



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
RESOURCE CONSERVATION AND RECOVERY ACT**

BASIC INFORMATION

Facility Name: University of Colorado – Boulder **RCRA ID:** COD007431505

Facility Location:

1000 Regent Drive
UCB 413
Boulder, CO 80309-0413

Facility Contact:

Chris Quattrociocchi
Hazardous Materials Program Manager
303-492-6390 (office)
303-435-3114 (cell)

Notification Status:

TSDF
Large Quantity Generator

Date of Inspection: July 18, 2023

Arrival Time: 9:15 a.m.

Departure Time: 4:00 p.m.

Weather Conditions: All parts of the facility that were inspected were indoors.

Lead Inspector: Kristin McNeill, U.S. EPA RCRA Inspector

Attendees:

1. David Foster, Colorado Department of Public Health and Environment (CDPHE) RCRA Inspector
2. Randy Perlis, CDPHE RCRA Permit Writer
3. Chris Quattrociocchi, CU Boulder Environmental Health & Safety (EH&S) Hazardous Materials Program Manager
4. Holly Gates-Mayer, CU Boulder EH&S Assistant Vice Chancellor
5. Mark Lapham, CU Boulder EH&S Director of Environmental Compliance
6. Eric Wright, CU Boulder EH&S Chemical Safety & Compliance Inspector
7. Alannah Gregory, CU Boulder EH&S Lab Safety & Compliance Inspector
8. Brad Denton, CU Boulder EH&S Radiation Safety Specialist

Type and Purpose of Inspection: Compliance Evaluation Inspection
Compliance with RCRA Subtitle C

Facility Type: Public university with teaching and research labs

Applicable Regulations and Permit: 6 CCR 1007-3 Parts 260-279
CDPHE State RCRA Permit No. CO-20-11-23-01

Inspection Type: Announced Inspection per CDPHE's inspection notification requirement
EPA inspection with CDPHE accompanying

Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision on compliance with RCRA regulations, nor is it meant to be a comprehensive summary of all activities and processes conducted at the facility.

OPENING CONFERENCE

We met Mr. Quattrociochi outside of the Environmental Health & Safety Center located at 1000 Regent Drive, EH&S Building H-13, and he brought us to a conference room for the opening conference. I presented my credentials to Mr. Quattrociochi, Ms. Gates-Mayer, Mr. Lapham, Mr. Wright, Ms. Gregory and Mr. Denton. We were not denied access to the facility and were allowed to inspect all areas that we selected for inspection. Mr. Quattrociochi and Mr. Lapham accompanied us at the permitted hazardous waste storage area and Mr. Wright and Ms. Gregory accompanied us throughout the generator areas.

The following information was obtained verbally during the inspection from Mr. Quattrociochi, Mr. Wright, Ms. Gregory, or Mr. Denton unless otherwise noted.

General Facility and Process Description

Ownership

The University of Colorado – Boulder (CU Boulder) is a state-run university owned by the state of Colorado. According to Ms. Gates-Mayer, there are 31 employees in the Environmental Health & Safety department.

Regulatory Status

According to RCRAInfo, the main campus of CU Boulder is a large quantity generator (LQG) of hazardous waste and a permitted hazardous waste storage facility under CDPHE State RCRA Permit No. CO-20-11-23-01. During the inspection, Mr. Quattrociochi confirmed that CU Boulder was an LQG and TSD and stated that they are not a 10-day transfer facility. Based on my observations of waste generation and the amount of waste on-site, the facility appeared to be generating at least 2200 pounds of hazardous waste per month and was therefore a large quantity generator at the time of the inspection.

