Lessons Learned & Success Stories – September to November 2018 Report

The NBACC Mishaps, Lessons Learned and Success Stories Summary serves to reinforce a strong culture of safety and accountability by promoting consistent reporting of mishaps, establishing strong lines of communication with the safety department, supporting a learning environment by allowing others to learn from reported events, and tangibly demonstrating NBACC Leadership's commitment to safety, accident prevention, and continuous improvement.

SUCCESS STORIES:

1. An employee was setting up their workstation in a Biosafety Level (BSL)-3 laboratory when they noticed that the small biohazard waste bag they were going to use was torn. Upon further investigation, all bags of this type tore very easily. The staff member immediately reported the incident to Health and Safety (H&S). The employee then sat all bags of this type aside, took photographs of the torn bags, and sent the photographs to H&S. The employee was proactive in noticing the initial tear, and went through all bags in the room and hallway to ensure that other staff members did not encounter the same problem.

2. An employee noticed an unsafe condition and called a 'stop work' and prevented a potentially serious injury. While working in an interstitial space, a member of Facilities noticed that a Fan Coil Unit (FCU) was making an odd noise. Upon visual inspection, the staff member determined that the drive belt for the fan needed to be replaced. The staff member informed another member of Facilities that they were going to go turn off the main breaker and get a Lock Out Tag Out (LOTO) number. When the staff member returned to the FCU, they noticed that the other Facilities member had already begun to change the belt of the FCU without the breaker being secured and a LOTO number being obtained. The Facilities member immediately called a 'stop work' until they were given a LOTO number and were assured that the breaker was secured.

LESSONS LEARNED:

1. Maintaining a sense of calm and focus while working allows deliberate movement and attention to detail, which reduces the risk of incidents.

2. Be diligent and aware of your movements, processes and work flow. Several of the near misses for this time period perhaps could have been avoided if individuals had taken a few minutes to mentally evaluate the placement of items or hands and the work being conducted.

3. Most people are aware of the major hazards in their work place but too frequently, people are either not aware of or take for granted the lesser hazards. A number of finger cuts were reported this past month. Many of these injuries are from simple tasks that are performed every day and would not be considered a high hazard, but being aware that these "simple" tasks can result in injuries is essential for maintaining a safe work environment. Some key points to remember, (1) always use the right tool for the job, (2) use the correct PPE for the job, and (3) be aware of your surroundings (i.e., pinch points, low or protruding objects).

EVENT SUMMARIES:

1. **FIRST AID SUMMARY:** 08/01/2018; A staff member slammed their hand in a BSL-4 door while carrying light fixtures. The suite had been Vapor Hydrogen Peroxide (VHP) decontaminated prior to the work. The Certifying Medical Authority (CMA) applied first aid and the staff member returned to work.

2. **FIRST AID SUMMARY:** 08/07/2018; A staff member reported to the CMA with mosquito bites on their skin. The staff member noticed the mosquito biting them while they were working in a BSL-2 laboratory. The CMA applied first aid and the staff member returned to work.

3. **FIRST AID SUMMARY:** 08/30/2018; A staff member cut their glove and thumb while they were crushing an autoclave biological indicator (BI) with their fingers. The CMA applied first aid and the staff member was restricted from BSL-3 and BSL-4 until the next day. The staff member was also retrained on how to properly crush BIs during processing.

4. **FIRST AID SUMMARY**: 10/01/2018; A staff member scraped their thumb while breaking down boxes in a BSL-3 hallway. The employee immediately washed their hands, called the Command Center and showered out to report to the CMA. The CMA applied first aid and the staff member was restricted from BSL-2, -3 and -4 laboratories until the injury healed.

5. **FIRST AID SUMMARY**: 10/02/2018; A staff member working in a BSL-3 laboratory was filling up a container in the sink when they scraped their hand on the faucet. The employee immediately washed their hands, called the Command Center and showered out to report to the CMA. The CMA applied first aid and the staff member was restricted from BSL-2, -3 and -4 laboratories until the injury healed.

