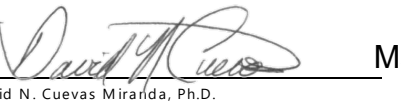
US Environmental Protection Agency – Region 2
Caribbean Environmental Protection Division
Response and Remediation Branch

EPA United States Environmental Protection Agency

Resource Conservation and Recovery Act (RCRA)
Compliance Evaluation Inspection

Facility Name:	University of Puerto Rico Mayagüez Campus		
EPA ID Number:	PRD000691063		
Date of Inspection:	March 8 - 10, 2023		
Generator Status in Record:	Non-Generator (Federal & State)		
Generator Status at the time of inspection:	SQG		
RCRA Permitted:	No		
Basis for Inspection:	Core Program		
Corrective Action:	No		
Project ID	CEPD-RCRA-23-0440		
Facility Physical Location: (Municipality, PR, zip code)	259 Norte Boulevard Alfonso Valdés Cobián, Mayagüez, Puerto Rico		
Geographical Coordinates:	18°12'32.95"N, 67° 8'29.36"W		
Facility Owner:	Ms. Maria Isabel Fernández, Health, Occupational and Environmental Safety Office Director	(787) 832-4040 ext. 3022, 3506, 3886 (787) 349-4791 (mobile)	
	maria.fernandez11@upr.edu		
	Mailing address: P.O. Box 9000 Mayagüez, P.R. 00681-9000		
Facility Operator:	Ms. Damaris Santiago, Health, Occupational and Environmental Safety Specialist	(787) 832-4040 ext. 3221, 3506	
	Damaris.santiago1@upr.edu		
	Mailing address: P.O. Box 9000 Mayagüez, P.R. 00681-9000		
NAICS:	611310 - Colleges, Universities, and Professional Schools		
SIC:	8221 Colleges, Universities, and Professional Schools		
Area:	315 acres of land property		
Number Employees:	13,316 Students, 1,181 Regular Staff Members and 625 Members of the Educational Staff		
Personnel participating in inspection:			
Eduardo R. Gonzalez	EPA Region 2-CEPD	Enforcement Officer	(787) 977-5839 gonzalez.eduardo@epa.gov
Khrystian Vazquez	EPA Region 2-CEPD	Enforcement Officer	(787) 977-5860 vazquez.khrystian@epa.gov
Status:	Final		
Record Schedule:	1044(c)		
Multi-media Checklist: ATTACHMENT # N/A		Referral: No	
EPA Lead Inspector Signature/Date	X Eduardo Gonzalez May 20, 2023		

Supervisor Signature/Date	X  May 20, 2024 David N. Cuevas Miranda, Ph.D.

1 INTRODUCTION

On March 8 thru 10, 2023, a Resource Conservation and Recovery Act (RCRA) Compliance Evaluation Inspection (the "Inspection") was conducted at University of Puerto Rico-Mayagüez Campus (the "Facility" or "UPR Mayagüez Campus"), pursuant to Section 3007 of RCRA. The Facility is located on 259 Norte Boulevard Alfonso Valdés Cobián, Mayagüez, Puerto Rico.

As part of the Inspection, an opening meeting, walkthrough, documents review and closing meeting were conducted to evaluate Facility's compliance with the requirements that govern hazardous waste generators, universal waste handlers and used oil generators as per RCRA. UPR Mayagüez Campus is designated in the RCRAInfo[1] database as a "Non-Generator of Hazardous Waste" as notified to EPA on January 1, 2008. However, UPR Mayagüez Campus has never formally notified EPA that the Facility manages laboratory wastes as an eligible college or university under 40 Code of Federal Regulations (CFR) Subpart K – "Alternative Requirements for Hazardous Waste Determination and Accumulation of Unwanted Material for Laboratories Owned by Eligible Academic Entities." Furthermore, according to E-Manifest data, UPR Mayagüez Campus had been generating hazardous waste as a Large Quantity Generator (LQG) at the time of this inspection.

According to EPA's RCRA Info and ECHO records, one full Clean Air Act inspection (one-Federal) was conducted on March 9, 2005, as an Operating Minor Source Emission (PR0000007209710000) and no violation were identified at the Facility. One RCRA Inspection (one-Federal) was conducted at the Facility on March 9 thru 18, 2005, in the areas of general generator requirements of hazardous wastes, and violations were found in areas of 40 CFR § 262.11- "Hazardous Waste Determination and Recordkeeping," 40 CFR § Part 270.1(c) – "Storage of Hazardous Waste Without a Permit, "40 CFR § 265.173(a), 40 CFR § 265.171- "Failure to Keep Hazardous Waste Containers Closed and Failure to Store Hazardous Waste Containers in Good Condition," 40 CFR § 265.31-"Failure to Minimize Risks," 40 CFR § 265.16 – "Failure to Provide Personnel with Hazardous Waste Training," 40 CFR Part 265 Subparts C and D- "Failure to Have a Contingency Plan/Failure to Make Arrangements with Local Authorities," 40 CFR § 279.22(c)(1) – "Failure to Label or Mark Clearly Containers with the Words "Used Oil Containers," 40 CFR § 262.40(a) – "Failure to Keep a Signed Generator Copy for Manifests," 40 CFR § 262.42(a)(1) – "Failure to Contact Transporter or Owner or Operator of the Designated Facility for each Manifests," and, 40 CFR § 262.42(a)(2) – "Failure to File an Exception Report for each Manifest." On September 30, 2005, EPA issued a Complaint, Compliance Order, and Notice of Opportunity for Hearing (Docket No. RCRA-02-2005-7115) against UPR Mayagüez Campus. The Complaint alleged that UPR had violated requirements of RCRA and regulations concerning the handling and management of hazardous waste at

[1] RCRA Info and ECHO, EPA's Enforcement Compliance and History Online System

its Mayagüez Campus, Puerto Rico. Based on the multiple violations and pursuant to the authority of Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928(a)(3), and the RCRA Civil Penalty Policy, EPA proposed a civil penalty in the total amount of $908,469 for the RCRA violations

On August 16, 2006, EPA and UPR Mayagüez Campus entered into a Consent Agreement and Final Order (CA/FO) to settle the RCRA violations identified EPA's Complaint. As stated in the Complaint, EPA found that Mayagüez Campus failed to operate its Facility in a manner that would minimize the risk of releasing hazardous wastes into the environment. It was storing containers of hazardous waste in several buildings and open areas on campus that were leaking, open or mislabeled. The containers held wastes ranging from used oil, various acids and spent solvents to formaldehyde. Mayagüez Campus was also storing hundreds of containers of old and expired chemicals, such as picric acid, in an unsafe manner. The investigation determined that the university also had failed to properly determine which of the wastes they generate are hazardous wastes. The Facility never put plans into place with local emergency response managers to respond to a chemical spill or incident on campus. In addition, UPR Mayagüez Campus didn't comply with the conditions and regulations necessary to qualify for permit exemptions. EPA ordered UPR Mayagüez Campus to fix leaking containers, place wastes in closed containers, properly label and store wastes and put into place a plan with local emergency response managers within 30 days. EPA has given the university one month to set up a system to determine which wastes it generates campus wide are hazardous and to ship this off campus for proper disposal in a timely manner. Also, under the CA/FO, UPR Mayagüez Campus had three months to obtain permits to accumulate and store hazardous waste, or alternatively, to meet the conditions for an exemption from permit requirements.

As part of the EPA Complaint, UPR Mayagüez Campus proposed a Supplemental Environmental Project (SEP) as part of the settlement negotiation process related to the findings of the EPA Inspection. The proposed SEP was an Environmental Management System (EMS) with the main goal of reducing the impact of the chemical substances and materials used at campus to fulfill its academic mission, and to promote source reduction, pollution prevention and compliance promotion awareness, and activities. The focus of the EMS was hazardous chemicals and wastes, although universal wastes and electronic equipment were also be managed. According to the record, the EMS program was implemented until May 2018, when UPR Mayagüez Campus decided to implement a Laboratory Management Plan (LMP) to standardize the management of hazardous waste materials regulated under RCRA in accordance with the regulation provided by 40 CFR § 262 Subpart K with respect to its laboratories, as an alternative to complying with the requirements of §§ 262.11 – "Hazardous Waste Determination and Recordkeeping," and 262.15 – "Satellite Accumulation Area Regulations for Small and Large Quantity Generators."

Additionally, before EPA Inspection, UPR Mayagüez Campus submitted self-disclosures under EPA's Audit Policy whereby the university self-disclosed possible violations of federal hazardous waste, clean water, and clean air laws. EPA normally would grant relief from financial penalties for self-disclosed violations, but it was determined that UPR Mayagüez Campus was not eligible for full relief because it was not correcting all its violations. As a result, EPA conducted its own comprehensive inspection of the campus, and found numerous violations proposing a $908,469 fine for these violations.

2 OPENING MEETING (DAY 1- MARCH 8, 2023)

On March 8, 2023, an opening meeting was held between Ms. Maria Isabel Fernández, Health, Occupational and Environmental Safety Office Director, and Ms. Damaris Santiago, Health, Occupational and Environmental Safety Specialist both from UPR Mayagüez Campus, Khrystian Vazquez, EPA RCRA Inspector, and me. We identified ourselves as EPA RCRA Enforcement Officers and told the Facility representatives that the purpose of my visit was to conduct a RCRA Inspection at the Facility to evaluate its hazardous waste management practices and compliance. I discussed the objectives of my inspection, and the requirements under RCRA for a Small or Large Quantity Generator (SQG or LQG). We asked Ms. Fernández to provide us for review UPR Mayagüez Campus' manifests (last three years), and land disposal records regarding the handling, transportation, and final disposal of hazardous waste generated, and stored at the campus. We also asked for review the waste analysis plan, weekly inspection records, personnel training requirements, biennial report, waste minimization plan, closure plan, contingency and emergency and preparedness plan, Used Oil manifests, and RCRA air emission requirements under 40 CFR § 265 Subparts AA, BB & CC certification reports.

Ms. Fernández stated that UPR Mayagüez Campus does not have to comply with Subparts AA, BB & CC of RCRA requirements, since the only area that might apply is in the hazardous waste containers storage area. However, the Facility is classified as a Small Quantity Generator. She added that containers holding volatile organic wastes were provided by Capitol Environmental Services Inc. and they were contained cover and manufactured tested seals in accordance with the Department of Transportation (DOT) (49 CFR 178 - Specifications for Packagings) requirements, and the United Nations (UN) Performance Oriented Packaging Standards. In addition, UPR Mayagüez Campus' container management practices (transferring, storing, and stacking) are provided to prevent of volatile air emissions in a well vented and controlled storage areas.

Based on a review of electronic manifests, it was estimated that approximately over 2,200 pounds of hazardous waste are generated at the Facility monthly and disposed of with Capitol Environmental Services, Inc. every six months. I was told by Ms. Fernández that there are one Central Accumulation Area (CAA) for collection of all hazardous waste containers in the campus and various hazardous waste satellite accumulation areas (SAA) for the management of hazardous wastes in the academic laboratories.

Ms. Fernández stated that the UPR Mayagüez Campus has chosen an alternative generator regulation for managing hazardous waste in academic laboratories in accordance with the regulation provided by 40 CFR § 262 Subpart K - "Alternative Requirements for Hazardous Waste Determination and Accumulation of Unwanted Material for Laboratories Owned by Eligible Academic Entities," with respect to its laboratories, as an alternative to complying with the requirements of §§ 262.11 and 262.16. She also explained that the UPR Mayagüez Campus as an eligible academic entity has developed the 2018-2020 Laboratory Management Plan (LMP) in accordance with § 262.214 that describes how the laboratories at the campus will comply with the requirements of Subpart K.

During the inspection, Ms. Fernández informed EPA Inspectors about a pipe break that supplies raw water to the Bo. Filter Plant located in Miradero, Mayagüez. This plant supplies water to most of the

Mayagüez City, as well as neighboring towns such as Hormigueros, Añasco, Cabo Rojo and Rincón. According to the Puerto Rico Aqueducts and Sewers Authority (AAA) the estimated repair time would be 48 hours.

The UPR Mayagüez Campus did not have drinking water service since the morning of March 8, 2023, which is the reason why the University Administration determined that classes on the afternoon of March 8, 2023, would be offered on-line via remote technology as well as in the March 9 and 10, 2023. Campus Administration also determined that staff should not report to work on March 9, 2023. This information was shared with EPA Inspectors who decided to continue with the Inspection.

2.1 LABORATORY MANAGEMENT PLAN (LMP)

Ms. Fernández stated that the 2018-2020 Laboratory Management Plan (LMP) was developed to standardize the management of "hazardous" materials discarded at the laboratories at UPR Mayagüez Campus that are regulated under RCRA in accordance with the regulation in 40 CFR § 262 Subpart K as an alternate process for academic institutions to manage their hazardous wastes. It must be noted that this process differs from the one originally established by RCRA for the industrial generators of hazardous waste. Referring to 2018-2020 Laboratory Management Plan, Ms. Fernández explained the protocols in place for the management of hazardous waste generated at the academic laboratories. She also stated which laboratories were covered by LMP which included chemical stockrooms that do not support laboratories, vehicle maintenance areas, machine shops, print shops, academic photo processing. As discussed in the opening meeting, EPA Inspectors would adhere to the procedures contained in the LMP to conduct the RCRA Inspection as described below in the academic program.

2.1.1 Container Labeling

Referring to the 2018-2020 Laboratory Management Plan (LMP), UPR Mayagüez Campus has decided to use the definition of "Unwanted Materials" to all chemical substances that are expired, used, or generated due to experiments unless determined otherwise by the laboratory worker, or until a formal determination is performed by the UPR Mayagüez Campus Environmental, Health and Safety Office (OSSOA).

It is also established in the LMP that all containers used to store "Unwanted Materials" must be labeled with the following information:

- The words "Unwanted Material"
- Contents of the container (chemical materials in the container and quantity)
- Accumulation start date

It will be the responsibility of the laboratory worker within the laboratory to prepare the label and verify that labels are placed on all containers of unwanted material stored in the laboratory. Containers will not be removed from a laboratory unless the "CHEMATIX"[2] label the is attached to the container.

2.1.2 Method of Removal of Unwanted Material

Referring to the 2018-2020 Laboratory Management Plan (LMP), unwanted materials shall be removed from the laboratory using a rolling 6-month approach, that is, each container will be removed within 6 months from the container's accumulation start date. OSSOA personnel will remove unwanted materials from a laboratory after the laboratory places a request for removal through the Chematix system. Chematix may be used to monitor whether removal of unwanted materials from a laboratory may be necessary. Furthermore, a laboratory will not accumulate more than 55-gallons of unwanted materials. It is the laboratory's responsibility to comply with all OSSOA requirements, including appropriate labeling, use of correct containers, and notification time.

If a laboratory accumulates a total volume of unwanted material more than 55-gallons, all containers of unwanted material in the laboratory:

- Will be removed from the laboratory within 10 calendar days of the date that 55-gallons were exceeded.

If a laboratory accumulates more than 1-quart of any of the 6 P-listed reactive acutely hazardous unwanted materials, all containers of reactive acutely hazardous unwanted material:

- Must be removed from the laboratory within 10 calendar days of the date that 1-quart was exceeded.
- To ensure compliance with this requirement, the 6 P-listed reactive acutely hazardous unwanted materials are:
  - P006 – Aluminum phosphide
  - P009 – Ammonium picrate
  - P065 – Mercury fulminate
  - P081 - Nitroglycerine
  - P112 - Tetranitromethane
  - P122 – Zinc phosphide (> 10%)

Laboratories that generate more than 55-gallons of unwanted materials or 1-quart of reactive acutely unwanted materials will need to request removal of the waste from the laboratory at the moment that the 55-gallons or 1-quart volume of unwanted material is reached. The laboratory worker assigned to each generation point will be responsible to comply with all requirements established by OSSOA.

[2] CHEMATIX is a chemical management software, capable of tracking chemicals from point of entry as inventory to point of exit as waste, as well as every point in between, providing a robust environment in which to track substances and maintain compliance with all governmental regulations.

Once the unwanted materials are removed from the laboratory by a trained professional, the hazardous waste determination will be made on the Central Accumulation Area (CAA) within four days of the unwanted materials arriving at this location. All RCRA applicable requirements for small quantity generators including those on 40 CFR§§§ 262.34(d), 262.34(f) and 40 CFR 265 Subpart I will be observed in the CAA.

The removal of unwanted materials from a laboratory is different from a laboratory clean-out procedure. The clean-out process can only be implemented once a year per laboratory or generation area.

2.1.3 Making Hazardous Waste Determination

Referring to the 2018-2020 Laboratory Management Plan (LMP), unwanted materials will be moved only by OSSOA authorized personnel to the Central Accumulation Area (CAA). Once the unwanted material is moved to the CAA, the hazardous waste determination will be made within four days of the material arriving at the CAA. Within this four-day time frame, OSSOA personnel would determine if the material is eligible for re-use, recycling or will be handled as a nonhazardous waste. After the hazardous waste determination is made, all applicable requirements in the CAA will continue to apply and be observed as usual.

Unwanted materials removed from the laboratories to the CAA must be identified with its removal date.

2.1.4 Laboratory Clean Out Procedures

Referring to the 2018-2020 Laboratory Management Plan (LMP), performing a Laboratory Clean Out procedure is not mandatory and will be directly influenced by the availability of funding to carry out a clean out. OSSOA will evaluate the laboratory inventory of chemicals and other materials which are no longer needed or that have expired, in order to determine the subsequent removal of those chemicals or other unwanted materials. Conducting a clean out will be considered for one of the following reasons, it may be on a routine basis (e.g., at the end of a semester or academic year) or as a result of a renovation, relocation, or change in laboratory supervisor/occupant.

The clean out process allows for the redistribution of the chemicals. If a laboratory worker makes a determination that a chemical can be used in another laboratory, it would be considered a product and thus not regulated under RCRA. However, if such determination is made after it is removed from the laboratory, the clean-out chemical would be regulated as an unwanted material until it is redistributed from the CAA to another laboratory for further use.

Clean outs will only be performed once every twelve (12) months per laboratory. At the conclusion of the laboratory clean-out, all unwanted materials must be removed from the laboratory.

2.1.5 Emergency Prevention

Referring to the 2018-2020 Laboratory Management Plan (LMP), to ensure a quick response in case of an emergency occurring in a UPRM laboratory, emergency contact information will be posted in every laboratory near the laboratory phone. This list will include contact information for both emergency responders on campus and off campus. Evacuation routes will also be posted in every laboratory.

Ms. Fernández provided us with a list of active laboratories at the UPR Mayagüez Campus that have been chosen to manage hazardous waste in academic laboratories in accordance with the regulation provided by 40 CFR § 262 Subpart K as depicted in Table No. 1 below.

Table No. 1 – LMP Active Laboratories Under 40 CFR § 262 Subpart K

Building # / Building Name	Room #	Lab Name
Alfredo Ramírez de Arellano y Rosell	CTA-220	Food Chemistry Research Lab CTA-220
Alfredo Ramírez de Arellano y Rosell	CTA-219	Food Microbiology CTA-219
Alfredo Ramírez de Arellano y Rosell	CTA-223	Storage Room CTA-223
473 /Mechanical Engineering	L-004	Research Lab L-004
473 /Mechanical Engineering	L-123	Research Lab L-123 A
473 /Mechanical Engineering	L-123	Research Lab L-123 B
473 /Mechanical Engineering	L-126	Research Lab L-126
473 /Mechanical Engineering	L-240	Research-Teaching Lab L-240
479 /Agricultural Sciences Faculty - Jesus T. Pinero	AD-PLA	Adjuntas - Almacen
479 /Agricultural Sciences Faculty - Jesus T. Pinero	AP-003	Research Lab AP-003
479 /Agricultural Sciences Faculty - Jesus T. Pinero	AP-100	Entomology Lab
479 /Agricultural Sciences Faculty - Jesus T. Pinero	AP-102	Fito-pathology Lab
479 /Agricultural Sciences Faculty - Jesus T. Pinero	AP-103	Nematology Lab
479 /Agricultural Sciences Faculty - Jesus T. Pinero	FALZ-001	Doctoral Lab - 001
479 /Agricultural Sciences Faculty - Jesus T. Pinero	FALZ-012	Quarantine Lab - Francisco Sein
479 /Agricultural Sciences Faculty - Jesus T. Pinero	FALZ-02	Research Lab FALZ-02
479 /Agricultural Sciences Faculty - Jesus T. Pinero	FALZ-07	Lab BNF
479 /Agricultural Sciences Faculty - Jesus T. Pinero	I-LAB	Isabela - Laboratory
479 /Agricultural Sciences Faculty - Jesus T. Pinero	I-PLA	Isabela - Plaguicidas
479 /Agricultural Sciences Faculty - Jesus T. Pinero	JD-LAE	Juana Diaz - Lab Entomologiy
479 /Agricultural Sciences Faculty - Jesus T. Pinero	JD-PLA	Juana Diaz - Plaguicidas y Abonos
479 /Agricultural Sciences Faculty - Jesus T. Pinero	L-PLA	Lajas - Almacen de Plaguicidas
479 /Agricultural Sciences Faculty - Jesus T. Pinero	P-002	Research Lab P-002
479 /Agricultural Sciences Faculty - Jesus T. Pinero	P-010B	Research Lab P-010B
479 /Agricultural Sciences Faculty - Jesus T. Pinero	P-014A	Animal Biotechnology
479 /Agricultural Sciences Faculty - Jesus T. Pinero	P-014A	(*) Research Lab P-014A
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-018	Explosives Storage Room P-018
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-108	Teaching Laboratory
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-112	Research Lab P-112B
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-114	Research Lab P-114
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-119	Research Lab P-119C
479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-121	Research Lab P-121 interior

479 / Agricultural Sciences Faculty - Jesus T. Pinero	P-209	Research Lab P-209
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-FDS	Soil Physics Lab
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-IBIOL	Research Lab - Biology
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-LCA	Laboratorio Central Analitico
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-LCAS	RP-Lab Calidad de Agua y Suelos
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-LQA	RP-Lab Quimica-Agroambiental
479 / Agricultural Sciences Faculty - Jesus T. Pinero	RP-V, BM	Lab Virologia y Biologia Molecular
490 / Luis Stefani / Engineering	S-101	Research Lab S-101
490 / Luis Stefani / Engineering	S-106	Research Lab S-106
490 / Luis Stefani / Engineering	S-110	Research Lab S-110
490 / Luis Stefani / Engineering	S-214	Biomedical Instrumentation Research Lab
490 / Luis Stefani / Engineering	S-311	Teaching Lab S-311
490 / Luis Stefani / Engineering	S-314	Research Lab S-314
733 / Civil Engineering	CI-018	Environmental Engineering
733 / Civil Engineering	CI-018	Research Lab CI-008 Dr. Carlos Ramirez
734 / Chemical Engineering	101-A	Research Lab 101-A
734 / Chemical Engineering	101-A	Research Lab 101-A M. Domenech
734 / Chemical Engineering	101-A	Research Lab 101-A M. Latorre
734 / Chemical Engineering	101-A	Research Lab 101-A M. Torres
734 / Chemical Engineering	101-B	Research Lab 101-B
734 / Chemical Engineering	101-B	Research Lab 101-B (D. Suleiman)
734 / Chemical Engineering	101-H	Research Lab 101-H, I
734 / Chemical Engineering	101-I	Inactive
734 / Chemical Engineering	101-J,K	Research Lab 101-J
734 / Chemical Engineering	101-J,K	Storage - Dr. Nelson Cardona
734 / Chemical Engineering	101-K	Research Lab 101-K
734 / Chemical Engineering	101-M	Research Lab 101-M
734 / Chemical Engineering	101-M	Research Lab 101-M (Acevedo)
734 / Chemical Engineering	101-N	Research Lab 101-N
734 / Chemical Engineering	101-O	Research Lab 101-O
734 / Chemical Engineering	102-A,B	Research Lab 102-A, B
734 / Chemical Engineering	102-A,B	Research Lab 102-A, B (L. Saliceti)
734 / Chemical Engineering	102-A, B	Research Lab 102-A, B (P. Ortiz)
734 / Chemical Engineering	102-E, D	Research Lab INQU-102-E, D
734 / Chemical Engineering	103-A	Chemical Analysis Lab 103-A
734 / Chemical Engineering	103-A-1	Research Lab 103-A
734 / Chemical Engineering	104-A	Research Lab 104-A
816 / Chemistry	Q-007	Storage Room
816 / Chemistry	Q-008	Flammables Q-008

816 / Chemistry	Q-009	Preparations Laboratory
816 / Chemistry	Q-011	Science on Wheels Educational Center
816 / Chemistry	Q-023	Research Lab Q-023
816 / Chemistry	Q-027	Natural Products Lab Q-027
816 / Chemistry	Q-030	Lab Q-030
816 / Chemistry	Q-031	Environmental Analytical Group
816 / Chemistry	Q-042	Molecular Spectroscopy II Lab Q-042
816 / Chemistry	Q-046	Physical Chemistry Lab Q-046
816 / Chemistry	Q-048	Molecular Spectroscopy Lab Q-048
816 / Chemistry	Q-050	Physical-Chemistry Q-050
816 / Chemistry	Q-051	Teaching Lab Q-051
816 / Chemistry	Q-058	Acids Q-058
816 / Chemistry	Q-058	Solids Q-058
816 / Chemistry	Q-059	Explosives
816 / Chemistry	Q-106	Research Lab Q-106
816 / Chemistry	Q-108	Teaching Lab Q-108
816 / Chemistry	Q-110	Inorganic Chemistry Lab Q-110
816 / Chemistry	Q-112	Bio-inorganic Lab Q-112
816 / Chemistry	Q-116	Bio-inorganic Lab Q-116
816 / Chemistry	Q-155	Surface and Materials Research Lab Q-155
816 / Chemistry	Q-157	Surface and Materials Research Lab Q-157
816 / Chemistry	Q-159	Research Lab Q-159
816 / Chemistry	Q-161	Research Lab Q-161
816 / Chemistry	Q-161	Research Lab Q-161 - Jose Cortes
816 / Chemistry	Q-163	Research Lab Q-163
816 / Chemistry	Q-165	Research Lab Q-165
816 / Chemistry	Q-205	Agronomy and Soils Lab Q-205
816 / Chemistry	Q-205	Agronomy ans Soils II Q-205
816 / Chemistry	Q-207	Agronomy and Soils II Q-207
816 / Chemistry	Q-207	Agronomy and Soils Q-207
816 / Chemistry	Q-209	Research Lab Q-209
816 / Chemistry	Q-211	Research Lab Q-211
816 / Chemistry	Q-213	Organic Research Lab Q-213
816 / Chemistry	Q-215	Research Lab Q-215
816 / Chemistry	Q-228	General Chemistry Q-228
816 / Chemistry	Q-230	General Chemistry Q-230
816 / Chemistry	Q-238	General Chemistry Conc.
816 / Chemistry	Q-240	General Chemistry Conc. Q-240
816 / Chemistry	Q-256	General Chemistry Q-256
816 / Chemistry	Q-258	General Chemistry Q-258
816 / Chemistry	Q-266	General Chemistry Q-266
816 / Chemistry	Q-268	General Chemistry Q-268
816 / Chemistry	Q-277	Research Lab Q-277

816 / Chemistry	Q-279	Natural Products Lab Q-279
816 / Chemistry	Q-282	Natural Products Lab Q-282
816 / Chemistry	Q-284	Natural Products Lab Q-284
816 / Chemistry	Q-286	Natural Products Lab Q-286
816 / Chemistry	Q-305	Research Lab Q-305
816 / Chemistry	Q-307	Research Lab Q-307
816 / Chemistry	Q-309	Biochemistry Teaching Lab Q-309
816 / Chemistry	Q-311	Medicinal Chemistry Lab Q-311
816 / Chemistry	Q-313	Research Lab Q-313
816 / Chemistry	Q-315	Organic Chemistry Lab Q-315
816 / Chemistry	Q-328	3462,64 Organic Chemistry Q-328
816 / Chemistry	Q-330	3462, 64 Organic Chemistry Q-330
816 / Chemistry	Q-338	Analytical Chem for Eng Te Q-338
816 / Chemistry	Q-340	Anal Chem for Eng Q-340
816 / Chemistry	Q-354	Anal Chem Q-354
816 / Chemistry	Q-356	Analytical Chem Lab Q-356
816 / Chemistry	Q-356	Inorganic Chem Teaching Lab Q-356
816 / Chemistry	Q-364	Teaching Lab Q-364
816 / Chemistry	Q-366	Organic Chemistry Teaching Lab Q-366
816 / Chemistry	Q-375	Research Lab Q-375
816 / Chemistry	Q-377	Biochemistry Lab Q-377
816 / Chemistry	Q-379	Research / Teaching Lab Q-379
816 / Chemistry	Q-381	Research Lab Q-381
816 / Chemistry	Q-383	Electrochemistry Lab Q-383
816 / Chemistry	Q-385	Research Lab Q-385
819 / Biology	B-020	Teaching Lab B-020
819 / Biology	B-026	Microscopy Research Lab B-026
819 / Biology	B-073	Biotechnology B-073
819 / Biology	B-087	Specimen Room B-087
819 / Biology	B-089	Storage Room B-089
819 / Biology	B-120	Teaching Lab B-120
819 / Biology	B-123	General Biology Lab B-123
819 / Biology	B-133	Teaching Lac B-133
819 / Biology	B-137	Parasitology Lab B-137
819 / Biology	B-148	Research Lab B-148 a
819 / Biology	B-148	Research Lab B-148 b
819 / Biology	B-218A	Mycology Lab B-218A
819 / Biology	B-218B	Research Lab B-218B
819 / Biology	B-220	Genetics Lab B-220
819 / Biology	B-230	Research Lab B-230
819 / Biology	B-241	Microbiology Lab B-241
819 / Biology	B-257	Research Lab B-257

819 / Biology	B-258	Mycology Lab B-258
819 / Biology	B-266	Microbiology Lab B-266
819 / Biology	B-282B	Research Lab B-282B
819 / Biology	B-322	Research Lab B-322
819 / Biology	B-329A	Immunology Teaching Lab B-329A
819 / Biology	B-331	Research Lab B-331
819 / Biology	B-337	Microbial Ecology Lab B-337
819 / Biology	B-348	Virology / Molecular Genetics Lab B-348
819 / Biology	B-351	Virology Lab B-351
819 / Biology	B-360	Mycology Lab B-360
700 / Physics	F-103	Research Lab F-103
700 / Physics	F-105	Research Lab F-105
700 / Physics	F-107	Research Lab F-107
700 / Physics	F-117C	Research Lab F-117C
700 / Physics	F-125E	Research Lab F-125E
700 / Physics	F-129	Research Lab F-129
700 / Physics	F-225	Lab F-225
700 / Physics	F-305	Research Lab F-305
700 / Physics	F-316	Lab F-316
700 / Physics	F-431	Research Lab F-431
700 / Physics	F-458	Lab F-458

2.2 FACILITY PHYSICAL DESCRIPTION AND OPERATION

The University of Puerto Rico was created by an act of the Legislative Assembly on March 12, 1903, emerging as an outgrowth of the Normal School, which had been established three years earlier to train teachers for the Puerto Rican school system. In 1908, the benefits of the Morill-Nelson declared applicable to the island, forested the rapid growth of the University. Evidence of that growth was the establishment of the College of Liberal Arts at Rio Piedras in 1910 and the College of Agriculture· at Mayagüez in 1911.

The University of Puerto Rico is a well-established and mature institution, with a total enrollment of over 69,000 students. The University consists of the Mayagüez Campus, the Medical Sciences Campus, and the Rio Piedras Campus, which are dedicated to both undergraduate and graduate education; and the Colleges at Aguadilla, Arecibo, Bayamon, Carolina, Cayey, Humacao, Ponce, and Utuado which provide undergraduate education.

In 1966, the Legislative Assembly reorganized the University of Puerto Rico as a system of autonomous campuses, each under direction of a chancellor. Therefore, each autonomous institutional unit has a Chancellor as chief administrator and academic officer. The College of Agriculture and Mechanic Arts (CAAM) became the University of Puerto Rico Mayagüez Campus.

Within the philosophical framework established by the University of Puerto Rico Act, the Mayagüez Campus directs its efforts towards the development of educated, cultured citizens, capable of critical thinking, and professionally qualified in the fields of agricultural, social, and natural sciences, engineering, humanities, and business administration. They should be able to contribute in an efficient manner to the cultural, social, and economic development of the Puerto Rican and international communities. This process is aimed at endowing our alumni with a strong technical and professional background and instill a strong commitment to Puerto Rico and our hemisphere.

Today, the Mayagüez Campus of the University of Puerto Rico is a co-educational research center, bilingual, and non-sectarian school comprising the Colleges of Agricultural Sciences, Arts and Sciences, Business Administration, Engineering, and the Division of Continuing Education and Professional Studies. The College of Agricultural Sciences includes the Agricultural Experiment Station (i.e., Alzamora Farm), and the Agricultural Extension Service.

According to the 2022-2023 Fiscal Year Annual Report, the University of Puerto Rico - Mayagüez Campus managed a budget from the general account funds (i.e., Commonwealth Central Government Funds) during last fiscal year of $116,602,725.00 in Campus, and with an enrollment over 13,316 undergraduate and graduate students, and with 1,181 regular staff members and 625 members of the educational staff.

2.3 PHYSICAL SETTING

The site is located at approximately 105 feet above mean sea level. ***Figure 1*** presents the site location on a portion of the US Geological Service (USGS) Topographical Map. ***Figure 2*** presents an aerial photograph of the site. The closest superficial water body is the Atlantic Ocean located approximately 0.88 miles to the west of the site (see **ATTACHMENT I)**.

2.4 SOLID AND HAZARDOUS WASTE GENERATION

The UPR Mayagüez Campus was founded in 1911, and is located on 259 Norte Boulevard Alfonso Valdés Cobián, Mayagüez, Puerto Rico. Approximately thirteen thousand (13,000) students attend numerous colleges operated at this campus. The UPR-Mayagüez Campus also housed over two thousand five hundred (1,806) full time faculty, and staff personnel. The university covers an area approximately of 315 acres and houses over eighty-nine (89) buildings including Administrative Offices and a Campus Hotel. Along with the traditional academic curricula, UPR Mayagüez Campus is involved in extensive research activities in a variety of areas including agricultural farming. Additionally, large physical maintenance department supports all Campus' activities.

UPR Mayagüez Campus also generates small quantities of medical regulated waste from its local Medical Services Unit, and Nursing College where medical analyses are conducted as part of the medical diagnosis examinations. Accordingly, there is a medical waste program in place to collect wastes in red plastic cannisters properly labeled and stored for final disposition.

From a RCRA perspective, hazardous waste is generated from numerous sources throughout the Campus, including the areas listed below and depicted in Figure No. 1 of the UPR Mayagüez Campus Map.

- General Engineering Department
- Chemical Engineering Department
- Civil Engineering Department
- Mechanical Engineering Department
- Electrical & Computer Department
- Marine Science Department
- Geology Department
- Art Education Department
- Theater/Performing Art
- Biology Department
- Chemistry Department
- Physics Department
- Investigation & Research Development Centers
- Nursing School
- Medical Services Unit
- Research & Development Laboratories
- Printing Department
- Physical Education Department (Swimming Pool Chemical Storage Area)
- Physical and Maintenance Shops
- Agricultural Science Department
- Agronomy and Soils Department
- Agricultural Experimental Stations (i.e., farms)
- Administrative Offices and Campus Hotel

Typically, the primary waste generated and stored at UPR Mayagüez Campus include corrosives, oxidizers, flammable, poisons, acute hazardous wastes, reactive, waste solvents, compressed gas cylinders, paint waste, and other laboratory chemicals and agricultural (i.e., pesticides) wastes. Hazardous wastes generated from the building maintenance department and vehicles and equipment shop include paint wastes, used oil, spent degreaser, spent fluorescent lamps, and used batteries. Paint jobs are conducted throughout the campus where is needed by painting shop staff. As part of the painting operations, thinner is used to clean up paint brushes, and other related equipment. Once the thinner is spent and mixed with paint wastes, it is collected and disposed of as special wastes.

There are various Agricultural Science Laboratories located at the Alzamora Farm. The laboratories could potentially generated laboratory wastes and discarded pesticides, in which pesticide spills could contaminate soils and water run-off could heavily impact septic wells, sewage systems and stormwater drainages. It was also noted that the university staff does not have much control or inventory of extremely hazardous substances, and continuously exercise the practice to accumulate hazardous chemicals for long periods of time (years), which have resulted in accumulation of large amounts of dangerous chemical wastes at different campus locations. Therefore, UPR-Mayagüez Campus must maintain and operate the facility to minimize the possibility of fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which have threaten human health and the environment.

Additionally, the art department, and under theater performing activities generate waste paints and spent thinners as well as printing wastes which could be considered as hazardous wastes, and on some occasions are dumped down the sinks or disposed of as domestic garbage. It must be noted that the university does not have any discharge permits under the Puerto Rico Aqueduct and Sewer Authority (PRASA) sanitary sewage system nor has a local wastewater treatment plant on-site.

Based upon a review of UPR Mayagüez Campus' manifest records, it appeared that UPR Mayagüez Campus is a Small Quantity Generator since it generates over 2,200 pounds of hazardous waste every month, and disposed of with Capitol Environmental Services, Inc. every six months. It must be noted that at the time of the inspection many of the manifest records were not available for review. In addition, it appears that hazardous waste generated at the Campus may not be properly characterized nor manifested as required by RCRA regulations. It has been determined by EPA Inspectors the university need to make appropriate hazardous waste determinations on hazardous wastestreams generate throughout the Facility.

Oher solid wastes generated at the Facility were Universal Waste (UW) associated with the management of spent fluorescent lamps, Ni-Cd batteries, and disposal of unused sanitation product with Capitol Environmental Services, Inc. Recyclable materials such as alumnium, cardboard, papel are disposed of with WR Recycling. Other disposal of sanitation, maintenance and housekeeping products are disposed of with Campos & Carreras Services at the Mayagüez Municipal Solid Waste Landfill.