Site Hazardous Waste Information

This inspection only addressed the CU Boulder main campus. There are a number of CU Boulder and CU Denver extension campuses that operate under separate EPA RCRA ID numbers. In addition to hazardous waste generated on the main campus, CU Boulder's permit allows the main campus to receive, consolidate, and store hazardous waste from all of the other CU campuses except the Anschutz Medical Campus. Hazardous waste generated on other campuses is accumulated in 90- and 180-day areas before it is transported to the CU Boulder main campus permitted storage area under a hazardous waste manifest. CU Boulder signs as the destination facility when the waste is received and then remanifests the hazardous waste when it is shipped to the final TSD. Hazardous waste collected on the main campus is transported under a contiguous property manifest. Hazardous waste is stored in the permitted storage area in the lower level of the Environmental Health & Safety Center building. The hazardous waste storage area is trenched (with no drains) for spill containment and wastes are separated based on compatibility. There is a separate room with a door where oxidizers are stored. CU Boulder

also stores mixed radioactive waste in a separate area of the same building. There is a universal waste accumulation area in the permitted storage area. There is also a walk-in hood where small containers of compatible hazardous waste generated in labs are consolidated into drums, including acids, bases, and corrosives.

CU Boulder has 448 chemistry, 130 biology, and 74 radiation teaching and research labs on its main campus that generate the majority of the hazardous waste managed at the site. A small amount of hazardous waste is also generated in the ceramics and photography studios in the art department, among other locations. Some vehicle maintenance is performed onsite; however, most is done on the East Campus. Mower maintenance is done in the grounds building, where used oil is generated in containers labeled as used oil. There is one 90-day area and approximately 629 satellite accumulation areas (SAAs) on the main campus, along with the permitted storage area.

CU Boulder tracks hazardous waste generated at various locations across all campuses using a carbon-copy paper tagging system. They also use BioRAFT lab management software that tracks lab management, training, equipment and weekly SAA inspections performed by lab personnel, in addition to other elements. Mr. Wright stated that he conducts an annual inspection at every SAA on campus. According to Mr. Wright, lab staff are instructed to send in copies of the paper tags for pick-up when any 55-gallon SAA waste containers are approximately three quarters full. EH&S staff then pick up the containers within 7-10 business days and transport them to the permitted hazardous waste storage area, where they are marked with an accumulation start date. According to Mr. Quattrociochi, the EH&S staff make hazardous waste determinations based on the information provided by the labs once the waste is received at the hazardous waste storage area.

The hazardous waste is picked up by Veolia three times per year; generally in April, July, and November. The next pick up following the inspection was scheduled for July 20, 2023 and the previous pick up was April 6, 2023. Mr. Quattrociochi said that these dates are scheduled at the beginning of the year. He also said that they generally ship approximately 90 bulk containers and 30 lab packs during each shipment, which fills a trailer. They also do smaller shipments throughout the year, consisting of non-hazardous waste, used oil, antifreeze, paints, and universal waste bulbs and batteries. Waste Management picks up their non-hazardous waste. Veolia currently picks up their hazardous waste, but Mr. Quattrociochi said that after the end of 2023, the hazardous waste contract will go out for bid.

Mr. Wright explained that lab staff, generally the lab manager, are responsible for performing weekly SAA inspections. They receive a 60-90 minute online annual general lab safety training, including identifying and labeling hazardous waste, which is tracked through the BioRAFT system. He also noted that if a teaching lab SAA contains hazardous waste, but is not being used during the summer months, permanent EH&S staff will perform the weekly inspections during the summer.

CU Boulder has two solvent recovery distillation units – one in the Environmental Health and Safety Center for ethanol, acetone, and methanol, and one in the Ekeley Sciences building for acetone. At the time of the inspection, the still in the EH&S Center had not been used since March 2023. Mr. Quattrociochi said that most of the labs preferred to use reagent grade, non-recycled ethanol, so they had a backlog of clean ethanol. I did not observe any waste ethanol waiting to be processed through the still.

Previous to this inspection, the permitted storage area and generator areas were inspected by EPA and CDPHE on July 19, 2022, resulting in a Notice of Noncompliance for failure to properly label satellite accumulation containers, failure to mark 90-day hazardous waste containers with accumulation start dates, and failure to make a hazardous waste determination. These violations have been corrected.

Since the last inspection, only minor changes have taken place. Mr. Quattrociochi confirmed that the university's hazardous waste generation and storage had not changed significantly since the 2022 RCRA inspection, with the exception that treatment by neutralization is no longer occurring. He explained that CU Boulder terminated their permit with the City of Boulder to discharge to the POTW and are now putting those hazardous waste streams into drums. He also noted that generation rates for the waste streams that had been treated had significantly decreased. Mr. Quattrociochi also confirmed that they had not had any spills within the past year.

