

RCRA Inspection Report

1) Inspector and Author of Report

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2) Facility Information

The University of North Carolina at Chapel Hill
1120 Estes Drive Extension
CB# 1650 Chapel Hill, NC 27599-1650

EPA ID# NCD982093783

3) Responsible Officials

Catherine Brennan, EHS Director

4) Inspection Participants

Catherine Brennan, UNC Chapel Hill	Aram Kim, NCDEQ
Steven Parker, UNC Chapel Hill	Laurie Benton DiGaetano, USEPA
Desiree Decker, UNC Chapel Hill	

5) Date of Inspection

August 26, 2021

6) Applicable Regulations

Resource Conservation and Recovery Act (RCRA) Sections 3002 (42 U.S. Code – Annotated U.S.C.A. 6925 and 6927), Title 15A of the North Carolina Administrative Code (NCAC), Chapter 13; State of North Carolina Division of Waste Management Permit NCD98209378-R2; and 40 Code of Federal Regulation (C.F.R.), Parts 260 - 270, 273, 278, & 279.

7) Purpose of Inspection

The purpose of this inspection was to conduct an unannounced compliance evaluation inspection to determine University of North Carolina Chapel Hill compliance with the applicable requirements of RCRA and the corresponding NCDEQ regulations. This was an EPA lead inspection.

8) Previous Inspection History

NCDEQ and EPA conduct a RCRA CEI at the subject facility every fiscal year and have noted only three potential violations since 1998.

9) Facility Description

UNC Chapel Hill is a multidisciplinary research university that has been in operation since 1795. The university operates under the NAICS Code 611310 for Colleges, Universities, and Professional Schools. The subject hazardous waste treatment, storage, disposal (TSD) facility at 1000-A Estes Drive Extension Buildings 488 and 531 manages hazardous waste generated by UNC Chapel Hill and the adjacent UNC Healthcare System. On 09/26/2016, the facility was issued the most recent renewal of the State of North Carolina Division of Waste Management Hazardous Waste Management Permit number NCD982093783-R2. Although the TSD facility is owned and operated by UNC Chapel Hill, it is located on property that is not contiguous the university campus. Therefore, the subject TSD facility operates under the EPA identification number NCD982093783. The UNC Healthcare System, which is affiliated with the UNC School of Medicine, is located on property that is contiguous to the university campus. UNC Chapel Hill and the adjacent UNC Healthcare System operates as a large quantity generator of hazardous waste under the EPA identification number NCD980515308.

The university's RCRA hazardous waste management program is operated by personnel in the university's Environment, Health and Safety (EHS) office. The EHS office has approximately 50 full time employees, and operates programs to address environmental, radiation, biological, industrial hygiene, safety, and risk management responsibilities. The university's research laboratories, healthcare operations, maintenance activities and facility operations all generate hazardous wastes which may be transported from on-campus and off-campus areas to the university's permitted TSD facility. The primary hazardous waste streams managed at the UNC Chapel Hill TSD facility include waste solvents, discarded commercial chemical products, radioactive mixed waste, and general chemical waste.

During any given year, the university operates between 2,000-4,000 individual laboratories, which may generate hazardous wastes, and identifies approximately 600 individuals as principal investigators, who are responsible for laboratory operations. Hazardous wastes generated in the university's laboratories are managed under the alternative requirements for teaching and research laboratories found in 40 C.F.R. Part 262 Subpart K until they are ready for transport to the UNC Chapel Hill TSD facility. When it is time to remove containers of unwanted material from a laboratory, personnel access the university's waste tracking system and enter the name of the Principal Investigator, the room number, the date, whether the unwanted material is new or used, the chemical composition of the material and the size of the container. Based on this information, the waste tracking system generates a waste tracking label and alerts the EHS office that a container is ready for pick-up. Laboratory personnel print the waste tracking label and attach it to the container for proper identification.

In addition to hazardous waste generated in university laboratories, the subject facility also manages hazardous waste generated by UNC Chapel Hill in other on-campus and off-campus

areas. The Industrial Maintenance and Support Systems (IMAS), which includes construction shops, art laboratories, a power generation facility, and housing facilities, and the UNC Healthcare System both generate hazardous wastes that are shipped to the subject UNC Chapel Hill TSD facility. IMAS and UNC Healthcare manage several hazardous waste satellite accumulation areas (SAAs), and UNC Healthcare also manages one hazardous waste central accumulation area (CAA).