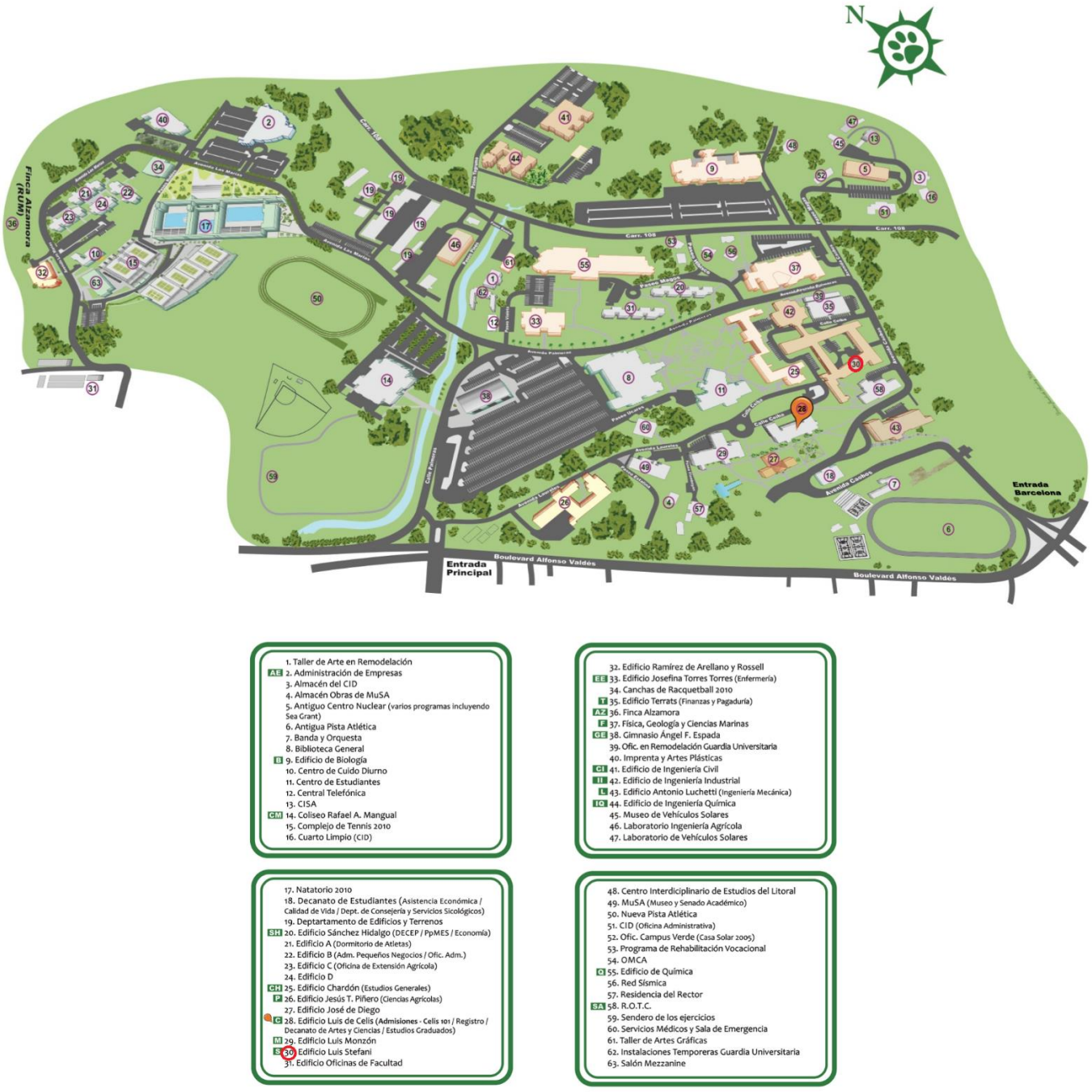


Figure No. 1- University of Puerto Rico Mayagüez Campus Map

(https://www.uprm.edu/portales/mapa)

3 FACILITY WALKTHROUGH (DAY 2 – MARCH 9, 2023)

Ms. Maria Fernández, Health, Occupational and Environmental Safety Office (OPASO) Director accompanied me during the Facility walkthrough. At the Facility various university engineering and science departments, medical services unit, research centers, printing department, physical education department (swimming pool chemical storage area), physical and maintenance shops, agricultural science farms among other administrative offices and supporting units were inspected as described below. The observations for each area are described below. Refer to Appendix 1 for pictures taken during the inspection.

3.1 CHEMICAL ENGINEERING DEPARTMENT

This building houses over twenty-two (22) chemical/biochemical research laboratories, teaching classrooms with cabinets used for the storage of chemical substances, chemical storage areas, and the storage room for the accumulation of chemical hazardous and toxic materials. This building also houses numerous hazardous waste satellite areas managed under Laboratory Management Plan RCRA § 262 Subpart K. Ms. Fernández and Ms. Jessamine Hernandez, EH&S Officer, both from OPASO served as the UPR Mayagüez Campus' representatives and escorts.

3.1.1 Chemical Engineering Research Laboratory (Cellular & Molecular) IQ-101 K

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 1-liter Erlenmeyer Flask with a "Biohazard Waste," unlabeled and without hazardous waste determination. If it is managed as a laboratory waste," the content and the container must be labeled as "Unwanted Material" and dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 1**).
ii. One (1) 2-liter container with a yellow-colored spent solvent (PBS) labeled as "Hazardous Waste," and with an accumulation start date of July 13, 2022, not managed as "Unwanted Material" (N/UM/, N/D) (see **Picture No. 2**).
iii. One (1) 4-liter amber container with "ACS Reagent 37%" waste labeled as "Unwanted Material" but not dated with its accumulation start date (UM, N/D) (see **Picture No. 3**).
iv. One (1) 2.5-liter plastic container with "DMF/DCM" waste labeled as "Hazardous Waste" but not dated with its accumulation start date nor managed as "Unwanted Material" (N/UM/, N/D) (see P**icture No. 4**).
v. Storage of chemical reagents at laboratory cabinets was conducted without following any safety protocols or compatibility characteristics of the reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction.

3.1.2 Chemical Engineering Research Laboratory (Catalyst) IQ-101 J

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Eight (8) 4-liter ambar containers stored inside a cabinet area all labeled as "Unwanted Materials" and without their accumulation start dates. It was noted that three of them were empty and one contained discarded vials at the time of the inspection. However, no compatibility characteristics protocols were followed in the storage area (i.e., sulfuric acid) (UM, N/D) (see **Picture No. 5**).
ii. Four (4) 4-liter ambar containers stored in trays containing THF (Tetrahydrofuran) and 1,4-Dioxane dated as July 16, 2019, and March 3, 2020, not in use and abandoned and not managed as "Unwanted Material," without a hazardous waste determination of the content of the containers. I mentioned that THF is common peroxide-forming after degradation if not used within 12 months (see **Picture No. 6**).
iii. One (1) 4-liter glass container with a spent mobile phase connected to a high-performance liquid chromatography (HPLC) not in use since November 2022. The container was unlabeled and without hazardous waste determination, or no indication if the contents was being managed as an "Unwanted Material" or not (see **Picture No. 7**).
vi. Storage of chemical reagents at laboratory cabinets was conducted without following any safety protocols or compatibility characteristics of the reagents using alphabetical order and failing to minimize the possibility of a fire, explosion, or any chemical violent reaction.

3.1.3 Chemical Engineering Research Laboratory (Porous Absorbent/Sorbents Synthesis) IQ-101 HI

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Six (6) 4-liter ambar containers stored inside a cabinet area, only two were labeled as "Unwanted Materials" and one with its accumulation start date of March 3, 26, 2019 which exceeded over six months of the LMP. The other containers were not dated with their accumulation start dates. (N/UM, N/D) (see **Picture No. 8**).
ii. It was observed an extinguisher with current inspection tag, and a phone station with Emergency Numbers posted on the wall. However, none of the emergency numbers were working except for the EH&S Office.
iii. Six (6) 4-liter ambar and glass containers stored inside a cabinet sink area, only four were labeled as "Unwanted Materials" and with their accumulation start dates. However, three (3) were not labeled as "Universal Wastes," nor dated with is accumulation start dates including various small bottles contained in a plastic tray. Some waste containers were labeled as "Hazardous Waste" but not dated with their accumulation start dates nor managed as "Unwanted Material." (N/UM/, N/D) (see **Picture No. 9**).
iv. Four (6) 4-liter ambar and glass containers stored inside a cabinet sink area not labeled as "Unwanted Materials," and dated as of August 23, 2022, March 1, 2021, February 24, 2023, and other non-dated with their accumulation start dates which exceeded over six months of the LMP collection protocols. In addition, there were two (2) 5-gallon white containers with spent solvents that were not labeled as "Unwanted Materials," nor dated with their

accumulation start dates. Some waste containers were labeled as "Hazardous Waste" but not dated with their accumulation start dates nor managed as "Unwanted Material." (N/UM/, N/D) (see **Picture No. 10**).

3.1.4 Chemical Engineering Research Laboratory (Absorption Analysis – Exterior Building) IQ-01 M

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 4-liter ambar container with a spent mobile phase (ACN/Water 90/10) connected to a high-performance liquid chromatography (HPLC),its holding jacket labeled as "Waste," but not dated with its accumulation start date nor managed as "Unwanted Material" (N/UM/, N/D) (see **Picture No. 11**).

3.1.5 Chemical Engineering Research Laboratory (X-Rays) IQ-01 I

EPA RCRA inspectors proceeded to inspect this research laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.1.6 Chemical Engineering Research Laboratory (Biomaterials "BioMa2RT") IQ-01 G

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Two (2) 750 ml plastic bottles and a 200 ml Erlenmeyer beaker containing "Coomassie Blue Ink Waste" with spent methanol solvent not labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D) (see **Picture No. 12**).
ii. One (1) styrofoam box (1' x 1' x 2') containing discarded vials not properly labeled as "Unwanted Materials," nor dated with its accumulation start date as required in the LMP protocols (N/UM/, N/D) (see **Picture No. 13**).
iii. One (1) 1-liter plastic bottle with yellow-colored PBS spent solvent not properly labeled as "Unwanted Materials," nor dated with its accumulation start date as required in the LMP protocols (N/UM/, N/D) (see **Picture No. 13**).
iv. One (1) ½-liter plastic bottle with spent methanol solvent not labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D) as required in the LMP protocols (N/UM/, N/D) (see **Picture No. 13**).

3.1.7 Chemical Engineering Research Laboratory (Rheometer) IQ-101 M

EPA RCRA inspectors proceeded to inspect this research laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.1.8 Chemical Engineering Research Laboratory (Material Analysis Cellular Culture) IQ-101 N

EPA RCRA inspectors proceeded to inspect this research laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.1.9 Chemical Engineering Research Laboratory (Polymer Synthesis) IQ-101 O

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Two (2) 4-liter plastic containers with a spent petroleum ether and terpolymer labelled as "Unwanted Materials," and dated with their accumulation start dates of May 15, 2022, which exceeded over six months of the LMP collection protocols. (UM/, N/D) (see **Picture No. 14**).

3.1.10 Chemical Engineering Research Laboratory (Cellular Culture) IQ-101 B

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Two (2) 1-gallon containers with a spent solvents labeled as "Hazardous Wastes," but not dated with its accumulation start date nor managed as "Unwanted Material." (N/UM/, N/D).
ii. Storage of chemical reagents at laboratory cabinets was conducted without following any safety protocols or compatibility characteristics (Flammable and Corrosives) of the reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction.

3.1.11 Chemical Engineering Research Laboratory (Cellular Culture) IQ-101 A

EPA RCRA inspectors proceeded to inspect this research laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.1.12 Chemical Engineering Research Laboratory (Biofilm) IQ-103 A

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. In a yellow cabinet there were three (3) 4-L ambar containers with Methanol stored "on the same tray" next to one (1) 500-ml bottle with Formic Acid and next to one (1) 1-gallon plastic bottle container Ethy Alcohol 70% without following any safety protocols or compatibility characteristics (Flammable and Corrosives) of the reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction (see **Picture No. 15**).

3.1.13 Chemical Engineering Research Laboratory (Unit Operations) IQ-103

EPA RCRA inspectors proceeded to inspect this research laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.1.14 Chemical Engineering Research Laboratory (Biochemical Engineering) IQ-102 A

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 2-gallon plastic container with a spent Ethanol aqueous waste not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 16**).
ii. Storage of chemical reagents at laboratory cabinets was conducted without following any safety protocols or compatibility characteristics (Flammable, Corrosives and Toxics – NaOH, Hydrochloric Methylcellulose, KCl) of the reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction (see **Picture No. 17**).

3.1.15 Chemical Engineering Research Laboratory (Catalyst Materials) IQ-102 D

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. Three (3) 1-L ambar bottles containing unknown wastes, one labelled as "Unwanted Materials," and dated with its accumulation start date of February 28, 2022, which exceeded over six months of the LMP collection protocols. The other two were not labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D) (see **Picture No. 18**).
ii. Two (2) ½-L ambar bottles containing unknown wastes, one labelled as "Unwanted Materials," and not dated with its accumulation start date (UM/, N/D). The other was not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 18**).
iii. Two (2) 4-L ambar containers with unknown wastes not labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D).
iv. One (1) 2.5-gallon plastic container with unknown wastes no labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D).

3.1.16 Pharmacy Building FARM 109

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 40-gallon cardboard drum containing wastes with "Active Ingredients" not labelled as "Unwanted Materials," and dated with its accumulation start date of January 22, 2021, which exceeded over six months the LMP collection protocols (N/UM/, D) (see **Picture No. 19**).

ii. One (1) 40-gallon blue drum containing wastes with "No Active Ingredients" not labelled as "Unwanted Materials," and dated with its accumulation start date of July 17, 2020, which exceeded over six months the LMP collection protocols (N/UM/, D) (see **Picture No. 20**).
iii. One (1) 30-gallon drum containing "Waste Operation Laboratory Pharmaceuticals." not labelled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D).

3.2 CIVIL ENGINEERING SURVEYING DEPARTMENT

This building houses construction and environmental research laboratories, teaching classrooms with cabinets used for the storage of chemical substances, chemicals storage areas, and the storage room for the accumulation of chemical and toxic reagents. This building also houses some "Satellite Accumulation Areas" (SAA) managed as "Unwanted Materials," under the Laboratory Management Plan. Dra. Ingrid Padilla is a Research Professor and Laboratory Coordinator in charge of the Environmental Engineering Laboratory, and Dr. José L. Flores Interim Director of the Civil Engineering and Surveying Department of the UPR Mayagüez Campus.

3.2.1 Environmental Engineering Laboratory

EPA RCRA inspectors proceeded to inspect this research laboratory area. The EPA Inspectors observed the following at this location:

3.2.1.1 Satellite Accumulation Area No. 1 – Room CI 018

i. Two (2) 5-gallon white containers with Methanol, Ethyl Acetate, Dichloromethane and Acetone both labelled as "Hazardous and dated with its accumulation start date of March 1, 2023, but not labeled as "Unwanted Materials" (N/UM/, D) (see **Picture No. 21**).
ii. Two (2) 4-L ambar bottles containing Acetone and both labelled as "Hazardous Wastes,"" and dated with its accumulation start date of January 15, 2023, but none labelled as "Unwanted Materials," (N/UM/, D) (see **Picture No. 22**).
iii. One (1) 4-L ambar bottle containing Methanol, Ethyl Acetate, Dichloromethane and Acetone labelled as "Hazardous and dated with its accumulation start date of November 10, 2022, which exceeded over six months the LMP collection protocols nor labeled as "Unwanted Materials," (N/UM/, D) (see **Picture No. 23**).
iv. One (1) 4-liter ambar container stored in the extractor hood THF (Tetrahydrofuran) and dated as May 5, 2012, not in use and abandoned and not managed as "Unwanted Materials," without a hazardous waste determination of the content of the container. I mentioned that THF is common peroxide-forming after degradation if not used within 12 months (N/UM/, N/D) (see **Picture No. 24**).

3.2.1.2 Satellite Accumulation Area No. 2 – Room CI 018

i. Two (2) 5-gallon white containers with organic wastes both labelled as "Hazardous Waste," and dated with its accumulation start date but not labeled as "Unwanted Materials" (N/UM/, N/D) (see **Picture No. 25**).

ii. Four (4) 4-L ambar bottles containing Methanol, Titanium Nitrate, Methyl Glycol, Triethyl Amine all labelled as "Hazardous Wastes," and some dated with its accumulation start date of November 11, 2022, which exceeded over six months the LMP collection protocols. The other bottles were not dated, and all were not labelled as "Unwanted Materials," (N/UM/, N/D) (see **Picture No. 25**).
iii. One (1) 4-L ambar bottle containing Methanol mixed with Water dated 2015, not labelled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D).
iv. One (1) 4-L ambar bottle containing Acetone not labelled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D).
v. One (1) ½-L ambar bottle containing an Unknow Hazardous Waste not labelled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D).

3.2.1.3 Old Chemical Reagents Storage Area (Blue Cabinet "Flammable") – Room CI 018

Upper Tray

i. Two (2) 4-L ambar bottles containing Dichloroethane leaking and covered with moisture, dated January 22, 2011, and August 2019, respectively.Dichloroethane decomposes into carbon dioxide and in present of a source of heat it can produce toxic and corrosive fumes including hydrogen chloride and methylene chloride (see **Picture No. 26**).
ii. One (1) 4-L ambar bottle containing Acetone dated April 4, 2014, which is highly flammable (see **Picture No. 27**).
iii. One (1) 1-gallon metal can with Sodium Borohydride, dated January 01, 2011, leaking on the tray, fully corroded, covered with water moisture and appeared to be decomposing forming sodium hydroxide and hydrogen. I explained that based upon chemical literature, the heat of this reaction may be sufficient to ignite the hydrogen and burns vigorously once ignited (see **Picture No. 28**).
iv. One (1) 4-L ambar bottle containing Titanium Isopropoxide, dated August 2019, which is incompatible with strong oxidizing agents and strong acids (see **Picture No. 29**).
v. One (1) 4-liter ambar container stored in the tray containing THF (Tetrahydrofuran), dated 2012, which is very unstable and a common peroxide-forming agent after degradation if not used within 12 months.

Lower Tray

vi. One (1) 4-L ambar bottle containing Methanol, dated March 2015, which vapors decompose to form carbon monoxide gas and hydrogen gas (see **Picture No. 30**).
vii. One (1) 4-L ambar bottle containing Hexanes, dated 2022, 4, 2014, which is highly flammable.
viii. One (1) 4-L plastic bottle containing Ethanol (Alcohol 95%), dated March 2015, which is highly flammable, not in use, and abandoned (see **Picture No. 30**).

3.2.1.4 Old Chemical Reagents Storage Area (Blue Cabinet "Corrosive") – Room CI 018

Upper Tray

i. Four (4) 4-L ambar bottles containing Acetic Anhydride (Aceti Acid Glacial) dated from years 2009 thru 2011, in deteriorated conditions and labels being vanished, not in use and abandoned (see **Picture No. 31**).
ii. Three (3) 4-L ambar bottles containing Hydrochloric Acid, dated January 27, 2020, some in deteriorated conditions and labels being vanished (see **Picture No. 32**). I explained that Acetic Anhydride was not compatible with Hydrochloric Acid and should not be stored together where they can be inadvertently mixed or where a spill or leak can cause danger.
iii. One (1) ½-L ambar bottle containing Poly (acrylic acid) 50% Solution, dated 2010, with label being vanished.

Middle Tray

iv. Two (2) 2.5-L and ½-L plastic and ambar bottles containing Phosphoric Acid, dated 2014, some old and in deteriorated conditions, not in use and abandoned (see **Picture No. 33**).
v. One (1) 1-L ambar bottle containing Hydrochloric Acid, dated 2001, with label being vanished, not in use and abandoned (see **Picture No. 34**).
vi. One (1) 500-ml ambar bottle containing Triton X-100, dated 2015, which is a nonionic surfactant that has a hydrophilic polyethylene oxide, harmful if swallowed, should not be stored together where strong acids can be inadvertently mixed or where a spill or leak can cause danger and possibility of hazardous reactions.
vii. One (1) 1-L ambar bottle containing Titanium Sulfate Solution, dated 2006, with label being vanished, not in use and abandoned.

3.2.1.5 Old Chemical Reagents Storage Area (Brown Cabinet "Flammable") – Room CI 018

Upper Tray

i. Six (6) 4-L ambar bottles containing Hexane, and n-Hexane, dated from 2005 – 2016 (see **Picture No. 35**).
ii. Four (4) 2-L ambar bottles containing Dichloromethane, and Iso-hexane, dated from 2016 – 2023 (see **Picture No. 35**).
iii. Four (4) 1-L ambar bottles containing Methanol HPLC, Dichloromethane, and Iso-hexane, dated from 2016 – 2023.
iv. One (1) 1-L ambar bottle containing Butanoic Acid, dated 2006, with label being vanished (see Picture No. 34). I mentioned that flammable and combustible liquids should not be stored together where acids can be inadvertently mixed or where a spill or leak can cause danger and possibility of hazardous reactions.

Middle Tray

v. Eight (8) 4-L plastics and ambar bottles containing Methanol, Water HPLC Grade, Ehtyl Acetate, and Xylene, dated from 2005 – 2014. The Ethyl Acetate was labeled as "Non in Use Contaminated," (see **Picture No. 36**).
vi. One (1) 2.5-L ambar bottle containing Methyl Acetate, dated 2010, (see **Picture No. 36**).

Lower Tray

vii. Seven (7) 2-L ambar bottles containing Methanol, Hexane, Methylpentane, Isopentyl Acetate, and Ethylene, dated from 2005 – 2016. One of the bottles containing Isopentyl Acetate was labeled as "Avoid Problems - Ask," (see **Picture No. 37**).
viii. Two (2) 4-L ambar bottles containing Methanol and Trichloroethylene, dated from 2005 - 2015.
ix. Five (5) 1-L ambar bottles containing Hexane, Pentane, and Methyl Tert-butyl Ether (MBTE), dated from 2005 – 2019." MTBE has been characterized as an animal carcinogen, (see **Picture No. 38**).

3.2.1.6 Solid Chemical Reagents Storage Area (Metal Grid Cabinet) – Room CI 018

On March 9, 2024, EPA Inspectors proceeded to inspect the Solid Chemical Reagents Storage Area (Metal Grid Cabinet) located in the Civil Engineering and Surveying Department which is used to store chemical reagents used in the performance of research experiments mainly in the Environmental Engineering Laboratory.

At the time of the RCRA Inspection, EPA Inspectors observed numerous expired chemicals (since before 1986), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more) in shelves without any physical means to protect each other from incompatibility of waste characteristics. As observed by EPA Inspector there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents. According to Assistant Students to Dra. Ingrid Padilla and Prof. Ricardo Berrios, all these chemical reagents were not in use and discarded a long time ago from various laboratory research seasons and were stored in this area and never declared as "solid waste material," or notified to the Health, Occupational and Environmental Safety Office (OPASO). There was no hazardous waste determination being performed on abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been managed under the Laboratory Management Plan.

As observed by EPA Inspectors, there were no Safety Data Sheets (SDSs) available at the storage area for most of the expired, abandoned, not in use chemical reagents that should be inventoried for final disposition. It was recommended by the inspectors that SDSs should be evaluated to determine the proper characterization and determination of the expired and discarded solid waste. Among the chemical reagents identified from a safety distance stored without segregation included Sodium Hydroxide, Arsenic, Potassium Dichromate, Ethylene Glycol, Pyridine, Ammonium Chloride, Ammonium Bromide, Potassium Iodide, Mercury Chloride, Antimony Potassium, Hydroxylamine Hydrochloride, Sodium Arsenate, Potassium Chromate, Ethyl Alcohol, Sodium Persulfate, Nickel Chloride, Dichloromethane, Potassium Arsenate, Arsenic Trichloride, Sodium Iodide, Arsenic Acid, Formaldehyde, and various 4-Liter bottles containing flammable and combustible liquids which were no longer intended to be used (see **Pictures No. 38, 39, and 40**).

It was determined by EPA Inspectors that there was an actual or potential of fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. As warranted by the potential threat of potential releases or explosion of hazardous waste, and under the authority of the

Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA), on March 9, 2023, EPA issued a Field Notice of Federal Interest (FNFI) to UPR-Mayagüez Campus requesting the responsible party to take corrective actions. Additionally, EPA requested that hazardous waste be disposed of as required by RCRA requirements. Based upon EPA's determination, unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents' threats were described as described below.

i. The release and/or threatened release noticed herein, observed during a Site visit on March 9, 2023, to the Environmental Engineering Laboratory (R-018) at the University of Puerto Rico-Mayagüez Campus, consists of several containers that were identified to be leaking, not properly labeled, haphazardly stored, without secondary containment and not segregated by chemical compatibility.
ii. The USEPA requested that by noon of March 10, 2023, the Respondent reported to the EPA, Region II, at the address, email and telephone number indicated in the FNFI, perform removal activities, in conformance with 42 U.S.C. §9601 (23), which removal activities had been performed and/or those removal activities which Respondent planned to perform immediately, to prevent, correct, clean up, minimize or mitigate the above-described release and/or threatened release. Also, to continue with any mitigation actions, already implemented, that restricts access to this room. Labeling, markings and change in access keys were also recommended.

UPR Mayagüez Campus' officials secured the Environmental Engineering Laboratory with signs and maintained personnel as well as professors and students away from the room area. They were coordinating with Stericycle Puerto Rico to assist with the characterization, segregation, packaging, transportation, cost estimates and final disposition will be performed under the oversight of the EPA On Scene Coordinator. Table No. 2 depicts the inventory of chemical reagents recorded during EPA Inspection provided by Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office to request quotation from Stericycle Puerto Rico for final disposition. As observed by EPA Inspector, there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents and some were not in use, expired and discarded a long time ago from various laboratory experiments and were stored, abandoned in this area and never declared as "solid waste material," or notified to the Health, Occupational and Environmental Safety Office (OPASO).

Table No. 2 – Chemical Waste Inventory at the Environmental Engineering Laboratory - March 9, 2023

Chemical Reagent Name	Year	Unit	Estimated Quantity	Quantity Number	Location	Storage Code
1,10-phenanthroline ferrous sulfate complex	2013	mL	120	1	HVC 76	Risk Minimum
1,2-propanediol	2009	mL	500	1	Flam Blue	Flammable

2-propanol	2015	L	20	1	Flam Blue	Flammable
2,2-bipyridine	2009	g	25	1	HVC 67	Toxic
2,2,4-trimethylpentane	-	L	1	1	Flam Crema	Flammable
2,3,5-triphenyltetrazolium chloride	2009	g	25	1	Fridge	Risk Minimum
2,3,5-triphenyltetrazolium formazan	2006	g	5	1	HVC 76	Risk Minimum
2,4-dinitrophenylhydrazine	2009	g	100	1	Flam Blue	Flammable
2,6-pyridinedicarboxylic acid	2010	g	10	1	Cabinet 19	Toxic
3,5-dinitrosalicylic acid	2009	g	500	1	HVC 67	Corrosive
acetic acid, sodium salt	2009	g	500	1	Fridge	Flammable
acetone	2019	L	1	1	Flam Blue	Flammable
acetone	2016	L	20	1	Flam Blue	Flammable
acetonitrile, anhydrous	2008	L	4	2	Flam Blue	Flammable
agar	2011	g	1000	1	Dry Keeper	Risk Minimum
alginic acid, sodium salt	2011	g	500	1	Cabinet 19	Toxic
alumina	2002	g	2500	1	HVC 76	Risk Minimum
aluminum hydroxide	2013	g	1	1	HVC 67	Corrosive
aluminum oxide, powder	2000	g	500	1	HVC 76	Risk Minimum
aluminum sulfate hydrate	2011	g	500	1	HVC 67	Corrosive
ammonium acetate	2009	g	500	1	Cabinet 19	Toxic
ammonium acetate	1998	g	500	1	HVC 67	Toxic
ammonium bromide cetyl dimethyl ethyl	2005	g	1500	3	Fridge	Corrosive

ammonium bromide, cetyl trimethyl	2005	g	3500	7	HVC 67	Corrosive
ammonium chloride, cetyl dimethyl ethyl 25% sol	2013	mL	500	1	HVC 67	Corrosive
ammonium calibration soln	-	mL	1000	2	Cabinet 17	Corrosive
ammonium chloride hydroxide buffer	<1986	onz	50	2	HVC 67	Corrosive
ammonium nitrate	2013	g	500	1	HVC 67	Reactive/Oxidizer
ammonium molybdate	1992	g	500	1	HVC 76	Risk Minimum
ammonium phosphate dibasic	<1986	g	400	1	HVC 76	Risk Minimum
ammonium p-toluenesulfonate	-	g	25	1	HVC 76	Risk Minimum
ammonium sulfate isa	2008	mL	950	1	Cabinet 17	Toxic
antimony potassium tartrate	1990	g	500	1	HVC 67	Toxic
arsenic standard		mL	500	1	HVC 67	Corrosive
arsenic std. for AA	2012	mL	500	1	Cabinet 19	Corrosive
boric acid	2010	g	1000	1	HVC 77	Risk Minimum
boric acid	<1986	g	1000	1	HVC 76	Risk Minimum
bromocresol green	1991	g	2	1	HVC 76	Risk Minimum
cadmium	1990	g	100	1	HVC 76	Risk Minimum
cadmium standard solution	-	mL	300	3	Cabinet 17	Corrosive
cadmium sulfate hydrate crystals	1999	g	500	1	HVC 67	Toxic
calcium carbonate, 99+%	2014	g	200	2	HVC 76	Risk Minimum

calcium chloride, anhydrous 96%	2017	kg	10	1	HVC 76	Risk Minimum
calcium chloride, anhydrous 96%	2014	g	2500	1	HVC 76	Risk Minimum
calcium chloride, anhydrous	2013	g	500	1	HVC 76	Risk Minimum
calcium chloride	2011	g	500	1	HVC 76	Risk Minimum
calcium chloride dihydrate	2011	g	1000	1	Cabinet 19	Risk Minimum
calcium chloride dihydrate	2011	g	6000	2	Cabinet 19	Risk Minimum
calcium hydroxide, 95%	2010	g	1000	1	HVC 67	Corrosive
calcium sulfate, -325 mesh	2004	g	100	1	HVC 76	Risk Minimum
carbon (charcoal) activated powder	2002	g	125	1	HVC 76	Risk Minimum
carbon activated WPX Pulv	<1986	g	200	1	HVC 76	Risk Minimum
carbon activated BL PULV	<1986	g	800	2	HVC 76	Risk Minimum
carbon activated D/S react A	<1986	g	175	1	HVC 76	Risk Minimum
carbon activated D/S react C	<1986	g	400	1	HVC 76	Risk Minimum
carbon activated F-200	<1986	g	1100	1	HVC 76	Risk Minimum
sodium salt hydrate	2014	g	250	1	Incubator	
cetylpyridinium chloride	2005	g	1	2	HVC 67	Corrosive
chloride calibration solution	2002	mL	1000	2	HVC 67	Corrosive
chromium (III) AA std.	-	mL	500	1	HVC 67	Corrosive
cyclohexane	<2006	L	1	1	Flam Crema	Flammable
citric acid	2011	g	100	1	Cabinet 19	Corrosive

cobalt chloride	1995	g	450	1	Cabinet 19	Risk Minimum
cobalt oxide	1994	g	100	1	HVC 76	Risk Minimum
copper	1994	g	250	1	HVC 76	Risk Minimum
copper std soln	2003	mL	325	4	Cabinet 17	Risk Minimum
cupric sulfate, anhydrous	1999	g	500	1	Cabinet 19	Toxic
dextrose anhydrous	<1986	g	500	1	HVC 76	Risk Minimum
dibutyl phthalate	2013	mL	500	1	HVC 67	Toxic
dichloromethane	2012	L	3	3	Flam Crema	Flammable
dioctyl phthalate	2009	mL	500	1	HVC 67	Toxic
EDTA magnesium salt	2000	g	100	1	HVC 76	Risk Minimum
ethyl acetate	2010	L	2.5	1	Flam Crema	Flammable
ethylene glycol	2011	L	4	4	HVC 76	Risk Minimum
ethylenediaminetetraaceti c acid, 99%	2009, 2012	g	500	2	HVC 67	Toxic
ferric chloride, anhydrous	2001	g	500	1	HVC 67	Risk Minimum
ferric chloride, 6-hydrate	2009	g	500	1	HVC 67	Corrosive
ferroin indicator solution	1997	mL	100	1	HVC 76	Risk Minimum
ferrous ammonium sulfate (6-) hyd.	1993	g	400	1	Cabinet 19	Risk Minimum
ferrous chloride, 4-hydrate	2009	g	250	1	Cabinet 19	Corrosive
ferrous sulfide	2010	g	500	1		Flammable
ferrozine iron reagent, hydrate 98%	2009	g	5	1	HVC67	Toxic
fluorine fc-77	2005	mL	25	1	HVC 67	Corrosive

formaldehyde, 37% aqueous solution	2009	mL	500	1	HVC 67	Flammable
formalin turbidity standard	-	mL	4500	6	Cabinet 17	Risk Minimum
glucose anhydrous, D(+) dextrose	-	g	3600	1	Cabinet 19	Risk Minimum
glutamic acid (L-)	2001	g	500	1	HVC 76	Risk Minimum
glycerin	<1986	mL	400	1	HVC 76	Risk Minimum
Hexane, HPLC Plus	2018	L	1	1	Flam Blue	Flammable
Hexane	2018	L	7.5	3	Flam Crema	Flammable
n-hexane	2016	L	16	4	Flam Crema	Flammable
hexane	2012	L	3	3	Flam Crema	Flammable
hexane, pentanal	2011	L	2.5	1	Flam Crema	Flammable
hexane, HPLC 95%	2010	L	4	2	Flam Crema	Flammable
hexane, 95%	<2005	L	3	3	Flam Crema	Flammable
humic acid	2016	g	10	1	Cabinet 19	Toxic
humic acid	2016	g	10	1	Cabinet 19	Toxic
humic acid	2014	g	10	1	Cabinet 19	Toxic
humic acid	2009	g	100	1	Cabinet 19	Toxic
hydrochloric acid, 32%	2009	L	2.5	1	Corrosives	Corrosive
hydrochloric acid 6N	2001	L	1	1	Corrosives	Corrosive
hydrogen peroxide 30%	2014	mL	1000	2	Fridge	Corrosive
hydrogen peroxide 30%	2013	mL	500	1	Fridge	Corrosive

hydrogen peroxide 30%	2013	mL	500	1	Fridge	Corrosive
hydrogen peroxide solution 30%	2011	mL	300	3	Corrosives	Oxidizer
imidazole	20118	g	1000	1	HVC 67	Corrosive
immersion oil	2010					
iodine	2002	g	100	1	HVC 67	Corrosive
iodine solution N/10 (Expire 1999)	1997	L	1	1	HVC 67	Risk Minimum
iron (II) sulfate heptahydrate	2009	g	500	1	HVC 67	
iron (III) sulfate hydrate, 97%	2006	g	500	1	Cabinet 19	Risk Minimum
iron (III) chloride	2013	g	1000	1	Cabinet 67	Corrosive
iron powder 99%	2009	g	500	1	Flam Blue	Flammable
isopentyl acetate	2007, 2009	L	6	3	Flam Crema	Flammable
lead nitrate	2005	g	100	1	HVC 67	Reactive/Oxidizer
lead oxide	<1986	g	450	1	HVC 67	Reactive/Oxidizer
lithium chloride	<1986	lb	5	1	HVC 76	Risk Minimum
magnesium chloride, 6-hydrate	2014	g	500	1	Cabinet 19	Risk Minimum
magnesium sulfate heptahydrate	2001	g	500	1	HVC 76	Risk Minimum
magnesium sulfate hydrate	2010	g	1000	1	HVC 76	Risk Minimum
manganese metal	1992	g	450	1	HVC 76	Risk Minimum
manganese sulfate monohydrate	2011	g	500	1	HVC 67	Toxic
manostat chromerge	-	mL	500	24	HVC 67	Toxic

mercuric chloride	1990	g	50	1	HVC 67	Toxic
mercuric sulfate	1988	g	100	1	HVC 67	Toxic
mercury monohydrate	2009	g	100	1	HVC 67	Toxic
methanesulfonic acid	2018	mL	100	1	Cabinet 19	Corrosive
methanol, HPLC Grade	2016	L	8	2	Flam Blue	Flammable
methanol, HPLC Grade	2015	L	4	4	Flam Blue	Flammable
methyl orange	<1986	g	450	1	HVC 67	Toxic
methyl Flammable	<1986	oz	1	1	HVC 76	Risk Minimum
methyl Flammable, 0.2%	<1986	oz	4	1	HVC 67	Risk Minimum
methylene blue	<1990	g	100	1	HVC 76	Risk Minimum
methyl-tert butyl ether	-	L	4	1	Flam Blue	Flammable
mineral stabilization	-	mL	50	1	Cabinet 17	Risk Minimum
nalidixic acid, 99%	2016	g	5	1	HVC 67	Toxic
nalidixic acid, 99%	2014	g	5	1	HVC 67	Toxic
nalidixic acid, 99%	2014	g	5	1	HVC 67	Toxic
naphthalene, 99%	1997	g	250	1	HVC 67	Toxic
nickel chloride	1999	g	500	1	HVC 67	Toxic
nickelous sulfate, 6-hydrate	2009	g	125	1	HVC 67	Toxic
N, N-diethyl-p-phenylenediamine	2009	g	25	2	HVC 67	Toxic
nitrate calibration standard	2002, 2012	mL	500	1	Cabinet 17	Reactive/Oxidizer
o-phenanthroline	2010, 2011	mL	1000	2	Cabinet 19	
pentafluorobenzoic acid	2007	g	10	1	HVC 67	Toxic

pentane	2019	L	2	1	Flam Blue	Flammable
pentane	-	L	1	1	Flam Crema	Flammable
phenol	2011	L	1	1	Corrosives	Corrosive
phenol Flammable-D	1991	mL	50	1	HVC 76	Risk Minimum
phenolphthalein soln. 1% (Expire 09/1998)	-	mL	500	1	Flam Blue	Flammable
phosphoric acid, 85%	2014	L	2.5	1	Corrosives	Corrosive
pipes, piperazine-N, N'-bis(2-ethanesulfonic ac	2009	g	100	1	HVC 76	Risk Minimum
poly (acrylic acid) 50% solution	2010	g	250	1	Flam Blue	Corrosive
potassium antimonyl tartrate hydrate	1994	g	100	1	HVC 67	Toxic
potassium bi-iodate	1991	g	75	1	HVC 76	Risk Minimum
potassium bromate	<1986	g	450	1	HVC 67	Reactive/Oxidizer
potassium chloride	1990	g	500	1	Cabinet 19	Risk Minimum
potassium chloride isa	2008	mL	950	2	Cabinet 17	Risk Minimum
potassium chloride fill soln	-	mL	375	2	Cabinet 17	Risk Minimum
potassium chloroplatinate	<1986	g	2	2	HVC 67	Toxic
potassium chromate	<1986, 1997	g	300	2	HVC 67	Reactive/Oxidizer
potassium citrate	1999	g	400	1	HVC 76	Risk Minimum
potassium dichromate	1999, <1986	g	1500	3	HVC 67	Reactive/Oxidizer
potassium hydrogen phthalate	1995	g	500	1	HVC 76	Risk Minimum
potassium hydrogen phthalate	1991	g	100	2	HVC 76	Risk Minimum

potassium hydroxide	2002	kg	3	1	HVC 67	Corrosive
potassium iodide, 5%	1986	mL	100	1	HVC 67	Risk Minimum
potassium persulfate	<1986	g	1000	2	HVC 67	Reactive/Oxidizer
potassium phosphate monobasic	1991	g	2000	2	Cabinet 19	Risk Minimum
potassium phosphate dibasic, 98+%	2014	g	1000	2	HVC 76	Risk Minimum
potassium phosphate dibasic	2011	g	500	1	HVC 76	Risk Minimum
potassium phosphate, 97%	1995	g	500	1	HVC 67	Corrosive
potassium reference soln	-	mL	500	1	Cabinet 17	Risk Minimum
potassium sulfate	<1986	g	2265	1	HVC 76	Risk Minimum
p-xylene	<2005	L	1.5	1	Flam Crema	Flammable
rhodamine 20%	2018	L	2	2	HVC 76	Risk Minimum
sand, Corrosive quartz	2019	g	500	1	HVC 76	Risk Minimum
scandium	2001	mL	500	1	HVC 67	Corrosive
silica gel	2019	g	100	1	HVC 76	Risk Minimum
silica gel	-	g	100	1	HVC 76	Risk Minimum
silica gel desiccant, Reagent 8mesh	-	g	2500	1	HVC 76	Risk Minimum
silver sulfate	<1986	g	25	1	HVC 67	blue
sodium acetate, anhydrous	1999	g	400	1	Cabinet 19	Risk Minimum
sodium aluminate	2010	g	100	2	HVC67	Corrosive
sodium arsenite	2011	g	100	1	HVC 67	Toxic
sodium azide	2011	g	500	1	Cabinet 19	Reactive/Oxidizer
sodium bicarbonate	1994	g	3500	2	Cabinet 19	Risk Minimum

sodium borate	1991	g	500	1	HVC 76	Risk Minimum
sodium borohydride 98%	2009	g	500	1	Flam Blue	Flammable
sodium bromide	2012	g	100	1	HVC 76	Risk Minimum
sodium chloride	2013	g	12000	1	HVC 76	Risk Minimum
sodium deuteroxide	2016	g	10	1	Cabinet 19	Corrosive
sodium hydroxide	-	L	2	2	HVC 67	Corrosive
sodium m-Arsenite	1997	g	70	1	HVC 67	Toxic
sodium metaphosphate	2004	g	500	1	HVC 76	Risk Minimum
sodium molybdate dihydrate	2010	g	100	1	Cabinet 19	Risk Minimum
sodium nitrate isa	2008	mL	950	3	Cabinet 17	Risk Minimum
sodium nitrite	<2004	g	250	1	HVC 67	Reactive/Oxidizer
sodium persulfate	2002	g	500	1	HVC 67	Reactive/Oxidizer
sodium phosphate dibasic heptahydrate	2009	g	500	1	HVC 76	Risk Minimum
sodium phosphate dibasic heptahydrate	1991	g	500	1	HVC 76	Risk Minimum
sodium phosphate monobasic, anhydrous	2009	g	500	1	Cabinet 19	Risk Minimum
sodium sulfite	2008	g	100	1	HVC 76	Risk Minimum
sodium tetraborate decahydrate	2009	g	500	1	HVC 67	Toxic
sodium tetrachloropalladate	2009	g	5	1	HVC 67	Toxic
sodium thiosulfate	<1986 , 1993	g	1500	3	HVC 76	Risk Minimum
sodium thiosulfate, anhydrous	<1986	kg	1	1	HVC 76	Risk Minimum

starch corn	<1986	g	400	1	HVC 76	Risk Minimum
starch soluble	<1986	g	400	1	HVC 76	Toxic
sulfuric acid, 95-98%	1996	L	2.5	1	Explosives	Corrosive
sulfamic acid	-	g	100	1	HVC 67	Corrosive
sulfuric acid, 1N	2009	L	1	1	Explosives	Corrosive
tartaric acid, DL-	-	g	10	2	HVC 67	Toxic
tetrabutyl ammonium hydroxide 40%	2009	g	250	1	HVC 67	Corrosive
tetrachloroethylene	<2006	mL	100	1	HVC 67	Toxic
tetrachloroethylene	<2005	L	4	1	Flam Crema	Flammable
thiamine monophosphate chloride dihydrate	2010	g	25	1	Dry Keeper	Risk Minimum
tin	1994	g	100	1	HVC 76	Risk Minimum
titanium (iv) oxide anhydrous	2016	g	500	1	HVC 67	Toxic
titanium (iv) oxide nanopowder	2018	g	100	1	HVC 67	Toxic
titanium (iv) oxide sulfate	2015	g	500	1	HVC 67	Corrosive
titanium sulfate solution	2006	g	400	1	Flam Blue	Corrosive
toluene	-	L	4	1	Flam Blue	Reactive/Oxidizer
trichloroethylene	2005	L	8	4	HVC 67	Flammable
trichlorotrifluoroethane	<2005	L	3.5	1	HVC 76	Toxic
Triton X-100	2015	mL	500	1	HVC 67	Corrosive
tween 80 polyxyethylene-20	1996	mL	500	1	HVC 76	Risk Minimum
urea	2014	kg	1	1	HVC 76	Risk Minimum

water	2014	L	4	1	Flam Crema	Risk Minimum
zinc (granular)	<1986	g	700	1	HVC 76	Risk Minimum
zinc	1994	g	250	1	HVC 76	Risk Minimum
zinc (dust)	<1986	g	450	1	HVC 76	Risk Minimum
zinc (metal)	<1994	g	450	1	HVC 76	Risk Minimum
zobells soln, Flammableox standard solns	-	mL	500	1	Cabinet 17	Reactive/Oxidizer

3.3 CHEMISTRY DEPARTMENT BUILDING

This building houses the general chemistry, analytical chemistry, physicochemical, organic, inorganic, biochemistry, and chemical instrumental laboratories, teaching classrooms with cabinets used for the storage of chemical reagents, a chemical storage warehouse, and hazardous waste satellite accumulation areas (SSA) located in most chemical laboratories managed under the Laboratory Management Plan. This building also houses the research and development laboratories. Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office, served as the UPR Mayagüez Campus' representative. Since this building houses numerous laboratories, a map depicting laboratory locations and personnel in charge was requested to the Department Director to minimize the complexity of the compliance inspection.

