

# Lessons Learned & Success Stories – April to June 2021

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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 STORY**

1. Facilities Management Operations (FMO) assisted members of Comparative Medicine with transporting animals into a particular lab. One member of FMO questioned if the room where the animals were being transported to was set up correctly. They performed a check and determined that the room in question was not set up for that particular animal. They notified Comparative Medicine and the Animal Facility Manager, who in turn coordinated with FMO, and were able to rectify the situation and properly set up the room.
2. A staff member reported that the lid to a Spill Kit was broken. It appears that two things happened, one gradually and one suddenly. Over time, exposure to UV light made the plastic lid brittle, and the five-gallon bucket was used as a seat or stool. Both compromised the lid, and the lid broke resulting in sharp edges. The staff member suggested that the lid be replaced.
3. A staff member was performing monthly environmental sampling swabbing of the laboratories. During sampling, they noticed that the new wooden stick swabs splintered, creating a sharp edge when being broken into the tube. Health and Safety was notified of the concern and determined that due to supply chain issues, the different material swabs were ordered as a replacement for the regularly supplied plastic swabs. An effort will be made to replace the wooden swabs with the plastic swabs for future use.
4. A new centrifuge was purchased for use in Biosafety Level-2 (BSL-2). During the initial calibration, the technician noticed that the usual HEPA filter found on this type of centrifuge was not present. The HEPA filters are normally present to filter any (potentially contaminated) air leaving the centrifuge chamber during a run. The technician reached out to the manufacturer to inquire about the lack of HEPA filter and discovered that this was an optional feature. They then reached out to Health and Safety to inquire about the proper path forward. Health and Safety decided to mark the unit out of service until the HEPA filter could be purchased and installed.

## **LESSONS LEARNED**

1. One of this month's occurrences provides a good example of how procedure departures could be avoided by utilizing Safe Conduct of Research (SCoR) principles. A Laboratory Space Manager (LSM) asked a staff member to help open a lab that had undergone vaporous hydrogen peroxide (VHP) decon. The staff member assumed this meant the decon had been cleared when it had not. This resulted in the staff member

entering the space early. SCoR principles include “Cultivating a questioning attitude” and “Hazards are identified and evaluated for every task every time.” Applying these principles could have resulted in the status of the decon being verified prior to entry, thus avoiding the occurrence. While no negative safety consequences occurred on this occasion, it is important to only enter spaces that have been cleared as safe for entry.

2. It is always important to remember that reportable safety events can happen anywhere and anytime at NBACC, including the parking lot. This means that we must remain vigilant about safety issues and concerns regardless of where we are working in and around the building and what our day-to-day responsibilities are. Remember, “See something, say something.” This becomes even more important as our building gets older, and as a result, things will break at an increased frequency. It is everyone’s responsibility to maintain a safe and healthy work environment.
3. Observe and report!  
Many of us have heard sayings, such as, “We’ve always done it like that” or “That’s not my department.” At NBACC, we simply cannot allow such phrases and attitudes to cloud our reasonable thinking. Like it or not, many of the duties we perform cross departmental “boundaries.” What one of us considers minor can seriously affect someone’s work that is critical or sensitive in nature. As you go through your day, stay vigilant and be mindful.

#### **EVENT SUMMARIES**

**FIRST AID SUMMARIES:** In all of the following incidents, personnel reported to the Competent Medical Authority (CMA), first aid was applied as necessary, and laboratory restrictions were placed, if needed:

- 03/03/2021 – A staff member cut their left elbow on an autoclave cart while moving a piece of equipment through a BSL-3 suite.
- 03/23/2021 – A staff member working in an administrative area sustained a paper cut on their left hand while searching for an item in a cabinet drawer.
- 03/25/2021 – A staff member was replacing a piece of equipment in the ceiling of an administrative area when they scraped their left arm on the strap that held it in place.
- 04/14/2021 – A staff member scraped their right knuckle while testing a piece of equipment in an interstitial area.
- 04/15/2021 – A staff member scraped their right arm on a nylon zip tie while unbolting a piece of equipment in an interstitial area.
- 05/04/2021 – A staff member slipped and fell while walking into a bathroom stall. The bathroom had been mopped but there was no slip hazard sign.
- 05/25/2021 – A staff member noticed a small cut on their right index finger while cleaning up a BSL-3 laboratory. The staff member believes the cut was from stacking cardboard.
- 05/27/2021 – A staff member noticed a glass splinter in their right pinky finger while opening a freezer. Prior to opening the freezer, that staff member had taken a break-safe ampoule opener out of its box. The staff member believes there was a small piece of glass on the ampoule opener that became stuck to their glove and then lodged in their finger when they opened the freezer door.
- 05/28/2021 – A staff member was working in a glovebox and leaned over the top of the unit to look through a window when they scraped their forehead on a bolt that is angled

towards the user. After the incident, the bolt was wrapped with a protective material until it can be repositioned following a VHP decontamination of the unit.

#### **NEAR MISS SUMMARIES**

1. **PERSONAL PROTECTIVE EQUIPMENT (PPE) FAILURE SUMMARY:** 03/22/2021 – A staff member who had been working in the BSL-4 suite was exiting through the chemical shower when they noticed that the left arm of their scrubs and left inner glove were wet. Upon reaching the suit room, the staff member pressure tested their suit and outer gloves and could not find a breach. The suit was placed ‘out of service’ and evaluated by a member of Health and Safety who found the suit to be intact. The staff member confirmed with a member of Health and Safety that their suit passed the pressure decay test prior to entering containment. The staff member did not work with agent during their time in containment. The CMA ruled no potential exposure.
2. **PPE FAILURE SUMMARY:** 04/07/2021 – A staff member who had been working in the BSL-4 suite was exiting through the chemical shower when they noticed that the left shoulder of their scrubs was wet. They could see water accumulating on the inner seam of the suit where the clear head covering material is adjoined to the white suit material. The suit was placed ‘out of service’, evaluated and retired. The staff member confirmed with a member of Health and Safety that their suit passed the pressure decay test prior to entering containment. The staff member did not work with agent during their time in containment. The CMA ruled no potential exposure.
3. **PROCESS FAILURE SUMMARY:** 04/20/2021 – Staff members working in a BSL-3 laboratory failed to recognize that a 96-well plate contained live agent and began a wash step without donning the additional PPE required in their Work Instruction. While washing the first plate, the staff members recognized the oversight, donned the extra PPE and continued their work. The additional PPE was a requirement per the group’s Work Instruction and not required by Health and Safety. The group has implemented changes to their process to include additional labels and signage when plates contain agent.
4. **EQUIPMENT FAILURE:** 04/22/2021 – Staff members reported that while using a radio inside of containment in order to communicate with contractors outside containment, keying the microphone of the radio resulted in some equipment in the room losing power. There was no agent involved in this incident, but the staff members will no longer use radios to communicate during the project.
5. **EQUIPMENT FAILURE:** 04/26/2021 – A hot water steam pipe burst in a buffer corridor ceiling resulting in flooding of nearby areas. Members of Health and Safety, FMO, and Environmental Operations (EO) worked to clean up excess water and ceiling debris. The steam pipe will be repaired.
6. **PROCESS FAILURE SUMMARY:** 05/05/2021 – A staff member misread a label on a high voltage line button which, when activated, interrupted power to a number of systems. Another staff member was able to reset the system and restore functionality. Upon further investigation, it appears that the signage on the button was ambiguous and had not been approved to be posted by supervisors. The signage was removed, and staff were reminded to contact specific individuals within the group when working in that space.

