



NYC Department of Environmental Protection
Bureau of Water & Sewer Operations, Environmental Health & Safety (EHS)

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Environmental Health & Safety News for BWSO



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“Compliance with the lockout/tagout standard prevents an estimated 120 fatalities and 50,000 injuries each year.”
– BWSO EHS Staff



BUREAU OF WATER & SEWER OPERATIONS
ENVIRONMENTAL HEALTH & SAFETY DIVISION

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Lockout/Tagout: Are you using it correctly?

According to the Occupational Safety and Health Administration (OSHA), approximately 3 million workers repair equipment and face the greatest risk of injury when lockout/tagout is not properly implemented. Compliance with the lockout/tagout standard (29 CFR 1910.147) prevents an estimated 120 fatalities and 50,000 injuries each year.

OSHA’s Control of Hazardous Energy, or Lockout/Tagout (LOTO) Standard, was enacted to ensure that workers would not be unintentionally injured by the unexpected energization, start-up, or release of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or any other type of energy. In general, the OSHA standard requires that all power sources that can be locked out, must be locked out for servicing or maintenance, and that employers develop a written energy control program that clearly explains all procedures for LOTO.

Although these requirements seem fairly straight forward, there may be some confusion across BWSO Operations between a lockout that is for operational purposes and one that is for the control of hazardous energy. Continue reading on page 3 for an example of each; do you know the difference between the two?

Continued on Page 3

Do you know about the Great Pacific Garbage Patch?



See article on page 2.

Lead Exposure at Florida Gun Range— OSHA fines total \$2,099,600!

As DEP employees, we are fortunate to work for an agency that has implemented strong Environmental, Health and Safety (EHS) programs throughout the organization to ensure employees’ health and safety. Unfortunately, not all U.S. workers are provided a safe and healthy work environment, and such was the case at E.N. Range Inc. in Miami, Florida.

On August 23, 2010, OSHA cited E.N. Range Inc. with \$2,099,600 in proposed fines for willfully exposing its employees, most of whom had limited knowledge of English, to excessive lead levels and other health and safety hazards. The company was cited for more than 50 violations of OSHA’s Lead standard (29 CFR 1910.1025), 42 of which were categorized as willful/serious. Some of the most egregious violations observed by OSHA inspectors during the inspections were as follows:

- Workers were shoveling and dry sweeping lead waste that has been accumulated on the floor of the indoor shooting range.



Continued on Page 2



**WIN AN iTUNES GIFT CARD!
TAKE QUIZ ON PAGE 3**

The Great Pacific Garbage Patch

In the middle of the North Pacific Ocean exists a subtropical gyre—a clockwise spiral of currents created by a high-pressure system of air currents. The gyre has produced two large masses of ever-accumulating trash, collectively called the “Great Pacific Garbage Patch.” The two garbage patches are connected by a thin 6,000-mile long current called the Subtropical Convergence Zone, where one patch appears between Hawaii and California and the other garbage patch lies between Japan and Hawaii. Each swirling mass of refuse is accumulated from all over the world.



What is the Garbage Patch made of?

About 80% of debris, the majority of which is plastic, originates from land sources; 10% of the debris is from marine litter such as free-floating fishing nets; and the last 10% comes from recreational boaters, offshore oil rigs and large cargo ships which drop about 10,000 steel containers full of various refuse into the sea each year.

How is the Garbage Patch affecting the environment?

Scientific studies have shown that the garbage patch is causing environmental problems such as:



- **Entanglement:** Entanglement is the first danger marine life encounters. Animals such as sea turtles are being trapped by fishing nets.
- **Ingestion hazards:** Ingestion of plastic bags likewise endangers marine life, which mistakenly confuses the plastic bags with jellyfish, a common prey. Small plastic granules that are melted down at manufacturing sites and remolded into commercial plastic present another hazard. Often these resin pellets get lost during transportation from site to site, and primarily affect sea birds like the short tailed albatross. The birds confuse the small plastic with protein-rich fish eggs that they feed to their newborns.
- **Photodegradation:** Photodegradation is a major problem that affects the environment, animals, and even us. Photodegradation is when the sun breaks down floating debris and plastic. The inherent toxins in plastic such as colorants and chemicals (e.g. bisphenol-A) may leak out into the sea. These colorants and chemicals could easily enter the food chain causing not only environmental problems, but health problems as well.