3.3.1 Chemical Laboratory Preparations Q-009

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

i. At the Satellite Accumulation Area under a laboratory cabinet there were numerous (approximately over twenty-eight 28) “Unwanted Materials,” containing discarded or spent chemical reagents generated at the laboratories not properly labeled as “Unwanted Materials,” nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 41**). In addition, the storage of these “Unwanted Materials” was conducted without following any safety protocols or compatibility characteristics (Flammable, Corrosives and Toxics – NaOH, Sulfuric Acid, Sodium thiocyanate, Nitric Acid, Pentane) of the spent reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction.

   It was discussed with Ms. Fernández that the responsibility of the laboratory technician within the laboratory is to prepare the label and verify that labels are placed on all containers of “Unwanted Material” stored in the laboratory. Containers will not be removed from a

laboratory unless the "CHEMATIX" label is attached to the container. As observed by EPA Inspector non-Chematix labels were affixed to each container (see **Picture No. 42**).

ii. Under a laboratory cabinet there were five (5) 4-liter crystal and ambar bottle containing spent Pentane, Iron (III) Chloride, Methyl Orange Ferric and other unknown wastes generated at the laboratories not properly labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 42**).

3.3.2 Chemical Laboratory Volatile Warehouse (Flammable) Q-008

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.3.3 Chemical Laboratory Acids Warehouse (Corrosive) Q-058

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.3.4 Chemical Laboratory Soil and Agronomy Q-007

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.3.5 Chemical Laboratory Instrumental Analysis Q-051

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 4-liter ambar container with a spent mobile phase (ACN/Water 90/10) connected to a high-performance liquid chromatography (HPLC) no labeled as "Unwanted Material" nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 43**).
ii. At the Satellite Accumulation Area there were numerous (approximately over ten 10) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories properly labeled as "Unwanted Materials," and dated with its accumulation start date but not segregated by compatible characteristics (Nitric Acid, Chlorobenzene) (UM, D) (see **Picture No. 44**).

3.3.6 Chemical Laboratory Analytical and Pharmaceutical Research Q-023

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

i. One (1) 4-liter ambar container with a spent Hydranal Composite and Methanol labeled as "Unwanted Material," dated with its accumulation start date of April 13, 2016, which exceeded over six months the LMP collection protocols (N/UM, N/D) (see **Picture No. 45**).
ii. Two (2) 4-liter ambar containers with a spent Hydranal Composite Waste, one also labeled as "Viejo – Old," both were no labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 46**).
iii. One (1) 500-ml containers with a spent Methanol Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
iv. One (1) 4-liter ambar container with a Methanol Solvent Waste labeled as "Unwanted Material," and dated with its accumulation start date of July 31, 2016, which exceeded over six months the LMP collection protocols (N/UM, N/D) (see **Picture No. 47**).
v. One (1) 500-ml container with a spent Cyclohexane Waste labeled as "Unwanted Material," and dated with its accumulation start date of March 3, 2015, which exceeded over six months the LMP collection protocols (N/UM, N/D).
vi. Two (2) 4-liter ambar containers with a spent Hydranal Composite Waste, and the other with Methanol Waste, both were labeled as "Unwanted Material," (no "CHEMATIX" label) and both dated with its accumulation start of December 19, 2016, and July 31, 2025, respectively, which exceeded over six months the LMP collection protocols (UM/, N/D) (see **Picture No. 48**).

3.3.7 Chemical Laboratory Physical Chemistry Q-050

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

i. At the Satellite Accumulation Area (SAA No. 1) under a laboratory cabinet there were numerous (approximately over eight 8) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories not properly labeled as "Unwanted Materials," (no "CHEMATIX" label) nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 49**).
ii. One (1) 500-ml container with a spent Napthalene not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
iii. One (1) 500-ml container with a Napthalene Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
iv. One (1) 750-ml container with a Phase Diagram Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 50**).
v. One (1) 250-ml container with a spent Acid labeled as "Unwanted Material," and dated with its accumulation start of September 14, 2018(N/UM, N/D) which exceeded over six months the LMP collection protocols (N/UM, N/D).
vi. Two (2) 4-liter ambar containers with a spent Unknown Waste, both labeled as "Unwanted Material," but properly dated with its accumulation start date of March 2023 (N/UM/, N/D) (see **Picture No. 51**).
vii. At the Satellite Accumulation Area (SAA No. 2) on top of a laboratory cabinet table there were four (4) 4-liter ambar containers with a spent Unknown Waste, all labeled as "Unwanted

Material," but not properly dated with their accumulation start dates (UM/, N/D) (see **Picture No. 52**).

3.3.8 Chemical Laboratory Molecular Spectroscopy Q-048

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes since this laboratory was closed at the time of the EPA Inspection.

3.3.9 Chemical Laboratory Physical Chemistry Q-046

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

i. At the Satellite Accumulation Area on top of a laboratory cabinet table there were numerous (approximately over sixteen 16) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories most of them properly labeled as "Unwanted Materials," but not dated with their accumulation start dates (UM/, N/D) (see **Picture No. 53**).
ii. Two (2) 4-liter ambar containers with a spent solvent waste both labeled as "Unwanted Materials," and dated with their accumulation start dates of September 27, 2021, and September 22, 2021, respectively, which exceeded over six months the LMP collection protocols. One (1) 500-ml container with a spent Napthalene not labeled as "Unwanted Material," (UM, N/D) (see **Picture No. 54**).
iii. Two (2) 4-liter crystal containers with a spent solvent waste both labeled as "Unwanted Materials," and dated with their accumulation start dates of September 27, 2021, and September 22, 2021, respectively, which exceeded over six months the LMP collection protocols. One (1) 500-ml container with a spent Napthalene not labeled as "Unwanted Material," (UM, N/D) (see **Picture No. 55**).
iv. Three (3) 4-liter crystal containers with a spent solvent waste both labeled as "Unwanted Materials," and dated as September 27, 2021, September 22, 2021, February 27, 2023, and which exceeded over six months the LMP collection protocols (see **Picture No. 56**).
v. Two (2) 4-liter ambar containers with a spent Acetone and Organic Ink waste both labeled as "Unwanted Materials," and dated with their accumulation start dates of February 13, 2022, and March 3, 2023, respectively, which exceeded over six months the LMP collection protocols. (UM, N/D) (see **Picture No. 57**).
vi. Two (2) 4-liter crystal containers with a spent Acetone and Ethylacetate waste both labeled as "Unwanted Materials," (but one without the proper "CHEMATIX" label as required by the LMP) and one dated with its accumulation start date of April 18, 2022, and the other was not dated. The contained labeled with the proper Chematix label, and dated on April 18, 2022, exceeded over six months the LMP collection protocols (UM, N/D) (see **Picture No. 58**).

3.3.10 Chemical Laboratory Q-044

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes since this laboratory was "Not-In-Use" at the time of the EPA Inspection.

3.3.11 Chemical Laboratory Equipment Storage Room Q-035

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.3.12 Chemical Laboratory Bio-Inorganics Q-116

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor there were numerous (approximately over eleven 11) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories most of them properly labeled as "Unwanted Materials," but not dated with their accumulation start dates of February 3, 2022, and year 2019, respectively, which exceeded over six months the LMP collection protocols (UM/, N/D) (see **Picture No. 59**).
ii. Four (4) 4-liter ambar containers with a spent solvent waste all labeled as "Unwanted Materials," and all dated with their accumulation start dates of February 3, 2022, which exceeded over six months the LMP collection protocols (UM, N/D).
iii. Two (2) 4-liter crystal containers with a spent solvent waste both labeled as "Unwanted Materials," and all dated with their accumulation start dates of February 3, 2022, which exceeded over six months the LMP collection protocols (UM, N/D).
iv. Four (4) Lab pack crystal containers with a spent solvent waste all labeled as "Unwanted Materials," and all dated with their accumulation start dates of February 3, 2022, or year 2019, respectively, which exceeded over six months the LMP collection protocols (UM, N/D).

Tray No. 2 - Satellite Accumulation Area

v. Inside an extractor hood there were numerous (approximately over ten 10) "Unwanted Materials," containing discarded or spent solid and liquids chemical reagents (i.e., Cyanide, Ethanol, Benzene) generated at the laboratories, not properly labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D) (see **Picture No. 60**).
vi. Four (4) 4-liter ambar containers with a spent solvent waste all labeled as "Unwanted Materials," and all dated with their accumulation start dates of February 3, 2022, which exceeded over six months the LMP collection protocols (UM, N/D).
vii. One (1) 750-ml container with Ferricyanide Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).

viii. Two (2) 500-ml containers with a Solid Waste not labeled as "Unwanted Material," but dated with their accumulation start dates of February 24, 2022, which exceeded over six months the LMP collection protocols (UM/, N/D).
ix. One (1) 750-ml container with Peptone Bacteriological Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
x. Two (2) 1-liter container with Unknown Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
xi. One (1) 1-gallon container with Discarded Vials labeled as "Unwanted Material," but dated with their accumulation start dates of February 24, 2022, which exceeded over six months of the LMP collection protocols (UM/, N/D) (see **Picture No. 61**).
xii. One (1) ½ -gallon container with Microbial Medium not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 61**).
xiii. One (1) 250-ml container with Unknow Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).

3.3.13 Chemical Laboratory Bio-Inorganics Q-112

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were numerous (approximately over nine 9) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories, not properly labeled as "Unwanted Materials," nor dated with their accumulation start (N/UM/, N/D) or segregated by compatible characteristics (Acids, Bases, Organic Wastes) (see **Picture No. 62**).
ii. One (1) 4-liter ambar container with a spent Acids not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
iii. One (1) 4-liter plastic container with a Chemical Wastes not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 63**).
iv. One (1) 1-liter ambar container with a spent Bases not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
v. One (1) 250-ml container with Organic Waste not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
vi. Four (4) 100-ml Erlenmeyer beakers and flasks with Unknown Waste, none labeled as "Unwanted Material," nor dated with their accumulation start dates (N/UM, N/D).

3.3.14 Chemical Laboratory Inorganic Chemistry Q-110

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. On top of a laboratory cabinet table there were numerous (approximately over thirteen 13) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories, few of them properly labeled as "Unwanted Materials," but not dated with their accumulation start dates (N/UM, N/D) (see **Picture No. 64**).
ii. One (1) 4-liter ambar container with a spent solvent waste not labeled as "Unwanted Materials," and dated with its accumulation start date of February 6, 2017, which exceeded over six months the LMP collection protocols (N/UM, N/D).
iii. Two (2) 1-liter ambar containers with spent solvent wastes not labeled as "Unwanted Materials," but dated with their accumulation start dates of February 8, 2017, which exceeded over six months the LMP collection protocols (N/UM, N/D).
iv. One (1) 500-ml container with Hydrochloric Acid mixed with Amonium Hydroxide, not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
v. One (1) 500-ml container with Unknown Wastes, not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
vi. One (1) 500-ml container with Unknown Wastes, not labeled as "Unwanted Material," but dated with its accumulation start date of January 2, 2023 (N/UM, D).
vii. One (1) 1-liter ambar container with Unknown Wates, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
viii. One (1) 1-liter ambar container with spent solvent with Iron, Potassium Hexacyanoferrate (III), and Iridium, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 65**).
ix. On3 (1) ½ -gallon white container with "Solid Material," not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
x. One (1) discarded thermometer containing mercury, not labeled as "Unwanted Material," nor dated with its accumulation start date or properly protected to control mercury releases or spills content (N/UM, N/D).
xi. One (1) 4-liter crystal container with Unknown Wates, not labeled as "Unwanted Material," but dated with its accumulation start date of September 9, 2019, which exceeded over six months the LMP collection protocols (N/UM, N/D).
xii. One (1) 500-ml container with spent Ethanol Waste, not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).
xiii. One (1) Erlenmeyer beaker, "open", containing discarded vials, not labeled as "Unwanted Material," nor dated with its accumulation start date (N/UM, N/D).

3.3.15 Chemical Laboratory Environmental Chemistry Q-106

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. One (1) 4-liter ambar container with a spent Methylene Chloride waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 66**).
ii. There were various styrofoam boxes containing Dissolve Oxygen Demand "High Range" test which uses Potassium dichromate as active ingredient (a strong base) and mercury. It was uncertain how COD vials were being disposed of since they are characterized as highly hazardous (see **Picture No. 67**).

3.3.16 Chemical Laboratory Electroanalytical Research Q-165

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. One (1) 1-gallon ambar container with a spent Sulfuric Acid waste, labeled as "Unwanted Materials," leaking, and dated with its accumulation start date of September 28, 2021, which exceeded over six months the LMP collection protocols (UM, N/D) (see **Picture No. 68**).
ii. One (1) ½ -gallon plastic container with "Drug Waste", not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).

3.3.17 Chemical Laboratory Organic Synthesis Research Q-163

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. On the laboratory floor there were numerous (approximately over twelve 12) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories, not properly labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM/, N/D) (see **Picture No. 69**).
ii. Five (5) 4-liter ambar containers with spent solvent wastes, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
iii. Five (5) 250-ml containers with spent solvent wastes, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
iv. One (1) 1-gallon white container with a Solid Waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
v. One (1) 5-gallon white pail containing Unknown Waste Solvent, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
vi. Two (2) 4-liter and 250-ml ambar containers stored in shelves containing THF (Tetrahydrofuran), not in use or managed as "Unwanted Material," not dated and without a hazardous waste determination of the content of the containers. I mentioned that THF is common peroxide-forming after degradation if not used within 12 months.

3.3.18 Chemical Laboratory Q-161

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes since this laboratory SAA was "Empty" at the time of the EPA Inspection.

3.3.19 Chemical Laboratory Research Q-159

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were numerous (approximately over ten 10) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories, not properly labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM, N/D) (see **Picture No. 70**).
ii. One (1) 1-liter ambar container with a spent Dichloromethane waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
iii. One (1) 4-liter ambar container with a spent Ethanol waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
iv. One (1) 4-liter ambar container with a spent Benzene waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
v. One (1) 1-liter ambar container with a spent Hexane waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
vi. One (1) 1-liter ambar container with a spent Platinum waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
vii. Three (3) 50-ml crystal containers with a spent Diary Propionitrile (DPN) and Polyphosphate Kinase (PPK2) enzymes, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
viii. One (1) 250-ml crystal container with a spent Xylene waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
ix. One (1) 100-ml Erlenmeyer beaker with an Unknown Solid Waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).

3.3.20 Chemical Laboratory Surface and Materials Research Q-157

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

3.3.21 Chemical Laboratory Surface and Materials Research Q-155

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed

the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were numerous (approximately over eighteen 18 "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories, few properly labeled as "Unwanted Materials," or dated with their accumulation start dates (N/UM, N/D) (see **Picture No. 71**).
ii. Two (2) 4-liter ambar containers with spent Silver Chloride and Sulfuric Acid wastes, labeled as "Unwanted Materials," and dated with its accumulation start date of July 20, 2013, which exceeded over six months the LMP collection protocols (UM, N/D).
iii. One (1) 1-liter ambar container with a spent Matubo and Toluene waste, labeled as "Unwanted Materials," dated with its accumulation start date of July 20, 2013, which exceeded over six months of the LMP collection protocols (UM, N/D).
iv. One (1) 2-liter ambar container with a spent Methyl Sulfoxide waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
v. One (1) 1-liter ambar container with a spent Hydrogen Peroxide waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
vi. One (1) 1-liter ambar container with a spent Methanol (MeOH) waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
vii. One (1) 1-liter ambar container with a spent Diethyl Ether waste, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
viii. One (1) 1-liter ambar container with contaminated used oil, not labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM, N/D).
ix. One (1) ½-liter ambar container with "Hazardous Waste", not labeled as "Unwanted Materials," and dated with its accumulation start date of August 17, 2009, not managed as Unwanted Material or complying with the Laboratory Management Plan (N/UM, N/D) (see **Picture No. 72**).
x. Over fifteen (15) small beakers and containers (Lab Packs) with Unknown Hazardous Waste, not labeled as "Unwanted Materials," nor dated with their accumulation start dates (N/UM, N/D).

3.3.22 Chemical Laboratory General Chemistry Q-228

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over four 4) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

Cabinet - Satellite Accumulation Area

ii. Inside a cabinet there were various (approximately over eight 8) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.23 Chemical Laboratory General Chemistry Q-268

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over four 4) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.24 Chemical Laboratory General Chemistry Q-266

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over eight 8) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.25 Chemical Laboratory General Chemistry Q-230

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over six 6) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.26 Chemical Laboratory General Chemistry Q-258

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed

the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over three 3) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

Cabinet - Satellite Accumulation Area

ii. Inside a cabinet there were various (approximately over four 4) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.27 Chemical Laboratory General Chemistry Q-238

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over four 4) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

3.3.28 Chemical Laboratory General Chemistry Q-240

EPA RCRA inspectors proceeded to inspect this chemical laboratory area. The EPA Inspectors observed the following at this location:

Tray No. 1 - Satellite Accumulation Area

i. Inside an extractor hood there were various (approximately over five 5) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories that were recently corrected by properly labeling them as "Unwanted Materials," and dated with their accumulation start dates (UM, D).

4 CLOSING MEETING (DAY 2 – MARCH 9, 2023)

At 5:30 pm in the afternoon, a closing meeting was held for the day at the Chancellor's Office. EPA Inspectors met with Ms. Maria Isabel Fernández, Health, Occupational and Environmental Safety Office

Director, and Ms. Damaris Santiago, Health, Occupational and Environmental Safety Specialist, Dr. Omar Molina, Dean of Administration Department, and Dr. Agustín Rullán (over the phone) Chancellor of the University of Puerto Rico, Mayagüez-Campus.

EPA Inspectors discussed the potential releases and/or threat of releases observed during the Inspection visit on March 9, 2023, at the Environmental Engineering Laboratory (R-018) of the University of Puerto Rico-Mayagüez Campus. Our observations consisted of several chemical reagent containers that were identified to be leaking, deteriorated, expired (i.e., 1986), abandoned, not in use, not properly labeled, haphazardly stored, without secondary containment and not segregated by chemical compatibility. Based on the laboratory conditions, that may present an imminent and substantial endangerment to health or the environment. EPA Inspectors reiterated on the notification regarding EPA's environmental emergency area about an imminent risk situation at various locations at the time of the Inspection. Ms. Fernández had spoken in various occasions with Mr. Carlos Huertas, EPA On-Scene Coordinator, and they agreed that the Agency would include additional environmental risk areas identified at the Campus and included them for removal and clean up activities as part of the original FINFI (Notice to Responsible Party) under CERCLA. The UPR Mayagüez Campus committed to sending an action plan to address all environmental risk areas identified in laboratories and warehouse areas on or before noon on March 10, 2023.

EPA Inspectors brought to the attention of Dr. Agustín Rullán, Chancellor, that during the Inspection, and according to what was observed in the Alzamora Farm pesticides warehouse (i.e., Dimethoate, Malathion, Azadirachtin), pesticide containers and boxes seemed abandoned, deteriorated, and expired or non in use pesticide materials. Containers appeared to have been impacted by rain events since aluminum windows were open and stored materials were adjacent to open windows. It was EPA Inspectors concern that exposure to some pesticides can cause rapid, fatal organophosphate poisoning with headache, sweating, nausea and vomiting, diarrhea, loss of coordination, muscle twitching, and potential death. It was recommended that emergency procedures should also manage the proper disposal of uncontrolled releases of pesticides at the Alzamora Farm pesticides warehouse.

As discussed with Dr. Agustín Rullán, and as determined by EPA Inspectors during the Inspection, there were numerous laboratories managed under EPA Academic Laboratories Subpart K, which were not in compliance with the UPR Mayagüez-Campus Laboratory Management Plan (LMP). It was explained that Subpart K provides standards for managing hazardous waste in academic laboratories at eligible academic entities as an alternative to the satellite accumulation area generator regulations or to traditional hazardous program. The Academy Laboratory Subpart K is an optional and flexible program that the Campus chose to implement under a LMP which better suites the specific activities conducted at the academic and research laboratories. However, it was observed that most of the Campus' laboratories do not comply with the requirement protocols of the LMP, and that was very worrying to EPA Inspectors, since the program should protect public health and the environment in the Campus.

At the meeting, Dr. Agustín Rullán, committed himself to issue a University's Declaration of a State of Emergency to address as matter of urgency all necessary corrective measures to be carried out corresponding and meeting compliance with all the findings and statements made by EPA.

Additionally, EPA Inspectors requested that hazardous wastes generated from disposal and removal activities are required to comply with RCRA requirements.

5 FACILITY WALKTHROUGH (DAY 3 – MARCH 10, 2023)

5.1 CENTRAL ACCUMULATION AREA (CAA)

EPA RCRA inspectors proceeded to inspect the Central Accumulation Area which houses all non-hazardous and hazardous wastes collected at the Campus under the Laboratory Management Plan (LMP) program. The Central Accumulation Area is a metal hangar warehouse (100 ft X 100 ft) with reinforced concrete floor used to store hazardous waste that are transferred to this location. It contains an explosion proof Hazmat Storage Building divided by means of steel metal walls into three independent compartments. It is in an isolated area away from Campus activities, and pedestrian accessible areas. It is also secured and protected around its perimeter. It is always closed, and with posted signs with the words, "Hazardous Waste Accumulation Area - Restricted Area Authorized Personnel Only," including emergency phone numbers (see **Pictures No. 73 and 74**). As observed, the base floor was free of cracks or gaps, and it was designed to contain leaks and spills in a collection sump. The room is well vented and provided with ambient controlled temperature in the area and emergency alarm and spill control equipment (see **Picture No. 75**).

As referred in the Laboratory Management Plan (LMP), all unwanted materials must be moved only by OSSOA authorized personnel to the Central Accumulation Area (CAA). Once the unwanted material is moved to the CAA, the hazardous waste determination shall be made within four (4) days of the material arriving at the CAA. Within this four-day time frame, OSSOA personnel would determine if the material is eligible for re-use, recycling or will be handled as a nonhazardous waste. Mr. Williams Lozado, EH&S Officer, and Mr. Luis Ayala, EH&S Specialist, are the only persons in charge of this storage area, and all hazardous wastes, radioactive wastes, or extremely hazardous substances to be stored in the area need to be approved and coordinated through them. After the hazardous waste determination is made, all applicable requirements in the CAA will apply pursuant to 40 CFR §262.16.

Mr. William Lozada is certified by the Puerto Rico Police and possesses an explosives licence. Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office, served as the UPR Mayagüez Campus' representative.

5.1.1 Unwanted Materials Receiving Area

As referred in the LMP, once the unwanted material is received in the CAA, the hazardous waste determination is be made within four (4) days of the material arriving at the CAA, dated with its accumulation start date, and store up to 180-days to be disposed of with Capitol Environmental Services, Inc., as a Small Quantity Generator pursuant to 40 CFR §262.16. It was observed that that some of the hazardous waste identified by the UPR-Mayagüez Campus's representative at CAA were not properly labeled, without accumulation start dates, some were not shown clearly. Additionally, it was observed that some of the containers were not in good conditions or sealed to secure of any potential releases of waste content (see **Pictures No. 76 and 77**). Some containers were not RCRA coded (i.e., "D001") nor identified with its hazard communication pictograms as required by RCRA regulations (see **Picture No.**

78). However, they were separated by physical means to protect each other from incompatibility of waste (e.g., spent acids, caustic soda).

5.1.2 Hazardous Wastes Flammable Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

i. Seven (7) 15-gallon blue drums containing flammable liquid wastes (Ethanol, Methanol, Acetone-D001), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates on October 6, 2022, December 13, 2022, February 28, 2023, November 18, 2022 (2), March 8, 2023, and August 16, 2022, respectively (see **Picture No. 79**). All drums were clearly labeled, coded as "D001,"and identified with its hazard communication pictograms as, "Flammable Liquids," (see **Picture No. 80**).
ii. Five (5) 5-gallon white drums containing flammable liquid wastes (Ethanol, Methanol, Acetone-D001), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates on February 8, 2023, March 8, 2023, August 3, 2023, March 7, 2023, and February 6, 2023, respectively (see **Picture No. 81**). All drums were clearly labeled, coded as "D001", and identified with its hazard communication pictograms as, "Flammable Liquids," (see **Picture No. 82**).
iii. One (1) 55-gallon white drum with flammable liquid waste (Methanol, Ethyl Acetate, Acetone, Dichloromethane), clearly labeled with the words, "Hazardous Waste," and dated on June 6, 2022, not coded as "D001," nor identified with its hazard communication pictograms as, "Flammable Liquids," (see **Picture No. 83**). EPA Inspectors indicated that the storage accumulation time exceeded over 180-day, as required for a Small Quantity Generator.

5.1.3 Hazardous Wastes Corrosive Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

i. Six (6) 5-gallon white drums containing corrosive liquid wastes (Sodium Hydroxide, Hydrochloric Acid, Hydrogen Peroxide, and Sulfuric Acid-D002), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates on September 1, 2022, August 17, 2022 (2), September 15, 2022, December 15, 2022, and August 17, 2022, respectively. All drums were clearly labeled, coded as "D002," and identified with its hazard communication pictograms as, "Corrosive Liquids," (see **Picture No. 84**).
ii. Three (3) 15-gallon blue drums containing corrosive liquid wastes (Sodium Hydroxide, Hydrochloric Acid, Hydrogen Peroxide, and Sulfuric Acid-D002), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates on November 29, 2022, December 16, 2022, and December 13, 2022, respectively. All drums were clearly labeled, coded as "D002," and identified with its hazard communication pictograms as, "Corrosive Liquids," (see **Picture No. 85**).
iii. One (1) 1-gallon crystal bottle containing corrosive liquid wastes (Acetic Acid, Glacial-D002), clearly labeled with the words, "Hazardous Waste," and dated with its accumulation start date on

March 9, 2023. The bottle was not clearly labeled, nor coded as "D002," nor identified with its hazard communication pictograms as, "Corrosive Liquids," (see **Picture No. 86**).

iv. Three (3) 15-gallon blue/white drums containing corrosive liquid wastes (Sodium Hydroxide, Hydrochloric Acid, Hydrogen Peroxide, and Sulfuric Acid-D002), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates on April 29, 2022, May 12, 2022, and January 11, 2022, respectively. All drums were not clearly labeled or coded as "D002," nor identified with its hazard communication pictograms as, "Corrosive Liquids," EPA Inspectors indicated that the storage accumulation time for the three drums exceeded the 180-day requirement for a Small Quantity Generator (see **Picture No. 87**).

5.1.4 Hazardous Wastes Toxic Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

i. Six (6) 500-ml, 250-ml, and 100-ml small ambar containers containing toxic solid wastes (Ampicin, Potasium Chromate, Hydroxide, and Butyronitrile), clearly labeled with the words, "Hazardous Waste," and all dated with their accumulation start dates on October 21, 2022. All containers were not clearly identified with its hazard communication pictograms as, "Toxic Solids." At time of the RCRA Inspection all pictograms were posted on the containers (see **Picture No. 88**).

ii. Four (4) 5-gallon white containers and one (1) cardboard box with discarded alkaline batteries, open and not clearly labeled with the words, "Universal Waste," nor dated with their accumulation start dates. None of the containers or the box were clearly identified with its hazard communication pictogram as, "Corrosive Solids," (see **Picture No. 89**).

iii. Two (2) plastic trays with discarded alkaline and computer lithium batteries, open and not clearly labeled with the words, "Hazardous Waste," nor dated with their accumulation start dates. None of the trays were clearly identified with its hazard communication pictogram as, "Ignitable and Reactive Solids," (see **Picture No. 89**).

5.1.5 Hazardous Wastes Explosive (Reactive) Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

i. Inside a metal cabinet there were five (5) carboard boxes and one plastic four-pack containing discarded bengale flares, not clearly labeled with the words, "Hazardous Waste," nor dated with their accumulation start dates. All boxes were not clearly identified with its hazard communication pictograms as, "Explosive Solids," (see **Picture No. 90**).

ii. Inside a metal secured cabinet there were explosive reagents (i.e., Nitric Acid, Potassium Permanganate, Ammonium Hydroxide, Sulfuric Acid, etc.) controlled and licensed by the Puerto Rico Police Department Explosives Unit. All reagents were well maintained, controlled and in compliance.

5.1.6 Hazardous Wastes Alarm System Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

The Central Accumulation Area which houses all hazardous wastes collected and transported from UPR-Mayagüez Campus for storge and final disposition by Capitol Environmental Services, is equipped with fire alarms, emergency system and security system. At the time of the Inspection, EPA inspector requested that the emergency and alarm system were tested to simulate a real case scenario of an emergency incident. UPR EHS officer proceeded to activate the alarm system, and once the alarm system stared sounding all fire suppressant material was concurrently activated and descended upon all of us in the CAA (see **Picture No. 91**). Therefore, it was concluded that the emergency system is fully functional. EPA Inspector stated that pursuant to 40 CFR §262.16(b)(8)(iii) all communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment must be tested and maintained as necessary to assure its proper operation in time of emergency.

5.1.7 Hazmat Storage Building Hazardous Wastes Outside Area

EPA RCRA inspectors proceeded to inspect this Central Accumulation Area. The EPA Inspectors observed the following at this location:

<u>Room No. 1</u>

i. Nine (9) 55-gallon blue/white drums containing corrosive liquid wastes (Chiller Washing Water – D002), clearly labeled with the words, “Hazardous Waste,” and all dated with their accumulation start dates of January 12, 2023. All drums were clearly labeled, coded as “D002,” and identified with its hazard communication pictograms as, “Corrosive Liquids,” (see **Picture No. 92**).
ii. Inside a metal cabinet there were five (5) 5-gallon containers with corrosive reagents (i.e., Sodium Hydroxide) secured by EH&S Officers. All reagents were well maintained, controlled and in compliance (see **Picture No. 93**).

<u>Room No. 2</u>

iii. There were approximately thirty (30) decommissioned extinguishers for disposal without no hazardous waste determination made on them nor managed as hazardous waste due to its hazard content. Nine (9) 55-gallon blue/white drums containing corrosive liquid wastes (Chiller Washing Water – D002),

<u>Room No. 3</u>

iv. Six (6) 1-gallon crystal containers containing radioactive waste of “Uranyl Nitrate” and/or “Uranyl Acetate,” being stored for years without no hazardous waste determination made on them nor managed as hazardous waste due to its radioactive-corrosive hazard content as indicated by Ms. Maria Fernández (see **Picture No. 94**). She added that no Hazardous Waste Disposal Contractor

in the Island would transport or dispose of radioactive waste and that is the reason those wastes have been stored for years (see **Picture No. 95**).

v. Inside a plastic tray there were three (3) 50-ml (30-g) crystal containers containing radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," being stored for years without no hazardous waste determination made on them nor managed as hazardous waste due to its radioactive-corrosive hazard content (see **Picture No. 96**).

As observed by EPA Inspectors, most of the waste stored in this room consisted of Uranyl Acetate, Nitrate of Uranyl, and Carbon 14 radioactive-corrosive wastes generated by Marine Science, Chemistry and Biology Departments. EPA Inspectors stated that a certified Radiation Safety Officer is needed at the Campus for the proper management of these radioactive wastes, and they should also contact the Department of Energy (DOE) for regulatory requirements. EPA Inspectors also advised to contact the Nuclear Regulatory Commission (NRC) to request how all these radioactive wastes should be removed from UPR Mayagüez Campus for the proper management and final disposition.

EPA Inspectors noted that some of the hazardous wastes identified at the Central Accumulation Area were not properly labeled, without accumulation start dates, and some were not clearly shown. Additionally, it was observed that some of the containers were not in good conditions or sealed to secure of any potential releases of waste content, and no hazardous communication pictograms were posted on the containers at the time of the Inspection.

In general, EPA Inspectors observed at the Central Accumulation Area the list of names and telephone numbers in case of an emergency at visible locations, specifically, nearby the hazardous waste storage trailer, cabinets, and receiving areas. There were telephones in place and two-way communication system. In additon, the CAA was equipped with alarm systems, sprinkler systems, and extinguishers nearby areas where hazardous wastes were stored.

Table No. 3 depicts the inventory of Flammable Hazardous Wastes recorded at Central Accumulation Area during EPA Inspection provided by Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office.

Table No. 3 -Inventory of Flammable Hazardous Wastes Recorded at the Central Accumulation Area – March 10, 2023

Name	Container Capacity	Categorization Date
Dimethyloctadecyl[3-(trimethoxysilyl) propyl] ammonium Chloride 60% in methanol	100 ml	7-Sep-22

Water 90%, Methanol, Ethanol, Toluene, Tetrahydrofuran, Chloroform, Pyridine, 4-Picoline, Strontium Chloride, Cupric Chlorate, Berilium Sulfate	500 ml	7-Sep-22
Styrene	1 L	16-Agosto-22
Pyridine	1 L	30-Nov-22
Sephadex LH-20 diried in Methanol, Ethanol and Isopropanol	2.5 kg	30-Nov-22
Methanol, Ethanol, Isopropanol, Acetonitrile, Ethyl Acetate, Petroleum Ether, Acetone, Chloroform, Vegetal Oil	2.5 L	30-Nov-22
Quinaldine	1 L	12-dic-22
Fumonisin B	10 l	9-Mar-23
Hydranal std	40 ml	9-Mar-23
Electrospray and APCI Performance	5 ml ampules	7-Mar-23
Mathanol, Ethanol, Propanol, 2-Propanol, 2-Butanol, Dichlrobenzene, 0-Xylene	1L	8-Feb-23
Water, Caffeine, Hydrochloric Acid 1M, Ethanol, Tert-Butyl Chloride, Methanol, Acetone, Acetic Acid, Nitroaniline	4L	8-Feb-22
Water, Hydrochloric Acid, Fluoridric Acid, Nitric Acid, Methanol, Ferric Chloride	4L	8-Feb-22
Sodium Hydroxide, Ethyl Acetate, Hydrochloric Acid, Sodium Carbonate	15 gal	18-Nov-22
Hexane, Oxibenzona, Methanol, 2-Propanol, Butanol, Acetonitrile, Formaldehyde	15 gal	13-dic-22
Calcium Chloride, Sodium Chloride, Manganese Chloride, Barium Chloride, Cupric Bromide, Copper Chloride, Nickel Chloride, Calcium Chloride, Zinc Chloride, Water, Triethylamine, Dimethylacetamide, 2-Bromopropionyl Bromide, Aniline 3%, Potassium Permanganate 1.0M, Ferric Chloride, Potassium Chloride, Sodium Hydroxide 1.0M, Hexylimidazole, Sulphuric Acid, Acetic Anhydride, Dichlromethane, Hydrochloric Acid, Methanol, Hexanol, Ethyl Ether, Pentane, Acetone, Triethylamine, Dichloromethylsilane, Methyl tert-Butyl Ether, Hexane, Dieldrine, Dimethl sulfate, Aldrine, Siloxanes, Endrine,	15 gal	16-agosto-22

Acetonitrile, Bromacil, Cadmium Selenide, Ammnium Hydroxide, Titanium Dioxide, Phenolphthalein, Propanol, Ethanol, Petroleum Ether, Ethyl Acetate		
Hexane, Methyl Tert-Butyl Ether, Dichloromethane, Acetonitrile, Ethyl Ether, Methyl Red, Sodium Acetate, Phenolphthalein, Ethanol, Methanol, 1-Butanol, 2-Butanol, 2-Propanol, Cyclohexane, p-Dichlorobenzene, Naphthalene, Tetrahydrofuran, Methylamine, Acetone, Chitosan, Silver Nitrate, Pectin, Citric Acid, Titanium Dioxide, Potassium Nitrate, Sodium Molybdate, Potassium Disulfate, Potassium Antimony Tartrate, EDTA, Cadmium, Bensenesulphonic Acid, 2,5-Dihydroxybenzoic Acid, cas 7263-92-0	15 gal	12-dic-22
Mercuric Chloride, Hydrochloric Acid, m-Cresol Purple, Methanol, Hydrogrn Sulphide, Ethyl Acetate, Dichloromethane, Acetone	55 gal	29-julio-22
Water, Methanol, Ethyl Acetate, Dichloromethane, Acetone, Hexadecyltrimethylammonium bromide, Dodecyl Trimethyl Ammonium Bromide, Sodium Chloride, Gold Chloride, 1-Octanethiol, 1-Decanethiol, 11-Mercapto-1-undecanol, 11-Amino-1-undecanol, Ethanol, Polymethyl Pentone, Acetonitrile, Triethylamine, Titanium Oxide, Hydrochloric Acid, 2-Propanol, Acetic Acid, Urea, Octasulfonic Acid, Ammonium Formate, Zinc Oxide, Titanium Oxide	15 gal	28-Feb-23
Spartan Products. Contains: Methylene Chloride and Perchloroethylene	15gal	8-Mar-23
Spartan Products. Contains: Methylene Chloride and Perchloroethylene	5gal	8-Mar-23
Mercuric Chloride, Hydrochloric Acid, m-Cresol Purple, Methanol, Hydrogrn Sulphide, Ethyl Acetate, Dichloromethane, Acetone	5 gal	1-Mar-23
Water, 2-Propanol, Acetonitrile, Methanol	5 gal	8-Mar-23
Methanol, Ethanol, Waer, Titanium Oxide, Oxybenzene	5 gal	8-Mar-22

Table No. 4 depicts the inventory of Corrosive Hazardous Wastes recorded at Central Accumulation Area during EPA Inspection provided by Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office.