6. **FIRST AID SUMMARY**: 10/04/2018; A staff member working in a BSL-3 laboratory was retrieving a container of disinfectant when they scraped their hand on the underside of the sink. The employee immediately washed their hands, called the Command Center and showered out to report to the CMA. The CMA applied first aid and the staff member was restricted from BSL-2, -3 and -4 laboratories until the injury healed.

7. **FIRST AID SUMMARY**: 10/16/2018; A staff member was walking through a BSL-3 hallway when they slipped and landed on their right thigh and forearm. The hallway had recently been mopped and had the appropriate signage. The staff member called the Command Center and reported the incident to H&S. After speaking with the CMA, the staff member was permitted to return to work without restriction.

8. **FIRST AID SUMMARY**: 10/22/2018; A staff member getting dressed in a change room was reaching into a locker when they scraped their hand on the edge of the door. The employee immediately washed their hands, left the change room and reported directly to the CMA. The CMA applied first aid and the staff member was restricted from BSL-2, -3 and -4 laboratories until the injury healed.

9. **FIRST AID SUMMARY**: 10/25/2018; A staff member was using a folding ladder to check the top gloves of a Class III Biological Safety Cabinet (BSC), when they accidentally pinched their finger while closing the ladder. The staff member called the Command Center, washed their hands and showered out to report to the CMA. The CMA applied first aid and the staff member was restricted from BSL-2, -3 and -4 laboratories until the injury healed. A new type of ladder has been purchased along with pinch point signage.

10. **FIRST AID SUMMARY**: 10/26/2018; A staff member was putting on their BSL-4 suit in the suit room when the sleeve of their suit snagged their cuticle and caused it to start bleeding. The employee immediately washed their hands, called the Command Center and showered out to report to the CMA. The CMA applied first aid and the employee returned to work on modified duty.

11. **FIRST AID SUMMARY**: 10/31/2018; A staff member was working on a water system panel in the Vivarium when they stood up and hit the top of their head on the door of the panel. The staff member left the vivarium and immediately reported to the CMA. The CMA applied first aid and the staff member was restricted from BSL-3 and -4 laboratories until the injury healed.

NEAR MISS SUMMARIES:

12. **SPILL SUMMARY:** 08/01/2018; A staff member working in a BSL-4 laboratory reported that pipette tips from a robot were expelled on the floor of the BSC after they put the sharps container in the wrong position. The tips had been in contact with a Risk Group (RG) 4 agent and MicroChem, but had not undergone a proper decon time. The CMA ruled no potential exposure.

13. **SPILL SUMMARY**: 08/09/2018; A staff member working in a BSL-3 laboratory reported that pipette tips from a robot were expelled on the floor of the BSC after they put the sharps container in the wrong position. The tips had been in contact with a RG2 agent and MicroChem, but had not undergone a proper decon time. The CMA ruled no potential exposure.

14. **PPE FAILURE SUMMARY**: 08/10/2018; A staff member working in an ABSL-3 laboratory reported that while scanning an animal's telemetry device, they were scratched and tore both gloves on their left hand. The staff member removed their gloves, washed their hands, and noted that there was no breach of skin. The CMA ruled no potential exposure.

15. **PPE FAILURE SUMMARY:** 08/14/2018; A staff member working in an ABSL-3 laboratory reported that they tore their outer glove on the plastic cover of a hose handle while they were spraying water into a floor drain. The CMA ruled no potential exposure.

16. **SPILL SUMMARY:** 08/22/2018; A staff member working in the BSC of a BSL-4 laboratory bumped the waste reservoir of a robot and spilled the contents inside of the BSC. The waste reservoir contained a mixture of MicroChem and a RG4 agent. The staff member was hooked up to air at the time of the spill and reported no issue with their suit or gloves. After speaking with H&S, the staff member cleaned the spill. The CMA ruled no potential exposure.