Mr. Foster also noted that CU Boulder had not submitted a notification to CDPHE for the generation of waste pharmaceuticals. He said that he would follow up with Mr. Quattrociochi to verify if the facility would be required to notify based on the waste streams generated.

DESCRIPTION OF INSPECTION

Areas of the facility toured

Mr. Quattrociochi led us on a tour of the permitted storage facility, and Mr. Wright and Ms. Gregory led us on a tour of a subset of the satellite accumulation areas in the teaching and research labs. I selected the SAAs previous to the inspection. We looked at the university's processes, including hazardous waste management practices, generation points, and accumulation areas. We also looked for wastes that facility representatives had not yet identified or designated as hazardous. Specifically, we inspected the following areas of the facility:

- Environmental Health and Safety Center (EHSC)
 - Permitted hazardous waste storage area
 - Oxidizer room: oldest accumulation start date was 7/22/22
 - Universal waste storage area
 - Room 150: Chemical Treatment Room
 - Ethanol solvent distillation unit
 - Room 135: Permitted mixed waste storage area
 - Nine 5-gallon containers of mixed waste hydrogen chloride with ethanol and chromium chloride (D002, D007) and sulfur 35, which takes approximately 3 years to decay
- Ekeley Sciences SAAs
 - Room M1B10: 90-day storage and acetone distillation unit (last run 7/14/23)
 - Room M1B65: organic chemistry teaching lab
 - Room M124: general chemistry teaching lab
 - Room M390: Zhang research lab
- Cristol Chemistry SAAs
 - Room 120: Michl research lab
 - Room 363: Walczak research lab
- Cooperative Institute for Research in Environmental Sciences (CIRES) SAAs
 - 138: Tolbert research lab

- Ramaley Biology SAAs
 - C271: Medeiros research lab
- Engineering Center – Environmental Sustainability (ECES) SAAs
 - 127: Chunmei Ban and Se-Hee Lee research labs

Only those areas in which we observed potential compliance concerns or noted pertinent activities are further discussed below.

Observations

Permitted hazardous waste storage area

The oldest date that I observed on a container in the Hazardous Waste Storage Area was 7/22/22, which was less than one year before the date of the inspection. Mr. Quattrociochi explained that the next scheduled pick up date is 7/20/23, and this container will be shipped out then.

I observed that the loose pack drums used to temporarily hold small containers of hazardous waste were all marked with a permanent accumulation start date of 4/1/23. According to Mr. Quattrociochi, their system is to leave this date on the loose pack drums as they are filled, regardless of when waste was first placed into the drum. He explained that information for each loose pack item placed into the drum is entered into a database and said that he can access the date of the earliest loose pack item for each drum. Mr. Quattrociochi pulled this information for one of the drums marked with an accumulation start date of 4/1/23, and the date that the oldest loose pack item was placed into that drum was 2/13/23. For this drum, the accumulation start date marked on the drum was after the date that waste had been placed into the drum. He said the loose pack drums are used for temporary storage and that waste from the loose pack drums is bulked or put into a lab pack before being shipped. Mr. Quattrociochi said that the lab packs are marked with the date that waste was first put into the container, which is the date that it was bulked. He explained that this date, along with the sequential numbering of drums bulked that day, make up the drum number marked on the top of each drum. According to Mr. Quattrociochi, bulked waste is never stored for more than one year. He also mentioned that they had recently purchased a new electronic hazardous waste management system.

During the inspection, we discussed whether having one permanent date on the loose pack drums was an appropriate way to meet the requirement to mark containers with an accumulation start date. I stated that I would research the regulations and the permit to determine if this was a compliant practice.

Cristol Chemistry

Ms. Gregory mentioned that a number of the labs had been doing inventory and cleaning out expired and unwanted chemicals.

Cooperative Institute for Research in Environmental Sciences (CIRES)

Room 138 – Tolbert Research Lab:

I observed three SAAs in Room 138, with a total of eleven containers in the SAAs. All of the containers were closed and labeled as hazardous waste. I observed that four of the containers were missing an indication of the hazard, while the other seven were properly labeled. Ms. Gregory labeled the SAA containers with hazard indications during the inspection.