**PROCESS FAILURE SUMMARY:** 05/25/2021 – A staff member was cleaning a BSL-4 personal shower when they heard a sound come from the shower drain and then a column of water exited the drain, which lasted approximately four to five seconds. The water was clear and did not have any visible contaminants. The staff member called Health and Safety from the suit room and confirmed that none of the liquid came in contact with their scrubs. After speaking with FMO, a member of Health and Safety contacted the staff member and confirmed that they could resume cleaning the shower. The staff

member was able to finish their work and clean the other personal shower without incident. The CMA ruled no potential exposure.

#### **OTHER OCCURENCES: REPORTED EVENTS:**

In all of the following, personnel reported the events to Health and Safety, and the events were tracked for trending purposes:

- A staff member reported that, upon opening an autoclave, water leaked out into nearby areas. The autoclave had sat overnight after successfully completing its cycle. A member of Health and Safety donned appropriate PPE to clean the spills according to spill cleanup procedures. The water that leaked from the unit was sterile condensate that accumulated in the autoclave chamber after the cycle was complete. A staff member also inspected surrounding areas, and no other leaks were found.
- Staff members working on a project in the BSL-4 suite failed to obtain approval from the Chemical Hygiene Officer (CHO) before inactivating waste on three separate occasions. In all instances, the waste was inactivated properly and in accordance with previous CHO guidance. The CHO is working with the staff members to include a note in specific Work Instructions as well as a sign reminding staff to secure approval prior to inactivating waste.
- A staff member entered a recently VHP deconned BSL-3 laboratory hours before the space was cleared by Health and Safety. This happened because the LSM asked the staff member if they were able to help unlock the door to the laboratory later in the afternoon. The staff member misunderstood this request and assumed the laboratory was already cleared. The staff member did not realize their mistake until they saw the clearance email from Health and Safety later that day. There was no VHP exposure risk to the staff member nor did their entrance into the space void the decon. The staff member was reminded that VHP decons are officially cleared by Health and Safety via email.
- A staff member exited a BSL-2 laboratory and forgot to remove their shoe covers. After taking a few steps, the staff member noticed their mistake and discarded the shoe covers. In this instance, the shoe covers were worn as a means to reduce signature spread inside specific laboratories and not for safety-related reasons. The staff member mopped the hallway with bleach and called Health and Safety to report the event.
- A staff member was doing a pre-work decon of a Biological Safety Cabinet (BSC) in a BSL-3 laboratory when they moved a roll of tape to bleach around it, and the tape rolled out of the BSC and onto the floor. The staff member held their breath, exited the room and called Health and Safety.
- Two staff members were walking down the buffer corridor and noticed that an airlock door appeared to be propped open on the clean side. They called the command center to speak with Health and Safety. Upon further investigation, it was determined that a staff member had placed lab supplies in the airlock and briefly stepped away to get more supplies when the door became caught on a cart in the hallway, preventing it from shutting completely. No one opened the airlock door from the containment side, and there were no air pressure issues with the airlock.
- A staff member reported a small puddle of water on the non-containment side of an autoclave. A successful liquid cycle had been run the day prior, and the autoclave sat overnight before being emptied. Consultation with FMO and Health and Safety confirmed that the water was sterile

condensate that leaked from the chamber when it was opened that morning. The water was mopped up with bleach.