17. **EQUIPMENT FAILURE SUMMARY:** 08/28/2018; A staff member working in a BSL-3 laboratory reported that their Powered Air Purifying Respirator (PAPR) lost power while they were setting up their workstation. The PAPR beeped a few times and then shut off. The employee immediately held their breath, exited the room and retreated to the PAPR staging area to get a new PAPR and place the faulty PAPR unit out of service. The CMA ruled no potential exposure.

18. **SPILL SUMMARY:** 08/28/2018; A staff member working in a BSL-3 laboratory reported that a single micropipette tip fell out of the BSC when the tip box they were opening spilled its contents onto the floor of the BSC. The spill was caused when a piece of tape became stuck on the box's insert and pulled the insert out of the box. The CMA ruled no potential exposure.

19. **SPILL SUMMARY:** 08/28/2018; A staff member reported that a box of tips fell off of a shelf and spilled on the floor of a BSL-3 lab. The tip box had been previously used in the BSC, surface decontaminated, been brought out of the BSC and stored on a shelf. The CMA ruled no potential exposure. Tip boxes that have been used in a BSC may be surface deconned, bagged and stored outside of the BSC, otherwise tip boxes should remain in the BSC.

20. **SPILL SUMMARY:** 09/06/2018; A staff member working in a BSL-3 laboratory dropped a Ziploc bag containing glass vials of a RG2 agent and one of the vials cracked. The employee held their breath, left the room and called H&S. The employee confirmed that the Ziploc bag remained intact and the CMA ruled no potential exposure.

21. **SPILL SUMMARY**: 09/07/2018; A staff member working in a BSL-3 laboratory reported that a tube cap fell out of the BSC and landed on the floor. The tube contained dilution fluid and serum. The staff member held their breath, left the room and called H&S. The CMA ruled no potential exposure.

22. **SPILL SUMMARY**: 09/07/2018; A staff member working in a BSL-3 laboratory was performing an ELISA assay with a RG2 agent when the tip of their aspirator fell off and dripped liquid onto the BSC workspace. The spill remained inside the BSC and the BSC was operating normally at the time of the spill. The CMA ruled no potential exposure.

23. **PPE FAILURE SUMMARY**: 09/12/2018; A staff member noticed a pinhole on the right side of the face shield on their BSL-4 suit (Sperian #261) when they were exiting the chemical shower. The staff member did not experience any spills during their work. The suit was retired and the CMA ruled no potential exposure.

24. **PPE FAILURE SUMMARY:** 09/13/2018; A staff member was working in a BSL-4 suite when they caught their glove on the small handle of an airlock door and ripped a large hole in their outer glove. The staff member dunked their glove in MicroChem for five minutes, placed a replacement glove over their torn glove and showered out of the suite. The employee's inner glove remained intact. The CMA ruled no potential exposure.

25. **SPILL SUMMARY:** 09/14/2018; A staff member working in a BSL-3 laboratory picked up a bag of waste and noticed it was dripping into the secondary container. The staff member held their breath, left the room and called the Command Center. After speaking to a member of H&S, the employee cleaned the spill. The CMA ruled no potential exposure.

26. **SPILL SUMMARY:** 09/14/2018; A staff member unloading an autoclave noticed a spill of brown liquid directly under the unit. The autoclave had successfully completed its run and the bag of waste being unloaded was intact. Additionally, there were no noticeable spills inside of the autoclave. After speaking with H&S, a member of Facilities donned additional respiratory protective equipment (RPE) and cleaned the spill. It was later determined that the spill was not from the autoclave chamber but instead from a heat exchanger. The CMA ruled no potential exposure.

27. **SPILL SUMMARY**: 09/17/2018; A staff member working in a BSL-3 laboratory reported that a tube cap fell out of the BSC and landed on the floor. The employee was working with a RG3 agent in the BSC, however the cap had not come in contact with any agent. The staff member held their breath, left the room and called H&S. The CMA ruled no potential exposure.