Each laboratory must submit an annual Laboratory Safety Plan to the EHS office for review and approval, and IMAS and UNC Healthcare Systems must also submit annual Hazardous Management Plans to the EHS office for review and approval. When EHS personnel approve a Laboratory Safety Plan or a Hazardous Management Plan, that laboratory or waste generation area is assigned an email and password to log into the university's internal waste tracking system. Each individual user within the laboratories, IMAS hazardous waste generation areas or UNC Healthcare System must complete the hazardous waste training specific to that area in order to obtain credentials to access the waste tracking system. The required training for laboratory personnel is included in the approved Laboratory Safety Plan that is specific to that laboratory, and the required training for IMAS and UNC Healthcare Systems personnel is included in the approved Hazardous Management Plan that is specific to that particular waste generation area.

When it is time to remove containers of hazardous waste from the laboratories, SAAs or CAA, personnel access the university's waste tracking system and enter the required information. Based on this information, the waste tracking system generates a waste tracking label for that specific container and alerts the EHS office that the container is ready for pick-up. Laboratory, IMAS or UNC Healthcare System personnel print the waste tracking label and attach it to the container for proper identification. EHS personnel approve individual requests to pick up containers of hazardous waste every day, and a list of approved requests is printed with the associated hazardous waste manifests and land disposal restriction forms each morning. EHS transportation personnel use this list to determine the hazardous waste collection routes each day. Two EHS employees have the full-time responsibility of picking up containers of hazardous waste from laboratories, satellite accumulation areas (SAAs) or the central accumulation area (CAA), and a third EHS employee is responsible for picking up containers of both hazardous waste and radioactive waste.

Hazardous wastes may be bulked and/or stored in the TSD facility before they are shipped off-site. The university has a goal of zero landfill disposal, so most wastes are shipped offsite for fuel blending or incineration. EHS personnel conduct lab packing and waste consolidation activities in Building 488 before transferring the larger containers of hazardous waste to Building 531 for storage. Most laboratory wastes are accumulated in small containers, which are segregated by waste codes in labeled trays when they are unloaded at Building 488. Compatible lab wastes are routinely lab-packed into 35-gallon drums, which are then either stored in Building 488 or transferred to Building 531 before they are shipped off-site. Smaller containers of spent halogenated and non-halogenated solvents are also brought to Building 488, where the contents of the containers are pumped into 55-gallon drums. The full 55-gallon drums are then transferred to the intrinsically safe room, where they are stored until the contents are pumped into a tanker truck for shipment offsite. EHS personnel also perform waste consolidation

activities in the permitted storage area inside Building 531 by transferring waste from smaller accumulation containers into 55-gallon drums for further storage and shipment off-site.

10) **Opening Conference**

On August 26, 2021, EPA inspector Laurie Benton DiGaetano, accompanied by NCDEQ inspector Aram Kim, arrived at the University of North Carolina Chapel Hill's permitted hazardous waste TSD facility at approximately 10:00 a.m. Catherine Brennan, Executive Director, immediately received the inspectors. Ms. Brennan and the inspectors were joined by Steven Parker, Hazardous Materials Manager, for the opening conference. The inspectors introduced themselves, showed their credentials to Ms. Brennan and Mr. Parker, and explained the purpose of the visit. The inspectors described the potential use of equipment (digital camera) during the inspection and provided a request for records. The inspectors discussed the facility's ability, pursuant to 40 C.F.R. §2.203, to assert a business confidentiality claim for information submitted to the EPA. The facility did not assert a business confidentiality claim. The inspection participants also discussed health and safety protocols and required personal protective equipment before Mr. Parker led the inspectors on a tour of the Facility operations.

