. purchase orders, construction contracts, etc.), and a work practice program including PPE, housekeeping, and hygiene; take air velocity measurements of any mechanical ventilation to demonstrate effectiveness; provide respirators and implement a respiratory protection program that meets the requirements of OSHA respiratory protection standard (1910.134); provide clean, dry protective work clothing and equipment at least weekly; provide change rooms with separate storage for street clothes and clothes worn during the work shift, require employees shower at the end of their work shift; provide annual training on the content of the OSHA lead standard (1910.1025), the specific nature of the operations which could result in exposure to lead above the AL, the purpose, proper selection, fitting, use, and limitations of respirators, the purpose and a description of the medical surveillance program and medical removal program, the engineering controls and work practices associated with the employee's job assignment, the contents of any compliance plan in effect and instructions to employees that chelating agents should not routinely be used to remove lead from their bodies

and should not be used at all except under the direction of a licensed physician; and recordkeeping of all monitoring and medical surveillance.

Sampling

Air monitoring for asbestos was performed on February 19, 2014. Area sampling for asbestos was performed by setting up two SKC AirCheck 2000 high-flow pumps with Mixed Cellulose Ester Filters (MCEF) in two of the booths in the range. The lab reported no asbestos detected on the samples. Lead was monitored for on February 19, March 6, and April 1 by Ms. White. Personal sampling for lead was conducted by fitting instructors with SKC AirCheck 2000 high-flow pumps and MCEF. The highest exposure on February 19 was 59.69 ug/m³. The highest exposure on March 6 was 154 ug/m³. Monitoring on April 1 was conducted to determine the instructors' exposure at the outdoor gun range and while inside the indoor gun range for about one hour to conduct low light qualifications. The lab reported no lead detected on the samples collected at the outdoor range. The highest exposure inside the indoor range was 2.65 ug/m³. The remaining results can be found on the attached sampling sheets and subsequent results. Note that the results on the sampling sheets are reported in milligrams per cubic meter. All of the samples were sent to the OSHA Salt Lake Technical Center (SLTC) for analysis and all results were calculated as an 8-hour Time Weighted Average (TWA).

While Baltimore County goes through the various stages of renovating the indoor range, shooting will be done primarily at the outdoor range and for less than one hour inside the indoor range as an interim protection measure. It was suggested that Baltimore County ask for references as they begin the renovation process and look for bidders. The importance of finding someone with experience building firing ranges and providing documentation of how they helped their clients achieve compliance with the OSHA standard was explained during the closing conference.

Records Review

Hazard Communication

Range instructors were exposed to lead dust from ammunition fired by police officers in the gun range. Lead is a systemic poison and employee exposure to it requires the development, implementation, and maintenance of a hazard communication program. A written program containing the elements of Safety Data Sheets (SDS), labeling, and employee information and training had not been maintained. Ms. White provided the employer with a copy of the Right-to-Know booklet which includes an outline and fill-in-the-blank program that can be used to establish a site-specific program. SDS were not maintained onsite. Corporal Bossi did provide Ms. White with copies of SDS later during the course of the inspection. Labeling was compliant with the OSHA hazard communication standard. This IH discussed the new labeling requirements of the Global Harmonization System (GHS) with the employer. According to Corporal Bossi, employees at the range had not received hazard communication training which requires an explanation of what the law is about, an explanation of how the chemicals in the workplace can be a hazard, a discussion of how exposure to hazardous chemicals can be controlled, an explanation of how employees can obtain information on hazardous substances, an explanation of labels and SDS, and an explanation of employee rights.

A list of hazardous chemicals had not been compiled and maintained. Ms. White explained the requirements of the list to the employer.

OSHA Injury and Illness (300) Logs

Ms. White requested summaries and logs multiple times for 2011-2014. Officer Jessica Ables provided Ms. White with logs for 2011, 2012, and 2014. Baltimore County maintains injuries and illnesses for all employees on one log so due to the large number of pages per year, Ms. White requested that Officer Ables supply only the pages that include injuries suffered by the range staff. There was one injury in 2011, one in 2012, and one in 2014. There were no injuries in 2013.