28. **LAB PROCESS FAILURE SUMMARY:** 09/19/2018; A staff member working in a BSL-3 laboratory called to report that they cracked a microscope slide while adjusting an objective lens on the microscope. The slide was a wet mount of a RG3 agent. All of the staff members immediately left the room and called the command center. After speaking with a member of H&S, the broken slide was cleaned up and the microscope was surface decontaminated. The CMA ruled no potential exposure and the Responsible Official (RO) was notified.

29. **PPE FAILURE SUMMARY**: 09/20/2018; A staff member working in the BSL-4 noticed that their inner glove and the sleeve of their scrubs were wet after exiting the chemical shower. The staff member was in the suite repairing the chemical shower door. Upon exiting the suite, the suit was pressure tested and there were no breaches reported. The CMA ruled no potential exposure.

30. **LAB PROCESS FAILURE SUMMARY**: 09/21/2018; A staff member working in a BSL-2 laboratory reported that they failed to don a second pair of gloves before beginning their work with a RG2 agent in the BSC. Upon noticing their mistake, the employee exited the BSC, discarded their gloves, washed their hands and called the command center. After speaking to a member of H&S, the employee double gloved and continued their work. The RO was notified. The CMA ruled no potential exposure.

31. **PPE FAILURE SUMMARY**: 09/21/2018; A staff member working in the BSL-4 noticed that the left shoulder of their scrubs was wet after exiting the chemical shower. The staff member was in the suite shadowing another staff member. Upon inspection, a small pinhole was discovered on the shoulder of their BSL-4 suit (Sperian #247). The suit was repaired and put back in service. The CMA ruled no potential exposure.

32. **SPILL SUMMARY:** 09/12/2018; A staff member working in a BSL-3 laboratory reported that they spilled stain dye onto the floor and their scrubs. The employee did not follow proper spill procedure and instead, cleaned the spill and changed their scrubs. They later reported the incident to a member of H&S. Health and Safety would like to remind staff members to review the newly revised spill SOP.

33. **PPE FAILURE SUMMARY:** 10/01/2018; A staff member working in a BSL-3 laboratory was removing their outer gloves to exit the BSC when they noticed that one of their inner gloves had a tear. Upon further inspection, the staff member confirmed that their outer gloves remained intact. The CMA ruled no potential exposure.

34. **SPILL SUMMARY**: 10/03/2018; A staff member working in a BSL-3 laboratory reported that a trash bag ripped and spilled its contents onto the laboratory floor. The staff member held their breath, left the room and called the Command Center. After speaking with a member of H&S and waiting for the 30 minute air wash, the staff member reentered the room with a full shroud PAPR hood (APF 1000) and cleaned up the spill. The CMA ruled no potential exposure.

35. **PPE FAILURE SUMMARY**: 10/10/2018; A staff member working in a BSL-4 hallway was installing a temporary wall when their air hose became detached from their suit (Dover #205) at the swivel. There was no "hole" in the suit as the hoses are attached to a swivel mechanism which allows users to move around the room without the hose staying in a fixed position. It is likely that the hose rotated enough to "unscrew" itself from the mechanism. The staff member immediately exited the suite through the chemical shower and reported the incident from the suit room. There was no agent present as the quad had been cleaned out to prepare for VHP decontamination. The CMA ruled no potential exposure.

36. **EQUIPMENT FAILURE SUMMARY**: 10/22/2018: Staff members working in a decontaminated BSL-4 quad reported that the tape sealing the temporary Lexan wall to the wall of the BSL-4 corridor had been breached. The staff members called the Command Center and after speaking to a member of H&S they were instructed to leave the quad until the breach could be repaired. The breach was likely due to pressure changes from personnel continually entering and exiting on the containment side of the wall. The pressure in the BSL-4 draws air into the containment side, so when the seal broke the air was pulled into the containment side of the corridor. The CMA ruled no potential exposure. Upon further investigation, it was determined that the breach was reported by a staff member working in the BSL-4 suite earlier in the day to members of Facilities, who had already entered containment to repair the seal. H&S was not informed of the breach and the ongoing repair when the staff members called from the decontaminated quad. H&S is working with Facilities to address ways to structurally improve the temporary wall fabrication and to improve the flow of information between the two groups.