What can we do?

The discoverer of the Great Pacific Garbage Patch, Captain Charles Moore, once said a cleanup effort “would bankrupt any country and kill wildlife in the nets as it went.” Education on proper disposal, recycling, and reuse of biodegradable materials are the best course to take to limit the amount of trash being thrown away.



References: www.mnn.com, marinedebris.noaa.gov, www.howstuffworks.com

Lead Exposure at Florida Gun Range— OSHA fines total \$2,099,600! – Continued from Page 1

- Even though the Action Level (AL) for airborne lead exposure is 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) over an eight hour Time Weighted Average (TWA), and the Permissible Exposure Limit (PEL) is 50 $\mu\text{g}/\text{m}^3$ TWA, airborne lead levels were as high as 954 $\mu\text{g}/\text{m}^3$ TWA when measured in the area where employees dumped dry lead waste into a 55-gallon drum. No engineering or administrative controls were in place to reduce employees’ exposure to lead.
- Even though the workers were exposed to lead levels in excess of the PEL, the employer did not provide shower facilities, nor a clean lunch area or a clean change room for its employees. Most of the workers were observed leaving the jobsite without taking a shower, or changing their work clothes or shoes.
- Most of the employees had lead poisoning, and the company administered them lead chelation medications without the supervision of a physician, a violation of the lead standard which requires that such medications shall only be administered under the supervision of a physician in an appropriate clinical setting.
- Employees were wearing respirators even though they were not in a respiratory protection program, and were never trained on the proper use of this personal protective equipment (PPE).

The abovementioned violations would not have been issued to E.N. Range Inc. if it had a Lead Management policy similar to DEP’s, and a competent Industrial Hygienist on board. With respect to employees performing tasks and/or working in areas where there is a potential for airborne lead exposure at concentrations greater than the AL and/or PEL, DEP’s Lead Management policy requires the following:

- EHS shall conduct exposure assessments for employees who perform high risk lead jobs to determine their exposure level.
- If the highest exposure level measured is between the AL and PEL, monitor other exposed employee groups (if not represented by the initial determination); repeat monitoring every six months until at least two consecutive measurements taken, at least seven days apart, are below the AL. Make medical surveillance available to any employee exposed on any day above the AL and institute a medical surveillance program for all employees who are or may be exposed above the AL for more than 30 days per year. Conduct training on specific work hazards, protective measurements and effects of lead on the body.
- If the highest exposure level measured is above the PEL, monitor other exposed employee groups, repeat monitoring quarterly, provide training and medical monitoring, and implement a written compliance program that provides for engineering and work practices control, respiratory protection, mechanical ventilation, and administrative controls as needed to reduce the affected employees’ lead exposure to below the PEL.
- For exposures at or above the PEL, without regard to the use of respirators, affected employees must be notified in writing that their exposure level exceeded the PEL, and what corrective actions will be taken to reduce their exposure to be below the PEL.
- Provide work clothing or disposable coveralls.
- Implement hygiene practices and provide change rooms and lunch rooms.
- Post warning signs in work areas where the PEL is likely to be exceeded.

In addition to these requirements, the DEP Lead Management policy addresses general work practices for “low risk” maintenance jobs. For more specifics on those requirements, see Section 5.3 of the policy.

The violations identified during the inspection at E.N. Range Inc. had abatement dates ranging from September 2, 2010 to December 31, 2010. OSHA inspectors will conduct follow-up visits at the facility to ensure that all the violations have been corrected. OSHA will also be checking to see that E.N. Range Inc. has successfully implemented a robust Lead Management policy similar to the DEP policy described above and that it has begun to take the health and welfare of its employees seriously – after all, it’s the law.