Employee Interviews

Employees were interviewed regarding their experiences concerning the complaint items. Employees indicated that the ventilation system was dated and at times black dust could be seen on surfaces inside of the indoor range. It was indicated that the ventilation has been a concern for years. Employees stated that their blood lead levels had increased since the police department started converting over to a new weapon requiring all of the County's officers to qualify for the new weapon. Employees also indicated they were having blood lead testing done every six months through Mercy Hospital but as their blood lead levels began to rise, the doctor wanted them to have their blood tested monthly. Most employees stated they thought the floor tiles in the range were asbestos based on the age of the building. An employee indicated that the floor tile is asbestos floor tile and some of it had been removed in the past because it was farther down the range floor and was being

shot at, potentially releasing asbestos fibers. Most employees were not sure if the floor down the range was coated with lead paint. An employee stated that the floor was never painted until about 10 years ago and lead paint was not used to paint the floor. Employees were not sure what the black/brown substance on the ventilation in the range was or where it was coming from. Many of the employees interviewed indicated that the welds holding the baffle system up are weak and some of the baffles on the bottom of the system fall when hit by a bullet. None of the employees indicated bullets ricochet occurring once a baffle had fallen.

Closing Conference

A closing conference was conducted on May 7, 2014 at 1:00 pm by Ms. White along with Mr. Penn. Baltimore County representatives present for the closing conference included Sergeant Anthony Russell, Captain John Campbell, Major Daniel Kaliszak, Colonel Joe Burris, Lieutenant Orlando Lilly, Officer Jessica Ables, Corporal Mandy Biter, and Corporal James Bossi. The complaint items, inspection findings, recommendations for citations, potential methods of abatement, and other recommendations were discussed. Colonel Burris indicated that Baltimore County plans to begin renovations on the firing range within 3-4 months.

Letter to Complainant

1. Possible overexposure to lead dust due to a poorly operating ventilation system

Findings:

Ms. White perform air monitoring for lead on February 19, March 6, and April 1. Monitoring done on February 19 was shortly after the range had been cleaned and filters replaced on February 10. Of the four samples, the OSHA Salt Lake Technical Center (SLTC) lab reported three samples above the OSHA Action Level (AL) for lead (30 micrograms per cubic meter (ug/m3) and one above the OSHA Permissible Exposure Limit for lead (50 ug/m3). On March 6, air monitoring was performed while instructors were still working in the indoor range before the weather warmed up. Employees indicated that the doors in the range were blowing open at this time which suggested to them that the filters were probably clogged. SLTC reported all five samples above the OSHA PEL. A meeting was held with Baltimore County Police representatives to make them aware of the overexposures to lead and the requirements of the OSHA lead standard, including additional personal protective equipment (ppe) and protective measures that would be required if employees were to continue having exposure to lead above the PEL. Baltimore County indicated they will be replacing the ventilation in the range and in the interim will be using the outdoor range primarily and the indoor range for low light qualifications for less than one hour. Air monitoring was repeated on April 1 to determine employee exposures using these interim protection measures. All five samples taken at the outdoor range were reported as "none detected" by SLTC. The highest exposure while inside the indoor range was 2.65 ug/m3.

Recommendations:

Based on the documented over-exposures to airborne concentrations of lead, numerous citations of the lead standard were recommended.

2. Possible poor housekeeping as evidenced by an accumulation of a thick black/brown substance on duct work.

Findings:

The ventilation in the indoor range was observed including duct work along the back wall above where the instructors stood. A brown substance was seen on the duct work which the employer indicated was rust. Employees did not express any concerns of symptoms related to the substance on the duct work.

Recommendations:

No citations were recommended. The employer indicated there are plans to renovate and redesign the indoor range which will include replacement of the ventilation system.

3. Possible ricochet from steel baffles falling from their position.

Findings:

The instructors were observed as police officers shot handguns in the indoor range and observed the condition of the baffle system as this occurred. No parts of the baffle system were seen moving out of position on any of the three days while on site sampling.

Recommendations:

No citations were recommended. The employer indicated there are plans to renovate the indoor range which will include replacement of the baffle system.

4. Possible exposure to lead paint due to bullets striking the range floor down range.

Findings:

The condition of the floor in the range was observed, which appeared to have been chipped from bullets striking the floor over the years. According to employees interviewed, the range floor was painted about 10 years ago with a paint purchased from Home Depot. Another employee indicated the range floor was not painted prior to that.

Recommendations:

No citations were recommended.

5. Possible exposure to asbestos contained in floor tile.

Findings:

The condition of the floor tile in the range was observed. There were some broken tiles but most of the floor tiles were intact. Air monitoring for asbestos was performed on February 19, 2014 and the lab reported no asbestos detected on the samples.

Recommendations:

No citations were recommended related to asbestos exposure. A citation was recommended for not having conducted a survey to identify the location and quantity of asbestos containing material and/or potential asbestos containing material. The employer indicated there are plans to renovate the indoor range which will include removal of the asbestos floor tile.

CSHO Signature	<i>Christina White</i>	Date	02/02/14
Accompanied By			