Table No. 4 -Inventory of Corrosive Hazardous Wastes Recorded at the Central Accumulation Area – March 10, 2023

Name	Container Capacity	Categorization Date
Mercury	10 ml	14-dic-22
Cesium Chloride solution	1L	14-dic-22
Cadmium, Sodium Hydrosulfide, Indole-3-Acetic Acid, Gibberillic Acid, Cadmium Sulfide, Lead metal, Ferric Oxide, Calcium Carbonate	1 kg	30-Nov-22
Pyridine, Sodium Hydroxide, Hydrochloric Acid, Water	1L	30-Nov-22
Sodium Sulfide	1 kg	24-agosto-22
Ammonium Nitrate	500g	23-Feb-23
1,1′-Diethyl-4,4′-carbocyanine iodide, 1,1′-Diethyl-2,2′-dicarbocyanine iodide, 1,1'-Diethyl-2,4'-cyanine iodide, 3,3′-Diethyloxadicarbocyanine iodide, 3,3′-Diethyloxacarbocyanine iodide, 3,3′-Diethylthiatricarbocyanine iodide, 1,1′-Diethyl-2,2′-carbocyanine iodide	4L	30-Nov-22
Folin Phenol solution, Acid Phenol	2.5L	14-dic-22
Magnesium Sulfate, Calcium Sulfate, Zinc Sulfate, Magnesium Chloride, Cobalt Chloride, Sodium Sulfate, Manganese Sulfate, Zinc Nitrate, Cupric Sulfate, Barium Chloride, Nickel Sulfate, Calcium Chloride, Sand	1 kg	3-Feb-23
Rif Ampicin	25g	21-Oct-22
Butyrinitrile	100 ml	21-Oct-22
Formamide	500 ml	21-Oct-22
Potassium Chromate	500g	21-Oct-22
Cycloheximide	10g	21-Oct-22
Phenyl Mercaptan	500ml	21-Oct-22

Mercury Wetted contact relay	2.5 kg	8-Mar-23
Acetic Acid	2.5L	9-Mar-23
Water, Cu, Ni, Fe, Manganese Chloride, Zinc Chloride, Selenium, Nitric Acid 3%	1L	9-Mar-23
Water, Cu, Ni, Fe, Manganese Chloride, Zinc Chloride, Selenium, Nitric Acid 3%	500 ml	9-Mar-23
Titanium Oxide, Zinc Sulfate, Ethanol, Cadmium, Methyl Blue, Nitric Acid	2.5L	9-Mar-23
Mercury, Nitric Acid 3%	100 ml	9-Mar-23
Hydrofluoric Acid, Nitric Acid, Water	1L	7-Mar-23
Water, Arsenic, Strintium, Antimony, Cobalt, Calcium, Magnesium, Magnesium Standard, Scandium Std., Nitric Acid 5%	1L	9-Mar-23
Sodium Dodecyl Sulfate	100g	9-Mar-22
Manganese Sulfate, Sodium Hydroxide, Sulfuric Acid, Sodium Iodide, Potasiium Iodide, Potassium Iodate, Thiosulfate	15 gal	27-Jul-2022
Manganese Sulfate, Sodium Hydroxide, Sulfuric Acid, Sodium Iodide, Potasiium Iodide, Potassium Iodate, Thiosulfate, Sodium Bisulfite 0.20%, Acetato de Zinc 30%, Potassiun Ferrocyanide, Honey	15 gal	27-Jul-2022
Sodium Chloride, Magnesium Sulfate, Zinc Sulfate, Gallium Oxide, Zirconium Oxide, Sodium Carbonate, Copper Oxide, Sodium Hydroxide, Potassium Permanganate, Potassium Chloride, Ammonium Chloride, Hydrochloric Acid, Nickel Chloride, Methyl Orange, Nitric Acid, Ferric Nitrate, Sodium Thiocyanate, Copper Sulfate, Ferric Chloride, Ferric Salicilate, Aspirin, Acetic Anhidride, Salicylic Acid, Sulfuric Acid, Nitrates of: Nickel, Barium, Iron, Zinc, Copper, Lead and Calcium Chlorides of: Iodine, Bromine, Potassium, Nickel, Calcium	15 gal	29-Nov-22
Methanol, Sodium Hydroxide, Magnesium Sulfate, Thioglycolic Acid, Zinc Sulfate, Manganese Sulfate, Water, Sodium Sulfide, Hydrochloric Acid, Sodium Hydroxide, Copper Nitrate, Phenol, Ammonium Iron Sulfate, Sulfuric Acid, Potassium Dichromate, Ethanol, silver Nitrate, Cadmium, Nitric Acid	15 gal	25-Oct-2022

Hydrochloric Acid 4.8 M, Bromothymol Blue	15 gal	29-Aug-2022
Hydrochloric Acid, sulfuric Acid, Phosphoric Acid, Potassium Dichromate, Potassium Permanganate, Sodium Hydroxide, Calcium Chloride, Barium Chloride, Manganese Chloride, Sodium Chloride, Potassium Chloride	15 gal	16-Aug-2022
Wash water from central air conditioning plant: Contains: Hydrochloric Acid, Trce of Copper and Iron	55 gal	12-Jan-2023
Water, Methyl Orange, Hydroquinone, Phenanthroline, Sulfuric Acid, Manganese Sulfate, KHP, Sodium Citrate, Ammonium Sulfate, Methylene Blue, Sodium Hydroxide, Sodium Iodide, Potassium Iodide, Potassium Iodate, Sodium Phosphate, Potassium Nitrate, Ammonium Chloride, Sodium Bicarbonate, Zinc Sulfate, Copper Sulfate, POtassium Chloride, Calcium Carbonate, Strontium Chloride, Nickel Chloride, Silver Nitrate, Magnesium Chloride, Nitric Acid, Calcium Chloride, Barium Chloride, Iron Chloride, Hydrogen Peroxide, Manganse Oxide, Lead Nitrate, Zinc Nitrate, Cupric Nitrate	55 gal	25-Jan-2023
Water, Ludox HS-40, Bis(pentamethylcyclopentadienyl)Cobalt (III)	5 gal	1-Sep-22
Water, Sodium Hydroxide 40%, Boric Acid 4%, Sulfuric Acid, Missouri Catalyst, Hydrogen Peroxide 30%, Hydrochloric Acid 0.20 N	5 gal	17-Aug-2022
Sodium Thiosulfate, Clorox, Potassium Iodide, Hydrochloric Acid, Sodium Hydroxide, Potassium Hydrogen Phtalate, Water, Sulfanilamide, Sulfuric Acid, Barium Chloride	5 gal	15-Dic-2022
Sulfanilamide, Ammonium Sulfate, Hydrochloric Acid, Potassium Phosphate, Nitrite Standard, N-(1-naphtyl)-ethylenediamine	5 gal	17-Jan-2023
Potassium Permanganate, Sodium Hydroxide, Water	5 gal	25-Jan-2023

5.2 BUILDINGS AND LAND DEPARTMENT

The Buildings and Land Department houses the carpentry, wood & cabinets shop, steel metal shop, plumbing, air conditioning repair shop, painting shop, electrical and light repair shop, light automobile mechanic services, and physical maintenance and cleaning departments which supports all Campus' activities. This building also houses various warehouses for raw material products and equipment

replacement parts. Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office, served as the UPR Mayagüez Campus' representative.

5.2.1 Mechanic Shop

Light mechanic repairs and preventive maintenance to vehicles fleet is performed at this Mechanic Shop. At the time of the Inspection, EPA Inspectors met with Mr. Ramon Collazo, Automotive Technician, and Mechanic Shop Supervisor. Services at this Mechanic Shop mainly include used oil and spent oil filter changes, and batteries' replacement, among other light repair jobs. Oil and filter changes are part of the vehicle's preventive maintenance program. Used oil is placed in 5-gallon containers and transferred to an on-site 200-gallon double wall Used Oil Tank. The Used Oil is later disposed of by a local used oil collector company. At the time of the inspection, Mr. Collazo informed that the quantity of used oil generated at the facility is relatively small and depends on the numbers of units in service. Used Oil impacted materials are disposed of as domestic garbage. Mr. Collazo indicated that the quantity of used oil impacted materials generated at the facility was unknown. No hazardous waste determination has been made on the used oil impacted materials before disposal of and mixed with their solid waste. Approximately twenty (20) used oil filters are generated from vehicles' preventive maintenance program monthly. Used oil filters are not punctured and/or crushed, but they are hot drained between 24 - 48 hours before been disposed of with the local used oil collector company. At the time of the Inspection, Mr. Collazo indicated that he did not know about the transporter who picks up the used oil filters.

EPA RCRA inspectors proceeded to inspect this Mechanic Shop Area. The EPA Inspectors observed the following at this location:

i. One (1) 55-gallon blue drum open with impacted material with used oil not marked with the words, "Used Oil" (see **Picture No. 97**).
ii. One (1) 5-gallon black pail with used oil not marked with the words, "Used Oil" (see **Picture No. 98**).
iii. One (1) 200-gallon double wall Used Oil Steel Tank marked with the words, "Used Oil." However, there were old and new used oil spills and stains on the concrete floor of the used oil and it seemed that multiple used oil spills have occurred continuously, since the floor around the tank was impregnated with used oil and dust debris. EPA inspector stated that pursuant to 40 CFR §279.22(d), requires that upon detection of a release of used oil to the environment, a generator must stop the release, contain the released of used oil; and clean up and manage properly the released used oil and other materials (see **Picture No. 99**).
iv. One (1) 30-gallon container part-washer machine which uses CB-100 degreaser (e.g., biodegradable water-based cleaner and degreaser) to clean up auto parts. At the time of Inspection, the part-washer machine was out of service for the last three months, and mechanics were using diesel as a replacement to clean auto parts at the part-washer station (see **Picture No. 100**).
v. One (1) 55-gallon black drum open on top with spent used oil filters impregnated with used oil not marked with the words, "Used Oil" (see **Picture No. 101**).

5.2.2 Refrigeration Shop

At the Refrigeration Shop services include diagnosing, testing, and repairing refrigeration equipment as needed based on the UPR Mayagüez Campus to ensure their refrigeration equipment runs properly. At the time of the Inspection, EPA Inspectors met with Mr. Jose L. Torres, Refrigeration Technician, and Mr. Pedro Mas. Mr. Mas stated that discarded equipment such as compressors and air conditioning parts are disposed of at the Mayagüez Municipal Landfill. Other scrap metals components are disposed of with Homeca Recycling, Inc.

EPA RCRA inspectors proceeded to inspect this Refrigeration Shop Area. The EPA Inspectors observed the following at this location:

i. One (1) 55-gallon blue drum with a yellow drainage tray on top with used oil generated from draining compressors, not marked with the words, “Used Oil” (see **Picture No. 102**).
ii. Two (2) 1,000 pounds steel tanks with discarded refrigerants, not marked with the words, "Used Refrigerant" (see **Picture No. 103)**. EPA Inspectors explained that pursuant 40 CFR § 261.4(b)(12) chlorofluorocarbons (CFC) refrigerants that cannot be reclaimed must be evaluated to determine if they exhibit any of the characteristics of a hazardous waste (i.e., ignitability, corrosivity, reactivity, and toxicity). Therefore, those exhibiting such characteristics must be handled according to regulations established under RCRA. Non-CFC refrigerants destined for reclamation or recycling that involves filtering, cleaning, or purifying the refrigerants prior to reuse may be considered wastes and must also be evaluated to determine if they are hazardous wastes and managed accordingly.

5.2.3 Cleaning Warehouse Shop

EPA RCRA inspectors proceeded to inspect the Cleaning Warehouse Shop which stores cleaning products for the sanitation and maintenance of Campus Buildings. Mr. Wilfredo Vargas Rivera, Warehouse Technician, and Mr. Ramon E. Cardona, Warehouse Shop Supervisor, served as the UPR Mayagüez Campus' representative and escort. EPA Inspectors requested the inventory of product purchased that has historically been used for cleaning purposes in the Campus (see **Picture No. 104)**.

Table No. 5 summarizes the inventory of cleaning products and hazardous chemical solvents stored in the Cleaning Operations Shop,

Table No. 5 - Inventory of Cleaning Products and Hazardous Chemical Solvents March 9, 2024

Product Name	Qt.	Volume	Product Name	Qt.	Volume
Multi Acid Bowl & Urinal Cleaner	9	Bottles	**Germicidal Bowl Cleaner**	6	Bottles
Consume - Disinfectant for toilers and urine bowls	4	Bottles Boxes	**Premium Wood Polish**	9	Bottles

Bowl cleaner - Cleaning Acid for toilers and urine bowls	9	Cans Boxes	**Dem-Tech ACTIV Germicidal Detergent**	4	Plastic Cans
Toilet Bowl Cleaner Remove Rust & Minerals	15		**Bleach Regular**	7	Container
Stainless Steel Polish & Cleaner	8	Cans Boxes	**Water Based Shine Maintainer**	3	Bottles
Graffiti Remover	3	Cans	**Air Wick Deodorant**	10	Cans
Hand Sanitizer (Alcohol)	1	Gallon	**HDQ Neutral Disinfectant**	1	Gallon

It was observed by EPA Inspectors that many of the cleaning solvent products were concentrated and contained hazardous substances as active ingredients (see **Picture No. 105)**. After thorough evaluation of the products Safety Data Sheets (SDSs), some of the cleaning products could be potentially hazardous to the environment if disposed of inappropriately. As observed by EPA Inspectors throughout the campus locations, and at the time where cleaning operations were undertaking, many of the cleaning solvents were not diluted as indicated in the product instructions and placed directly on surfaces to clean or to disinfect surfaces or floors. Many of the cleaning material impacted such as rags with solvents were disposed of with domestic garbage as well as left over from non-used products. EPA Inspectors instructed Mr. Cardona to train his employees in the proper management and disposal of these hazardous wastes (i.e., contaminated rags). EPA Inspectors reiterated that products containing hazardous substances as active ingredients, and as specified in the product's SDSs, must be managed in a manner to avoid the disposal into the environment as a hazardous waste. Additionally, hazardous waste determinations must be done before residual waste or impacted materials are disposed of as solid waste.

It was also observed that the list products used at the shop were non-biodegradable products such as stripper furniture, oil cleaning, bowl cleaning, bacteria control, and degreasers (i.e., waxes) were applied on floors, bathrooms, common areas throughout the Campus. It was stated by Mr. Cardona that most of the inventory of products is always in use, and that expired products, if any, are disposed of as hazardous waste such as stripper remover wax, and degreasers for stains. However, no hazardous waste determination has been performed on discarded solid waste from cleaning operations identified throughout the Campus before its final disposition.

5.2.4 Fields and Roads Shop

The Fields and Roads Shop provides maintenance and preventive services to Campus green areas. At the time of the Inspection, EPA Inspectors met with Mr. Eduardo Ibarrondo, Shop Supervisor.

EPA RCRA inspectors proceeded to inspect this Fields and Roads Shop Area. The EPA Inspectors observed the following at this location:

i. One (1) 30-gallon container part-washer machine which uses mineral spirit degreaser to clean up equipment parts served by Oil Energy System. At the time of Inspection, the part-washer machine

was out of service for a long period of time, and mechanics were using diesel as a replacement to clean equipment parts at the part-washer station (see **Picture No. 106**).

ii. One (1) 20-gallon black container open on top with spent used oil filters impregnated with used oil, not marked with the words, "Used Oil" (see **Picture No. 107**).

iii. One (1) 55-gallon blue drum with a white drainage tray on top with used oil generated from draining landscape equipment, not marked as “Waste Oil,” and without the words, "Used Oil" (see **Picture No. 108**).

iv. One (1) 55-gallon white drum with a yellow drainage tray on top with used oil generated from draining landscape equipment, marked with the words, "Aceite Usado" (see **Picture No. 109**).

v. One (1) 55-gallon white drum with rags impregnated with used oil, not marked with the words, "Used Oil" (see **Picture No. 110**).

EPA inspector recommended to keep good housekeeping practices to avoid spills (apparently of used oil) on the floor. No hazardous waste determination has been made on the solid waste mixed with rags impregnated with used oil as observed in the inside the drum.

5.2.5 Universal Waste Storage Area

EPA RCRA inspectors proceeded to inspect the Universal Waste Storage Area which stores spent fluorescent-lamps, batteries, ballasts, high-density halogen bulbs, sodium lamps, LED light cards, electrical pig tails, and emergency flooding light bulbs for the lighting maintenance of Campus Buildings and open areas.

The EPA Inspectors observed the following at this location:

i. One (1) 40-gallon container and three (3) 5-gallon pails, all open with broken fluorescent lamps (e.g., approximately over 20 spent broken bulbs each), mixed with crushed fluorescent lamps and high-density halogen bulbs showing evidence of breakage, leakage, and damage that could potentially cause a release of mercury or other hazardous constituents to the area (see **Picture No. 111**).

ii. One (1) white plastic tray (1’x1’x 2’) with crushed fluorescent lamps and high-density halogen bulbs showing evidence of breakage, leakage, and damage that could potentially cause a release of mercury or other hazardous constituents to the area (see **Picture No. 112**).

iii. Sixty (60) square cardboard boxes (1’x1’x 4’) packing over sixty (60) 4-foot spent fluorescent lamps, some open and not labeled with the words, “Universal Waste,” or dated with their accumulation start dates (see **Picture No. 113**).

iv. Thirty (30) square cardboard boxes (1’x1’x 8’) packing over sixty (60) 8-foot spent fluorescent lamps, open, not labeled with the words, “Universal Waste” or dated with their accumulation start dates (see **Picture No. 114**).

v. Three (3) square cardboard boxes (1’x1’x 2’), one packing spent high-density halogen bulbs, the other packing electrical pig tails, and another one with LED light cards, not labeled with the words, “Universal Waste,” or “Universal Waste-Mercury Containing Equipment,” nor dated with their accumulation start dates (see **Picture No. 115**).

vi. Two (2) green plastic trays (2'x2'x2') packing over twenty-five (25) U-shaped spent fluorescent lamps, open and not labeled with the words, "Universal Waste," or dated with their accumulation start dates (see **Picture No. 116**).
vii. One (1) 55-gallon white drum and one (1) square cardboard boxes (1'x1'x 4') packing over twenty (20) 4-foot and 8-foot spent fluorescent lamps, both open and not labeled with the words, "Universal Waste," or dated with their accumulation start dates (see **Picture No. 117**).
viii. Two (2) 55-gallon black steel drums with lids containing "Ballast" which were removed from aluminum frames. None of the drums were clearly labeled with the words, "Universal Waste-Mercury Containing Equipment," or dated (see **Picture No. 118**).
ix. Two (2) cardboard box (1'x1'x 2') open with high-density halogen, open and not labeled with the words, "Universal Waste," or dated with their accumulation start (see **Picture No. 119**).
x. One (1) cardboard box (1'x1'x 2'), open, with LED light cards, and not labeled with the words, "Universal Waste-Mercury Containing Equipment," or dated (see **Picture No. 120**).

EPA Inspectors stated that any spent fluorescent lamp that is broken or shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment must immediately be cleaned up and placed in containers pursuant to 40 CFR § 273.13(d)(2). We also stated that mercury-containing ballast must be managed in a way that prevents releases of any universal waste or component of a universal waste to the environment and must be placed in a container as a universal waste. Mmercury-containing equipment that shows evidence of leakage, spillage, or damage that could cause leakage must immediately be cleaned up and placed in appropriate containers pursuant to 40 CFR §273.13(c)(1).

In addition, EPA Inspectors stated that each drum containing mercury-containing equipment must be labeled or marked clearly with the words, "Universal Waste-Mercury Containing Equipment," "Waste Mercury-Containing Equipment," or "Used Mercury-Containing Equipment." Similarly, each lamp or a container or package in which lamps are contained must be labeled or marked clearly with the words, "Universal Waste-Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)."

At the time of the RCRA Inspection, there were various broken fluorescent lamps inside drums, cardboard boxes and plastic trays mixed high-density halide bulbs without control or containment, showing evidence of breakage, leakage, and damage that caused releases of mercury or other hazardous constituents to the area at the Universal Waste Storage Area, not managed as per 40 CFR § 273.13(d)(2).

Additionally, there were various ballasts or mercury containing equipment inside cardboard boxes showing evidence of breakage, leakage, and damage that could potentially cause a release of mercury or other hazardous constituents to the area not managed as per 40 CFR § 273.13(c)(1).

At the time of the RCRA Inspection, there were various 55-gallon black steel drums and cardboard boxes containing "Ballast" or mercury containing equipment, none of the drums or boxes were clearly labeled with the words, "Universal Waste-Mercury Containing Equipment," as required pursuant to 40 CFR § 273.14(d)(1).

5.2.6 Paint Shop Warehouse

The Paint Shop Warehouse provides painting jobs and maintenance to Campus Buildings and open areas (i.e., parking and sidewalks). At the time of the Inspection, EPA Inspectors met with Mr. Carmelo Diaz Rivera, Shop Supervisor.

The EPA Inspectors observed the following at this location:

i. Approximately nine-five (95) to over one hundred (100) 1-gallon paint pails were decommissioned since there were damaged due to the long period of time that they were not in use during the COVID-19 that became expired, deteriorated and many pails rusted because they were abandoned and not in use. Therefore, most of the paint pails were damaged and could not be used for painting. Most to the decommissioned pails were organic solvent based. No hazardous waste determination had been made on the contents to all the 5-gallon paint pails at the Paint Shop (see **Picture No. 121**).
ii. It was noted that the practice to dispose of used brushes was to clean them up with solvent thinner, if it was no longer usable, then allow them to dry, and then dispose of as domestic garbage. This could be considered as illegal treatment of hazardous wastes (see **Picture No. 122**).

At the time of the Inspection, EPA Inspectors recommended to the Paint Shop Supervisor to have available the Safety Data Sheet (SDS) for the type of paints (i.e., solvents, oil, and water base) being in use at the Campus, and to have knowledge and control of their content by implementing inventories of paint material in use to avoid paint waste being dumped into the environment.

It was explained to Mr. Diaz that clean brushes with thinner and allowing them to dry and then disposed of as domestic garbage could be considered illegal treatment. EPA Inspectors added that on-site treatment and disposal of hazardous waste without a permit or interim status is a potential violation of both statutory and regulatory requirements. EPA Inspectors explained that treatment means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. Since paint brushed are cleaned up with solvent thinner, these discarded brushes are considered hazardous wastes which are being treated on-site.

5.2.7 Carpentry Shop

The Carpentry Shop provides carpentry jobs and maintenance to Campus Buildings and open areas. At the time of the Inspection, EPA Inspectors met with Mr. Fernando Montalvo, Shop Supervisor. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.2.8 Plumbing Shop

The Plumbing Shop provides plumbing jobs and maintenance to Campus Buildings and open areas. At the time of the Inspection, the shop was closed, and EPA Inspectors made a general view of the Plumbing Shop. Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.2.9 Welding Shop

The Welding Shop provides welding jobs and maintenance to Campus Buildings and open areas. At the time of the Inspection, the shop was closed, and EPA Inspectors made a general view of the Welding Shop (see **Picture No. 123**).

The EPA Inspectors observed the following at this location:

i. Over ten (10) 100-lbs, 75-lbs and 25-lbs gas cylinders stored in a concrete shed and secured with a cyclone fenced gates. There was oxygen, ethylene and other compressed gase cylinders stored in this shop used for welding jobs (see **Picture No. 124**).

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.3 DEPARTMENT OF AGRICULTURE - ALZAMORA FARM

The Alzamora Farm was founded in 1946 for teaching purposes. It is currently used by undergraduate and graduate students, teachers, and employees as a teaching center and as a medium and support for research in the areas of agriculture and farming. The farm has a sales area of ornamental plants, medicinal plants, fruit trees and compost. The funds generated from these sales go into the Alzamora Farm general fund, which is used to purchase necessary equipment and agricultural materials in the laboratories and to spread plants. This farm also houses various warehouses, animal farms and ornamental plants areas. Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office, served as the UPR Mayagüez Campus' representative.

5.3.1 Mechanic Shop

The Mechanic Shop provides maintenance and preventive services to Agricultural equipment and vehicles. At the time of the Inspection, EPA Inspectors met with Mr. Elvin Ronda, Shop Supervisor. Services at this Mechanic Shop mainly include used oil and spent oil filter changes, and batteries' replacement, among other light repair jobs. Oil and filter changes are part of the vehicle's preventive maintenance program. Used oil is placed in 55-gallon drums from oil and filter changes during maintenance. The Used Oil is later disposed of by a local used oil collector company. Used Oil impacted materials are disposed of as domestic garbage. Mr. Ronda indicated that the quantity of used oil impacted materials generated at the facility was unknown. No hazardous waste determination has been made on the used oil impacted materials before disposal of and mixed with their solid waste. Used oil filters are not punctured and/or crushed, but they are hot drained between 24 - 48 hours before been disposed of with the local used oil collector company.

EPA RCRA inspectors proceeded to inspect this Mechanic Shop Area. The EPA Inspectors observed the following at this location:

i. Over ten (10) 4-foot spent fluorescent lamps, on the floor without control or containment showing evidence of breakage, leakage, and damage that could potentially cause a release of mercury or other hazardous constituents to the area (see **Picture No. 125**).
ii. One (1) 55-gallon red drum open on top, with spent used oil filters impregnated with used oil not marked with the words, "Used Oil" (see **Picture No. 126**).
iii. One (1) 55-gallon black steel drum, open, with used oil and not marked with the words, "Used Oil" (see **Picture No. 127**).
iv. Two (2) 55-gallon blue plastic drums, one with a draining tray holding a spent oil filter. Both drums had used oil and were not marked with the words, "Used Oil"(see **Picture No. 128**).
v. Two (2) 55-gallon blue plastic drums, with spent degreaser, not labeled with their waste content. No hazardous waste determination had been made on the contents of the two 55-gallon drums at the Mechanic Shop (see **Picture No. 129**).
vi. Five (5) vehicle and truck batteries on the floor discarded, without control or containment showing evidence of breakage, leakage, and damage that could potentially cause a release of Sulfuric Acid, and were not labeled with the words, “Hazardous Wastes,” nor date with their accumulation start dates (see **Picture No. 130**).
vii. One (1) Tractor 6600 parked outside of the shop releasing used oil on the ground from an engine leak. EPA Inspectors advised to stop, control, and clean up immediately the used oil release on the ground (see **Picture No. 131**).

EPA Inspectors recommended to keep good housekeeping practices to avoid spills (apparently of used oil) on the floor. No hazardous waste determination had been made on the solid waste mixed with rags impregnated with used oil or discarded batteries as observed in the area. At the time of the Inspection, EPA Inspectors met with Mr. Jose Muñoz Rivera, Farm Agronomist.

5.3.2 Pesticide Warehouse

The Pesticide Warehouse is located at the Alzamora Farm and is used to store insecticide, fungicide, and herbicide products. At the time of the Inspection, the warehouse seemed abandoned, deteriorated and pesticide materials were either with expired dates or not being used. It was also seemed that pesticide materials were impacted by rain events since aluminum windows were open and stored materials were located adjacent to the windows. EPA Inspectors learned that the last application for most pesticides at the warehouse was logged in its Application Registry as of February 9, 2018 (see **Picture No. 132**).

EPA RCRA inspectors proceeded to inspect this Pesticide Warehouse Area. The EPA Inspectors observed the following at this location:

i. One (1) 2.5-gallon container with “Poast” herbicide which is a postemergence herbicide for control of annual and perennial grass weeds manufactured by BASF. The container seemed deteriorated and abandoned (see **Picture No. 133**).

ii. Seven (7) 1-liter containers with Neem Oil "Dyna Gro" which is an organic solution used as a pesticide against insects, mites, or fungi in plants. The containers seemed not in use or abandoned (see **Picture No. 134**).
iii. Two (2) 2.5-gallon container with "M-Pede" insecticide that provides excellent contact control of various insects. The container seemed not in use or abandoned (see **Picture No. 135**).
iv. One (1) 55-gallon black steel drum with "Dipel DT" insecticide used for caterpillar control. The drum seemed not in use or abandoned (see **Picture No. 136**).
v. One (1) cardboard box containing 20-liter "Hi-Yield" insecticide for termites, fleas, ticks, carpet beetles, and cockroaches manufactured by Hedwin, Baltimore, MD. The box seemed deteriorated, abandoned, and leaking on the shelf (see **Picture No. 137**).
vi. One (1) 3-shelf metal storage rack containing ("Insecticides"): i) eight (8) plastic bags broken containing powder insecticide (Dipel Dry); ii) two (2) 1-lb bottles with Dipel 150 Dust insecticide; iii) two (2) 1-gallon containers with Vydate L insecticide; iv) two (2) 1-gallon containers with Malathion 56 EC insecticide; v) one (1) 2.5-gallon with Carbaryl insecticide; vi) one (1) l-liter bottle with Cygon 2E insecticide; vii) one (1) l-liter bottle with Mavrik insecticide; vii) one (1) 2-liter bottle with Alias 2F insecticide; and, vii) one (1) 5-gallon container with unknow insecticide; and six (6) 2.5-gallon and 1-gallon containers with unknow insecticide. All containers seemed deteriorated and abandoned and some were leaking on the shelves (see **Picture No. 138**).
vii. One (1) 3-shelf metal storage rack containing ("Fungicides"): i) one (1) 2.5-gallon with Physan 2.0 fungicide; ii) two (2) 2.5-gallon with Banrot 40 WP fungicide; and iii) nine (9) 2-5-gallon and 1-gallon containers with unknown fungicides (i.e., Ridomil, Tilt, Cabrio, Ethephon 2.0, Nutonex, Crymax, Systec 1998, Difel 150, Bravo 500 and M-Pde-C). All containers seemed deteriorated and abandoned and some were leaking on the shelves (see **Picture No. 139**).

At the Alzamora Farm pesticide storage area, EPA Inspectors found pesticides stored in shelves which were made of metals and were corroded. Some pesticides were leaking on the shelves or the floor, in particular one box containing 20-liter "Hi-Yield" insecticide for termites, fleas, ticks, carpet beetles, and cockroaches and one 2.5-gallon container with unknown insecticide severely deteriorated and in detrimental conditions. There were other pesticides with torn labels inside plastic bags that appeared not to be in use or abandoned. The pesticide storage area had no weathering protection and was out of control releasing pesticides into the air and surrounding soils due to the detrimental conditions of the pesticide warehouse.

As a result, the agronomist José Muñoz Rivera made an inventory of the stored materials (March 15, 2023) (see **Picture No. 140**). The inventory was reviewed and updated and managed as follows:

i. Pesticides products in good condition would be transferred to the Isabela Experimental Station.
ii. Pesticide products in good condition would be transferred to the Department of Crops and Agro- Environmental Sciences of the Campus.
iii. Pesticide products in good condition for which there is no use will be disposed of with the Health, Occupational and Environmental Safety Office for hazardous waste determination and characterization.
iv. Materials in poor condition will be disposed of with the Health, Occupational and Environmental Safety Office for hazardous waste determination and characterization.

5.4 CAMPUS HOTEL

EPA RCRA Inspectors proceeded to inspect the Campus Hotel which stores cleaning products for the sanitation and maintenance of Hotel Buildings. Mr. Orlando Bellido, Hotel Shop Supervisor, served as the UPR Mayagüez Campus' representative and escort.

EPA Inspectors observed that many of the cleaning solvent products were concentrated and contained hazardous substances as active ingredients (see **Pictures No. 141** and **142**). After thorough evaluation of the products Safety Data Sheets (SDSs), some of the cleaning products could be potentially hazardous to the environment if disposed of inappropriately. EPA Inspectors instructed Mr. Bellido to train his employees in the proper management and disposal of these hazardous wastes (i.e., contaminated rags). EPA Inspectors reiterated that products containing hazardous substances as active ingredients, and as specified in the product's SDSs, must be managed in a manner to avoid the disposal into the environment as a hazardous waste.

5.5 PRINTING DEPARTMENT

EPA RCRA inspectors proceeded to inspect the Printing Department which provide services of photocopies, printing, banners, flyers, handouts, pamphlets and manuals reproduction, and other special digitalized printing (i.e., maps, aerial photos. Mr. Jose Luis Caban, Printing Department Supervisor, served as the UPR Mayagüez Campus' representative and escort.

According to the information provided all photocopying, offset printing, screen printing of the Campus is done by computer digitalized process. All printing ink used to reproduce the imprint is water based therefore it does not contain hazardous ingredients. The Printing Office uses Digital Xerox machines in which ink cartridges are replaced on a tolling agreement with Xerox (see **Picture No. 143**). Old ink cartridges are collected by Xerox and replaced with new ones on a rotational basis. Mr. Caban indicated that the printing used to be offset by pressing machine (see **Picture No. 144**). He also indicated that wastes used to be generated from used rags impregnated with Supreme Plate Cleaner which were collected and sent to be laundered and reused. Also is generated Arabic Gum from cleaning press operations.

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.6 SWIMMING POOL AREA

EPA RCRA inspectors proceeded to inspect the Swimming Pool Area which is used asa the Health and Physical Fitness Center Facility for teaching and practicing swimming styles and surviving skill in water. Mr. Felix Vega, Swimming Pool Supervisor, served as the UPR Mayagüez Campus' representative and escort.

EPA Inspectors' were looking for existing conditions and control of chlorine gas cylinders which was considered a hazardous chemical of concern located in the swimming pool area. In a brief description, chlorine gas is primarily a respiratory irritant. In sufficient concentration, the gas irritates the mucous

membranes, the respiratory tract, and the eyes. In extreme cases difficulty in breathing may increase to the point where death can occur from respiratory collapse or lung failure. The characteristic, penetrating odor of chlorine gas usually gives warning of its presence in the air. Also at high concentrations, it is visible as a greenish yellow gas.

Mr. Felix Vega explained that all choline treatment at the swimming pool area is contracted out and is based on solid dosage of Sodium Chloride (NaCl) by a Pulsar 4 System (see **Picture No. 145**). The Pulsar 4 System controls and applies chemicals as needed to the pool water on a routine basis. This service is contracted out in which the contractor brings all the chemicals and feed the tanks, and therefore, there is not any chemical storage room at the swimming pool area (see **Picture No. 146**).

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.7 HEALTH FITNESS CENTER (NEW GYM)

EPA RCRA inspectors proceeded to inspect the Health Fitness Center (New Gym) which provide athletic and physical fitness classes and a gym to Campus students. Mr. Juan G. Rivera, Center Administrator, served as the UPR Mayagüez Campus' representative and escort.

As observed by EPA Inspectors, raw material products that are used in this area mainly for cleaning such as waxes, finishing stripper, interlock metal degreaser, mechanic degreaser, spray cans (containing propane), and industrial floor cleaner for heavy stains and oily areas as stored in a brown cabinet secured lock (see **Picture No. 147**).

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.8 NURSING SCHOOL DEPARTMENT

The Nursing Department houses the nursing school laboratories and teaching classrooms which are used to simulate medical emergencies and routine day care of hospital patients (see **Picture No. 148**). Mr. Michael Colon Rosado, Nursing School Administrator, served as the UPR-Mayagüez Campus' representative and escort.

As stated by Mr. Colon, vegetal blood is used for every simulated test or procedure performed by students at their nursing laboratories. Spent vegetal blood and spent related equipment (i.e., needles, syringes, gloves, and gauzes, among others) are discarded in red bags and containers which are later disposed of as biomedical waste by Stericycle Puerto Rico biomedical contractor (see **Picture No. 149**).

Additionally, biomedical wastes such as spent needles and syringes, artificial spent lactose injection, saline water, glucose, and vegetal blood are generated at this department. Mr. Colon stated that no mercury-based thermometers or mercury containing equipment (i.e., sphygmomanometers) are generated by the school, only the disposition of simulated biomedical waste

At this time, Mr. Colon accompanied EPA RCRA inspectors on a walk-through of the Nursing Department at the following areas:

5.8.1 Nursing Skills Laboratory

The EPA RCRA inspectors proceeded to inspect the nursing skill laboratory. As observed by EPA Inspectors, spent synthetic blood (vegetable blood), spent needles, spent syringes, spent gauzes, spent cottons, spent artificial lactose solution serum, spent glucose solution serum, and spent normal saline serum are generated as part of the activities performed in this laboratory. All the above-mentioned wastes are collected at the laboratory in biomedical plastic red bags, and in red containers for sharp waste materials. Thereafter, all biomedical wastes are collected by Stericycle Puerto Rico for final disposition (see **Picture No. 150**).

5.8.2 Nursing Department Warehouse Area

The EPA RCRA inspectors proceeded to inspect the warehouse area of the Nursing Department. There were just nursing school supplies for teaching classrooms.

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.9 CAMPUS HEALTH MEDICAL SERVICES BUILDING

The Health Medical Service Department provides dental and clinical services to the Campus' community. EPA Inspectors met Ms. Ileana Lebron, Medical Technician, and Ms. Mildred Rosa Rodriguez, Graduated Nurse. According to Ms. Lebron, used needles, syringes, gloves, gauzes are generated from medical services provided to either students and/or employees. Around a hundred (100) student patients are attended monthly. All medical waste generated is discarded as Biomedical Waste in red bags and in red containers for discarded sharp objects. As part of the activities conducted at the Medical Service Department, the facility generates biomedical waste which is disposed of by Stericycle Puerto Rico for final disposition. The UPR-Mayagüez Campus has never notified EPA nor submitted a revised hazardous waste activity (i.e., EPA Form 8700-12) for the management of hazardous waste pharmaceuticals (40 CFR Part § 266 Subpart P - Hazardous Waste Pharmaceuticals) generated at healthcare facilities and managed at reverse distributors.

Ms. Lebron informed EPA RCRA inspectors that mercury thermometers are no longer used at present, since free-mercury thermometers are being acquired. A hazardous waste determination has been made on one mercury thermometer that is not currently in use and would be collected by the Health, Occupational and Environmental Safety Office for final disposal. As recommended by EPA Inspectors spent or expired pharmacy drugs or medicines should be disposed of as biomedical waste if they are not considered a hazardous waste (i.e., RCRA Characteristics or Listed under 40 CFR § Part 261 Subpart C and D) with Stericycle Puerto Rico. She also informed that preventive maintenance is provided to their ambulance fleet by the Buildings and Land Department at the University Campus.