Ms. Brennan and Mr. Parker provided an overview of the facility's history and current operations during the opening conference. The facility does not appear to meet the Small Business Regulatory Enforcement Fairness Act's classification of a "small business," which is generally set by the Small Business Administration using the business' SIC/NAICS code and annual receipts or number of employees. Therefore, the EPA inspector did not provide a copy of the agency's information sheet for small businesses, which can be found at <https://www.epa.gov/sites/production/files/2017-06/documents/smallbusinessinfo.pdf>.

11) **Findings**

Mr. Parker pointed out the facility's security cameras and motion detectors as the inspectors were led through the gate into the permitted TSD area. Desiree Decker joined Mr. Parker and the inspectors for the facility tour. The tour began in Building 488, where the inspectors observed emergency eyewash and shower units, fire extinguishers, and a spill kit.

Building 488: Just inside the main room of Building 488, the inspectors observed two 55-gallon drums inside a small cabinet and exhaust hood. Ms. Decker explained that one of the 55-gallon drums, which were both empty, will be used to accumulate and store spent nonhalogenated solvents and the other will be used to accumulate and store spent halogenated solvents. The full drums are transferred from this area to Building 531 for temporary storage in an intrinsically safe room.

The inspectors observed several 10-gallon carboys and a drying unit near the small cabinet and exhaust hood. The carboys were staged in a line waiting transfer of their contents into the 55-gallon drums. Each carboy was labeled with the words "hazardous waste," marked with an accumulation start date, identified with a flammable liquid DOT hazard placard, and tagged with a waste tracking form. The drying unit is connected to an air exhaust system, and Ms. Decker explained that the empty carboys are placed into this unit after their contents are pumped into the

55-gallon drums. Carboys that are in good condition are then returned to the laboratories or hospital for reuse.

The main room of Building 488 was also furnished with a wall of shelving to hold small hazardous waste containers that will be placed with compatible wastes in a 35-gallon lab-pack drum. The inspectors observed a series of secondary containment trays staged on the shelving unit, and each tray was clearly labeled to indicate the type of hazardous waste to be placed onto that tray. When sorting incoming materials, each waste container is placed onto the appropriate, labeled, secondary containment tray for temporary storage prior to lab-packing. Compatible materials are then placed together into a 35-gallon lab-pack drum, which is then shipped off-site for disposal at another permitted TSD facility. The inspectors observed a total of approximately six individual small containers of hazardous waste on the designated trays. Each waste container was identified with a waste tracking form, which included the words "hazardous waste," an indication of the hazards of the contents, and the accumulation start date. The inspectors also observed a few 35-gallon lab-pack drums on the floor next to the shelving unit. Each lab-pack drum was labeled "hazardous waste," identified with DOT hazard placards, and marked with an accumulation start date. Ms. Decker explained that lab-pack drums are usually transferred to Building 531 for storage until they are picked up by the hazardous waste transporter and shipped to a permitted TSD. However, lab-pack drums that contain more reactive-type materials are kept in this room until they are picked up and transported to a permitted TSD.

The inspectors entered a smaller room off of the main room in Building 488. This room contained supplies and four 55-gallon drums of non-PCB ballasts. No hazardous wastes were observed in this room.

Building 531: Additional waste consolidation and storage activities are performed in Building 531, which includes an intrinsically safe room and several storage bays. The building is equipped with emergency shower and eyewash equipment, spill clean-up equipment, fire extinguishers and a fire suppression system. The building is also equipped with a fire alarm and burglar alarm, and personnel working in the area carry a medical alert / pager, which is capable of activating an alarm and summoning help.

Building 531 includes an intrinsically safe room for storing up to twenty-seven 55-gallon drums of spent solvents, which are bulked in Building 488. During the inspection, the inspectors observed two full 55-gallon drums and several empty 55-gallon drums in the intrinsically safe room. The full drums were located in the far corner on the right side of the room. Each full drum was labeled D001/F003/F005/U001/U008/U213/U003/D038/U112 hazardous waste flammable liquids (methanol), identified with a flammable liquid DOT hazard placard, and marked with an accumulation start date. According to Ms. Decker and Mr. Parker, the hazardous waste transporter will pump waste from the full 55-gallon drums into a tanker truck and transport the waste to a permitted TSD facility.