37. **SPILL SUMMARY**: 10/23/2018; A staff member working in a BSL-4 laboratory reported that a pipetting robot spilled its tips onto the surface of the BSC. The tips had been in contact with a RG4 agent and MicroChem, but had not been decontaminated for the full contact time. The tips remained inside the BSC and the BSC was functioning properly at the time of the incident. After reporting the spill and speaking to a member of H&S, the staff member cleaned the BSC following proper spill cleanup procedure. Upon closer observation, it was determined that the waste container for the tips was too full and there was no space for additional tips in the container, causing the spill. The responding H&S

member reminded the staff member to empty or decon out the sharps container of tips when it becomes too full. The CMA ruled no potential exposure.

38. **PPE FAILURE SUMMARY:** 10/23/2018; A staff member working in a BSL-4 laboratory was wiping the outside of a BSC with isopropyl alcohol when their glove snagged the plastic portion of the visual airflow indicator and tore a hole in their outer glove. The staff member dunked their glove in MicroChem for 5 minutes, placed a replacement glove over their torn glove and showered out of the suite. The employee did a leak test on their inner glove and confirmed that their inner glove remained intact. The CMA ruled no potential exposure.

39. **SPILL SUMMARY**: 10/24/2018; A staff member working in a BSL-4 laboratory reported that a microtube fell out of the BSC and landed on the floor. The tube contained a RG4 agent that had been chemically decontaminated. The outside of the tube had been sprayed with MicroChem though it had not undergone the full contact time. After speaking with H&S, the staff member returned the tube to the BSC and deconned the area on the floor where the tube landed with MicroChem. None of the contents leaked from the tube and the staff member had no issues with their suit at the time of the incident. The CMA ruled no potential exposure.

40. **SPILL SUMMARY:** 10/31/2018; A staff member reported that an autoclave filled with water and leaked into the corridor when the autoclave door was opened. The autoclave cycle had completed successfully and the water was clean water that was introduced to the autoclave chamber after the cycle is complete. Due to the large volume of water, some water entered a BSL-3 airlock and crossed over the line of containment. To prevent water returning back over the line of containment, members of H&S entered the airlock, diluted the water with bleach, allowed for a 15-minute contact time and pushed the water across the line of containment where it was mopped up from the BSL-3 side. A member of Facilities is working to repair the autoclave. The CMA ruled no potential exposure.

41. **PPE FAILURE SUMMARY:** 10/30/2018; A staff member working in a BSL-4 laboratory was reattaching the faceplate of an incubator when their hand became caught between the unit and the faceplate and tore a hole in their outer glove. The staff member proceeded to the nearest glove tear kit and dunked their hand in MicroChem for five minutes, placed a replacement glove over their torn glove, and showered out of the BSL-4. After speaking to a member of H&S, the staff member then did a leak test on their inner glove and found that there was no breach. The CMA ruled no potential exposure.

OTHER OCCURENCES:

42. **FACILITY FAILURE SUMMARY:** 08/06/2018; The Effluent Decontamination System (EDS) system failed to send a remote notification alarm when one of the tanks filled up over the weekend due to a malfunctioning animal watering system. The laboratories were shut down for several hours to allow the tanks to heat up and sterilize the excess effluent. Several corrective actions have resulted from this near miss and information is still being gathered on the potential cause of the malfunction.