Reference: osha.gov, DEP’s Lead Management policy

Congratulations to:
Queens Water Maintenance
*for achieving a high level of EH&S compliance
and for their*
OUTSTANDING PERFORMANCE*
at their OEHSC EH&S AUDIT

*Based on a comparison of their two most recent audits resulting in a 50% or more reduction of their total findings.

UPCOMING TRAINING:
October – November 2010

1. Traffic Work Zone Safety
2. Chainsaw Safety Training
3. Office Right-to-Know

Questions? Contact Nelson Leon
at (718) 595-5544

The Silver Lining in Staten Island: The Story of the Silver Lake Tanks

“The purpose of the whole thing is to hold water,” according to a representative of the New York City Water Board interviewed during the completion of the 100 million gallon Silver Lake Tanks. At the time of completion, these tanks were the largest underground reservoir in the world.

Originally the Silver Lake Reservoir was used to store drinking water on Staten Island. In 1913 the original lake was modified and became the endpoint of the Catskill water supply system. The completion of the underground Silver Lake Tanks, around 1970, improved upon the reservoir in two main ways. First, the underground enclosed tanks enhanced the protection of the water supply from outside contaminants, which may have been introduced via the open Silver Lake Reservoir. Secondly, the underground tanks increased water pressure to the end users.

Although the tanks have replaced the Silver Lake Reservoir, the reservoir is still used. If the tanks are filled above the desired level, the excess can be discharged to the reservoir. Also, in the event of a flood inside the Silver Lake Tanks facility, there is a valve that can be opened to drain the facility to the reservoir.

The Silver Lake Tanks are integral to successfully supplying potable water to the residents of Staten Island. Our current distribution system utilizes the Richmond Tunnel, which branches off from Brooklyn, to supply water to Staten Island. Before reaching the Silver Lake Tanks, water passes through Richmond Chlorination, where, you guessed it— additional chlorine is added to maintain adequate chlorine residual levels. The tanks can be utilized to store nearly a two-day water supply for all of Staten Island. This capability is extremely valuable; in the event of maintenance or other events that require the Richmond Tunnel to be taken off-line, the Silver Lake Tanks can be used, albeit for a short time, to maintain water supply to Staten Island. It is only through maintenance of infrastructure staples, like the Richmond Tunnel, that we can ensure a clean and plentiful water supply to the residents of all five boroughs.



Special thanks to Odd Larsen for his help with this article.

Connecticut Power Plant Explosion Update

In the April 2010 edition of The Conduit, we highlighted the importance of implementing an effective EHS program in order to protect employees from potentially fatal situations. In that article we spoke about the February 7, 2010 tragic accident at the Kleen Energy Systems Plant, where an explosion ripped through the facility killing six workers and injuring 50. The plant exploded when something ignited natural gas and air that had accumulated in tight quarters as workers cleaned pipes in a procedure known as “gas blow.”

As a result of this fatal incident, OSHA imposed \$16.6 million in fines against the companies involved in the blast in Middletown, CT. The largest proposed fine is \$8.3 million against O&G Industries, the general contractor. Seventeen other companies also face potential fines, ranging from \$7,000 against several small contractors to more than \$6 million against Keystone Construction & Maintenance, which oversaw the gas blow procedure. According to OSHA, the companies “blatantly disregarded well-known and accepted industry procedures and their own safety guidelines during the work at the power plant.”

OSHA officials said the fines are the largest in New England in recent history and among the largest nationwide in workplace safety investigations. Local and state law enforcement agencies are still determining whether to bring criminal charges in the case.

References: \$16 Million Fine for Conn. Power Plant, New York Times

Lockout/Tagout: Are you using it correctly?

– Continued from Page 1

Example 1: The distance between the grinding wheel and the rest on a grinder in a BWSO machine shop is greater than the OSHA mandated maximum of 1/8 of an inch. The Safety Officer notices this and places a “Do Not Use” tag on the machine.