The rest of Building 531 is divided into individual bays for segregating waste containers. Six smaller bays are lined up along one side of the building, and two larger bays are lined up along the wall on the other side of the building. The bays are defined by cinderblock half-walls, which leave a wide walkway extending down the length of the building and separating the smaller bays

from the larger ones.

Bay 1 is labeled for storing flammable wastes, but no waste containers were present in this bay during the inspection.

Bay 2 is labeled for storing flammable wastes. The inspectors observed two 55-gallon drums and two 10-gallon carboys in this bay during the inspection. One 55-gallon drum was labeled D001/F005 hazardous waste, identified with a flammable liquid DOT hazard placard, and dated 07/19/2021. The other 55-gallon drum was empty. The two carboy containers were labeled D001/F003 hazardous waste flammable liquid, identified with a flammable liquid DOT hazard placard, and dated 08/24/2021. Ms. Decker explained that the water content of the spent solvents in these containers is too high to be bulked together with the spent solvents sent off-site for fuel blending. Instead, when enough spent solvents with high water content are generated, the material will be bulked together into a 55-gallon drum under the exhaust hood in Building 488 and then shipped off-site for incineration.

Bay 3 is labeled for storing flammable wastes. The inspectors observed one 55-gallon poly-drum and one 30-gallon poly-drum in this bay during the inspection. The 55-gallon drum was labeled D001/D002/F003/F005/F002/D038 hazardous waste, identified with flammable, toxic and corrosive DOT hazard placards, and dated 08/15/2021. The 30-gallon drum was labeled D001/D002 hazardous waste, identified with flammable, toxic and corrosive DOT hazard placards, and dated 08/24/2021.

Bay 4 is labeled for storing poison wastes. The inspectors observed three 12-gallon fiber drums of non-RCRA waste podophyllum resin in this bay during the inspection. The drums were identified with a toxic DOT hazard placard.

Bay 5 is labeled for storing corrosive wastes. The inspectors observed two 55-gallon drums and three 30-gallon drums in this bay during the inspection. One 55-gallon drum was labeled D002/U122 hazardous waste, identified with corrosive and toxic DOT hazard placards, and dated 07/13/2021. The second 55-gallon drum was labeled D002 hazardous waste, identified with a corrosive DOT hazard placard, and dated 07/15/2021. One 30-gallon drum was labeled D011/U122 hazardous waste, identified with a class 9 DOT hazard placard, and dated 08/25/2021. The second 30-gallon drum was labeled D002/D008 hazardous waste, identified with corrosive and toxic DOT hazard placards, and dated 08/07/2021. The last 30-gallon drum was labeled D002 hazardous waste, identified with a corrosive DOT hazard placard, and dated 08/03/2021.

Bay 6 is labeled for storing universal waste and nonhazardous waste, and the inspectors observed several containers in this bay during the inspection. One 55-gallon drum was labeled for storing used alkaline batteries; one 5-gallon bucket was labeled hazardous waste PCBs and identified with a class 9 DOT hazard placard; one 30-gallon drum was labeled universal waste alkaline batteries; one 55-gallon drum was labeled universal waste non-PCB ballasts; one 15-gallon container was labeled universal waste mercury manufactured articles and identified with corrosive and toxic DOT hazard placards; one 5-gallon bucket was labeled universal waste lithium batteries and identified with a class 9 DOT hazard placard; one 55-gallon drum was

labeled universal waste lithium batteries and identified with a class 9 DOT hazard placard; one 30-gallon drum was labeled used NiCad batteries; and one 55-gallon drum was labeled used lithium ion batteries and identified with a class 9 DOT hazard placard.

Bay 7 is labeled for storing mixed waste, and personnel maintain a written inventory of wastes in a notebook at the entrance to this bay. Mr. Parker explained that all waste in this area is radioactive liquid waste mixed with hazardous waste generated in university laboratories, and the waste tracking form for mixed waste is different than the one used for hazardous waste. Low level radioactive wastes are stored here for at least ten half-life's before it is shipped offsite. Each container appeared to be labeled and identified with an associated waste tracking form.