Ms. Torres accompanied us on a walk-through of the Medical Services Department. The following areas were visited:

5.9.1 Emergency Room

EPA Inspectors observed red bags and red plastic containers used to store and dispose of biomedical waste properly labeled with such words. Controlled pharmacy drugs and medicines were stored together with some expired controlled pharmacy drugs which are disposed of as biomedical waste (see **Picture No. 151**). As reiterated by EPA Inspectors spent or expired pharmacy drugs or medicines should be disposed of as pharmacy drugs if they are not considered a hazardous waste (i.e., RCRA Characteristics or Listed under 40 CFR § Part 261 Subpart C and D) with Stericycle Puerto Rico.

5.9.2 Clinical Laboratory

EPA Inspectors observed that Safety Data Sheets (SDS's) were available at the Clinical Laboratory and were available for review. Observations at this area rendered no concerns.

5.9.3 Biomedical Waste Storage Area

At the time of the inspection, biomedical waste generated was stored in Biomedical Waste red bags and containers to be disposed with Stericycle Puerto Rico. Observations at the Biomedical Waste Storage Area rendered no concerns.

EPA Inspectors stated that expired medicines and/or pharmacy chemicals are always discarded as a Biomedical Waste. Some of the expired medications have hazardous waste characteristics and a proper hazardous waste determination must be made on expired medicines (see **Picture No. 152**). It was recommended that proper documentation should be maintained characterization of expired medicines as hazardous or non-hazardous wastes (i.e., biomedical wastes).

5.10 PHYSICS DEPARTMENT

5.10.1 Physics Laboratory Spectrometry (Geology) F-107

EPA RCRA inspectors proceeded to inspect this Geology Laboratory area. Ms. Yelitza Gonzalez, Laboratory Supervisor, served as the UPR Mayagüez Campus' representative and escort.

The EPA Inspectors observed the following at this location:

i. Two (2) 4-liter ambar container with a spent Phosphoric Acid (100%) inside a blue plastic bin, no labeled as “Unwanted Material”, dated with their accumulation start dates of July 18, 2003, and July 11, 2003, respectively, which exceeded over six months the LMP collection protocols (N/UM, D) (see **Picture No. 153**). In addition, both containers seemed abandoned and not being used, based onthe date posted on the containers.
ii. One (1) 4-gallon bucket with a spent vials containing Phosphoric Acid (100%), not labeled as “Unwanted Material” nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 154**).

iii. One (1) 250-ml Erlenmeyer flask and discarded vials containing Phosphoric Acid (100%) inside a blue plastic bin, not labeled as "Unwanted Material" nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 155**).

5.10.2 Physics Research Laboratory F-129

EPA RCRA inspectors proceeded to inspect this Physics Laboratory area. Mr. Omar Vazquez, Laboratory, Technician, served as the UPR Mayagüez Campus' representative and escort.

At the time of the RCRA Inspection, EPA Inspectors observed numerous expired chemicals (since before 2004), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more before 2004) in shelves without any physical means to protect each other from incompatibility of waste characteristics. As observed by EPA Inspector there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents. According to the Laboratory Technician, all these chemical reagents were not in use or discarded since years from 1970, 1980, and 1990 thru 2004 from various laboratory research seasons and were stored in this area and never declared as "solid waste material," or notified to the Health, Occupational and Environmental Safety Office (OPASO). There was no hazardous waste determination being performed on abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been managed under the Laboratory Management Plan.

The EPA Inspectors observed the following at this location:

i. At this laboratory the following chemical reagents, just to name a few, were found stored in a white solids' cabinet: sodium acetate, aluminium acetate, sodium sulfide, lithium hydroxide, tin (II) oxide, amonium hydroxide, demethyl carbonate, acetic acid glacial, propylene carbonate, toluene, oleylamine, 2-ethylhexanoic acid, acetonitrile, sulfuric acid, nitric acid, phosphoric acid, chloroform, silicone (IV) oxide, strontium carbonate, calcium nitrate magnesium carbonate, phosphoric pentaoxide, titanium (IV) oxide, triethylphosphine sulfide, boron oxide, lanthanum oxide, neodymium (V) oxide, bismuth metal, activated carbon, erbium (III) oxide, 4-aminobenzophenone, silicon (II) oxide, calcium carbonate, sodium dodecyl sulfate, zinc acetate anhydrous, cesium chloride, chromium metal, arsenic metal, fluorene, sodium hydroxide, potasium hydroxide, cupric oxide, magnesium carbonate, gadolinium acetate, zinc sulfide, sodium chloride, pentacene, lithium carbonate, magnesium chloride among many other chemical reagents (see **Picture No. 156**).
ii. Sodium hydroxide stored next to Polyvinylpyrrolidone; possible incompatible chemical reagents stored together without any mean of physical segregation. Sodium hydroxide should not be stored near acetaldehyde, acetic acid, hydrochloric acid, hydrofluoric acid, nitric acid, sulfuric acid, water, and other organics (see **Picture No. 157**).
iii. Potassium Acetate stored next to Iron Acetate "moisture sensitive" possible incompatible chemical reagents stored together without any mean of physical segregation. Iron Acetate is air sensitive and recommended to be stored under inert gas (see **Picture No. 158**).
iv. Potassium chloride stored next to Citric acid; possible incompatible chemical reagents stored together without any mean of physical segregation. Potassium chloride incompatible with acids, sulfuric acid, and citrates (see **Picture No. 159**).

v. At this laboratory the following chemical reagents, just to name a few, were found stored in a gray solids cabinet: Nitroaniline stored next to ammonium, and cobalt (II) chloride which turns pink on exposure to air and moisture sensible and should be stored under nitrogen. All these chemical reagents were stored together without any mean of physical segregation nor hazardous determination made on them (see **Picture No. 160**).
vi. In the gray solids' cabinet, there were unknown chemical reagents stored next to acids (i.e., tartaric acid, some seemed abandoned, not in use or stored in lieu of being disposed of as a hazardous (see **Picture No. 161**).
vii. In the gray solids' cabinet, there was Potassium dichromate (i.e., oxidizers), stored next to Strontium hydroxide (i.e., inorganic bases) possible incompatible chemical reagents stored together without any mean of physical segregation nor hazardous waste determination (see **Picture No. 162**).
viii. In the gray solids' cabinet, there was Lithium oxide stored next to Oxalic acid, and Lithium bromide (do nor store near acids nor bases) and Niobium (IV) oxide (i.e., oxidizers) possible incompatible chemical reagents stored together without any mean of physical segregation nor hazardous waste determination (see **Picture No. 163**).
ix. In the gray solids' cabinet, there was a bottle of Hydrofluoric acid, broken, and leaking acid on cabinet shelf stored next to Sodium bromide, Sodium thiosulfate (violently reacts with strong oxidizers, and acids) and Silica gel incompatible with HF, incompatible chemical reagents stored together without any mean of physical segregation nor hazardous waste determination (see **Picture No. 164**).

Table No. 6 summarizes the inventory of chemical solvents stored at the Physics Laboratory F-129 and recorded on March 10, 2023.

Table No. 6 - Inventory of Chemical Solvents Stored at Physics Laboratory F-129 March 10, 2023

Container Description	Container Size	Number of Containers	Status
Propylene Carbonate 99%	250.00 g	2	Shelved
Oleylamine tech. 70%	500.00 g	2	Shelved
Ammonium Hydroxide ACS 28-30%	1.00 kg	2	Shelved
Dimethyl carbonate 99%	500.00 g	2	Shelved
Acetic Acid Glacial	2.50 L	14	Shelved
Acetic Acid	2.5 L	3	Shelved

Acetic Acid Glacial 99.7%	2.00 L	1	Shelved
toluene	1.00 L	2	Shelved
Ammonium Hydroxide ACS 28-30%	1.00 kg	2	Shelved
2-ethylhexanoic acid 99%	4.00 L	2	Shelved
Dimethyl carbonate 99%	500.00 g	2	Shelved
Acetonitrile HPLC	1.00 L	2	Shelved
Sulfuric Acid 95-98%	1.00 kg	4	Shelved
Nitric Acid 69-70%	2.50 L	2	Shelved
Chloroform ACS 99.8+%	1.00 L	2	Shelved
Phosphoric Acid ACS 85%	1.00 kg	2	Shelved
Sulfuric Acid 95-98%	1.00 kg	4	Shelved

5.10.3 Physics Research Laboratory F-123

EPA RCRA inspectors proceeded to inspect this Physics Laboratory area. Mr. Omar Vazquez, Laboratory, Technician, served as the UPR Mayagüez Campus' representative and escort.

At the time of the RCRA Inspection, EPA Inspectors observed numerous expired chemicals (since before 1986), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more before 2004) in shelves without any physical means to protect each other from incompatibility of waste characteristics. As observed by EPA Inspector there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents. According to the Laboratory Technician, all these chemical reagents were not in use or discarded since years from 1970, 1980, and 1990 thru 2004 from various laboratory research seasons and were stored in this area and never declared as “solid waste material,” or notified to the Health, Occupational and Environmental Safety Office (OPASO). There was no hazardous waste determination being performed on abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been managed under the Laboratory Management Plan.

The EPA Inspectors observed the following at this location:

i. At this laboratory the following chemical reagents were stored in a blue cabinet identified as “Corrosive,” and included nitric acid, hydrochloric acid, phosphoric acid, Triton X-100 (octylphenol polyethoxyethanol), acetic acid anhydrous, hydrazine hydrate solution, aceti acid glacial, sulfuric acid, ammonium hydroxide, dimethyl carbonate (flammable), unknown corrosive

solvents, and an abandoned sodium metallic bar not totally submerged in an organic phase and not used since year 2004 (see **Picture No. 165**).

ii. The bottles of acid, flammable and reactive solvents were stored together and seemed very old, very dry, and potentially unstable; the bottles also had leaking metal lids, contained moisture, labels vanished, which introduced the possibility of violent chemical reaction, fumes generation and potential explosion. In addition, other potential for explosion was the abandoned metallic sodium bar found not totally submerged in oil. It was strongly recommended by EPA Inspectors to keep the submerge the metallic sodium in oil. It was also recommended to have an emergency environmental contractor to remove the metallic sodium which were no longer intended to be used (see **Picture No. 166**).

iii. One (1) 1-L ambar bottle containing Triton X-100, which is a nonionic surfactant that has a hydrophilic polyethylene oxide, harmful if swallowed, should not be stored together where strong acids can be inadvertently mixed or where a spill or leak can cause danger and possibility of hazardous reactions (see **Picture No. 167**).

iv. Three (3) 4-L ambar bottles containing Acetic Anhydride (Aceti Acid Glacial) in deteriorated conditions and labels being vanished, not in use and abandoned, not compatible with Sulfuric Acid (see **Picture No. 168**).

v. Two (2) 4-L ambar bottles containing Hydrochloric Acid in deteriorated conditions and labels being vanished (see **Picture No. 169**). I explained that Acetic Anhydride was not compatible with Hydrochloric Acid and should not be stored together where they can be inadvertently mixed or where a spill or leak can cause danger.

vi. One (1) 4-L ambar bottle Ammonium Hydroxide stored in the cabinet may read violently with strong acids such as hydrochloric, sulfuric, and nitric, dimethyl sulfate, halogens and an abandoned sodium metallic bar not totally submerged in an organic phase and not used since year 2004 (see **Picture No. 170**).

As warranted by the potential threat of potential releases or explosion (i.e., sodium metallic bar) of hazardous waste, and under the authority of the Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA), EPA included in Field Notice of Federal Interest (FNFI) to UPR Mayagüez Campus the Physics Laboratories requesting the responsible party to take corrective actions. Additionally, EPA Inspectors requested that hazardous waste be disposed of as required by RCRA requirements.

UPR-Mayagüez Campus' officials secured the sodium metallic bar and maintained personnel as well as professors and students away from the room. They coordinated with Stericycle Puerto Rico to assist with the control, transportation and properly disposition of the explosive material. Coordination for removal and disposal or any other approved disposal method will be performed under the oversight of the EPA OSC.

5.10.4 Physics Research Laboratories F-458, F-225, F-117C

EPA RCRA inspectors proceeded to inspect these Physics Laboratory areas. Mr. Omar Vazquez, Laboratory, Technician, served as the UPR Mayagüez Campus' representative and escort.

At the time of the RCRA Inspection, EPA Inspectors observed numerous expired chemicals (since before 2004), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more 2004) in shelves without any physical means to protect each other from incompatibility of waste characteristics. As observed by EPA Inspector there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents. According to the Laboratory Technician, all these chemical reagents were not in use or discarded since years from 1970, 1980, and 1990 thru 2004, from various laboratory research seasons and were stored in this area and never declared as "solid waste material," or notified to the Health, Occupational and Environmental Safety Office (OPASO). There was no hazardous waste determination being performed on abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been managed under the Laboratory Management Plan.

The EPA Inspectors observed the following at these locations:

i. At the Satellite Accumulation Area there were numerous (approximately over nine 9) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories not properly labeled as "Unwanted Materials," nor dated with its accumulation start date or segregated by compatible characteristics (N/UM, N/D) (see **Picture No. 171**).
ii. One (1) 4-liter ambar container with a spent Orthophosphoric Acid, next to one (1) 4-liter ambar container with a spent Chloroform, next to a high-performance liquid chromatography (HPLC) bottle labeled as "HPLC Grade 99.8%) and stored next to one (1) 4-liter crystal container with a spent Hydrochloric Acid. All containers were not labeled as "Unwanted Material" nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 172**).
iii. One (1) ½-liter ambar container with a spent Hydrogen Peroxide stored, next to one (1) 1-liter ambar container with a spent Octadecene, and next to one (1) 4-L Hexane. There are incompatible chemical reagents stored together without any mean of physical segregation. All containers were not labeled as "Unwanted Material" nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 173**).
iv. At this laboratory the following chemical reagents, just to name a few, were found stored in a white solids' cabinet: potassium iodide (corrosive), vinyl alcohol (flammable), malonic acid (corrosive), lithium metallic bar (reactive), thiourea (toxic), oleylamine (corrosive) among many other chemical reagents stored together in an incompatible manner where they could be inadvertently mixed or where a spill or leak can cause danger or explosion (see **Picture No. 174**).
v. One (1) 4-liter ambar container with a spent Ethanol mixed with water, abandoned in a laboratory sink and not labeled as "Unwanted Material" nor dated with its accumulation start date (N/UM, N/D) (see **Picture No. 175**).
vi. At this laboratory the following chemical reagents, just to name a few, were found stored in a yellow flammable cabinet: oleylamine (highly corrosive organic chemical), next to one (1) 4-L dimethylformamide (flammable), next one (1) 4-L hexane, next to one (1) 4-L hydrobromic acid (corrosive), next to one (1) 4-L hydrofluoric acid (corrosive) among many other chemical reagents stored together in an incompatible manner where they can be inadvertently mixed or where a spill or leak can cause danger or explosion (see **Picture No. 176**).
vii. At this laboratory the following chemical reagents, just to name a few, were found stored in a bone white solids cabinet: cadmium stearate (toxic) next to malonic acid (highly corrosive

organic chemical) among many other chemical reagents stored together in an incompatible manner where they can be inadvertently mixed or where a spill or leak can cause danger or explosion (see **Picture No. 177**).

viii. At this laboratory the following chemical reagents, just to name a few, were found stored in a white gray cabinet: sodium sulfite, activated carbon, flourene, yttrium nitrate (corrosive to skin and in contact an oxidizing agent may cause fire on contact with combustible material) stored next of potassium dichromate, and strontium hydroxide, strontium acetate, lanthanum chloride (react with water under fire conditions liberating flammable hydrogen gas) next to oxalic acid (corrosive), tritium nitrate (source of beta radiation), niobium(V) oxide (reacts with oxidizing agents and bases), silicon (IV) nitride (may emit toxic fumes of ammonia and ozone with acids may generate flammable hydrogen gas), lithium oxide (corrosive substance that can cause pulmonary edema), mercury oxide, boric acid (corrosive), phosphotungric acid (corrosive), sodium thiosulfate anhydrous among many other chemical reagents stored together in an incompatible manner where they can be inadvertently mixed or where a spill or leak can cause danger or explosion (see **Picture No. 178**).

ix. At this laboratory the following chemical reagents, just to name a few, were found stored in a white gray cabinet: mercuric choride (toxic and corrosive), zinc iodide (highly flammable may ignite spontaneously on contact with air and cause fire or explosion), chromium potassium sulfate (highly toxic), cesium iodide (highly toxic and reacts explosively with water even at low temperatures), ammonium chloride (corrosive), cesium chloride (reactive with the oxygen in the ai or water getting a very vigorous reaction), dimethyl naphthalene (very toxic), aminobenzene (highly flammable), ammonium oxide (can ignite and explode under certain conditions of containment), nitroaniline (toxic and flammable), tetramethylammonium chloride (toxic), sodium tartrate (reacts violently on contact with oxidizers and water), potassium dichromate,(oxidizer), arsenic acid (corrosive and very toxic), ammonium sulfate (toxic), ammonium monohydrogen (toxic), old can pails of molecular sieve, glycerine (flammable), tartaric acid (corrosive), rhodium metal among many other chemical reagents stored together in an incompatible manner where they can be inadvertently mixed or where a spill or leak can cause danger or explosion (see **Picture No. 179**).

x. At this laboratory Inspectors observed numerous expired chemicals (since before 2004), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more 2004) in shelves without any physical means to protect each other from incompatibility of waste characteristics (see **Picture No. 180**).

xi. At this laboratory the following chemical reagents were stored in a blue cabinet identified as “Corrosive,” and included one (1) 1-L bottle phosphoric acid (corrosive), and one (1) 1-L bottles hydrochloric acid (corrosive), next to two (2) 1-L bottles of hydrogen peroxide (oxidizer), and next of one (1) 1-L bottle sodium dodecyl sulfate (explosive - dust can form an explosive mixture in air) and not used since year 2004 (see **Picture No. 181**).

xii. At this laboratory the following chemical reagents were stored in a blue cabinet identified as “Corrosive,” and included two (1) 4-L bottle hydrochloric acid (corrosive), next to various bottles of ammonium hydroxide (avoid contact with hydrochloric acid which forms a chloramine toxic gas), potassium hydroxide (corrosive) not stored in a compatible manner and not used since year 2004 (see **Picture No. 182**).

xiii. At this laboratory the following chemical reagents were stored in a blue cabinet identified as "Corrosive," and included one (1) 4-L bottle and various containers with phosphoric acid (corrosive), next to a bottle of nitric acid, next to chromium solution (toxic) and vanadium metal solution (toxic) not stored in a compatible manner and not used since year 2004 (see **Picture No. 183**).

xiv. At this laboratory the following chemical reagents were stored in a blue cabinet identified as "Corrosive," and included two (2) 4-L bottle with hydrochloric acid (corrosive), next to a one (1) 4-L with acetic acid (corrosive but not compatible with inorganic acids), next of one (1) 4-L bottle of ammonium hydroxide (reactive), next to one (1) bottles of acetone (flammable) not stored in a compatible manner and not used since year 2004 (see **Picture No. 184**).

Table No. 7 summarizes the inventory of chemical solvents stored at the Physics Laboratory F-458 and recorded on March 10, 2023.

Table No. 7 - Inventory of Chemical Reagents Stored at Physics Laboratory F-458 March 10, 2023

Name	Grade	Amount
Acetone	Histological grade	4L
Acetone	HPCL grade	4L x 6 bottles
Acetone	Certified	4L
Acetic Acid GR		2.5L
Aqua day Colloidal Graphite		50g
Aluminum Flux Paste		1L
Aluminum oxide	99.8%	500g x 2 bottles
Aluminum oxide	99.999%	25g
Ammonium Hydroxide ACS	28-30%	250g
Antimony (III) oxide	0.99999	25g
Balsam Canada	99.8%	25g
Barium carbonate	99.8%	1Kg
Barium carbonate	99.98%	25g
Barium carbonate	99.997%	100g

Barium carbonate	99.98%	100g
Barium carbonate	99.999%	25g
Barium carbonate	99.8%	1Kg
Barium titanate		25g
Barium titanate (IV)	Powder 99%	100g
Bismuth oxide Bi 20	99.975%	250g
Boric Acid	Certified ACS	1 L
Boric Acid	Regent ACS	1 L
Boron	99.999%	5g
Boron oxide	99.98%	I 00g x 3 bottles
Boron Nitride		10g
Cadmium nitrate tetrahydrate	98%	75g
Cadmium nitrate tetrahydrate	98%	100g
Cadmium oxide	99.95%	500g
Cadmium selenide	Phosphor grade 99.99%	50g
Cadmium sulphide	Phosphor grade 99.99%	50g
Cadmium telluride	99.99+%	5g
Calcium Carbonate Precipitate Light powders		500g
Calcium Oxide	Purified	100g
Calcium Oxide	99.9995%	50g
Carbonate de Potasium	Analysis	
Carborundum		
Cellulose powder		500g

Cerium (III) 2-ethylhexanoate Ce (OOCC7Hl 5)		100 ml
Chromic-Sulfuric Acid		IL x 2potes
Chromium, AAS Standard Solution Crim 5% HCL Cr 1000ug/ml		100ml
Chromium, Powder	99.9%	1oz
Chromium plates	99.2%	2 run thick, 100g
Chromium (III) oxide	99.995%	25g
Chromium (III) oxide	99.995%	100g
CA-10 Conductive Adhesive Part "A"		
CA-10 Conductive Adhesive		
Copper Chloride	99+%	25g
Copper oxide	99.99%	10g
Copper oxide	97%	25g
Copper (II) oxide	99.99+%	10g
Copper (II) oxide	99%	100g x 3potes
Copper (II) oxide	99.99+%	500g
Copper (II) oxide	99.995%	500g
Copper (II) oxide	98%	500g
Cupric Sulfate	N.F. Crystals	1 Lb
Cupric Sulfate	Certified A.C.S.	500g
EPO-TEK 419 Pail "A"		
EPO-TEK 920 Part "B"		
Erbium (III) oxide	99.99+%	5g

Ethyl-alcohol reagent, denature	Analytical	4L x3potes
Ethyl-alcohol reagent, denature	Analytical	500ml
Europium (III) oxide	99.999%	*Sg*
Fullerene Powder C 60	99.5%	5g
Gadolinium (III) oxide	99.9%	25g
Gadolinium (III) oxide	99.99+%	
Gallium Ingot	99.99%	5g
Gallium isopropoxide	99%	5g
Gallium (III) Nitride	99.99%	10g
Gallium Oxide	99.99%	lg x 2 cans
Gallium (III)Oxide	99.999%	5g
Germanium Dioxide	99.99%	1oz
Germanium oxide GeO_2	Ultrapure	25g
Germanium Pieces	99.9999+%	5g
Germanium Powder	99.999%	10g
Germanium Lump	99.99%	5g
Glycerine		8oz
Gold powder	99.9%	500mg
Hafnium oxide	98%	10g
HF Diluted Used		2.5L
Hydrochloric Acid	Reagent A.C.S.	2.5L x 4 bottles
Hydrochloric Acid		2.5L
Hydrofluoric Acid	48-51%	500ml
Inigo, Synthetic	95%	.25g

Indium Bar	99.999+%	25g
Indium isopropoxide	5%W/V	25ml
Indium, foil	0.99999	1.0mm
Indium Nitride	99.8%	5g x2 bottles
Indium (III) oxide	99.995%	10g
Indium (III) oxide	99.999%	10g
Indium in D Alloy Flux #2		
Indium-tin Oxide	99.99%	20g
Indigo, Synthetic	95%	25g
Iron Metal		4oz
Lanthanum 2-ethylexanoate		100 ml
Lead (II) oxide	99.9999%	25g
Lead (II) oxide	99.9%	500g
Lead (II) oxide	99.99+%	250g
5-methyl-2-pynolidinone	98%	l0g
Molybdenum metal powder		
Molybdenum metal powder	99.8%	28g
Niobium, AAS standard solution NbCl in 2%HF Nb 1000ug/ml		100ml
Niobium, foil	0.998	0.25mm
Niobium (V) oxide	99.99%	50g
Nb_2O_5, Niobium (V) oxide	99.9+%	500g
Niobium powder	99.8%	100g
Nitric Acid (NH_4OH) Diluido Usado		2.5L

Nitric Acid		2.5L
Palladium Black		lg
Paraffin wax		1Kg
Phosphoric Acid	85% HPLC Grade	500ml
Phosphorus Pentoxide	99.98%	25g
Platinum	0.9999	2.00x0.125
Platinum, foil	0.9999	0.25mm thick
Poly-Flux		2oz
Polymer for lead zirconate-titanate		
poly (methyl-methacrylate)		500g
Polyvinyl alcohol	98-99%	100g
Potassium, AAS Standard Solution l000ug/ml KNO3 in 5% HNO3		100ml
Potassium Bromide		25g
K_2CO_3, Potassium carbonate	ACS, 99.0%	500g
K_2CrO_4, Potassium chromate	ACS, 99.0%	100g
Potasium carbonate, Potasium dichlormate		100 g
Potassium Nitrate A.C.S Regent		500g
Potassium niobium oxide $KNbO_3$	99.999%	100g x 3bottles
Potasium tantalum oxide $KTaO_3$	99.998%	25g x 4 bottles
Potassium isopropoxide KOC_3H_7	99%	100ml x 2bottles
Potassium niobium isopropoxide KNb (OC3 H)$_6$	99%	100ml x 2 bottles

Potassium nitrate	Certified	500g
Potassium nitrate crystal		500g
Potassium superoxide powder		50g
$KTa(OC_3H/)_6$	0.99	1
Potassium tantalum isopropoxide	99%	100ml
$KtaO_3$, Potassium tantalum oxide	0.99998	25g x 9 bottles
Praseodymium (III, IV) oxide	99.999%	10g
2-propanol	Optima	4L x 3bottles
2-propanol	Certified A.C.S.	4L x 8 bottles
2-propanol	HPCL grade	4L x 2 bottles
Pyrolytic Graphite	0.99999	2 x 0.25g
Rhodium metal		lg x 3potes
Selenium powder	99.5%	50g
Silica gel		l Lb
Silica gel		2.5Kg
Silica gel		1Kg
Silica Powder		SL
Silicon	0.99999	2x0.25
Silicon carbide		250g
Silicone oil		37oz
SiO_2 Silicon (IV) Oxide	99.5%	2Kg
Silicon (IV) oxide	Grade 1	100g
Silver Conductive Paint		3oz

Silver Brazing Flux		3oz
Sodium chloride crystal	Certified A.C.S.	500g
Sodium Hydroxide	Certified A.C.S.	500g
Sodium nitrate	A.C.S. reagent	500g
Sodium nitrate	A.C.S. 99.0%	250g
Spectrum Diamond Lapping Oil		16oz
Spectrum Thinner solvent for use whit diamond Lapping oil		1.6oz
Stearic acid	analysis	500g
Stearic acid		8 x 2 bottles
$SrCO_3$, Strontium carbonate	99% (Bal%)	1Kg x 2
Sulfuric Acid		2.5L
Sulfuric Acid Used		2.5L
Sulphur powder		500g
Tantalum	0.9995	2 x 0.25g
Tantalum AAS standard solution Ta 1000ug/ml		100ml
Tantalum, foil	0.999	0.5mm
Tantalum(V) oxide	0.99	50g
Ta_2O_5, Tantalum (V) oxide	0.9995	100g
Tantalum powder	99.98%	25g
Tellurium Powder	99.8%	100 g
Terbium (III, IV) oxide	99.999%	2g
o-Terphenyl	99%	100g
m-Terphenyl		100g

p-Terphenyl	99%	100g
Thulium oxide	99.99%	lg
Tin		
Tin (IV) oxide	99.9%	100g
Tin (IV) oxide	99.995%	25g
Titanium oxide (TiO_2)		75g
Titanium (IV) oxide	99.99%	25g
Titanium (IV) oxide	99+%	100g
Toluene	Certified A.C.S.	4L
Trichloroethylene	Certified	4L x 3 bottles
Trichloroethylene	Stabilized	4L
1,1,1- Trichloroethylene	Stabilized	4L x 4 bottles
Tungsten	99.95	
Tungsten metal powder	Purified	113g
Vanadium AAS Standard Solution V-20 in 5% HNO3 V 1000ug/ml		100ml
Vanadium (V) Oxide	99.6%	100g
Vanadium pieces	99.7%	10g
Watch oil	99.5%	10g
Wood's Metal Alloy Sticks		
Yttrium oxide	99.9999%	50g
Yttrium oxide	99.99%	50g
Yttrium oxide	99.99%	250g

Zinc isopropoxide **Zn ($OOCCH_{15}$)0.1(OC_3H1)1.9**		100ml x 2 bottles
Zinc Metal	Certified A.C.S.	500g
Zinc oxide	99%	500g
Zinc selenide	99.99%	10g
Zinc sulfide	99.99%	100g
Zirconium oxide	purified	113g
Ytterium oxide	Certified A.C.S.	bag

As warranted by the potential threat of potential releases or explosion (i.e., nitric acid, ammonium hydroxide, lithium metallic bar, sulfuric acid, zinc oxide, hydrogen peroxide, sodium dodecyl sulfate) of hazardous waste, and under the authority of the Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA), EPA included in the Field Notice of Federal Interest (FNFI) to UPR Mayagüez Campus Physics Laboratories, requesting the responsible party to take corrective actions. Additionally, EPA Inspectors requested that hazardous waste be disposed of as required by RCRA requirements.

UPR-Mayagüez Campus' officials secured the nitric acid, ammonium hydroxide, lithium metallic bar, sulfuric acid, zinc oxide hydrogen peroxide, sodium dodecyl sulfate and maintained personnel as well as professors and students away from the room. They coordinated with Stericycle Puerto Rico to assist with the control, transportation and properly disposition of the dangerous and explosive material. Coordination for removal and disposal or any other approved disposal method will be performed under the oversight of the EPA OSC.

5.11 BIOLOGY DEPARTMENT

EPA Inspector met Dr. Benjamin Van Ee, who is the Director of the Biology Department. Dr. Benjamin Van Ee served as the UPR Mayagüez Campus' representative and escort. The biology building has four (4) stories. There are Biology Laboratories in each floor. The building has twelve (12) academic classrooms and thirteen (13) investigation research laboratories.

5.11.1 Teaching Laboratory B-020

EPA Inspectors proceeded to inspect this Teaching Laboratory area. Ms. Damaris Santiago, EH&S from Health, Occupational and Environmental Safety Office (OPASO), also served as the UPR Mayagüez Campus' representative and escort. In this Teaching Laboratory students perform evaluations of plant tissues under microscope with iodine. and safranin, a biological stain which is used to identified dense vs.

non dense tissues. According to Mr. Van Ee, Director Department, most unwanted materials are vegetative.

The EPA Inspectors observed the following at this location:

i. A refrigerator with chemical reagents such as phytagel-plant cell culture (tested powder), albumin, saccharose, fructose, hematoxylin, glucose, and kinetin solution (see **Picture No. 185**).
ii. On a testing table, EPA Inspector observed iodized salt, NAOH liquid solution, and HCl stored next to each other (see **Picture No. 186**).
iii. On shelf car numerous bottles of benedict solution.
iv. A tissue culture chemical cabinet with three (3) shelve subdivisions containing buffer solution, citric acids, glycerin, amino-3 acetic acid paste, iodine, citric acid monohydrate, D-Sucrose. All these chemicals were in small quantities, and some were leaking.

At the time of the RCRA Inspection, EPA Inspectors observed various expired chemicals (since before2010 and 2018), discarded, unlabeled, contaminated, leaking, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more before 2010) in shelves without any physical means to protect each other from incompatibility of waste characteristics (see **Picture No. 187**). As observed by EPA Inspector there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents.

It was recommended by EPA Inspectors to re-evaluate and re-organize reagent compatibility and proper storage and disposal if the reagents were not in use instead of being abandoned. Some of the chemical reagents were unlabeled, leaking and with roughly dated as 2009 and 2010.

5.11.2 Microscopy Research Laboratory B-026

RCRA Inspectors proceeded to inspect this Microscopy Research Laboratory area. In this laboratory, students perform tissue dehydration, tissue population, microtome for fine cut tissue and dissect or stain.

The EPA Inspectors observed the following at this location:

i. A yellow cabinet identified as “Flammable” with an inventory list of chemicals reagents.
ii. Inside this cabinet there were numerous reagent bottles in the first shelf labeled as methanol, butanol, ethanol, propanol, ethyl alcohol, sodium sulfite, paraffin oil, mercuric iodine red and buffer solution non compatible (i.e., Acetic Acid Glacial, Ethanol, Sodium Sulfite, and Mercury Iodide) (see **Picture No. 188**).
iii. In the second shelf had a box of ethyl alcohol 190 proof containing four (4) 1-gallon bottles, and a smaller box containing a yellow buffer solution. Also, behind the boxes there were glass bottles of ethanol and acetic acids (see **Picture No. 189**).
iv. The third and last shelves contained twelve (12) glass 1-gallon bottles of cadmium 10ppm solution.

v. In an extractor hood there was one (1) 1-liter plastic bottle with "COTEX" labeled as "Hazardous Waste'" and dated with its accumulation start date of August 2019 (over 4-5 years old) (see **Picture No. 190**)

At the time of the RCRA Inspection, EPA Inspectors observed various expired chemicals (since < before 1999 and 2001), discarded, unlabeled, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more 1999) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., Benzoic Acid vs. Nitroaniline) (see **Picture No. 191**).

5.11.3 Molecular Investigation Laboratory (Biotechnology) B-073

EPA Inspectors proceeded to inspect this Molecular Investigation Laboratory (Biotechnology) area. In this laboratory students perform genetic extraction, extraction, purification, and amplification of DNA. Most cabinets have their inventory list of chemical reagents posted.

The EPA Inspectors observed the following at this location inside brown cabinets:

Cabinet No. 1 (Three shelves)

i. In the first shelf had numerous small cap glass bottles with acid fuchsin, amino black 106, Anilin, Bismarck Brown, Carmine Rubrum.
ii. In second shelf had crystal violet, Eosin Y certified, Fast green, Giemsa Stain, hematoxylin, mercury, and methylene.
iii. In the third shelf had single orange stain, pararosaniline, safranin, Sudan IV, and orcein.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were deteriorated, leaking, corroded, and spilling its content (see **Picture No. 192**).

Cabinet No. 2 (Three shelves)

i. In the first shelf had numerous small cap bottles with algae destroyer, 1-Benzylaminopurine, boileezers (dated May 20, 2000), carbowax, and activated charcoal.
ii. In the second shelf had gum mastic, gelatin, indole-3-acetic acid, maltose, molecular sieve 5A refill kit, nutrient algae, osmometric standard solution.
iii. In the third shelf contained KCL solution, sodium chloride, sucrose, lab-metal paste, urea ACS reagent, gel mount.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were deteriorated, leaking, corroded, and spilling its content. In addition, there was one empy bottle labeled as "Hazardous Wastes" that was removed at the time of the EPA Inspection (see **Picture No. 193**).

Cabinet No. 3 (Three shelves)

i. The first shelf had sodium phosphate monobasic-monohydrate bottle, sodium phosphate, and sodium thiosulfate pentahydrate.

ii. The second shelf had TRITON X-100 wetting agent (i.e., Corrosive, and Flammable violent reaction with oxidizers and acids and vapours can form explosive mixtures with air), and uranyl acetate dihydrate reagent (i.e., Radioactive and waste disposal are regulated as radioactive waste).
iii. The Third shelf was mostly empty. It only contained a carboard box.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were deteriorated with vanished labels, corroded, and spilling its content. In addition, there were chemical reagents stored for a very long time (i.e., over a year or more November 1, 1992) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., TRITON-100 corrosive vs. Uranyl Acetate-radioactive) (see **Picture No. 194**).

Cabinet No. 4 (Three shelves)

i. The first shelf had a box with plus embedding kit of solution a, b and catalyst, as second box with JB-4 Plus S Embedding Kit containing benzoyl peroxide catalyst, small cap bottles of Lacmoid, magnesium sulfate, a box of mercuric chloride reagent, another small cap bottle of manganese sulfate, three (3) bottles of methyl benzoate reagent.
ii. The second shelf had nadic methyl anhydride glass bottle, another glass bottle with paraformaldehyde, and a plastic bottle with paraformaldehyde.
iii. The third shelf had a glass bottle labeled as paraldehyde, another with sodium acetate, sodium bicarbonate, and sodium meta-bisulfite.

At the time of the RCRA Inspection, EPA Inspectors observed that this cabinet was identified as toxic and irritant chemicals. Some of the chemical reagents were deteriorated with vanished labels, corroded, and spilling its content. In addition, there were chemical reagents stored for a very long time (i.e., expiration date April 2015) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., Benzoyl Peroxide – Reactive strong oxidizer which may explode if exposed to heat, shock, or friction vs. Methyl Benzoate-Flammable) (see **Picture No. 195**).

Cabinet No. 5 (Two shelves)

i. The top shelf had one (1) 5-gallon container of ethyl alcohol, eosin Y, chloroform reagents, few bottles of ethyl alcohol 200 proof, permount mounting medium containing toluene.
ii. The bottom shelf had ethanol anhydrous, formalin, toluene, xylene, tert-butyl alcohol, and ethyl alcohol.

At the time of the RCRA Inspection, EPA Inspectors observed that some of the chemical reagents were deteriorated with vanished labels, corroded, spilling its content and stored for several years and without segregation(see **Picture No. 196**).

Cabinet No. 6 (Three shelves)

iii. The top shelf hadone (1) 5-gallon container of ethyl alcohol, eosin Y, chloroform reagents, few bottles of ethyl alcohol 200 proof, permount mounting medium containing toluene.

iv. The bottom shelf had ethanol anhydrous, formalin, toluene, xylene, tert-butyl alcohol, and ethyl alcohol.

At the time of the RCRA Inspection, EPA Inspectors observed that some of the chemical reagents were deteriorated with vanished labels, corroded, spilling its content, and stored for several years and without segregation (see **Picture No. 196**).

5.11.4 Biology General Storage Room B-086

EPA Inspectors proceeded to inspect this General Storage Room area. In this room most chemical reagents purchased by the Biology Department are stored in this room in cabinets and supplied to biology laboratories. Most cabinets have their inventory list of chemical reagents posted.

The EPA Inspectors observed the following at this location inside brown cabinets:

Cabinet No. 1 (Three shelves)

i. The first shelf had magnesium sulfate heptahydrate, agarose, amonium acetate, sodium disulfate, black K salt, L-Ascorbic sodium salt, dimethylglyoxime, and Coomassie brilliant blue reagent.
ii. The second shelf had containers of sodium chloride, ammonium sulfate, glycerol, cetyltrimethylammonium bromide, polyvinylpyrrrolidone K30, sea sand, agarose, histidine, L-ascorbic acid sodium salt, granulated peptone.
iii. The third shelf had ultra-pure agave, tri bas crystalline powder, polyvinyl pyrrolidone, agarose, sucrose, sodium dodecyl sulfate, sodium chloride, and MES.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for a very long time (i.e., over a year or more before October 20, 2015) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., Glycerol-Flammable vs. Ammonium Sulfate-Toxic) (see **Picture No. 197**). In addition, in another cabinet there were other chemical reagents stored in shelves without any physical means to protect each other from incompatibility of waste characteristics deteriorated, leaking, corroded, and spilling its content including Lithium Hydroxide (i.e., highly Corrosive chemical which direct contact can severely irritate and burn the skin and eyes leading to eye damage) next to Potassium Cyanide (i.e., highly toxic and exposure to potassium cyanide can be rapidly fatal) (see **Picture No. 198**).