Example 2: The dust collector in a BWSO Machine shop became clogged while an employee was operating it. Before heading to the basement to unclog the dust collection vessel, the employee switched the electrical disconnect switch to the off position and placed a lock and a tag that stated “Danger, Locked Out, Do Not Remove” on the switch.

In the two scenarios above, Example 2 demonstrates the correct application of a LOTO tag and lock for the purposes of controlling hazardous energy. The fact that an employee was preparing to service the dust collector, which was energized, triggered BWSO’s written energy control program. In this situation the employee followed the appropriate procedures for locking and tagging out the equipment.

An acceptable LOTO procedure should cover the following:

- How to prepare for and perform the shutdown;
- How to isolate the equipment;
- How to apply and remove lockout devices;
- How to safely release stored energy to assure that a zero energy state exists; and
- How to verify that the machine or equipment is isolated from its energy supplies.



To ensure that BWSO employees have a sound understanding of the applicable LOTO requirements associated with their operation/facility, BWSO EHS is planning on conducting additional LOTO training in the coming year. In the meantime, if you have any questions regarding LOTO at your facility, contact EHS.

Sources: Keller Online & osha.gov

TAKE THIS QUIZ: SUBMIT CORRECT ANSWERS FOR A CHANCE TO WIN A FREE GIFT CARD

BE SURE TO INCLUDE YOUR FULL NAME AND WORK ADDRESS. FAX: (718) 595-5541 AND/OR EMAIL: BWSOEHS_suggestions@dep.nyc.gov

- | | | |
|--|---|--|
| <p>1. Which of the statements about lead are true?</p> <p>A) In adults, exposure to lead may result in decreased reaction time.</p> <p>B) Lead is more dangerous to children because children’s bodies absorb more lead.</p> <p>C) Lead is a naturally occurring volatile organic compound (VOC).</p> <p>D) A + B</p> <p>E) All of the above</p> | <p>2. As per OSHA 1910.147, energy control procedures must:</p> <p>A) Be inspected/reviewed at least once every 3 years.</p> <p>B) Detail how to isolate the piece of equipment to control hazardous energy.</p> <p>C) Be completed by a certified electrician.</p> <p>D) None of the above</p> | <p>3. The Croton WFP, when fully operated will use _____ technology to disinfect for Giardia and Cryptosporidium.</p> <p>A) DAFF</p> <p>B) Sulfuric Acid</p> <p>C) UV</p> <p>D) Flocculation</p> |
|--|---|--|

Answers for August 2010 Newsletter Quiz: 1) B 2) D 3) C



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*We'd love to hear
from you!*

E-mail us at:

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Sindy Mulyono – Facility Engineer, Croton Water Filtration Plant (WFP)



Sindy Mulyono joined the DEP in 2009 to work on the start-up and operations of the Croton Water Filtration Plant, which is expected to be completed by 2012. She is a busy Facility Engineer assisting Mike Keating in different aspects of the start-up: putting together Croton WFP's new needs, staffing and hiring, selecting and purchasing the Computerized Maintenance Management System for the plant, and reviewing consultant's submittals such as start-up schedule, Standard Operating Procedures (SOPs), Facility Monitoring Plan (FMP), etc. Sindy has a B.S. in Industrial Engineering and a minor in Mathematics from San Jose State University. She also has her Masters in Engineering Management.

Q: Where are you from?

A: I am originally from Jakarta, Indonesia. I lived in California for about 10 years before moving to New York two years ago.

Q: How did you find about (or become involved with) Environmental Health & Safety?

A: Previously, I worked for a Semiconductor and Solar Company in Silicon Valley as a Facility Safety Engineer. I headed two main facilities: a solar reliability laboratory, and a semiconductor research and development laboratory. As the Facility Safety Engineer, my main focuses were the facility safety aspect of the design of the semiconductor and solar equipment, getting the necessary project and permit approvals by City agencies, and being heavily involved in the construction and start-up of the equipment.