Bay 8 is located directly across the walkway from Bay 7 and is used to store containers of hazardous waste paint related material and hazardous waste containing dioxin. Some containers of dioxin-containing waste have been stored at this location for many years. Section III.J. of the Permit requires UNC Chapel Hill to keep an inventory of the F027 waste stored on-site, to document attempts that the facility makes to find commercial disposal facilities for this waste, and to submit an annual report of this inventory to the Department during the fourth quarter of each calendar year. The facility provided the inspectors with the most recent annual report for this requirement, which was submitted to NCDEQ on 12/22/2020. EPA is continuing to review this documentation, and may supplement this inspection report, if necessary.

The inspectors observed the following containers of dioxin-containing waste in this area: one 5-gallon container labeled D037/F027 hazardous waste, which was identified with a poison DOT hazard placard and dated 12/12/2012; one 5-gallon container labeled D001/D037/F003/F027 hazardous waste, which was identified with flammable liquid and toxic DOT hazard placards and dated 02/27/2002; one 5-gallon container labeled D001/D002/D042/F003/F027 hazardous waste, which was identified with a flammable liquid DOT hazard placard; one 10-gallon container labeled F027 hazardous waste, which was identified with a poison DOT hazard placard and dated 06/13/2018; one 10-gallon container labeled F027/D037/D017/D041 hazardous waste, which was identified with a poison DOT hazard placard and dated 07/26/2001; and one 15-gallon container labeled F027 hazardous waste, which was identified with a poison DOT hazard placard and dated 10/24/2011. The inspectors also observed containers labeled D001/F003/F005 hazardous waste paint related material, which were identified with a flammable liquid DOT hazard placard and dated 06/02/2021 in this bay.

Bay 9 is labeled for storing corrosive waste, and the inspectors observed nineteen 55-gallon containers of corrosive hazardous waste in this bay during the inspection. Each 55-gallon drum was labeled D002 hazardous waste, identified with a corrosive DOT hazard placard, and marked with an accumulation start date. The oldest drum observed in this area waste dated 07/26/2021. The inspectors also observed one 55-gallon drum labeled used oil in this bay.

Near the walkway at the entrance to Bay 9, the inspectors observed several containers of universal waste that were staged for consolidation. The containers were all approximately 10-gallons or less, and each was labeled used batteries and marked with an accumulation start date.

Building 582: Building 582, which is located directly across from the secured permitted storage

area, is used to store biomedical waste, radioactive waste, universal waste, and facility supplies. The inspectors observed one box of 4-foot universal waste fluorescent lamps, two boxes of small universal waste lamps, one cubic yard box of universal waste HID bulbs, and one cubic yard box of boxes containing 4-foot universal waste fluorescent lamps. Each of the containers was labeled universal waste lamps.

Contingency Plan: The actions that facility personnel should take in response to an emergency are described in the facility's Contingency Plan, which was last updated on 12/05/2019. The plan describes actions facility personnel must take in response to fires, explosions, floods, and any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. The plan includes coordination agreements with the Orange County Emergency Management Services, the Regional Response Team 4, the Town of Carrboro Fire Department, the Town of Carrboro Police Department, the Town of Chapel Hill Fire Department, the Town of Chapel Hill Police Department, the UNC Chapel Hill Department of Public Safety, and the UNC Healthcare System. The plan lists the names and emergency telephone numbers for persons identified as emergency coordinators. The plan includes a list of emergency equipment at the facility, the location and a physical description of each item on the list, and a brief outline of its capabilities. The plan includes an evacuation plan for personnel. This plan describes signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.

A copy of the contingency plan (and its draft quick reference guide) was most recently submitted to the Town of Chapel Hill Fire Department, the Town of Chapel Hill Police Department, the Town of Chapel Hill, the Town of Carrboro Fire Department, the Town of Carrboro Police Department, the Orange County Manager, the Orange County Emergency Services, the City of Raleigh Fire Department, the UNC Healthcare System, and the UNC Chapel Hill Department of Public Safety in early 2020. The university's records included letters returned from these response entities, in which the recipients acknowledged the availability and adequacy of resources and equipment to respond to an emergency at the university's facility in accordance with the recipient's role as described in the contingency plan. The letters of acknowledgement were dated between 03/10/2020 and 10/27/2020.