Cabinet No. 2 (Three shelves)

i. The top shelf was identified as irritant and corrosive chemical reagents. This shelf contained potassium phosphate plastic bottles, citric acid (monohydrate), citric acid (anhydrous), and chlorosuccinimide.
ii. The second shelf was identified as health hazardous and toxic chemical reagents. This shelf contained: MOPS (99.5%), lithium chloride, sodium phosphate, potassium phosphate, Trizma hydrochloride, boric acid, sodium carbonate and hypoxanthine.
iii. The third shelf was identified as irritant and corrosive chemicals. This shelf contained unreadable chemicals, sodium chloride, sodium phosphate, urea, polyethylene glycol,

hydrochloride reagent, sodium hydroxide, potassium iodine and another unreadable chemical.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for a very long time (i.e., over a year or more before November 2006) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., Glycerol-Flammable vs. Sodium Hydroxide-Corrosive dated year 2006) (see **Picture No. 199**).

Freezer Storage Compartment

i. Inside the freezer compartment, EPA Inspectors observed a box with testing tubes. Next to the freezer compartment there was one (1) five 5-gallon container labeled as "Hazardous Waste," not dated with its accumulation start date or waste content information (see **Picture No. 200**).

Cabinet No. 3 (Three shelves)

i. The top shelf was identified as General Storage for Tissue Culture Chemicals. It contained Casein hydrolysate, amylose, nicotinic acid, pyridoxine plus HCL, Gelzan (dated January 14, 2009) and adenine sulfate.
ii. The second shelf was also identified as General Storage. It contained bacteriological grade peptone, 1-naphthaleneacetic acid 97% (dated January 14, 2009), cholesterol, TWEEN 20 polysorbate, phytagel, plant cell culture tested powder, and dimethyl sulfoxide (dated June 2011).
iii. The third shelf was identified as irritant-toxic-corrosive. It contained L-arginine (the container was wet at the bottom, but it could not be determined what was leaking), paromomycin sulfate, pyridoxine chloride, putrescine dihydrochloride. At the very back of the shelf it was observed a very rusty can labeled Melittin, from Bee Venon (approximately 70% for HPLC) with evident signs of leaks. The shelf was completely spilled with the leak solution (see **Picture No. 201**).

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for a very long time (i.e., over a year or more before January 14, 2009) in shelves without any physical means to protect each other from incompatibility of waste characteristics (i.e., TWEEN 20 very Flammable vapours which are heavier than air and may spread near ground to sources of ignition vs. Dimethyl Sulfoxide can produce an explosive reaction when exposed to chlorides vs. 1-Naphthaleneacetic Acid 97% Corrosive – Year 2009) (see **Picture No. 202**).

5.11.5 Biology Chemical Reagents Storage Room

EPA Inspectors proceeded to inspect this Chemical Reagents Storage Room area. In this room is where most chemical reagents purchased by the Biology Department are stored in this room in cabinets and supplied to biology laboratories. Most cabinets have their inventory list of chemical reagents posted on the doors of the cabinets.

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.11.6 Biology Biohazard Chemical Reagents Storage Room B-085

EPA Inspectors proceeded to inspect this Biohazard Chemical Reagents Storage Room area. In this room is where Biohazard chemical reagents are stored to supply biology laboratories.

Observations at this area rendered no concerns regarding the generation or management of unwanted waste or hazardous wastes.

5.11.7 Biology Explosive Chemical Reagents Storage Room B-089

EPA Inspectors proceeded to inspect this Explosive Chemical Reagents Storage Room area. In this room is where Explosives are stored. We met Mr. Donato Segui, who is the person in charge and hold the explosive license No. 030-0017-0000 with expiration date of March 15, 2023. The explosive cabinet had an inventory list of chemical reagents posted on the door.

The EPA Inspectors observed the following at this location inside the cabinets:

Cabinet No. 1 (Two shelves)

i. In the first shelf had two (3) 1-liter plastic bottle of sodium hydroxide.
ii. In the second shelf had two (3) 1-liter and ½ -liter ambar plastic bottle of ammonium hydroxide.

At the time of the RCRA Inspection, EPA Inspectors observed that the cabinet was identified as "Flammable," instead of "Explosive," and some chemical reagents stored in the cabinets did not match with what it was inside the cabinet containing ammonium hydroxide and nitric acids (see **Pictures No. 203** and **204**).

5.11.8 Biology Academic Laboratories B-120-121

EPA Inspectors proceeded to inspect these Biology Academic Laboratory areas. In this laboratory students perform general biology experiments as complement of biology academic lectures. Most cabinets have their inventory list of chemical reagents posted.

The EPA Inspectors observed the following at this location inside extractor hoods and cabinets:

i. Various corroded chemical reagent containers.
ii. Worn dye pots with advanced deterioration.
iii. Numerous hazardous waste materials and non-hazardous waste materials in cabinets without proper identification, labeled or dated as required by Subpart K Laboratory Management requirements.
iv. Various chemical reagents not segregated by compatibility characteristics posing a risk to students and academic lectures.

v. Chemical reagent materials not in use and stored for a very long time that must be discarded in lieu of being abandoned.
vi. Chemical reagents not stored by compatibility characteristics.
vii. Numerous chemical reagents with expired dates.
viii. The use of trays, plastic bags or absorbent paper in cabinets without proper identification and management of content or residues.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for several years in shelves without any physical means to protect each other from incompatibility of waste characteristics. There were no unwanted materials or at least not properly identified in the Biology Academic Laboratories.

5.11.9 Parasitology Research Laboratory (Aquatic Biology) B-137

EPA Inspectors proceeded to inspect this Parasitology Research Laboratory and were introduced to Mr. Sean Locke, Associate Professor, and Mr. Carlos Santos Flores, Professor. In this laboratory students perform live animal dissection for histology and molecular biology investigation. They explained that they do have hazardous material which are flammable, and that they do not generate hazardous waste. They have a yellow metal cabinet for hazardous material storage and inside the cabinet EPA Inspector observed the Hydrogen Peroxide, Permount, Hydrochloric Acid, Ethanol, and Mineral Spirits.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for several years in shelves without any physical means to protect each other from incompatibility of waste characteristics. There were no unwanted materials or at least not properly identified in the Aquatic Biology Laboratory.

5.11.10 Microbiology Research Laboratory B-266

EPA Inspectors proceeded to inspect this Microbiology Research Laboratory area and were introduced to Mr. Carlos Rios Velazquez. Mr. Rios is the laboratory Professor of Microbial Microbiology and Microbial Protection, Gene Cloning and Genetics. Accordingly, in this laboratory hazardous material and hazardous wastes are stored and generated from microbiology research.

The EPA Inspectors observed the following at this location inside extractor hoods and cabinets:

i. Storage of unwanted material in a tray containing one (1) 1-gallon glass bottle with HCL (dated: January 29, 2022) and one (1) 1-gallon glass bottle with Chloroform (dated: July 12, 2022).
ii. On a wall there were three (3) storage cabinet of chemical reagents. The cabinet were identified with color codes (blue, brown, white). According to the legend posted on the cabinets; red is for Flammable, blue is for Health Hazards, yellow is for Reactive and Oxidizing reagents, white is for Corrosive and brown for Moderate Hazard.
iii. Another chemical reagent storage shelves with five characteristic subdivisions with color coded.
iv. There was one more cabinet identified as “acid danger and flammable liquids” Each door contained two subdivisions. The one that read acid danger contained hydrochloride solution,

acetic acid, acetic anhydride, perchloride acid, trifluoroacetic acid. The second door contained dehydrated alcohol, chloroform, N, N-Dimethyl Formamide, amyl alcohol, xylenes, red solution, ethyl alcohol and ethanol.

v. Last wall shelves also identified with blue color codes contained biological and chemical reagents.
vi. There was one small yellow metal cabinet identified as Flammable. Inside it had: 2-propanol, alcohol, methanol, isopropyl alcohol, and ethanol.

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for several years in shelves without any physical means to protect each other from incompatibility of waste characteristics. There were unwanted materials not properly labeled or dated with their accumulation start date or at least not properly identified in the Microbiology Laboratory.

5.12 AGRICULTURAL SCIENCES DEPARTMENT – JESUS T. PIÑERO

5.12.1 Plant Physiology Research Laboratory

EPA Inspectors proceeded to inspect this Plant Physiology Research Laboratory area. In this laboratory there was a cabinet containing numerous of chemical reagents that were used for various plant and physiology testing. One of the cabinets was identifies as "Physiology of Plant Reactive." The cabinet had six shelves (see **Picture No. 205**).

The EPA Inspectors observed the following at this location inside cabinets:

Cabinet No. 1 (Six shelves)

i. The first shelf had numerous unreadable chemical reagents.
ii. The second shelf there were Sodium oxolate, zinc chloride, potassium chloride, sulfate, malolactic acid.
iii. The third shelf contained ammonium sulfate, and potassium phosphate dibasic powder,
iv. In the fourth shelf from contained potassium phosphate dibasic powder, potassium phosphate monobasic powder, and cupric sulfate reagent.
v. The fifth shelf there were numerous chemical reagents, all were unreadable with vanished or missing labels.
vi. In the sixth and bottom shelf there were cardboard boxes with supplies.

At the time of the RCRA Inspection, EPA Inspectors observed inside an Extractor Fume Hood that it was identified as Satellite Accumulation Area (SAA) holding hazardous waste. Inside the hood there was one (1) 1-gallon glass container labeled unwanted material with a contact telephone number and accumulation start date of September 2022, but it didn't provide the content information inside the glass bottle (see **Picture No. 206**).

5.12.2 Phytopathology Research Laboratory AP-102

EPA Inspectors proceeded to inspect this Phytopathology Research Laboratory area. In this laboratory students conduct studies on biology of fungi, Oomycetes, and bacteria, with the aim to understand and predict their functioning in agricultural and natural ecosystems.

The EPA Inspectors observed the following at this location inside refrigerators and storage cabinets:

i. Inside one of the refrigerators there were stored, with sodium glass bottles dated February 2011, sodium hydroxide and acid solutions, and solution B Griess glass bottles (see **Picture No. 207**).
ii. Inside a 5-shelfe gray cabinet there were gloves, microscope slides, two shelves contained nutrient broth bottles, nutrient agar, maltose agar, BD™ Bacto™ Tryptic Soy Broth (Soybean-Casein Digest Medium), agarose, benzoic acid, glucose anhydrous, calcium chloride, pectin, glycerol, beef extract, boric acid, 2,6-dichloro-4-nitroaniline (i.e., "Combustible." many reactions may cause fire or explosion) , and N-Lauroylsarcosinate (sodium salt) (see **Picture No. 208**).
iii. Inside in an extractor fume hood, there were glass bottle containing Amina stored with glycerol in plastic bottles, permethrin in glass bottle, distilled water in glass bottle, glycerol diluted in glass water, and formaldehyde in glass bottles (see **Picture No. 209**).

5.12.3 Nematology Research Laboratory AP-103

EPA Inspectors proceeded to inspect this Nematology Research Laboratory area. In this laboratory students study the biology of nematodes, and associated organisms, to understand and predict their functioning in agricultural and natural ecosystems.

The EPA Inspectors observed the following at this location inside an extractor fume hood and storage cabinets:

i. Inside the extractor fume hood there were two (2) 5-gallon white plastic containers and a five (5) gallon container used for the storage of hazardous waste generated at the laboratory. At the time of the RCRA Inspection one container was empty and the other did not identify its residual content nor labeled as "Hazardous Waste," or date with its accumulation start date (see **Picture No. 210**).
ii. Inside the extractor fume hood there three (3) 200-g bottles with discarded reagents without any hazardous determination or characterization as, "Hazardous Waste," or "Unwanted Wastes" as required by the RCRA Subpart K, Management of Laboratory Wastes (see **Picture No. 211**).

5.12.4 Entomology Research Laboratory AP-100

EPA Inspectors proceeded to inspect this Entomology Research Laboratory area. In this laboratory students work on the physiology of insect/plant interactions and the ecology of parasite/host and predator/prey interactions.

The EPA Inspectors observed the following at this location inside an extractor fume hood and storage cabinets:

i. Inside an extractor fume hood there were three (3) 1-gallon crystal containers containing radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," being stored for years without no hazardous waste determination made on them nor managed as hazardous waste due to its radioactive-corrosive hazard content (see **Picture No. 212**). According to Ms. Maria Fernández from the Health, Occupational and Environmental Safety Office, and as previously discussed, there are no Hazardous Waste Disposal Contractor in the Island that would transport or dispose of radioactive waste and that is the reason those wastes have been stored for years (see **Picture No. 213**).
ii. Inside a plastic tray there were three (3) 50-ml (30-g) crystal containers containing radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," being stored for years without no hazardous waste determination made on them nor managed as hazardous waste due to its radioactive-corrosive hazard content (see **Picture No. 214**).

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for a very long time in shelves without any physical means to protect each other from incompatibility of waste characteristics including radioactive-corrosive wastes. There were unwanted materials not properly labeled or dated with their accumulation start date or at least not properly identified in the Agricultural Laboratories.

5.13 MECHANICAL ENGINEERING DEPARTMENT – LUCHETTI BUILDING

EPA Inspectors met Ms. Zilma Poueymirou of the Mechanical Engineering Department. Ms. Poueymirou is the Scientific Investigation Technician who was in charge of the laboratory at the time of the RCRA Inspection and served as the UPR Mayagüez Campus' representative and escort. The Luchetti Building has one (1) academic teaching laboratory and four (4) investigation research laboratories.

5.13.1 Metallurgy Research Teaching Laboratory L-240

EPA Inspectors proceeded to inspect this Metallurgy Teaching Laboratory area. Ms. Poueymirou explained that most of the testing they perform at the laboratories is related to metallurgy analysis. Usually, they conduct edging oxidation reactions to observe behavior of structure materials by using chemical reagents such as Nitric acid, Hydrochloric Acid, Ferric Chloride, Methanol, Ethanol among other chemical analysis.

The EPA Inspectors observed the following at this location inside extractor fume hoods and storage cabinets:

i. On a bench working area there were small Erlenmeyer's beakers with metals (steel, aluminum, and brass) submerged in various etching solutions of ferric chloride, hydrochloride acid, and nitric acid/methanol (see **Picture No. 215**).
ii. Inside an extractor fume hood there was one (1) 2.5-gallong plastic container with spent etching solution from washing metal etching testing containing solution wastes of HCl, HF (i.e., very

dangerous since breathing in hydrogen fluoride at high levels or in combination with skin contact can cause death from an irregular heartbeat or from fluid buildup in the lungs), $FeCl_3$, and HNO_3(see **Picture No. 216**).

iii. On top of a bench cabinet there was one (1) 4-liter plastic bottle containing spent Nitric acid, Hydrochloric Acid, Ferric Chloride, Methanol, Ethanol from etching chemical analysis properly labeled as "Unwanted Materials," and dated with its accumulation start date of May 6, 2022, which exceeded over six months the LMP collection protocols (see **Picture No. 217**).

5.13.2 Biosensing and Microfluid Research Laboratory L-123

EPA Inspectors proceeded to inspect this Biosensing and Microfluid Research Laboratory as part of walkthrough of the Mechanical Engineering Building. Mr. Resto and Mr. Ruben Diaz are the Professors in charge of this laboratory area and served as the UPR Mayagüez Campus' representative and escort. Biosensing platform is mostly based on microfluid systems. In this laboratory, chemical reagents are used for cleansing purpose and sterilization of biological cells.

The EPA Inspectors observed the following at this location inside extractor fume hoods and storage cabinets:

i. Inside a 2-shelfe yellow cabinet, labeled as "Flammable," there were one (1) 1-gallon bottle container with Microposit Remover (1165) with expiration date of January 2, 2011; two (2) 1-gallon plastic bottle with Isopropyl Alcohol; one (1) 1-gallon glass bottle with ethanol 85%; and one (1) 1-gallon glass bottle with Acetone (see **Picture No. 218**).
ii. Inside a 2-shelfe white cabinet, labeled as "Corrosive," there were one (1) 1-gallon bottle container with Hydrochloride Acid 37% one (1) metal cylindrical can with solid Hydrofluoric Acid and one Erlenmeyer's beakers with pure Hydrofluoric Acid solution (40%) (see **Picture No. 219**).

At the time of the RCRA Inspection, EPA Inspectors observed that some chemical reagents were stored for a very long time in shelves without any physical means to protect each other from incompatibility of waste characteristics. There were unwanted materials were not properly labeled nor dated with their accumulation start date at the Mechanical Engineering Department.

5.14 GENERAL ENGINEERING DEPARTMENT – LUIS STEFANI BUILDING

EPA Inspectors met Dr. Marcelo Suarez and Mr. Boris Renteria who are the responsible Professors in charge of the laboratory areas. The Luis Stefani Building houses one (1) academic teaching laboratory and five (5) investigation research laboratories.

5.14.1 General Synthesis Research Teaching Laboratory S-311

EPA Inspectors proceeded to inspect this General Synthesis Research Laboratory area. In this laboratory, synthesis of polymers and ferrites are conducted and tested for various sample materials.

The EPA Inspectors observed the following at this location inside extractor fume hoods and storage cabinets:

i. Inside the extractor fume hood there were "Unwanted Materials," including one bottle of acetic, glacial, ACS, 99.7%; one bottle with NaOH, $FeCl_3$, cobalt with start accumulation date of August 31, 2018; one gallon glass bottle with NaOH with start accumulation date of January 12, 2018; one gallon glass bottle with acetic acid glacial with expiration date of March 2019; one glass bottle with hydrochloride acid and three (3) 5-gallon containers with H_2O and ferrites not clearly labeled (see **Picture No. 220**).

As observed by EPA Inspectors, the Satellite Accumulation Area inside extractor fume hood or cabinets in the laboratory containing discarded or spent chemical reagents generated at the laboratories were not properly labeled as "Unwanted Materials," nor dated with its accumulation start date (N/UM/, N/D) (see **Picture No. 220**). In addition, the storage of this "Unwanted Materials" was conducted without following any safety protocols or compatibility characteristics (Flammable, Corrosives and Toxics – Ethyl Acetate, Acetone next to Hydrochloric Acid, Sodium Hydroxide) of the spent reagents failing to minimize the possibility of a fire, explosion, or any chemical violent reaction (see **Picture No. 221**). In addition, various container bottles were deteriorated and not identified with its content expired and stored for a very long time (i.e., over a year or more August 31, 2018) (see **Picture No. 222**).

5.14.2 Material Engineering and Characterization Research Laboratory S-110

EPA Inspectors proceeded to inspect this Material Engineering and Characterization Research Laboratory area.

The EPA Inspectors observed the following at this location inside extractor fume hoods and storage cabinets:

i. Below an extractor fume hood there was a "Corrosive" cabinet storing chemical reagents including hydrochloric acid, acetic anydride glacial acid, sulfuric acid, a metal container identified as SINGH (3-aminopropyltriethoxysilane) in advanced degree of deterioration, one (1) 4-L glass bottle with an unknown solution. I explained that Acetic Anhydride was not compatible with Hydrochloric Acid and should not be stored together where they can be inadvertently mixed or where a spill or leak can cause danger (see **Picture No. 223**). In addition, various container bottles were deteriorated and not identified with its content expired and stored for a very long time (i.e., over a year or more August 31, 2018) (see **Picture No. 224**) such as 3-aminopropyltriethoxysilane which is very harmful in contact with skin and can cause serious eye damage.
ii. Below an extractor fume hood there was a "Flammable" cabinet storing chemical reagents including iron (III) chloride anhydrous, cooper (II) chloride anhydrous, acetone optima, ethyl acetate, methanol, calcium chloride dihydrate, alginic acid/sodium salt, sodium hydroxide, and cellulose acetate (see **Picture No. 225**). I explained that acetone optima, ethyl acetate, methanol are not compatible with sodium hydroxide and should not be stored together where they can be inadvertently mixed or where a spill or leak can cause danger.
iii. Below a laboratory bench there was satellite accumulation area with discarded hazardous wastes unlabeled, not dated, or managed under the Laboratory Management Plan, which

included three (3) 5-gallon white containers with corrosive wastes (pH > 12.5) stored next other organic solvent wastes unidentified (see **Picture No. 226**).

iv. On a laboratory bench there was a Satellite Accumulation Area with two trays containing numerous "Unwanted Materials," unlabeled, undated, nor identified with its hazardous waste content. Among the chemical reagents identified from a safety distance stored without segregation included Acetone, Cobalt, Acetone, $CaFeO_4$, Cooper, Ethanol, Titanium, Methyl alcohol, Hydrochloric acid, Ethylene glycol, Triethylene glycol, Polyamic acid (packed October 8, 2008), Urea, Magnesium chloride, 1-gallon glass bottle of Acetic acid/ ferrite cobalt, 1-gallon glass bottle of unknown chemical, 1-gallon glass bottle of alumina/Ni-Co/Ni, 1-gallon glass bottle of cobalt/ aluminum/chloride, atrazine, alumina, Isopropyl alcohol, Acetone, Acetic Acid, Sodium Hydroxide, Hydrochloric Acid, Ethanol Amine, and various 4-Liter bottles containing flammable and corrosive liquids which were no longer intended to be used (see **Picture No. 227**).

At the time of the inspection, EPA Inspectors observed numerous expired chemicals (since before 2008), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (i.e., over a year or more) in trays without any physical means to protect each other from incompatibility of waste characteristics. As observed by EPA Inspectors there were corrosive, flammable, reactive, toxic and poison chemical wastes reagents. According to Dr. Marcelo Suarez, Professor, all these chemical wastes were used and discarded a long time ago from various laboratory research experiments and were stored in this area to declare them as "Unwanted Material," or notified to the Health, Occupational and Environmental Safety Office (OPASO). There was no hazardous waste determination being performed on numerous abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been in compliance with the Laboratory Management Plan (LMP) (see Picture **No. 228**).

As observed by EPA Inspectors, there were no Safety Data Sheets (SDSs) available at the Satellite Accumulation Area for most of the expired, discarded, abandoned, not in use chemical reagents that should be inventoried for final disposition as "Unwanted Materials." There was no "Unwanted Material" labeling, dating, waste codes, compatibility, lack of the use of chemical formulae and use to the terms unknown waste or original container chemical names products as problem areas for satellite accumulation containers under RCRA Subpart K. As stated by EPA Inspectors, labeling on many containers did not provide any useful information to emergency responders in the event a chemical emergency should occur at these areas. Additionally, there was a concern about the lack of awareness of satellite accumulation control requirements under RCRA Subpart K for properly identifying, dating, and labeling the hazardous waste generated at the laboratories. It was recommended by the inspectors that SDSs should be evaluated to determine the proper characterization and determination of the expired and discarded solid waste.

EPA Inspectors discussed with Ms. Fernández that the responsibility of the laboratory technician within the laboratory is to prepare the label and verify that labels are placed on all containers of "Unwanted Material," and dated with the start accumulation date (six months for collection) stored in the laboratory. According to Ms. Fernández, containers will not be removed from a laboratory unless the

"CHEMATIX" label the is attached to each container. As observed by EPA Inspectors non "Chematix" labels were affixed to each container.

6 DOCUMENTS REVIEW

The following documents were reviewed as required by the RCRA Program after the walkthrough inspection and on follow-up e-mails with the requested information:

6.1 MANIFEST RECORDS AND LAND DISPOSAL RESTRICTION FORMS (LDR)

Manifests and associated LDRs for all incoming and outgoing shipments for the last three years were reviewed in hard copies. Most of the hazardous waste are sent by Capitol Environmental Services, Inc. to a destination in Elizabeth, New Jersey, and Birmingham, Alabama, USA. It seemed that UPR Mayagüez Campus is a Small Quantity Generator since it generates less than 2,000 pounds of hazardous waste every six months and disposed of with Capitol Environmental Services, Inc. All appeared to be properly maintained and in compliance.

Table No. 8 summarizes the Manifest and Land Disposal Restriction provided by UPR Mayagüez Campus.

Table No. 8 - MANIFEST RECORDS AND LAND DISPOSAL RESTRICTION

Manifest No.	Date	Quantity (Lbs)	Manifest No.	Date	Quantity (Lbs)
Year 2023					
024521823 JJK	Aug 1, 2023	866	**-**	-	-
Year 2022					
024071778 JJK	Sep 30, 2022	1,960	**023361832 JJK**	Apr 29, 2022	2,120
022139121 JJK	Feb 1, 2022	2,300	**022139120 JJK**	Feb 1, 2022	1,142
023032339 JJK	Jan 13, 2022	8,000	**-**	-	-
Year 2021					
-	-	-	**-**	-	-
Year 2020					
020977879 JJK	Sep 11, 2020	175	**020977880 JJK**	Sep 11, 2020	2,258
020977873 JJK	Jul 24, 2020	224	**001659624 VES**	Feb 24, 2020	800

6.2 WASTE ANALYSIS

A Full RCRA analysis was provided by Capitol Environmental Services, Inc. during charactering and profiling hazardous waste at the UPR Mayagüez Campus and described in the Land Disposal Restriction Notification Certification Forms. Capitol Environmental Services, Inc. prepared a Detail Report containing information about Toxic Characteristic Leaching Procedure (Test Method SW 1311) tests, and other analytical methods or knowledge of the waste including used oils disposal. All wastestreams generated by the UPR Mayagüez Campus were identified, classified, tested, codified, and disposed of as required by the land disposal restrictions (LDRs). The Waste Analysis Plan submitted by Capitol Environmental Service Inc. appeared to be in compliance.

6.3 PERSONNEL TRAINING RECORDS

UPR Mayagüez Campus provided a Record of Training for the academic staff associated with the "Management of Chemical Wastes in Laboratories," including the management of unwanted wastes under RCRA Subpart K. All training sessions are offered yearly in Subpart K requirements and other hazardous wastes in the laboratories and other university shops. The record documentation of the of university detailed the kind of training, date, and completion status taken by professors, researchers, students, and EH&S personnel during 2023. Also, on March 28, 2023, UPR Mayagüez Campus offered another training session with 141 participants. It appeared to be properly maintained and in compliance.

6.4 WEEKLY LOG RECORDS

All weekly logs records for daily and weekly inspections at the Central Accumulation Area (CAA) and hazardous waste container storage areas were reviewed and found to comply.

6.5 CONTINGENCY AND EMERGENCY PREPAREDNESS PLAN

There was an Emergency Plan of the UPR Mayagüez Campus (Certification Number 17-1 8-1 01), dated November 13, 2017, which included and Emergency Plan: Spill of Hazardous Materials and/or Emanations or Gas Escapes and outlines the procedures and activities required for the prevention of, and response to, hazardous material releases at the UPR Mayagüez Campus. In general, the plan provided contingency and emergency preparedness procedures in case of an emergency incident. The plan also provided a list of responsible emergency personnel but did not include telephones in case of an emergency and proper procedures in a case of an emergency. As observed the Emergency Plan of the UPR Mayagüez Campus did not provide for any attempt to make arrangements with the local police department, fire department, other emergency response teams, emergency response contractors, equipment suppliers and local hospitals, taking into account the types and quantities of hazardous wastes handled at the UPR Mayagüez Campus. No arrangements were made with the Local Emergency Planning Committee.

Additionally, the UPR Mayagüez Campus was equipped with alarm systems, sprinkler systems, telephones, certified extinguishers nearby areas where hazardous wastes were stored throughout the UPR Mayagüez Campus.

7 CLOSING MEETING (DAY 3 – MARCH 10, 2023)

At 5:30 pm in the afternoon, a closing meeting was held for the final day of EPA Inspection at the Chancellor's Office. EPA Inspectors met with Dr. Agustin Rullán, Rector of the Mayagüez University Campus, Dr. Omar Molina, Dean of Administration Department, Deans from all University Departments (via video conference), Ms. Maria Isabel Fernández, Health, Occupational and Environmental Safety Office Director, and Ms. Damaris Santiago, Health, Occupational and Environmental Safety Specialist,

EPA Inspectors discussed and revisited the potential releases and/or threatened releases observed during the Inspection visit on March 10, 2023, at the Alzamora Farm Pesticides Warehouse, Radioactive Wastes and Physics Department (i.e., F-129, F-458, F-123, F-225) of the University of Puerto Rico-Mayagüez Campus. The main treat consisted of metallic sodium bars (i.e., 2009) that were identified in advanced degree of deterioration, not in use, not properly labeled, haphazardly stored, without appropriate secondary "explosive" containment, not segregated by chemical compatibility that needed to be addressed on an expedited basis (i.e., metallic sodium "bomb" removal operations). EPA Inspectors reiterated that Civil Engineering Department, Alzamora Pesticides, Radioactive wastes, and Physics Laboratories presented an imminent and substantial endangerment to health or the environment. EPA Inspectors re-notified EPA's Emergency Responders about the imminent risk situation at the time of the Inspection, and Mr. Carlos Huertas, EPA On-Scene Coordinator, indicated that emergency incidents should be managed under the Field Notice of Federal Interest (FNFI) issued to UPR-Mayagüez Campus under the authority of the Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA), on March 9, 2023, requesting the responsible party to take immediate corrective actions.

EPA Inspectors informed to Dr. Agustin Rullán, Chancellor of the Mayagüez University Campus, that the management of hazardous wastes program at UPR-Mayagüez Campus was not satisfactory based upon potential violations, and other applicable hazardous waste regulations that were identified during the EPA Inspection compliance evaluation. In particular, the mismanagement of inventory logs for hazardous waste chemicals, the potential of explosion from chemical incompatibility characteristics, and from the statement that UPR-Mayagüez Campus did not generate much hazardous wastes. As observed by EPA Inspectors, UPR-Mayagüez Campus does generate hazardous wastes over 1,000 kg per month on a seasonal basis. EPA inspectors emphasized that these potential violations may result in a written notice of violations or any other enforcement actions dictated by the agency. However, EPA Inspectors also emphasized that these potential violations were tentative and are pending administrative review.

EPA Inspectors explained that the lag time between the EPA Inspection, and resulting RCRA Inspection Report, could be substantial based on the complexity of the University and many laboratories and areas that were involved and regulated under RCRA requirements (i.e., 2018-2020 Laboratory Management Plan (LMP) and/or 40 CFR § 262 Subpart K). At this point, EPA Inspectors reiterated the fact that the

RCRA Report and determination of Agency action for this EPA Inspection would not occur for several months.

During the inspection, EPA Inspectors observed that UPR-Mayagüez Campus generates solid wastes. However, the UPR-Mayagüez Campus has failed to determine if a solid waste is a hazardous waste in many areas that were not covered by Laboratory Management Plan. There were lots of off specification, discarded, abandoned, and outdated materials not properly characterized or disposed of. There were other potential hazardous materials that were disposed improperly (i.e., spent fluorescent lamps, mercury containing equipment, used oil, abandoned radioactive wastes). Therefore, it was very hard to determine the Facility generator classification based upon total waste generated on a monthly basis. There were discrepancies between the inventory logs and the actual containers observed in storage areas of the campus.

Additionally, documentation associated with the solid waste disposal practices lacked, and were not available in the central file at the Occupational and Environmental Safety Office.

Among the physical locations within the UPR-Mayagüez Campus that EPA Inspectors identified as a major concern regarding solid waste management without a pertinent hazardous waste characterization were the Civil Department, Physics Department, Biology Department, Agricultural Sciences, Agronomy, Alzamora Farm, and Mechanics Department, and other Buildings and Land Departments throughout the campus. There was another concern regarding the management of spent fluorescent lamps, and used oils discarded by the University. There were no proper disposal procedures in place for the management of spent fluorescent lamps and discarded used oils. Some of the spent fluorescent lamps were crushed and/or disposed of with proper storage protection. EPA Inspectors stated that the lamps contain small amounts of mercury that could pose potential problems at the site if the university's management practices were not improved.

During the inspection, EPA Inspectors observed that UPR-Mayagüez Campus failed to properly label, date, or dispose of drums, and containers used to store hazardous waste. Many drums, and containers throughout the UPR-Mayagüez Campus were improperly labeled, dated, or not labeled at all posing a potential threat of fire or explosion or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. Failure to mark containers of hazardous waste properly creates a risk to human health and the environment. Among the physical locations within the UPR-Mayagüez Campus that EPA Inspectors identified as a major concern regarding the proper labeling, dating of containers with hazardous waste were the Central Accumulation Area for Hazardous Wastes, Civil Engineering, Physics Department, Mechanics Engineering and numerous satellite areas not covered under the Environmental Management Plan (i.e., approximately 40 satellite areas) located at different research laboratories throughout the UPR-Mayagüez Campus including the Civil Engineering, Chemistry Department, Biology Department, Agricultural Sciences, Agronomy, and Physics Department, respectively.

Under the University Laboratory Management Plan (LMP RCRA Subpart K), EPA Inspectors observed in the satellite areas, there were lacks “Unwanted Material” labeling, dating, waste codes, compatibility, the use of chemical formulae and the use to the terms unknown waste or original container chemical

names products as problem areas for satellite accumulation containers under RCRA Subpart K. As stated by EPA Inspectors, labeling on many containers did not provide any useful information to emergency responders in the event a chemical emergency should occur at these areas. Additionally, there was a concern about the lack of awareness of satellite accumulation control requirements under RCRA Subpart K for properly identifying, dating, and labeling the hazardous waste generated at the laboratories.

As observed by EPA Inspectors in various hazardous waste storage and/or unwanted material areas the UPR-Mayagüez Campus has failed to store compatible waste in order to avoid any detrimental event that may pose a human threat or environmental impact. It was stated on many occasions by EPA Inspectors that chemicals did not appear to be segregated by compatibility, and that shelving was not self-contained to prevent chemical leaks or spillage from incompatible waste containers. In the Civil Engineering, Physics Department and Alzamora Farm, EPA determined that there was an actual or potential of fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

8 COMPLIANCE ASSISTANCE

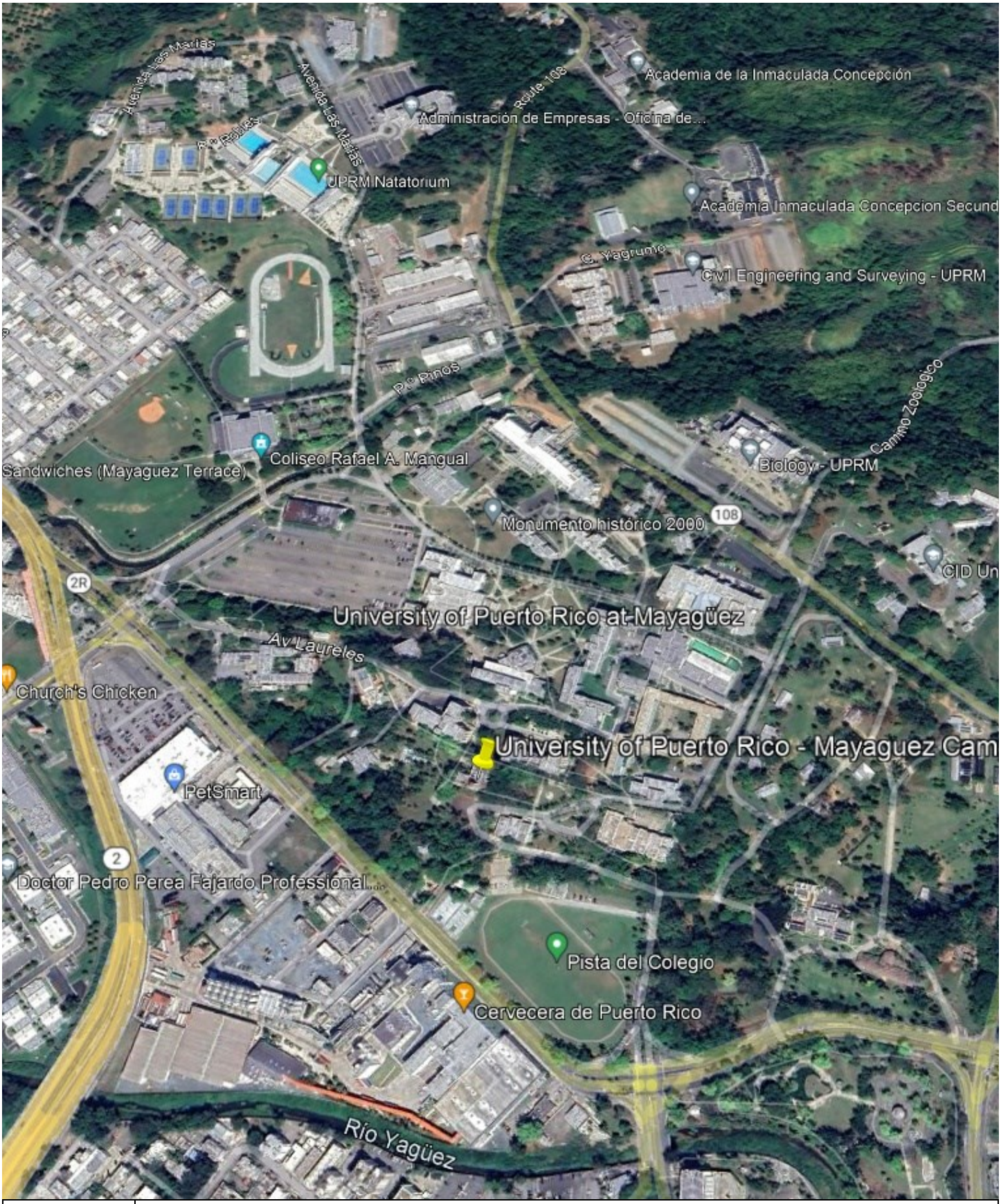
EPA Inspectors during the walkthrough the compliance areas discussed with UPR-Mayagüez Campus' representatives the specific RCRA program regulations that apply to the University Campus, and how to stay in compliance in case they decide to minimize or recover waste streams and implement waste minimization/pollution prevention procedures as required by RCRA.

9 CONCLUSION & FOLLOW-UP ACTIONS

After responding to EPA's observations, inspection of regulated areas and completion of a document session, EPA determined that the hazardous waste management program at UPR-Mayagüez Campus was not satisfactory as required by the RCRA program, and that potential violations on applicable hazardous waste regulations were found. Therefore, I communicated to Dr. Agustin Rullán, Rector of the Mayagüez University Campus, that any further enforcement action regarding potential violations were tentative and are pending administrative review by EPA.