43. **SPILL SUMMARY:** 08/7/2018; A staff member working in a BSL-2 laboratory reported that a small amount of dye was spilled onto the walls of the BSC when they were tapping a 96-well plate during a training exercise. The spill was cleaned up and the mentor and trainee discussed tapping the plates more gently.

44. **PROCEDURAL FAILURE SUMMARY**: 08/13/2018; A staff member was escorted into several BSL-3 suites without an approved Escorted Laboratorian Form (ELF) or updated ELF card. The staff member was retrained on these procedures and several recommendations were proposed to improve the access procedures. Staff members should always check ELF cards before escorting individuals into containment.

45. **PROCEDURAL FAILURE SUMMARY**: 08/21/2018; A staff member working in a BSL-3 laboratory reported that they did not remove their lab coat prior to exiting the laboratory. The staff member admitted that they were in a hurry to blow their nose when they failed to doff their lab coat.

46. **SPILL SUMMARY:** 08/23/2018; A staff member working in a BSL-4 cabinet laboratory reported that they spilled a small amount of media on a blue diaper pad in a Class III BSC. The diaper pad was disposed of and the floor of the BSC was cleaned.

47. **FACILITY FAILURE SUMMARY:** 09/05/2018; A -80 freezer in a BSL-3 laboratory failed and leaked Freon inside the unit and onto the floor. It was determined that the Freon had eaten away at the gasket material covering the copper piping. The compressor and the associated piping was replaced.

48. **SPILL SUMMARY:** 09/19/2018; A staff member working in the BSC in a BSL-3 laboratory reported that the lid of an agar plate fell off the plate and landed onto a slide containing a RG3 agent. The spill remained in primary containment and was less than 1ml. All materials were decontaminated and the contaminated lid was discarded and replaced with a lid from an unused plate. The staff member filled out a near-miss form and provided it to H&S.

49. **PROCEDURAL FAILURE SUMMARY**: 09/20/2018; A staff member failed to obtain a Lock Out Tag Out (LOTO) number prior to beginning to repair a fan coil unit. Another staff member recognized the mistake and called a 'stop work' until a LOTO number could be obtained. The fan coil unit was repaired and the staff member was given a refresher on the LOTO program.

50. **PROCEDURAL FAILURE SUMMARY:** 10/11/2018; While assisting in the transport of a piece of equipment from an airlock to the dock, a staff member accessed a decontaminated airlock that they were not authorized to enter. Another staff member immediately noticed the issue, informed the staff member in the airlock and the incident was reported to H&S. The staff member was reminded of the areas they are restricted from accessing.

51. **PROCEDURAL FAILURE SUMMARY:** 10/14/2018; A subcontractor was allowed access into two BSL-2 laboratories without having completed all proper safety trainings. The training coordinator noticed the discrepancy during a review of other trainings. The completion of trainings must be verified when staff or subcontractors seek access.

52. **EQUIPMENT FAILURE SUMMARY:** 10/24/2018; A staff member reported that a toaster in a kitchenette area was sparking and smoking despite not being in use. An NBACC electrician inspected the toaster and removed it from the kitchenette for disposal. A new toaster has been ordered.

53. **SPILL SUMMARY**: 10/30/2018; A staff member working in a BSL-2 laboratory was decontaminating a small, non-mercury thermometer with bleach when the thermometer slipped from their hands, hit the side of the counter and snapped the liquid bulb at its base. The staff member and a subcontractor immediately held their breath, left the room and called the Command Center. After speaking to a member of H&S, the staff member reentered the room and cleaned up the liquid and broken glass.

Note: *It should be assumed that staff are wearing a PAPR (minimum APF 25) in events taking place in the BSL-3 laboratories unless otherwise stated.*

Document Definitions:

Event Summaries – Any OSHA recordable mishap or first aid injury or illness.

Near Miss Summaries – Any mishap that requires a potential exposure ruling from the Competent Medical Authority (CMA) or represented a CDC Form 3 submission.

Other Occurrences – Mishaps that do not fit into the other two categories.

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