- A staff member reported a spill of approximately 100 mL of 70% Isopropyl Alcohol (IPA) in an office area. A bottle of IPA was next to a computer when it was accidentally bumped and knocked to the floor. The staff member cleaned the spill and called Health and Safety.
- A staff member reported that a box of tips fell out of a BSC while they were following up their surface decon with IPA. The staff member had finished their work with a Risk Group (RG) 1 agent, and the BSC had sat for the full contact time prior to the spill.
- A staff member reported that an autoclave load probe was incorrectly wrapped around the bars of the autoclave cart. An email was sent to staff with access to that space reminding them of the appropriate way to store the probe.
- An employee found a broken coffee pot in the trash can. The bag with the glass was isolated, labeled and taken out to the dumpster. The responsible staff member was advised to request a sharps container in the future.
- A staff member reported that a sharps container lid popped off during a liquid cycle run, which resulted in sharps waste scattering around the autoclave chamber. Members of Health and Safety and FMO cleaned the autoclave. Upon further investigation, it was confirmed that the correct cycle was selected, and the sharps container was not overfilled. Health and Safety and FMO are working to find the cause of the spill.
- A staff member working in a BSC reported an outer glove tear. The staff member was not working with agent at the time of the tear. They performed a leak test on their inner glove and confirmed that it remained intact.
- A staff member entered the containment-side airlock and noticed that the timer had fallen off the door. The knob of the timer had rolled onto the clean side of the airlock. The timer is magnetically adhered to the door and, upon investigation, it appeared the adhesive glue that sticks the magnet to the timer failed. The staff member, making sure not to step over the line of containment, picked up the knob and liberally bleached the clean-side floor for the full contact time. The timer was put back together and confirmed to be functional.
- A staff member was moving a floor model centrifuge from a laboratory to an airlock for a VHP decon. Upon exiting the room, the door hit the centrifuge and knocked a previously unseen agar plate off the rear platform of the centrifuge and onto the floor of the hallway, causing the lid of the plate to come off. The staff member was unsure of the status of the plate at the time and followed proper spill procedure by holding their breath and leaving the area. The staff member also ensured that the entire quad was evacuated. After speaking to Health and Safety and waiting 30 minutes, the staff member was permitted to put on an Assigned Protection Factor (APF) 1000 Powered Air Purifying Respirator (PAPR) to clean up the spill. While cleaning, it was confirmed that the plate was unused and had previously fallen unnoticed between the wall and the centrifuge, landing on the back deck of the unit.
- A staff member working in a BSL-2 laboratory was working with a commercially available cell line when they noticed a tear in one of their gloves. The staff member discarded the gloves, washed their hands, donned a new pair of gloves, and continued their work.
- A staff member was handling a container of freshly made 10% bleach inside of the BSC when it slipped out of their hands. Some of the bleach spilled out of the container onto the surface of the

BSC, and some dripped down below the tray of the BSC. Upon speaking to Health and Safety, they were permitted to finish their work and then use absorbent material to soak up as much of the bleach below the tray as they were able to reach.

- A staff member was loading items into an autoclave from the buffer corridor so that they could be pulled into a containment suite when one of the items bumped the autoclave lockout key, causing the key to break in the lock. The autoclave was placed out of service until FMO was able to retrieve the broken key from the lock and replace it.
- A staff member was conducting an assay when they bumped into a small reservoir that contained wash buffer. Roughly, 5mL of wash buffer spilled onto the surface of the BSC. The buffer was cleaned up with absorbent material, and the area was washed with 10% bleach.
- Staff members working in the BSC of a BSL-4 laboratory had completed their work and were wiping down the cabinet when one of their suit cuffs bumped the lid to an empty freezer box and caused it to fall outside of the BSC and onto the floor. The staff members placed the lid of the box back inside the BSC and deconned the area of the floor where it landed.

**Note:** *It should be assumed that staff are wearing a PAPR (minimum APF 25) during 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), represented a CDC Form 3 submission, or a potentially serious accident or incident that could have resulted in personal injury, illness, death, and damage to property or the environment but did not occur due to one or more factors.

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

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All research was conducted in compliance with the Animal Welfare Act and other federal statutes and regulations relating to animals and experiments involving animals and adheres to principles stated in the Guide for the Care and Use of Laboratory Animals, and approved by both the NBACC Institutional Animal Care and Use Committee and, when applicable, the DHS Compliance and Assurance Program Office. The facility where this research was conducted is fully accredited by AAALAC International and maintains a Public Health Service (PHS) Humane Care and Use of Laboratory Animals (Policy) assurance.