10 ATTACHMENTS

I. Figure 1- Facility Location Map and Figure -2 Aerial Photograph
II. Photolog and Camera Roll (include all pictures taken during the inspection)



	Title: **Figure 1: University of Puerto Rico—Mayagüez Campus, Puerto Rico - Location Map**
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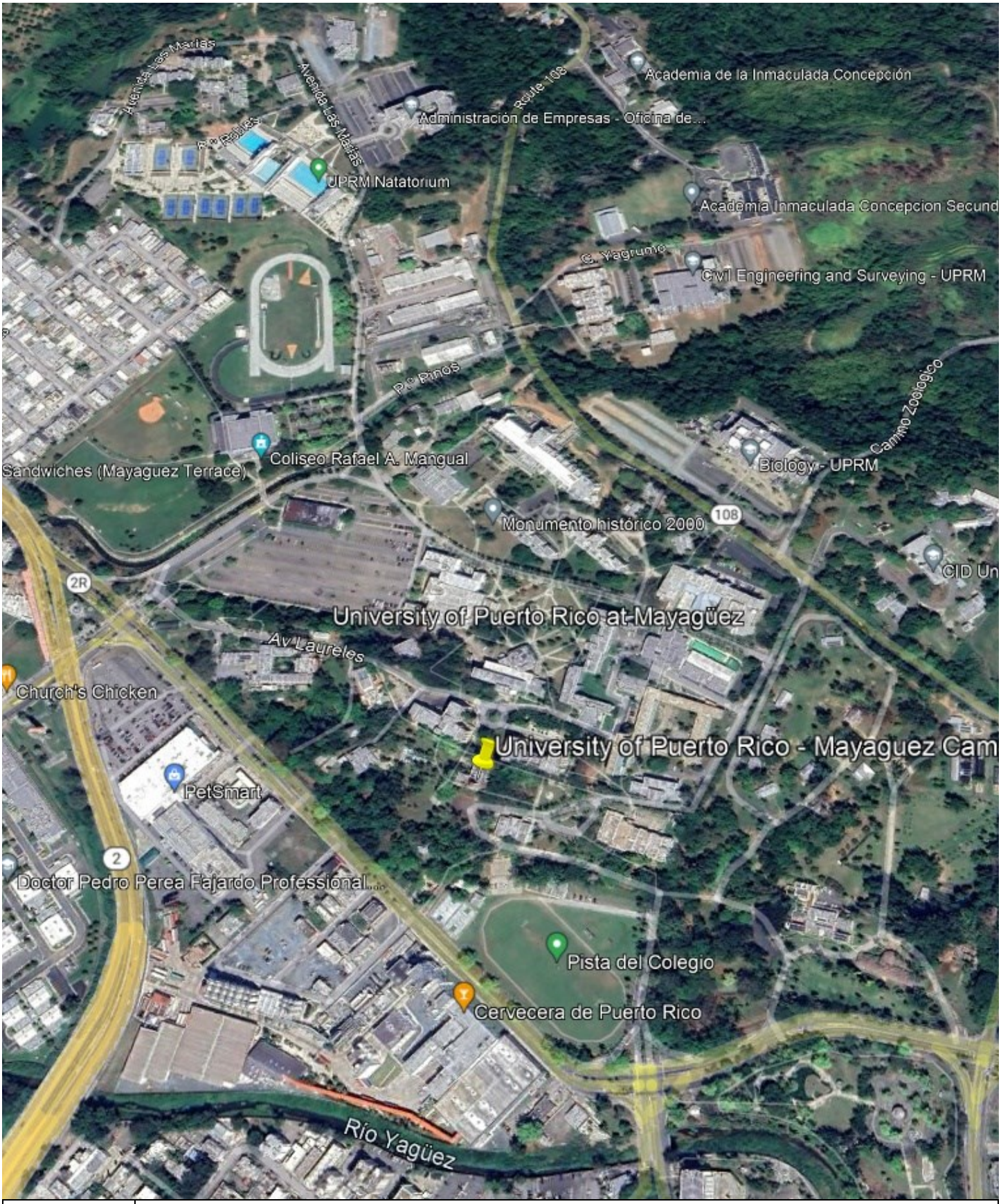
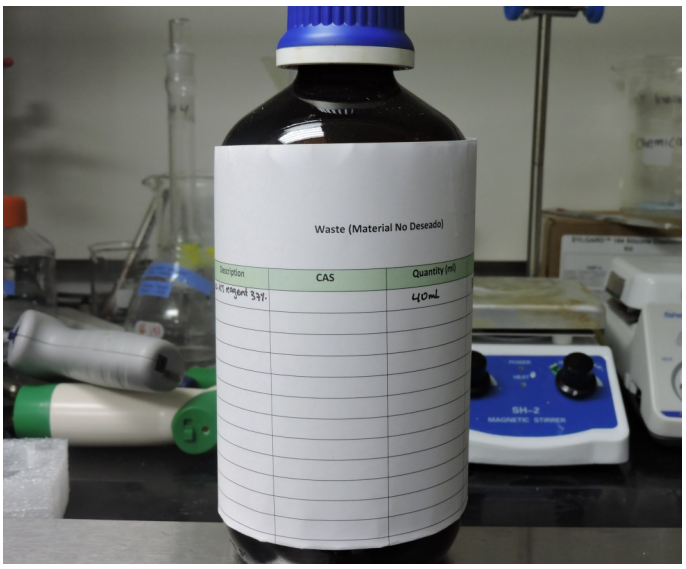


	Title: **Figure 2: University of Puerto Rico—Mayagüez Campus, Puerto Rico - Aerial Photo**
EPA ID: **PRD000691063**	Project: **CEPD-RCRA-23-0440**

Picture 1 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 K there was one (1) 1-liter Erlenmeyer Flask with a "Biohazard Waste," unlabeled and without hazardous waste determination if it is managed as an lab waste, the content and the container must be labeled and date as "Unwanted Material."

Picture 2 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 K there was one (1) 2-liter container with a yellow-colored spent solvent (PBS) labeled as "Hazardous Waste," and with an accumulation start date of July 13, 2022, not managed as "Unwanted Material"



Picture 3 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 K there was one (1) 4-liter amber container with "ACS Reagent 37%" waste labeled as "Unwanted Material" but not dated with its accumulation start date.

Picture 4 - UPR CHEMICAL ENGINEERING– At the Lab IQ-101 K there was one (1) 2.5-liter plastic container with "DMF/DCM" waste labeled as "Hazardous Waste" but not dated with its accumulation start date nor managed as "Unwanted Material."

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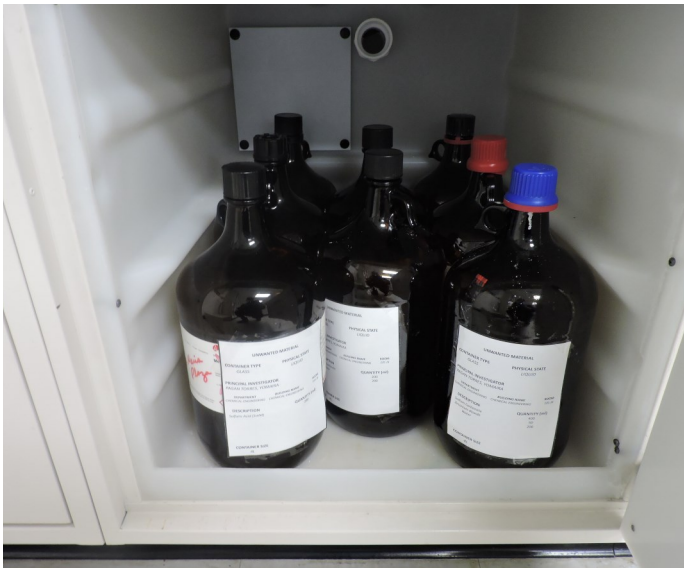

Picture 5 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 J there were eight 4-L containers stored inside a cabinet area all labeled as "Unwanted Materials" and without their dates. However, no compatibility characteristics protocols were followed in the storage area.

Picture 6 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 J there were four 4-L containers stored in trays containing THF and 1,4-Dioxane dated as July 16, 2019, and March 3, 2020, not in use and abandoned and not managed as "Unwanted Material," without a hazardous waste determination.

Picture 7 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 J there was one (1) 4-liter glass container with a spent mobile phase connected to a HPLC not in use since November 2022, unlabeled and without hazardous waste determination if it managed as an "Unwanted Material."

Picture 8 - UPR CHEMICAL ENGINEERING— At the Lab IQ-101 HI there were six (6) 4-liter ambar containers stored inside a cabinet area only two were labeled as "Unwanted Materials" and one with its accumulation start date of March 3, 26, 2019 which exceeded over six months of the LMP.

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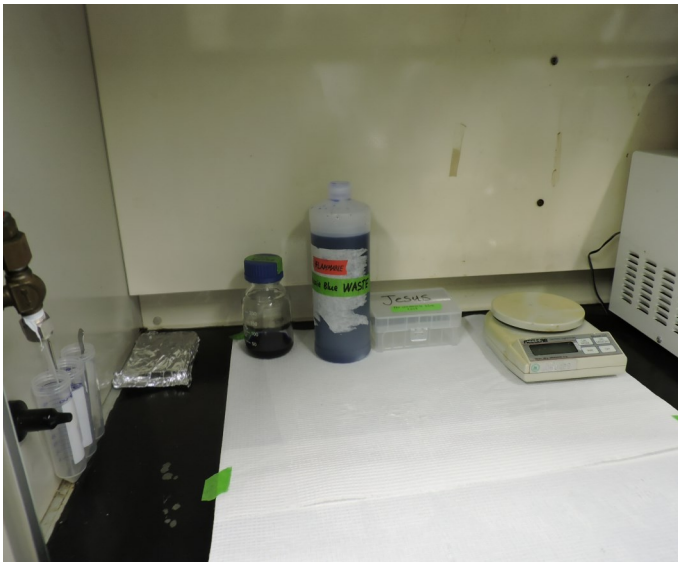
Picture 9 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 HI there were six (6) 4-liter ambar and glass containers stored inside a cabinet sink area only four were labeled as "Unwanted Materials" and with their accumulation start dates. However, three (3) were not labeled as "Universal Wastes," nor dated .

Picture 10 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 HI there were four (4) 4-L containers stored inside a cabinet sink not labeled as "Unwanted Materials," and dated as of August 23, 2022, March 1, 2021, February 24, 2023, and other non-dated which exceeded over six months of the LMP collection protocols.

Picture 11 - UPR CHEMICAL ENGINEERING- At the Lab IQ-01 M there was one (1) 4-liter ambar container with a spent mobile phase (ACN/Water 90/10) connected to a HPLC labeled its holding jacket as "Waste," but not dated with its accumulation start date nor managed as "Unwanted Material"



Picture 12 - UPR CHEMICAL ENGINEERING— At the Lab IQ-01 G there were two (2) 750 ml plastic bottle and 200 ml Erlenmeyer beaker containing "Coomassie Blue Ink Waste" with spent methanol solvent not labeled as "Unwanted Materials," nor dated among other unlabeled and undated wastes.

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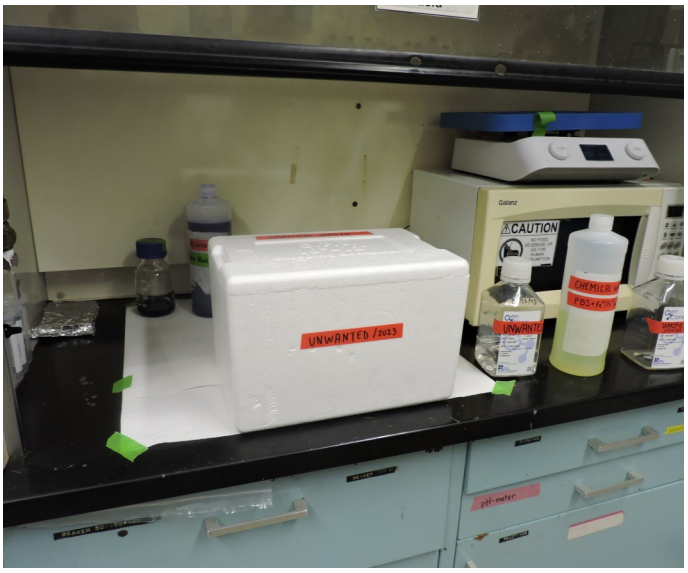

Picture 13 - UPR CHEMICAL ENGINEERING- At the Lab IQ-01 G there were one styrofoam box containing discarded vials an other waste bottles not properly labeled as "Unwanted Materials," nor dated with its accumulation start date as required in the LMP protocols .

Picture 14 - UPR CHEMICAL ENGINEERING- At the Lab IQ-101 O there were two (2) 4-liter plastic containers with a spent petroleum ether and terpolymer labelled as "Unwanted Materials," and dated with their accumulation start dates of May 15, 2022, which exceeded over six months of the LMP collection protocols.

Picture 15 - UPR CHEMICAL ENGINEERING- At the Lab IQ-103 A there were three 4-L ambar containers with Methanol stored next to one (1) 500-ml bottle with Formic Acid and next to one (1) 1-gallon plastic bottle container Ethy Alcohol 70% without following any safety protocols or compatibility characteristic.

Picture 16 - UPR CHEMICAL ENGINEERING— At the Lab IQ-102 A there was one (1) 2-gallon plastic container with a spent Ethanol aqueous waste no labeled as "Unwanted Materials," nor dated with its accumulation start date.

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Picture 17 - UPR CHEMICAL ENGINEERING- At the Lab IQ-102 A it was observed the storage of chemical reagents at laboratory cabinets was conducted without following any safety protocols or compatibility characteristics (Flammable, Corrosives and Toxics – NaOH, Hydrochloric Methylcellulose, KCl) of the reagents.

Picture 18 - UPR CHEMICAL ENGINEERING- At the Lab IQ-102 D there were three 1-L ambar bottles with unknown wastes, one labelled "Unwanted Materials," and dated as February 28, 2022, which exceeded over six months of the LMP collection protocols. The other two were not labeled as "Unwanted Materials."

Picture 19 - UPR PHARMACY BUILDING - At the FARM 109 there was one 40-gallon cardboard drum containing wastes with "Active Ingredients" not labelled as "Unwanted Materials," and dated with its accumulation start date of January 22, 2021, which exceeded over six months of the LMP collection protocols.

Picture 20 - UPR PHARMACY BUILDING — At the FARM 109 there was one (1) 40-gallon blue drum containing wastes with "No Active Ingredients" not labelled as "Unwanted Materials," and dated with its accumulation start date of July 17, 2020, which exceeded over six months of the LMP collection protocols.

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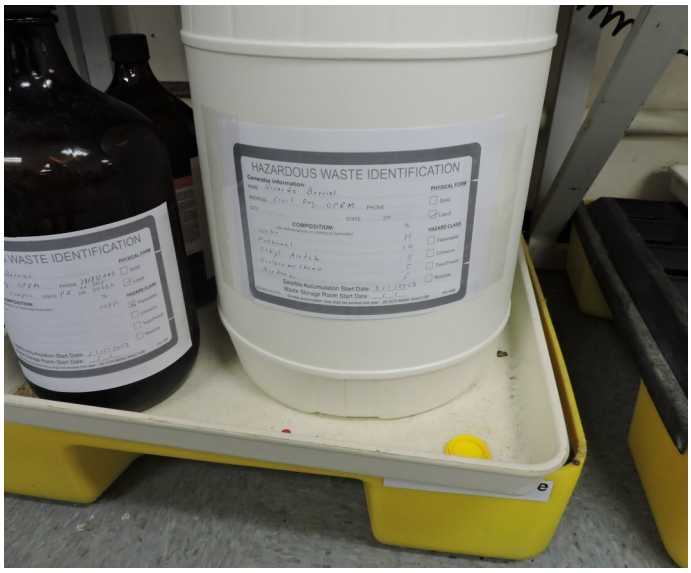
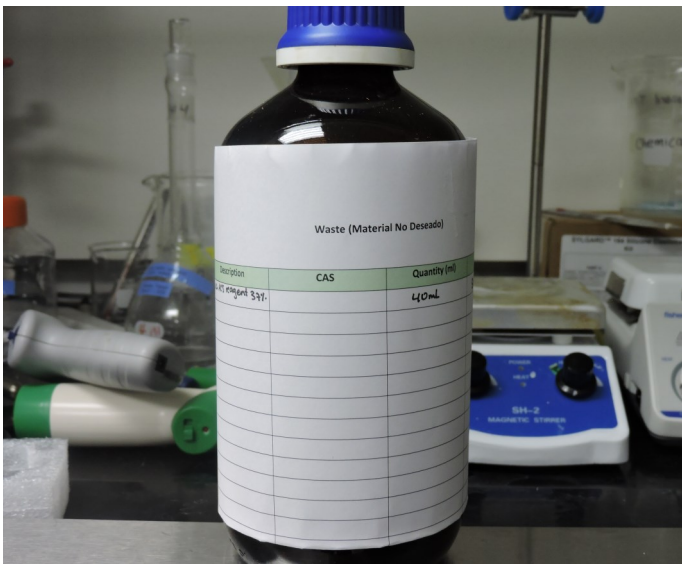
Picture 21 - UPR CIVIL ENGINEERING- At the Lab CI 018 there were two (2) 5-gallon white containers with Methanol, Ethyl Acetate, Dichloromethane and Acetone both labelled as "Hazardous and dated with its accumulation start date of March 1, 2023, but not labeled as "Unwanted Materials."



Picture 22 - UPR CIVIL ENGINEERING- At the Lab ICI 018 there were two (2) 4-L ambar bottles containing Acetone and both labelled as "Hazardous Wastes,"" and dated with its accumulation start date of January 15, 2023, but none labelled as "Unwanted Materials."



Picture 23 - UPR CIVIL ENGINEERING- At the Lab CI 018 there was one (1) 4-L ambar bottle containing Methanol, Ethyl Acetate, Dichloromethane and Acetone labelled as "Hazardous and dated as November 10, 2022, which exceeded six months LMP collection protocols nor labeled as "Unwanted Materials."

Picture 24 - UPR CIVIL ENGINEERING– At the Lab CI 018 there was one One (1) 4-L container stored in the extractor hood THF (Tetrahydrofuran) and dated as May 5, 2012, not in use and abandoned and not managed as "Unwanted Materials," without a hazardous waste determination of the content.

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Picture 25 - UPR CIVIL ENGINEERING- At the Lab CI 018 SSA-1 there were two (2) 5-gallon white containers with organic wastes both labelled as "Hazardous Waste," and dated with its accumulation start date nor labeled as "Unwanted Materials."

Picture 26 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Flammable there were two (2) 4-L bottles containing Dichloroethane leaking and covered with moisture, dated January 22, 2011 which decomposes into carbon dioxide and in present of heat it can produce toxic fumes such methylene chloride.

Picture 27 - UPR CIVIL ENGINEERING- At the Lab ICI 018 Blue Cabinet Flammable there was one (1) 4-L ambar bottle containing Acetone dated April 4, 2014, which is highly flammable and not in use.

Picture 28 - UPR CIVIL ENGINEERING— At the Lab CI 018 Blue Cabinet Flammable there was one (1) 1-gallon metal can with Sodium Borohydride, dated January 01, 2011, leaking on the tray, fully corroded, covered with water moisture and seemed decomposed forming sodium hydroxide and hydrogen.

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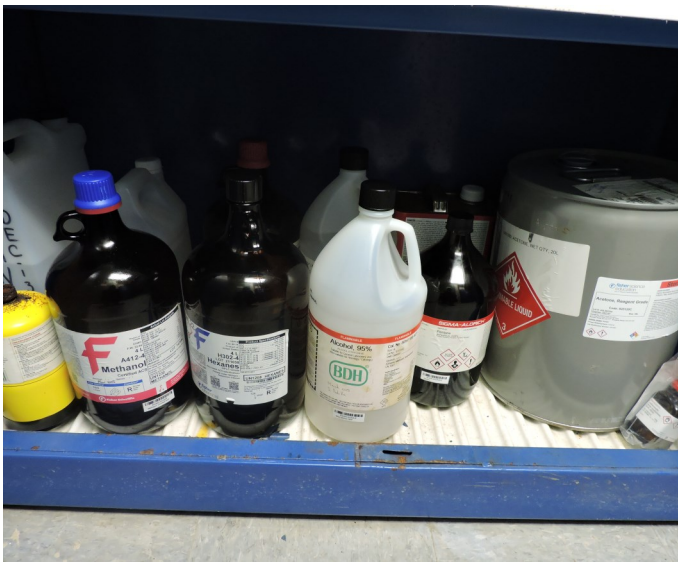
Picture 29 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Flammable there was one (1) 4-L ambar bottle containing Titanium Isopropoxide, dated August 2019, which is incompatible with strong oxidizing agents and strong acids



Picture 30 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Flammable there was one (1) 4-L ambar bottle containing Methanol, dated March 2015, not in use, abandoned which vapors decompose to form carbon monoxide gas and hydrogen gas

Picture 31 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Corrosive there was one Four (4) 4-L ambar bottles containing Acetic Anhydride (Aceti Acid Glacial) dated from years 2009 thru 2011, in deteriorated conditions and labels being vanished not in use and abandoned.

Picture 32 - UPR CIVIL ENGINEERING— At the Lab ICI 018 Blue Cabinet Corrosive there were three (3) 4-L ambar bottles containing Hydrochloric Acid, dated January 27, 2020, deteriorated conditions and labels being vanished. Acetic Anhydride is not compatible with Hydrochloric Acid and should not be stored

Picture 33 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Corrosive there were two (2) 2.5-L and ½-L plastic and ambar bottles containing Phosphoric Acid, dated 2014, some old and in deteriorated conditions, not in use and abandoned .

Picture 34 - UPR CIVIL ENGINEERING- At the Lab CI 018 Blue Cabinet Corrosive there was one (1) 1-L ambar bottle containing Hydrochloric Acid, dated 2001, with label being vanished, not in use and abandoned .

Picture 35 - UPR CIVIL ENGINEERING- At the Lab CI 018 Brown Cabinet Flammable there were six (6) 4-L ambar bottles containing Hexane, and n-Hexane, dated from 2005 – 2016.

Picture 36 - UPR CIVIL ENGINEERING— At the CI 018 Brown Cabinet Flammable there were Eight (8) 4-L plastics and ambar bottles containing Methanol, Water HPLC Grade, Ehtyl Acetate, and Xylene, dated from 2005 – 2014. The Ethyl Acetate was labeled as "Non in Use Contaminated."

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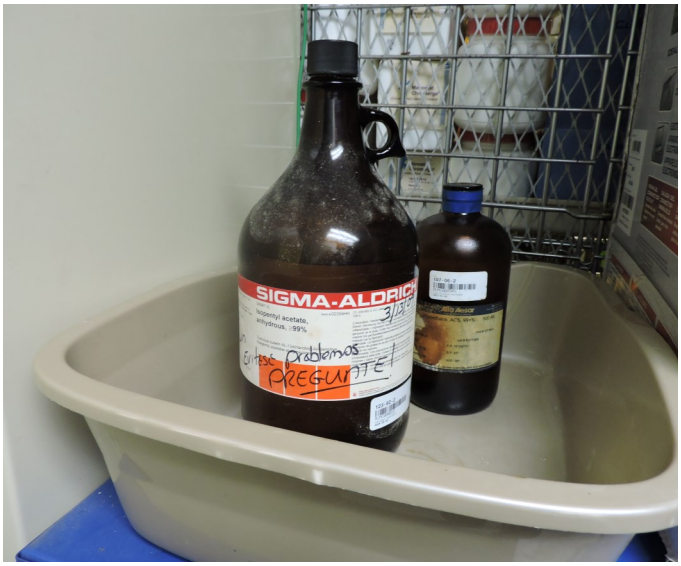
Picture 37 - UPR CIVIL ENGINEERING- At the Lab CI 018 Brown Cabinet Flammable there were seven (7) 2-L ambar bottles containing Methanol, Hexane, Methylpentane, Isopentyl Acetate, and Ethylene, dated from 2005 – 2016. One of the bottles containing Isopentyl Acetate was labeled as "Avoid Problems - Ask."

Picture 38 - UPR CIVIL ENGINEERING- At the Lab CI 018 EPA Inspectors observed numerous expired chemicals (since < 1986), discarded, contaminated, various unused chemical reagents, deteriorated and stored for a long time in shelves without physical protection each other from incompatibility characteristics.

Picture 39 - UPR CIVIL ENGINEERING - At the Lab CI 018 all these chemical reagents were not in use, expired and discarded a long time ago from various laboratory research and were stored in this area and never declared as "solid waste material," or notified to the OPASO for final disposition.



Picture 40 - UPR CIVIL ENGINEERING - At the Lab CI 018 there was no hazardous waste determination being performed on abandoned, expired, not in use, discarded hazardous chemical waste inventory before its final disposal nor have been managed under the Laboratory Management Plan.

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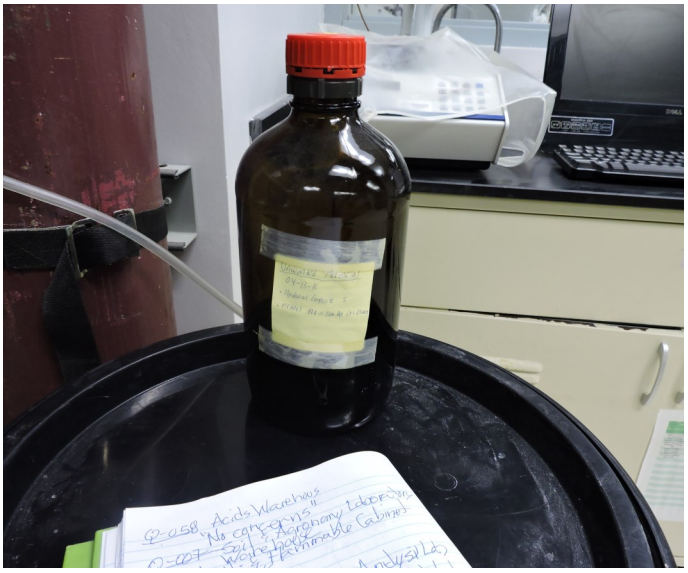
Picture 41 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-009 there were over twenty-eight (28) bottles and containers with discarded or spent chemical reagents generated at the laboratories not properly labeled as "Unwanted Materials," nor dated with its accumulation start date.

Picture 42 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-009 containers will not be removed from a laboratory unless the "CHEMATIX" label is attached to the container. As observed by EPA Inspector non Chematix labels were affixed to each container of "Unwanted Material, No labels, No dates.

Picture 43 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-051 Instrumental Analysis there was one 4-liter ambar container with a spent mobile phase (ACN/Water 90/10) connected to a high-performance liquid chromatography (HPLC) no labeled as "Unwanted Material" nor dated with its accumulation start date.

Picture 44 - UPR CHEMISTRY DEPARTMENT– At the Lab Q-051 SAA there were 10 bottles of "Unwanted Materials," with spent chemical reagents generated at the laboratories properly labeled as "Unwanted Materials," and dated with its accumulation start date but not segregated by compatible characteristics



Picture 45 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-023 there was One (1) 4-liter ambar container with a spent Hydranal Composite and Methanol labeled as "Unwanted Material," dated with its accumulation start date of April 4, 2019, which exceeded over six months of the LMP collection protocols.

Picture 46 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-023 there were Two (2) 4-liter ambar containers with a spent Hydranal Composite Waste, one also labeled as "Viejo – Old," both were no labeled as "Unwanted Material," nor dated with its accumulation start date.

Picture 47 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-023 there was one (1) 4-liter ambar container with a Methanol Solvent Waste labeled as "Unwanted Material," dated with its accumulation start date of July 31, 2016 which exceeded over six months of the LMP collection protocols.

Picture 48 - UPR CHEMISTRY DEPARTMENT— At the Lab Q-023 there were two (2) 4-liter ambar containers with a spent Hydranal Composite Waste, and the other with Methanol Waste, both were labeled as "Unwanted Material," and both dated with their start dates of December 19, 2016, and July 31, 2025.

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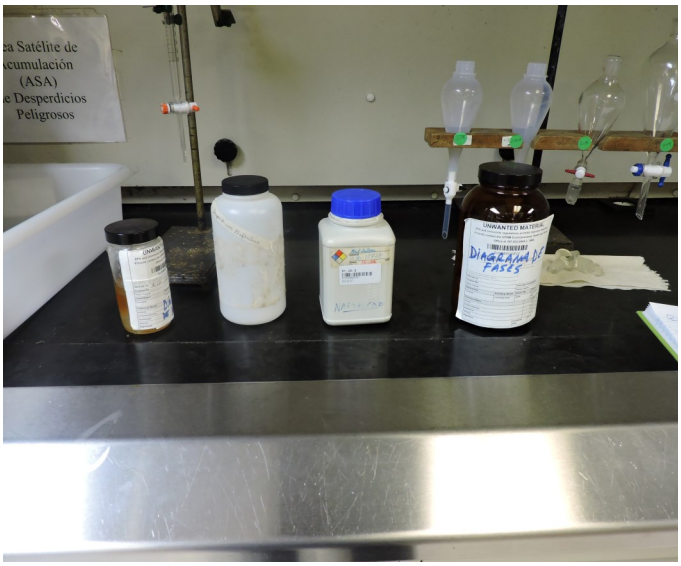
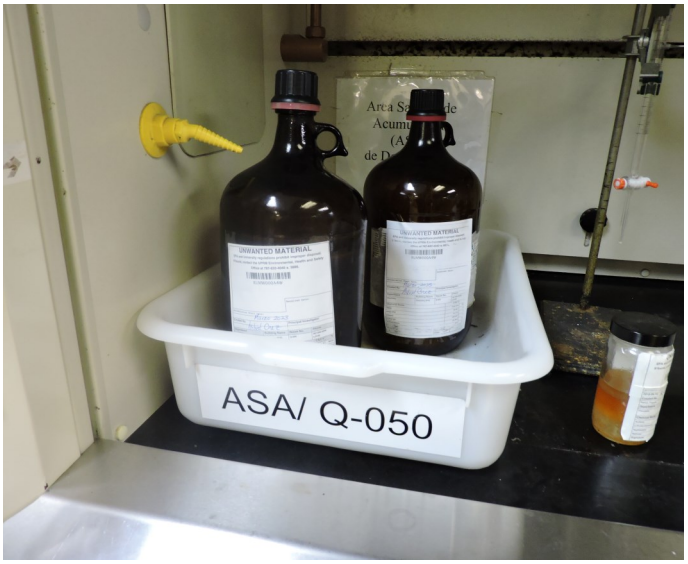
Picture 49 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-050 at the Satellite Accumulation Area under a laboratory cabinet there were numerous bottes containing discarded or spent chemical reagents generated at the laboratories not labeled as "Unwanted Materials," nor properly dated.



Picture 50 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-050 there were two (2) 500-ml containers with a Napthalene Waste and one (1) 750-ml container with a Phase Diagram Waste no labeled as "Unwanted Material," nor dated with its accumulation start date.



Picture 51 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-050 there were two (2) 4-liter ambar containers with a spent Unknown Waste, both labeled as "Unwanted Material," but properly dated with its accumulation start date of March 2023.

Picture 52 - UPR CHEMISTRY DEPARTMENT— At the Lab Q-050 (SAA No. 2) on top of a laboratory cabinet table there were four (4) 4-liter ambar containers with a spent Unknown Waste, all labeled as "Unwanted Material," but properly dated with their accumulation start dates.

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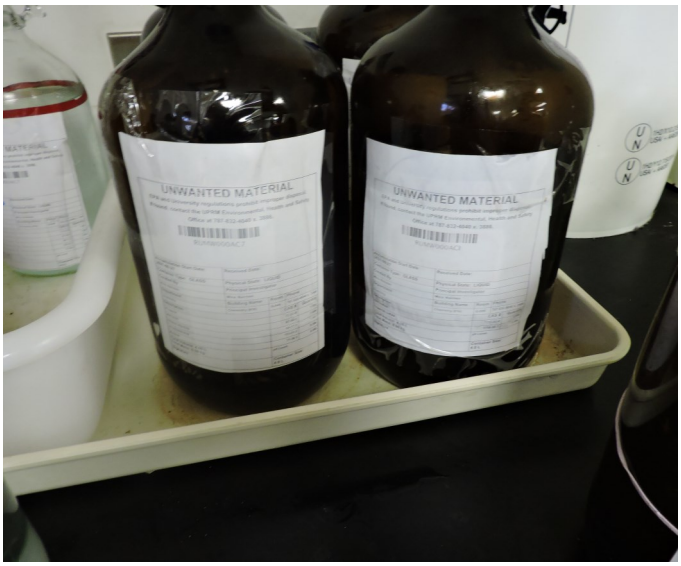
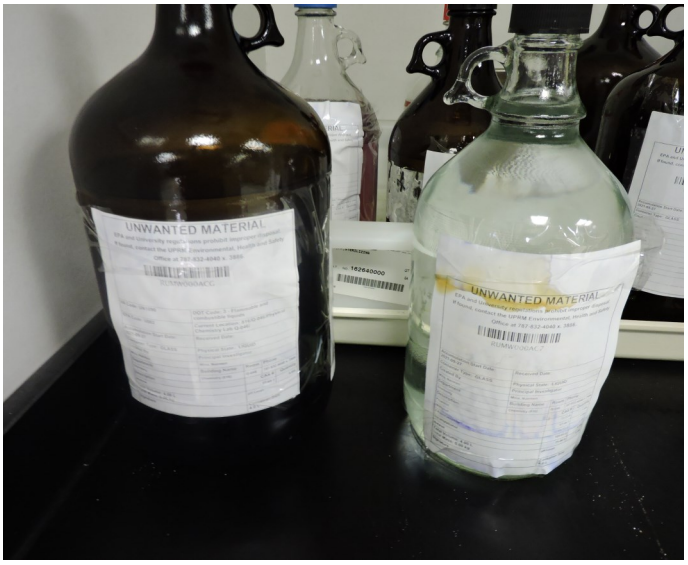
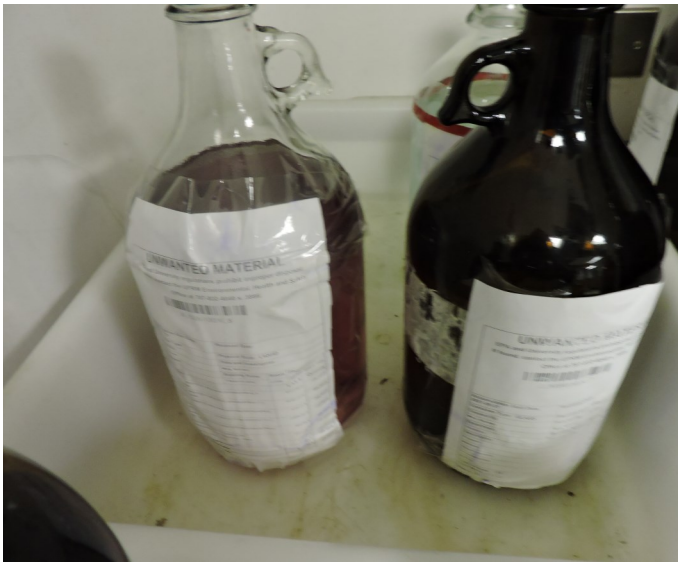
Picture 53 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-046 SAA there were numerous containers with discarded or spent chemical reagents generated at the laboratories most of them properly labeled as "Unwanted Materials," but properly dated with their accumulation start dates .



Picture 54 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-046 there two (2) 4-liter ambar containers with a spent solvent waste both labeled as "Unwanted Materials," and dated as September 27, 2021, and September 22, 2021, which exceeded over six months of the LMP collection protocols.



Picture 55 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-046 there were two (2) 4-liter crystal containers with a spent solvent waste both labeled as "Unwanted Materials," and dated as September 27, 2021, and September 22, 2021, which exceeded over six months of the LMP collection protocols.



Picture 56 - UPR CHEMISTRY DEPARTMENT— At the Lab Q-046 were three (3) 4-liter crystal containers with a spent solvent waste both labeled as "Unwanted Materials," and dated as September 27, 2021, September 22, 2021, February 27, 2023 and which exceeded over six months of the LMP collection protocols.

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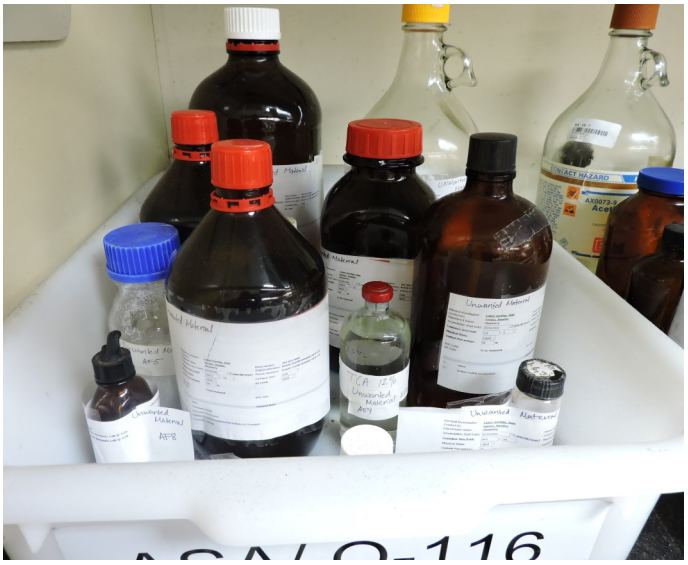
Picture 57 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-046 there were two (2) 4-liter ambar containers with a spent Acetone and Organic Ink waste both labeled as "Unwanted Materials," and dated as February 13, 2022, and March 3, 2023, which exceeded over six months of the LMP collection protocols.

Picture 58 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-046 there were two (2) 4-liter crystal containers with a spent Acetone and Ethylacetate waste both labeled as "Unwanted Materials," (one no "CHEMATIX" label) and dated with their accumulation start dates of April 18, 2022, and the other no dated.



Picture 59 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-116 there were numerous (approximately over eleven 11) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories labeled as "Unwanted Materials," but not dated February 3, 2022, and year 2019.

Picture 60 - UPR PCHEMISTRY DEPARTMENT — At the Lab Q-116 there were numerous over ten 10 "Unwanted Materials," containing discarded chemical reagents (i.e., Cyanide, Ethanol, Benzene) generated at the laboratories not properly labeled as "Unwanted Materials," nor properly dated.

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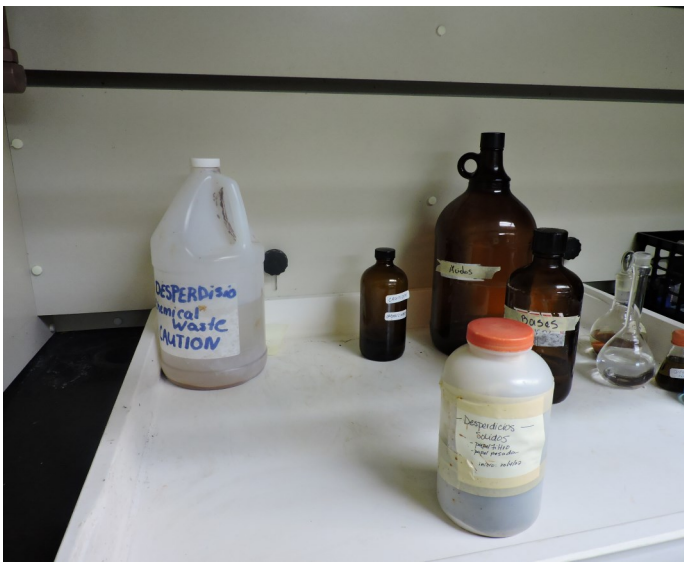
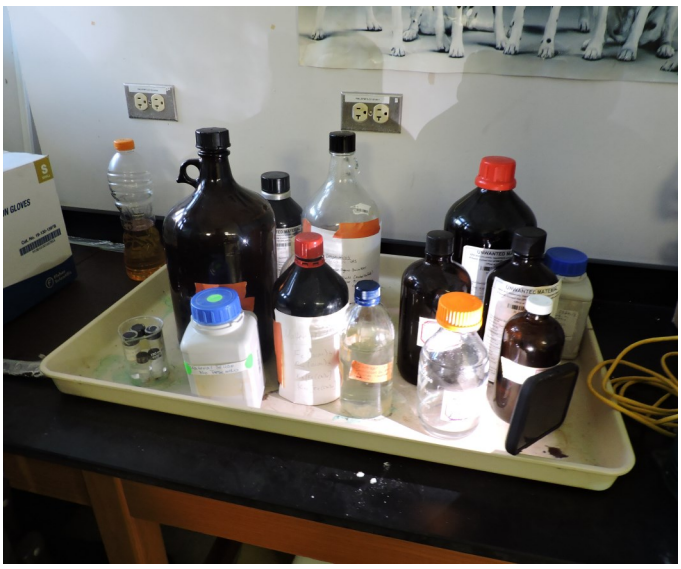
Picture 61 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-116 there was one (1) 1-gallon container with Discarded Vials labeled as "Unwanted Material," but dated with their accumulation start dates of February 24, 2022, which exceeded over six months of the LMP collection protocols.

Picture 62 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-112 Inside an extractor hood there were numerous (approximately over nine 9) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories no properly labeled as "Unwanted Materials," nor dated.



Picture 63 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-112 there were one (1) 4-liter plastic container with a Chemical Wastes not labeled as "Unwanted Materials," nor dated with its accumulation start date.