Q: What is your current job title and your responsibilities/role at the DEP?

A: My current office title is Facility Engineer. I work under Mike Keating, and assist him on the facilitation of Croton WFP start-up and operations. Currently I am focusing on Croton's new needs, ensuring that the consultant is meeting all of their deliverables, performing QA on consultant's submittals (i.e. SOPs, FMP, O&M Budget, etc.), and ensuring that the consultant and the start-up committees stay on schedule. My team members, Tom Tipa and John Dydland, are focused on the operability of the Croton WFP and are heavily involved in the review of the SOPs and FMP.

Q: What did you learn from your prior experiences that you apply to your new position?

A: My previous job relied heavily on my skills as an advisor and as a project manager. I like to be hands-on, methodical, and very organized. I also think that communication is the key to a successful project, so it is very important to communicate the goal to the team and for everybody to work together to achieve that goal. My previous experience taught me to think analytically, to work towards efficiency and improvements, and to always offer a solution. My role as an advisor was to advise my client in the subject of my expertise. I realized that I may not know all the answers but I know my resources and I am not afraid to ask questions and ask for help.

Q: Why was the Croton Filtration Plant developed?

A: The Croton Filtration Plant was developed to meet the public water supply and public health needs of the City, and to comply with State and Federal drinking water standards and regulations. The water that is being filtrated by the plant is from Croton, not Catskill/Delaware. I also believe that it is good to have this redundancy for different reasons, for instance when work needs to be done on the Catskill/Delaware system.

Q: How will Croton disinfect the water? What is the disinfection process?

A: From the Raw Water Wet Well, the water is pumped

to the mixers where the required chemicals [Sulfuric Acid and Sodium Hypochlorite (optional)] and coagulant aid polymer are added. Once mixed, the water goes to the flocculator tanks where a filter aid polymer and Sodium Hypochlorite (pre-feed) are added to maintain an oxide coating in the filters. After that process, the floated solids in the water are skimmed and the water will go through the Dissolved Air Flotation Filter (DAFF) process and then to the UV-unit. UV is the primary disinfection for Giardia and Cryptosporidium inactivation. Leaving the UV-unit the filtered and disinfected water goes to the Treated Water Tank (Backwash Tank) where additional chemicals are added if required/needed:

- Sodium Hypochlorite – for residual or secondary disinfection;
- Sodium Hydroxide – to raise the pH of the water leaving the plant;
- Corrosion Inhibitor – to control the levels of lead and copper within the distribution system; and
- Hydrofluorosilicic Acid – used to add fluoride for dental benefit.

From the Backwash Tank, the water will be pumped to either the Low Service (Bronx) or the High Service (Manhattan) for distribution.

Q: Besides disinfectants (chemicals and UV), what other tools are being used to ensure water quality?

A: Croton WFP is equipped with a process control laboratory to perform and control the monitoring of the plant's process to meet specific parameters before the water leaves the plant. The compliance portion of the water quality will be performed by the Bureau of Water Supply (BWS).

Q: How much water can the plant filter/treat?

A: The plant is designed to produce 290 million gallons of water per day.

Q: What EHS programs are being implemented in the new plant?

A: The majority of current EHS programs will be implemented at the plant. However, I think Lockout/Tagout (LOTO), Confined Space, Hot Work, and Walking/Working Surfaces (fall protection) will be some of the main focuses at the plant.

Q: What types of EHS duties have you participated in?

A: I work closely with Jane Weber with policy reviews, job hazard assessment (JHAs) efforts with the consultants, and other EHS issues that may come up. I also work closely with Karen Marino on the training program for Croton WFP personnel.

Q: How is Croton being integrated into BWSO?

A: In terms of the organization, Croton will be in Distribution Operations under the supervision of Mike Keating.

Q: Do you have any final words of wisdom, mottos or advice you would like to share?

A: I really like the quote from the movie *Dead Poets Society*—“Carpe diem. Seize the day. Make your lives extraordinary.”