The draft quick reference guide includes the types/names of hazardous waste in layman's terms and the associated hazard associated with each hazardous waste present at any one time; the estimated maximum amount of each hazardous waste that may be present at any one time; the identification of any hazardous wastes where exposure would require unique or special treatment by medical or hospital staff; a map of the facility showing where hazardous wastes are generated, accumulated and treated and routes for accessing these wastes; a street map of the facility in relation to surrounding businesses, schools and residential areas; the locations of water supply; the identification of on-site notification systems; and the name of the emergency coordinator(s) and emergency telephone number(s).

Training Records: The inspectors reviewed facility job descriptions and employee names that were provided for EHS Personnel. Each description included the requisite skill, education, or other qualifications, and duties of facility personnel assigned to that position. UNC Chapel Hill provided a written description of the type and amount of both introductory and continuing training to be given to each person filling the positions listed above. The inspectors reviewed

records of EHS employee hazardous waste training completed in July 2020 and July 2021.

Waste Manifest Records: The inspectors reviewed available hazardous waste manifest records and land disposal restriction forms for shipments of hazardous waste sent since January 2020. Hazardous waste manifest records show that hazardous wastes flammable liquids, hazardous waste corrosive liquids, hazardous waste lab packs were shipped to permitted TSD facilities. The TSD destination facilities include: Spring Grove Resource Recovery (OHD000816629), Veolia Technical Solutions (NCD986166338), Veolia Technical Solutions (NJD980536593), Clean Harbors (ARD069748192), and Clean Harbors (NCD000648451).

Inspection Records: The inspectors reviewed UNC Chapel Hill's available records of inspections of the permitted hazardous waste storage area since January 2021. Each inspection record includes the time and date of the inspection, and the initials of the individual conducting the inspection. The checklist for the daily inspection records includes places to record observations about the presence of foreign odors, the presence of unusual conditions, the security of the gate and access doors, and the status of general housekeeping. The daily inspection checklist also includes observations of the loading and unloading areas, of cracks, spilling or uneven settlement in the secondary containment system, and of leaking containers, and verification that the telephone and man-down systems are both operable.

The checklist for the weekly inspection records is broken down into sections for the facility's security system, structural integrity, container storage area, smaller containers, and emergency equipment. Under the section for the security system, personnel record observations concerning the perimeter fence, the access gates, the chains and locks, the availability of keys, the operation of the locks, the presence and legibility of perimeter warning signs, the outdoor lighting, and the alarm system. Under the section for structural integrity, personnel record observations concerning the floors, containment trenches, curbs, and door sills. Under the section for the container storage areas, personnel record observations concerning leaking containers, significant container deterioration, liquid in containment trenches, container labels, DOT containers, closed / sealed containers, segregation by hazard class, aisle space, and container stacking height. Under the section for smaller containers, personnel record observations concerning leaking containers, significant deterioration, distance from the edge of shelving, segregation by hazard class, and condition of containers. The emergency equipment section of the inspection log includes a PPE checklist and an emergency equipment checklist. No inspection records were provided for the weeks of 02/15/2021, 03/29/2021, 04/05/2021 or 06/28/2021.

Pursuant to HW Permit NCD982093783-R2, Section III.D. Inspections, which incorporates 15A NCAC 13A .0109 [40 C.F.R. § 264.174], the Permittee is required to, at least weekly, inspect areas where containers are stored. The Permittee must look for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

12) Closing Conference

The inspectors conducted the exit meeting with Ms. Brennan and Mr. Parker. During this meeting, the inspectors stated their preliminary conclusions of the inspection.

13) **Inspection Findings**

Based on the observations made during the inspection, UNC Chapel Hill was apparently deficient with the following RCRA requirement:

- **Pursuant to HW Permit NCD982093783-R2, Section III.D. Inspections, which incorporates 15A NCAC 13A .0109 [40 C.F.R. § 264.174], the Permittee is required to, at least weekly, inspect areas where containers are stored. The Permittee must look for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.**

14) **Signed**

Laurie Benton DiGaetano
Senior Enforcement and Compliance Specialist

Date

Concurrence

Araceli B. Chavez
RCRA Enforcement Section

Date