Ramaley Biology

Room C271 – Medeiros Research Lab:

I observed two SAAs in Room C271, with a total of ten containers in the SAAs. All of the containers were closed and labeled as hazardous waste. I observed that three of the containers were missing an indication of the hazard, while the other seven were properly labeled. Ms. Gregory labeled the SAA containers with hazard indications during the inspection.

Engineering Center – Environmental Sustainability (ECES)

Room 127 – Chunmei Ban and Se-Hee Lee Research Labs:

Room 127 is a research lab shared by the Principal Investigators, Chunmei Ban and Se-Hee Lee. The Ban lab has two SAAs and the Lee lab has three SAAs. In the two SAAs belonging to the Ban lab, I observed a total of eight containers. All of the containers were closed and labeled as hazardous waste. I observed that one of the containers was missing an indication of the hazard, while the other seven were properly labeled. Ms. Gregory labeled the SAA container with the hazard indication during the inspection.

In the three SAAs belonging to the Se-Hee Lee lab, I observed a total of four containers. Three of the containers were closed, labeled as hazardous waste, and labeled with an indication of the hazard. I observed that one of the containers in hood #4 was not closed, with a piece of aluminum foil covering the top (photo 1). I also observed that, while the container was labeled with a hazardous waste tag, the written contents of the container were illegible and it was unclear if it was labeled with an indication of the hazard. While most of the SAA containers were closed and properly labeled, general housekeeping could be improved in this lab.

Records Review:

The following documents were reviewed:

- Permitted hazardous waste storage area daily, weekly, and monthly inspection logs (July 2022 – June 2023)
- Hazardous waste manifests with land disposal notifications: July 2022 – present
- Hazardous waste training records and job descriptions for EH&S staff (Chris Quattrociocchi, Stephen Kupecz, Joe Gibbs, William Moore, Joan Jenkins and Devin Hammett)
- SAA weekly inspection log form and process in BioRAFT
- Lab safety and hazardous waste generator training program and tracking process for lab personnel

The contingency plan was not reviewed because it had not changed since the previous inspection. Mr. Wright provided an up-to-date list of the current SAAs throughout main campus.

Stephen Kupecz was overdue by 13 days on his annual hazardous waste general refresher and contingency plan and emergency procedures trainings. The previous trainings had been completed July 5, 2022.

CLOSING CONFERENCE

We held a closing conference with Mr. Quattrociochi, Ms. Gates-Mayer, Mr. Lapham, Mr. Wright, Ms. Gregory and Mr. Denton in which I summarized the concerns that we had noted during the walk-through inspection and the records review.

Areas of concern discussed in the closing conference:

1. In CIRES Room 138, four SAA containers were not labeled with an indication of the hazard. These containers were properly labeled during the inspection.
2. In Ramaley Room C271, three SAA containers were not labeled with an indication of the hazard. These containers were properly labeled during the inspection.
3. In Engineering Center – Environmental Sustainability (ECES) Room 127 Ban lab, one SAA container was not labeled with an indication of the hazard. This container was properly labeled during the inspection.
4. In Engineering Center – Environmental Sustainability (ECES) Room 127 Lee lab, one SAA container was not labeled with an indication of the hazard and was not closed.
5. Stephen Kupecz was not up-to-date on his annual hazardous waste trainings by approximately two weeks.

I also reiterated that I would research the regulations and their permit to determine if the date on the loose pack drums meets the requirement to mark containers with an accumulation start date.

SIGNATURES

KRISTIN MCNEILL

Digitally signed by KRISTIN
MCNEILL

Date: 2023.09.14 17:11:45 -06'00'

Kristin McNeill, Lead RCRA Inspector

FRANCISCA CHAMBUS

Digitally signed by FRANCISCA CHAMBUS
Date: 2023.09.14 16:56:17 -06'00'

Janice A. Pearson, Manager
RCRA & OPA Enforcement Branch
Enforcement and Compliance Assurance Division

APPENDIX

Appendix A: Photo log

APPENDIX A: PHOTO LOG

The photo is original and has not been modified in any way. The photo was taken by Kristin McNeill on July 18, 2023, using a Nikon Coolpix A900 camera.

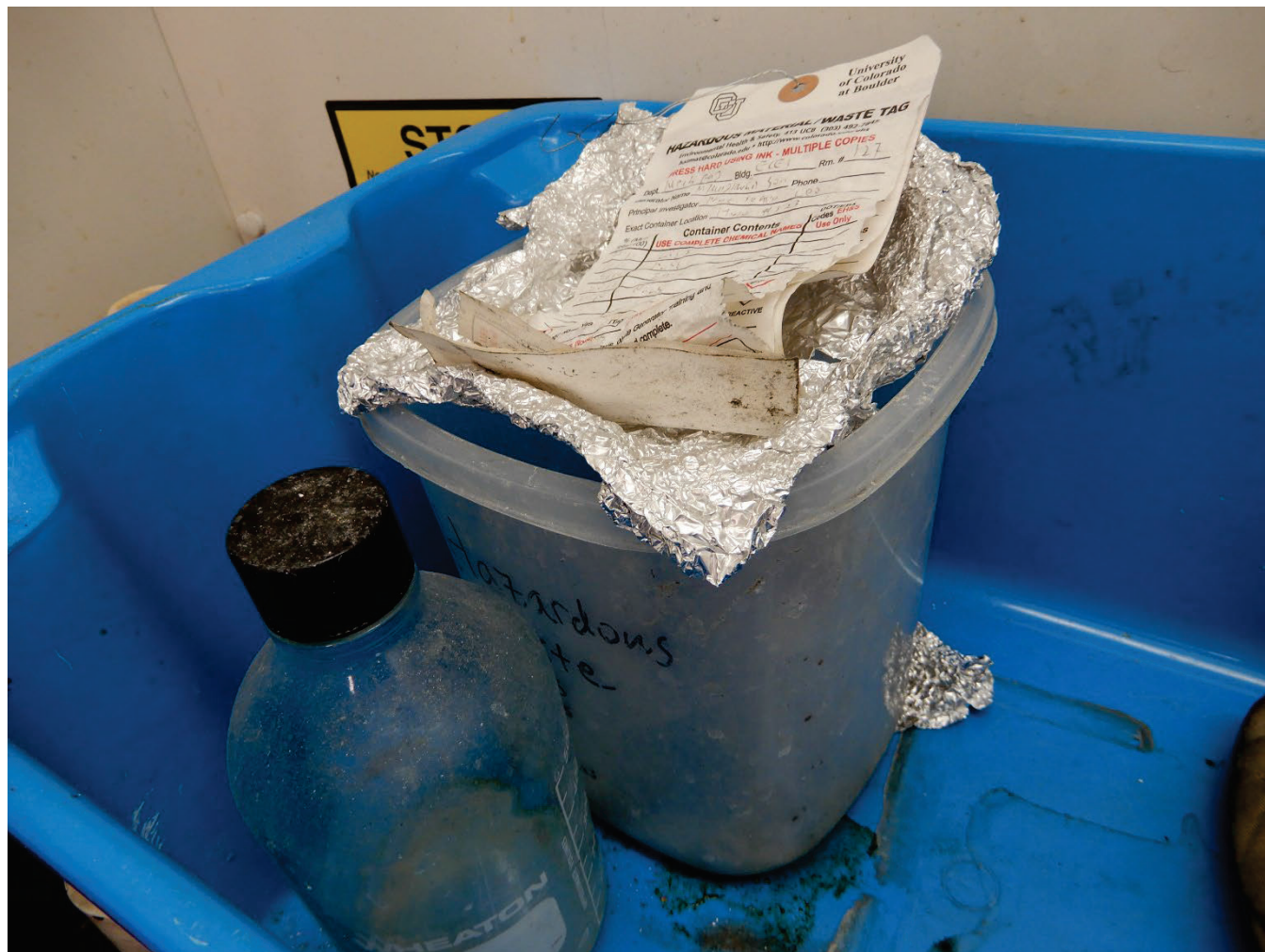


Photo 1 (DSCN0121.JPG): Satellite accumulation container in the Engineering Center – Environmental Sustainability (ECES) Room 127 – Se-Hee Lee lab.
At the time of the inspection, this container was holding solid hazardous waste.