Picture 64 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-110 there were numerous over ten 13 "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories few of them properly labeled as "Unwanted Materials," but not dated with their accumulation start dates .

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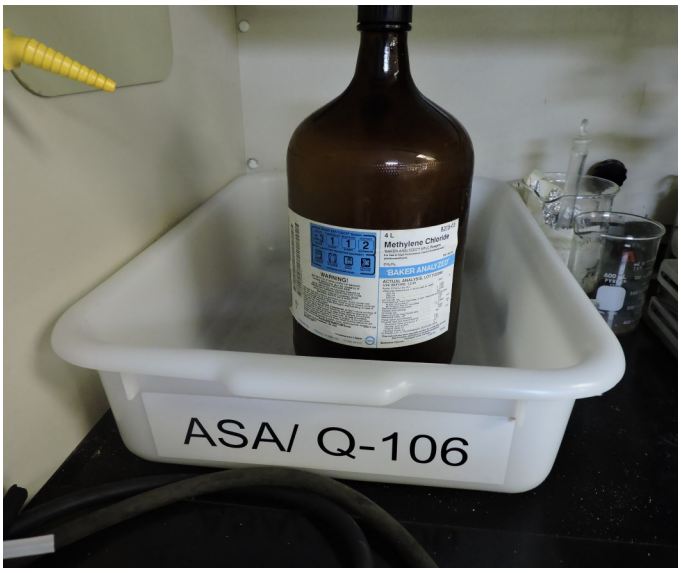
Picture 65 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-110 there was one (1) 1-gallon container with Discarded Vials labeled as "Unwanted Material," but dated with their accumulation start dates of February 24, 2022, which exceeded over six months of the LMP collection protocols.



Picture 66 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-106 one (1) 4-liter ambar container with a spent Methylene Chloride waste not labeled as "Unwanted Materials," nor dated with its accumulation start date.

Picture 67 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-106 there were were various styrofoam boxes containing Dissolve Oxygen Demand test which uses Potassium dichromate as active ingredient and mercury. It was questionable how COD vials are being disposed of since they are characterized as highly hazard.

Picture 68 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-165 there was one (1) 1-gallon ambar container with a spent Sulfuric Acid waste labeled as "Unwanted Materials," leaking, and dated with its accumulation start date of September 28, 2021, which exceeded over six months of the LMP collection protocols.

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Picture 69 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-163 on the floor there were numerous (approximately over twelve 12) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories not properly labeled as "Unwanted Materials," nor dated.

Picture 70 - UPR CHEMISTRY DEPARTMENT- At the Lab Q-159 inside an extractor hood there were numerous (approximately over ten 10) "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories not labeled as "Unwanted Materials," open and not dated.

Picture 71 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-155 inside an extractor hood there were numerous (approximately over eighteen 18 "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories few properly labeled as "Unwanted Materials," nor dated.

Picture 72 - UPR CHEMISTRY DEPARTMENT - At the Lab Q-155 there was one (1) ½-liter ambar container with "Hazardous Waste" not labeled as "Unwanted Materials," and dated as August 17, 2009, not managed as Unwanted Material or complying with the Laboratory Management Plan (LMP).

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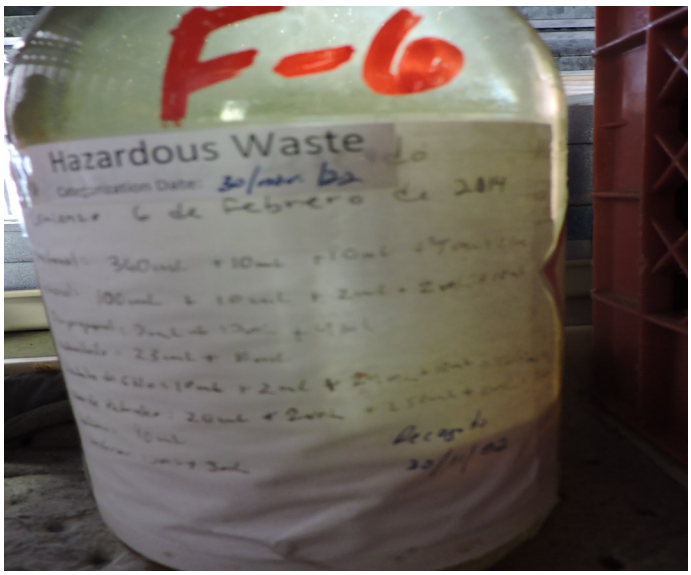
Picture 73 - UPR CENTRAL ACCUMULATION AREA– It has posted signs with the words, "Hazardous Waste Accumulation Area - Restricted Area Authorized Personnel Only," including emergency phone numbers.

Picture 74 - UPR CENTRAL ACCUMULATION AREA- It has posted signs with the words, "Hazardous Waste Accumulation Area - Restricted Area Authorized Personnel Only," including emergency phone numbers.

Picture 75 - UPR CENTRAL ACCUMULATION AREA- The room is well vented and provided with ambient controlled temperature in the area and emergency alarm and spill control equipment.



Picture 76 - UPR CENTRAL ACCUMULATION AREA– At the at CAA, it was observed that some containers were not properly labeled, nor accumulation start dates were shown clearly.

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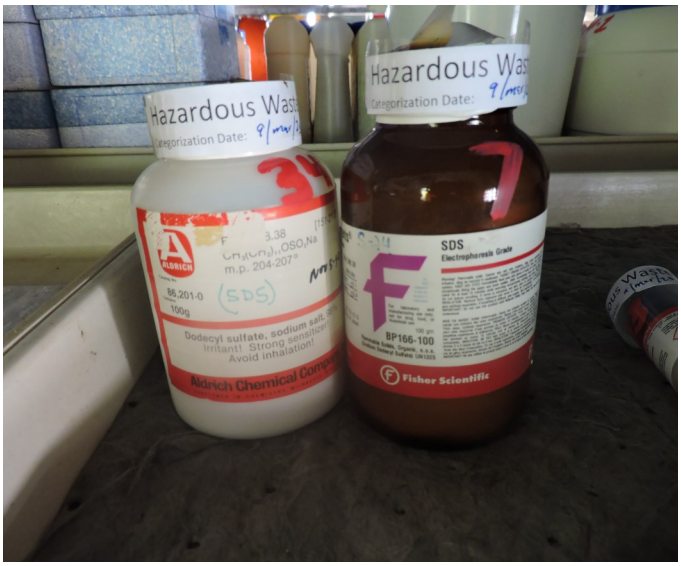
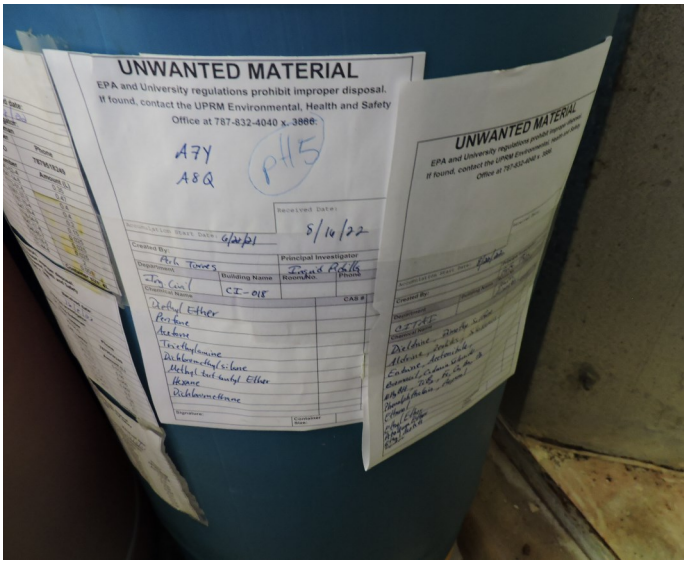
Picture 77 - UPR CENTRAL ACCUMULATION AREA- At the CAA, it was observed that some of the containers were not in good conditions or sealed to secure of any potential releases of waste content.



Picture 78 - UPR CENTRAL ACCUMULATION AREA- At the CAA, it was observed that some containers were its RCRA codes (i.e., "D001") nor identified with its hazard communication pictograms as required by RCRA regulations



Picture 79 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there were seven (7) 15-gallon blue drums containing flammable liquid wastes (Ethanol, Methanol, Acetone-D001), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates

Picture 80 - UPR CENTRAL ACCUMULATION AREA— At the CAA, all drums were clearly labeled, coded as "D001", and identified with its hazard communication pictograms as, "Flammable Liquids."

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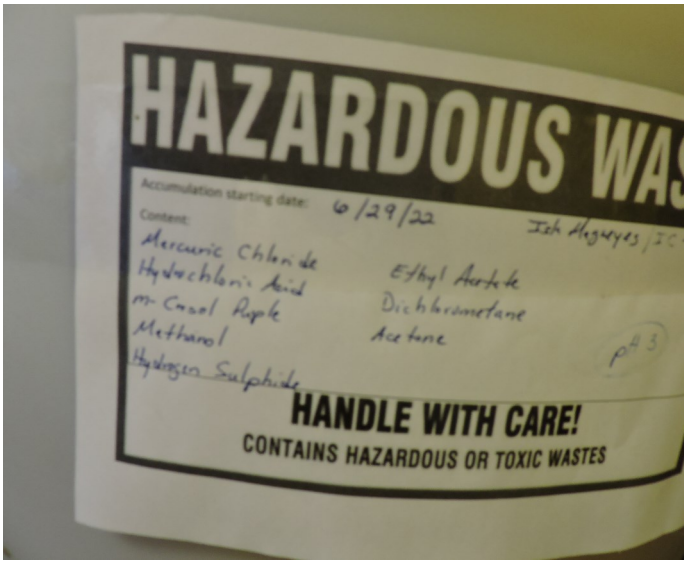
Picture 81 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there were five (5) 5-gallon white drums containing flammable liquid wastes (Ethanol, Methanol, Acetone-D001), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates .

Picture 82 - UPR CENTRAL ACCUMULATION AREA- At the CAA, all drums were clearly labeled, coded as "D001", and identified with its hazard communication pictograms as, "Flammable Liquids."



Picture 83 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there was one (1) 55-gallon white drum with flammable liquid waste, clearly labeled with the words, "Hazardous Waste," and dated on June 6, 2022, not coded as "D001", nor identified with its hazard communication pictograms.

Picture 84 - UPR CENTRAL ACCUMULATION AREA— At the CAA, there were Six (6) 5-gallon white drums containing corrosive liquid wastes (Sodium Hydroxide, Hydrochloric Acid, Sulfuric Acid-D002), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates.

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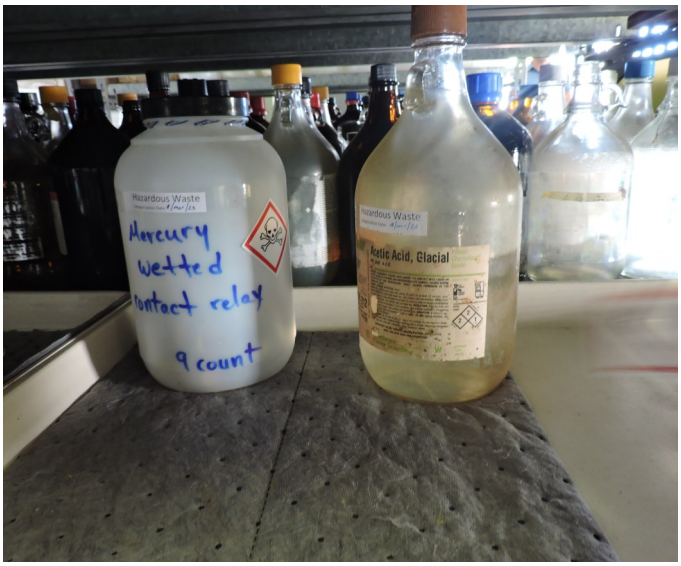
Picture 85 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there were three (3) 15-gallon blue drums containing corrosive liquid wastes (Sodium Hydroxide, Hydrochloric Acid, and Sulfuric Acid-D002), clearly labeled with the words, "Hazardous Waste," and dated with their accumulation start dates .



Picture 86 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there was one 1-gallon crystal bottle containing corrosive liquid wastes (Acetic Acid, Glacial-D002), labeled as "Hazardous Waste," and dated on March 9, 2023 but not coded as "D002", nor identified with its hazard communication pictogram.

Picture 87 - UPR CENTRAL ACCUMULATION AREA- At the CAA, Three (3) 15-gallon blue/white drums containing corrosive liquid wastes clearly labeled with the words, "Hazardous Waste," but not pictograms and exceeded over 180 dyas accumulation time permitted.

Picture 88 - UPR CENTRAL ACCUMULATION AREA— At the CAA, Six (6) 500-ml, 250-ml, and 100-ml small ambar containers with toxic solid wastes (Ampicin, Potasium Chromate, Hydroxide, and Butyronitrile), labeled as "Hazardous Waste," and all dated es on October 21, 2022, but not labeled with hazard pictograms.

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Picture 89 - UPR CENTRAL ACCUMULATION AREA- At the CAA, there two (2) plastic trays with discarded alkaline and computer lithium batteries, open and not clearly as "Hazardous Waste," nor dated with their accumulation start dates and no hazard communication pictogram as, "Ignitable and Reactive Solids."

Picture 90 - UPR CENTRAL ACCUMULATION AREA- At the CAA, Inside a metal cabinet there were five (5) carboard boxes and one plastic four-pack containing discarded flares not labeled as "Hazardous Waste," nor dated with their accumulation start dates nor hazard pictograms as, "Explosive Solids."

Picture 91 - UPR CENTRAL ACCUMULATION AREA - At the time of the Inspection, EPA inspector requested to test emergency and alarm system when tested all fire suppressant material was concurrently activated and descended upon all of us inside the CAA.

Picture 92 - CENTRAL ACCUMULATION AREA — At the Hazmat Storage Building there were nine (9) 55-gallon blue/white drums containing Chiller Washing Water – D002), clearly labeled with the words, "Hazardous Waste," and all dated with their accumulation start dates of January 12, 2023 and hazard pictograms.

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Picture 93 - UPR CENTRAL ACCUMULATION AREA- At the Hazmat Storage Building inside a metal cabinet there were five (5) 5-gallon containers with corrosive reagents (i.e., Sodium Hydroxide) secured by EH&S Officers. All reagents were well maintained, controlled and in compliance.

Picture 94 - UPR CENTRAL ACCUMULATION AREA- At the Hazmat Storage Building there were six (6) 1-gallon crystal containers with radioactive waste of "Uranyl Nitrate" and "Uranyl Acetate," stored for years without no hazardous waste determination or managed as hazardous waste (radioactive-corrosive).

Picture 95 - UPR CENTRAL ACCUMULATION AREA - At the Hazmat Storage Building that no Hazardous Waste Disposal Contractor in the Island would transport or dispose of radioactive waste and that is the reason those wastes have been stored for years.

Picture 96- CENTRAL ACCUMULATION AREA — At the Hazmat Storage Building inside a plastic tray there were three (3) 50-ml (30-g) crystal containers with radioactive waste of "Uranyl Nitrate" and "Uranyl Acetate," stored for years without no hazardous waste determination or managed as hazardous waste.

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Picture 97 - UPR BUILDINGS & LAND DEPARTMENT– At the Mechanic Shop there was one (1) 55-gallon blue drum open with impacted material with used oil not marked with the words, "Used Oil."

Picture 98 - UPR BUILDINGS & LAND DEPARTMENT- At the Mechanic Shop there was one (1) 5-gallon black pail with used oil not marked with the words, "Used Oil."

Picture 99 - UPR BUILDINGS & LAND DEPARTMENT- At the Mechanic Shop there was one (1) 200-gallon double wall Used Oil Steel Tank marked with the words, "Used Oil." However, there were old and new used oil spills and stains on the concrete floor of the used oil.

Picture 100 - UPR BUILDINGS & LAND DEPARTMENT– At the Mechanic Shop there was one (1) part-washer tray-container machine which uses CB-100 degreaser (e.g., biodegradable water-based cleaner and degreaser) to clean up auto parts, but diesel was used as a degreaser in the part-washer machine.

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Picture 101 - UPR BUILDINGS & LAND DEPARTMENT- At the Mechanic Shop, there was one (1) 55-gallon black drum open on top with spent used oil filters impregnated with used oil not marked with the words , “Used Oil.”

Picture 102 - UPR BUILDINGS & LAND DEPARTMENT- At the Refrigeration Shop, there was one (1) 55-gallon blue drum with a yellow drainage tray on top with used oil generated from draining compressors not marked with the words, "Used Oil"

Picture 103 - UPR BUILDINGS & LAND DEPARTMENT- At the At the Refrigeration Shop, there were two (2) 1,000 pounds steel tanks with discarded refrigerants not marked with the words, "Used Refrigerant." No hazardous waste determination has been made nor recycling or reclaiming program evidenced.

Picture 104 - UPR BUILDINGS & LAND DEPARTMENT— At the Cleaning Warehouse Shop, EPA inspectors requested the inventory of product purchased that has historically been used for cleaning purposes in the Campus which contain hazardous characteristics.

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Picture 105 - UPR BUILDINGS & LAND DEPARTMENT- At the Cleaning Warehouse Shop, many of the cleaning solvent products were concentrated and contained hazardous substances as active ingredients after thorough evaluation of the products Safety Data Sheets (SDSs).

Picture 106 - UPR BUILDINGS & LAND DEPARTMENT- At the Fields and Roads Shop there was one (1) 30-gallon container part-washer machine which uses mineral spirit degreaser to clean up equipment parts served by Oil Energy System which was out of service for a long period of time.

Picture 107 - UPR BUILDINGS & LAND DEPARTMENT- At the Fields and Roads Shop there was one (1) 20-gallon black container open on top with spent used oil filters impregnated with used oil not marked with the words, "Used Oil."

Picture 108 - UPR BUILDINGS & LAND DEPARTMENT— At the Fields and Roads Shop there was One (1) 55-gallon blue drum with a white drainage tray on top with used oil generated from draining landscape equipment not marked as “Waste Oil,” and not with the words, "Used Oil."

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Picture 109 - UPR BUILDINGS & LAND DEPARTMENT- At the Fields and Roads Shop there was one (1) 55-gallon white drum with a yellow drainage tray on top with used oil generated from draining landscape equipment marked with the words, "Aceite Usado."

Picture 110 - UPR BUILDINGS & LAND DEPARTMENT- At the Fields and Roads Shop there was one (1) 55-gallon white drum with rags impregnated with used oil not marked with the words, "Used Oil."

Picture 111 - UPR BUILDINGS & LAND DEPARTMENT - At the Universal Waste Storage Area there were one (1) 40-gallon container and three (3) 5-gallon pails all open with broken fluorescent lamps mixed with crushed fluorescent lamps and sodium bulbs showing evidence of mercury releases and breakage.

Picture 112 - UPR BUILDINGS & LAND DEPARTMENT - At the Universal Waste Storage Area there was one (1) white plastic tray (1'x1'x 2') with crushed fluorescent lamps and sodium bulbs showing evidence of breakage, leakage, and damage that caused releases of mercury or other hazardous constituents to the area.

Picture 113 - UPR BUILDINGS & LAND DEPARTMENT- At the Universal Waste Storage Area there were sixty (60) square cardboard boxes (1'x1'x 4') packing over sixty (60) 4-foot spent fluorescent lamps, some open and not labeled with the words, "Universal Waste," or dated with their accumulation start dates.

Picture 114 - UPR BUILDINGS & LAND DEPARTMENT- At the Universal Waste Storage Area there were thirty (30) square cardboard boxes (1'x1'x 8') containing broken 8-foot spent fluorescent lamps, open, not labeled with the words, "Universal Waste" or dated with their accumulation start dates.

Picture 115 - UPR BUILDINGS & LAND DEPARTMENT - At the Universal Waste Storage Area there were three (3) cardboard boxes (1'x1'x 2') one withi spent halogen bulbs, the other with pig tails, and another with LED light cards, not labeled with the words, "Universal Waste," or "Mercury Equipment," nor dated.

Picture 116 - BUILDINGS & LAND DEPARTMENT — At the Universal Waste Storage Area there were two (2) green plastic trays (2'x2'x2') packing over twenty-five (25) U-shaped spent fluorescent lamps, open and not labeled with the words, "Universal Waste," or dated with their accumulation start dates.

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Picture 117 - UPR BUILDINGS & LAND DEPARTMENT- At the Universal Waste Storage Area there were one (1) 55-gallon white drum and one (1) square cardboard boxes (1'x1'x 4') packing over twenty (20) 4-foot and 8-foot spent fluorescent lamps, both open and not labeled with the words, "Universal Waste."

Picture 118 - UPR BUILDINGS & LAND DEPARTMENT- At the Universal Waste Storage Area there were two (2) 55-gallon black steel drums with lids containing "Ballast" which were removed from aluminum frames. None were clearly labeled with the words, "Universal Waste-Mercury Equipment," or dated.

Picture 119 - UPR BUILDINGS & LAND DEPARTMENT - At the Universal Waste Storage Area there were two (2) cardboard box (1'x1'x 2') open with high-density halogen open and not labeled with the words, "Universal Waste," or dated with their accumulation start dates.

Picture 120 - BUILDINGS & LAND DEPARTMENT — At the Universal Waste Storage Area there was one (1) cardboard box (1'x1'x 2') open with LED light cards, and not labeled with the words, "Universal Waste-Mercury Containing Equipment," or dated.

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Picture 121 - UPR BUILDINGS & LAND DEPARTMENT- At the Paint Shop there were over 100 1-gallon paint pails decommissioned since were damaged due the time during the COVID-19 not in use No hazardous waste determination has been made on the contents of all 5-gallon paint pails at the Paint Shop.

Picture 122 - UPR BUILDINGS & LAND DEPARTMENT- At the Paint Shop, it was noted that the practice to dispose of used brushes was to clean them up with solvent thinner, if it is no longer usable, they allow them to dry, and then dispose of with domestic garbage as illegal treatment of hazardous wastes.

Picture 123 - UPR BUILDINGS & LAND DEPARTMENT - At the Welding Shop, the shop was closed at the time of the Inspection and EPA inspectors took an overlook view of the shop from the outside area.

Picture 124 - BUILDINGS & LAND DEPARTMENT — At the Welding Shop, there were over ten (10) 100-lbs, 75-lbs and 25-lbs gas cylinders store in a concrete shed and secured with a cyclone fenced gates. There was oxygen, ethylene and other compressed gases stored in this shop and used for welding jobs.

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Picture 125 - UPR ALZAMORA FARM– At the Mechanic Shop there were over ten (10) 4-foot spent fluorescent lamps, on the floor without control or containment showing evidence of breakage, leakage, and damage that caused releases of mercury or other hazardous constituents to the area.

Picture 126 - UPR ALZAMORA FARM- At the Mechanic Shop there was one (1) 55-gallon red drum open on top with spent used oil filters impregnated with used oil not marked with the words, "Used Oil," (Spanish “Filtros Usados”).

Picture 127 - UPR ALZAMORA FARM- At the Mechanic Shop there was one (1) one (1) 55-gallon black steel drum open with used oil not marked with the words, "Used Oil."

Picture 128 - UPR ALZAMORA FARM– At the Mechanic Shop there were two (2) 55-gallon blue plastic drums with used oil not marked with the words, "Used Oil."

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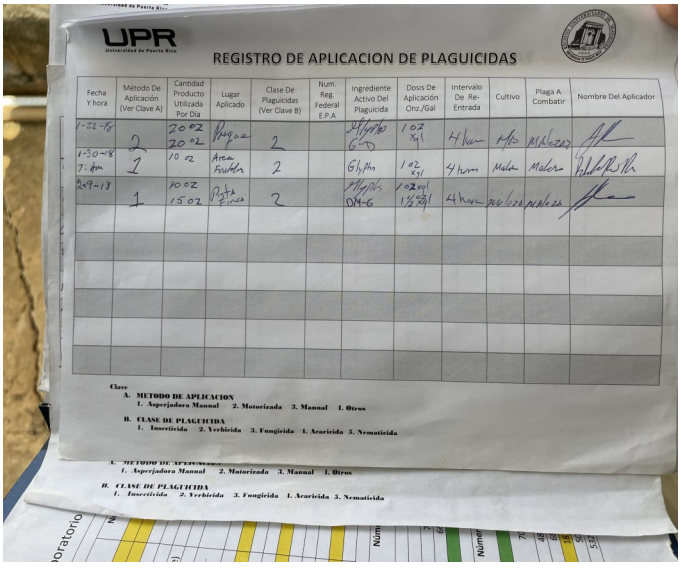
Picture 129 - UPR ALZAMORA FARM- At the Mechanic Shop, there were two (2) 55-gallon blue plastic drums, with spent degreaser not labeled with their waste content. No hazardous waste determination has been made on the contents of the two 55-gallon drums at the Mechanic Shop.

Picture 130 - UPR ALZAMORA FARM- At the Mechanic Shop there were five (5) vehicle and truck batteries on the floor discarded without control showing evidence of leakage, and damage that releases of Sulfuric Acid, and not labeled with the words, “Hazardous Wastes,” nor dated.

Picture 131 - UPR ALZAMORA FARM- At the Mechanic Shop there was one (1) Tractor 6600 parked outside of the shop releasing used oil on the ground from an engine leak. EPA inspectors advised to stop, control, and clean up immediately the used oil release on the ground.



Picture 132 - UPR ALZAMORA FARM— At the Alzamora Farm, EPA inspectors learned that the last application used of most pesticides at the warehouse were logged in its Application Registry as of February 9, 2018.

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Picture 133 - UPR ALZAMORA FARM- At the Alzamora Farm, there was one (1) 2.5-gallon container with "Poast" herbicide which is a postemergence herbicide for control of annual and perennial grass weeds manufactured by BASF. The container seemed deteriorated and abandoned.

Picture 134 - UPR ALZAMORA FARM- At the Alzamora Farm, there were seven (7) 1-liter containers with Neem Oil "Dyna Gro" which is an organic solution used as a pesticide against insects, mites, or fungi in plants. The containers seemed not in use or abandoned.

Picture 135 - UPR ALZAMORA FARM- At the Alzamora Farm, there were two (2) 2.5-gallon container with "M-Pede" insecticide that provides excellent contact control of various insects. The container seemed not in use or abandoned.

Picture 136 - UPR ALZAMORA FARM— At the Alzamora Farm, there was one (1) 55-gallon black steel drum with "Dipel DT" insecticide used for caterpillar control. The drum seemed not in use or abandoned.

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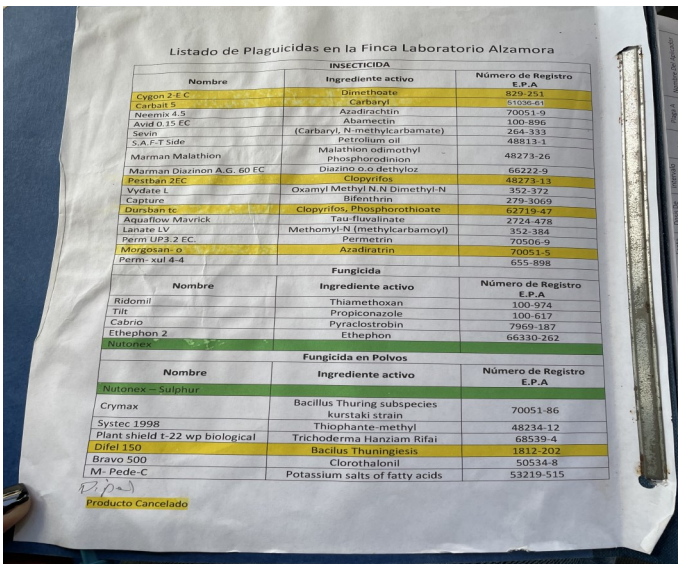
Picture 137 - UPR ALZAMORA FARM- At the Alzamora Farm, there was one (1) cardboard box containing 20-liter "Hi-Yield" insecticide to termites, fleas, ticks, carpet beetles, and cockroaches manufactured by Hedwin, Baltimore, MD. The box seemed deteriorated, abandoned, and leaking on the shelf.

Picture 138 - UPR ALZAMORA FARM- At the Alzamora Farm, there was one (1) 3-shelf metal storage rack containing; i) eight (8) plastic bags broken with powder insecticide (Dipel Dry); ii) two (2) 1-lb bottles with Dipel 150 Dust; iii) two (2) 1-gallon containers with Vydate L and other various not in use insecticides.

Picture 139 - UPR ALZAMORA FARM- At the Alzamora Farm, there was one (1) 3-shelf metal storage rack containing ("Fungicides"): i) one (1) 2.5-gallon with Physan 2.0 fungicide; ii) two (2) 2.5-gallon with Banrot 40 WP fungicide; and iii) nine (9) 2 -5-gallon and 1-gallon containers with unknown fungicides.



Listado de Plaguicidas en la Finca Laboratorio Alzamora

INSECTICIDA		
Nombre	Ingrediente activo	Número de Registro E.P.A
Cygon 2 E C	Dimethoate	829-251
Carbalt 5	Carbaryl	51036-61
Neemix 4.5	Azadirachtin	70051-9
Avid 0.15 EC	Abamectin	100-896
Sevin	(Carbaryl, N-methylcarbamate)	264-333
S.A.F-T Side	Petrolium oil	48813-1
Marman Malathion	Malathion odimothyl Phosphorodinion	48273-26
Marman Diazinon A.G. 60 EC	Diazino o.o dethyloz	66222-9
Pesthan 2EC	Clopyrifos	48273-13
Vydate L	Oxamyl Methyl N.N Dimethyl-N	352-372
Capture	Bifenthrin	279-3069
Dursban tc	Clopyrifos, Phosphorothioate	62719-47
Aquaflow Mavrick	Tau-fluvalinate	2724-478
Lanate LV	Methomyl-N (methylcarbamoyl)	352-384
Perm UP3.2 EC	Permetrin	70506-9
Morgosan- o	Azadiratrin	70051-5
Perm- xul 4-4		655-898

Fungicida		
Nombre	Ingrediente activo	Número de Registro E.P.A
Ridomil	Thiamethoxan	100-974
Tilt	Propiconazole	100-617
Cabrio	Pyraclostrobin	7969-187
Ethephon 2	Ethephon	66330-262
Nutonex		

Fungicida en Polvos		
Nombre	Ingrediente activo	Número de Registro E.P.A
Nutonex – Sulphur		
Crymax	Bacillus Thuring subspecies kurstaki strain	70051-86
Systec 1998	Thiophante-methyl	48234-12
Plant shield t-22 wp biological	Trichoderma Hanziam Rifai	68539-4
Difel 150	Bacilus Thuningiesis	1812-202
Bravo 500	Clorothalonil	50534-8
M- Pede-C	Potassium salts of fatty acids	53219-515

Producto Cancelado

Picture 140 - UPR ALZAMORA FARM- At the Alzamora Farm, the agronomist José Muñoz Rivera made an inventory of the stored materials (March 15, 2023) of the unknown insecticide severely deteriorated and in detrimental conditions .

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Picture 141 - UPR CAMPUS HOTEL - At the Campus Hotel, EPA inspectors observed that many of the cleaning solvent products were concentrated and contained hazardous substances as active ingredients.

Picture 142 - UPR CAMPUS HOTEL - At the Campus Hotel, EPA inspectors reiterated that products containing hazardous substances as active ingredients, and as specified in the product's SDSs, must be managed in a manner to avoid the disposal into the environment as a hazardous waste.

Picture 143 - UPR PRINTING DEPARTMENT - At the Printing Shop, all printing ink used to reproduce the imprint is water based therefore it does not contain hazardous ingredients. The Printing Office uses Digital Xerox machines in which ink cartridges are replaced on a tolling agreement with Xerox.

Picture 144 - UPR PRINTING DEPARTMENT - At the Printing Shop, Mr. Caban indicated that the printing used to be offset by pressing machine and that wastes used to be generated from used rags impregnated with Supreme Plate Cleaner which were collected and sent to be laundered and reused.

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Picture 145 - UPR SWIMMING POOL AREA - At the Swimming Pool Area, all choline treatment at the swimming pool area is contracted out and is based on solid dosage of Sodium Chloride (NaCl) by a Pulsar 4 System .

Picture 146 - UPR SWIMMING POOL AREA - At the Swimming Pool Area, the Pulsar 4 System controls and applies chemicals as needed to the pool water, and on a routine basis, and therefore, there is not any chemical storage room at the swimming pool area .

Picture 147 - UPR HHEALTH FITNESS CENTER (NEW GYM) - At the Health Fitness Center, raw material products are used in this area mainly for cleaning such as waxes, finishing stripper, interlock metal degreaser, mechanic degreaser, spray cans stored in a brown cabinet secured lock.

Picture 148 - UPR NURSING DEPARTMENT - The Nursing Department houses the nursing school laboratories and teaching classrooms which are used to simulate medical emergencies and routine day care of hospital patients.

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Picture 149 - UPR NURSING DEPARTMENT - At the Nursing School, spent vegetal blood and spent related equipment (i.e., needles, syringes, gloves, and gauzes, among others) are discarded in red bags and containers which are later disposed of as biomedical waste by Stericycle Puerto Rico biomedical contractor.

Picture 150 - UPR NURSING DEPARTMENT - At the At the Nursing School, all biomedical wastes are collected at the laboratory in biomedical plastic red bags, and in red containers for sharp waste materials and collected by Stericlycle Puerto Rico for final disposition.

Picture 151 - UPR HEALTH MEDICAL SERVICES BUILDING - At the Health Medical Services, controlled pharmacy drugs and medicines were stored with some expired controlled pharmacy drugs which are disposed of as biomedical waste.

Picture 152 - UPR HEALTH MEDICAL SERVICES BUILDING - At the Health Medical Services, expired medicines and/or pharmacy drugs are discarded as a Biomedical Waste. Some of the expired medications have hazardous waste characteristics and a proper hazardous waste determination must be made on them.

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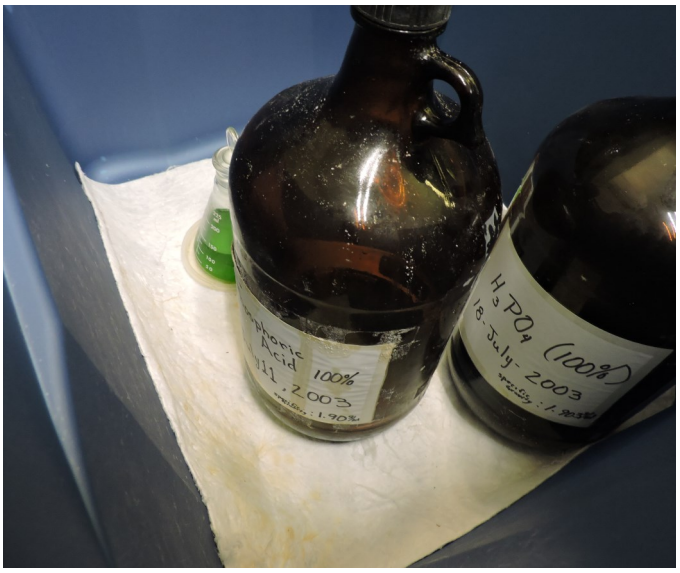

Picture 153 - UPR PHYSICS DEPARTMENT- At the Geology Lab F-107 there were two (2) 4-liter ambar container with a spent Phosphoric Acid (100%) inside a blue plastic bin no labeled as "Unwanted Material" and dated with their accumulation start dates of July 18, 2003, and July 11, 2003.

Picture 154 - UPR PHYSICS DEPARTMENT- At the Geology Lab F-107 there was one (1) 4-gallon bucket with a spent vials containing Phosphoric Acid (100%) no labeled as "Unwanted Material" nor dated with its accumulation start date.

Picture 155 - UPR PHYSICS DEPARTMENT- At the Geology Lab F-107 there was one (1) 250-ml Erlenmeyer flask and discarded vials containing Phosphoric Acid (100%) inside a blue plastic bin no labeled as "Unwanted Material" nor dated with its accumulation start date.

Picture 156 - UPR PHYSICS DEPARTMENT– At the Physics Lab F-129, there were numerous chemical reagents in a cabinet including sodium acetate, aluminium acetate, sodium sulfide, lithium hydroxide, tin (II) oxide, amonium hydroxide without compatibility or hazard waste determination.

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Picture 157 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-129, there was sodium hydroxide stored next to Polyvinylpyrrolidone; possible incompatible chemical reagents stored together without mean of physical segregation nor hazardous waste determination.

Picture 158 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-129, there was potassium Acetate stored next to Iron Acetate "moisture sensitive" possible incompatible chemical reagents stored together without mean of any physical segregation. Iron Acetate is air sensitive and should be stored under inert gas..

Picture 159- UPR PHYSICS DEPARTMENT- At the Lab F-129, there was potassium chloride stored next to Citric acid; possible incompatible chemical reagents stored together without any mean of physical segregation. Potassium chloride incompatible with acids, sulfuric acid, and citrates

Picture 160 - UPR PHYSICS DEPARTMENT— At the Physics Lab F-129, there were nitroaniline stored next to ammonium, and cobalt (II) chloride which turns pink on exposure to air and moisture sensible and should be stored under nitrogen. All these chemical reagents stored together incompatibles.

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Picture 161 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-129, inside the gray solids' cabinet, there were unknown chemical reagents stored next to acids (i.e., tartaric acid, some seemed abandoned, not in use or stored in lieu of being disposed of as a hazardous.

Picture 162 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-129, there was potassium dichromate (oxidizers), stored next to Strontium hydroxides and lithium hydroxide (inorganic bases) incompatible and stored together without any mean of physical segregation nor hazardous waste determination

Picture 163 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-129, there was Lithium oxide stored next to Oxalic acid, and Lithium bromide and Niobium (IV) oxide possible incompatible chemical reagents stored together without any mean of physical segregation nor hazardous waste determination.

Picture 164- UPR PHYSICS DEPARTMENT— At the Physics Lab F-129, there was Hydrofluoric acid, broken, and leaking acid on cabinet shelf stored next to Sodium bromide, Sodium thiosulfate (violently reacts with strong oxidizers, and acids) and Silica gel incompatible with HF, stored together possible

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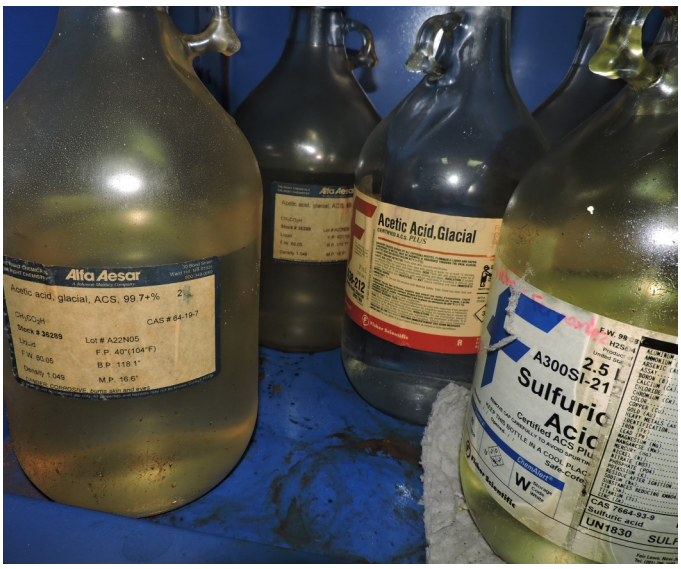
Picture 165 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-123, chemical reagents were stored in a blue cabinet identified as "Corrosive," and included nitric acid, hydrochloric acid, phosphoric acid, Triton X-100 (octylphenol polyethoxyethanol), acetic acid anhydrous, hydrazine hydrate solution, among others.

Picture 166 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-123, the bottles of acid, flammable and reactive solvents were stored together with an abandoned sodium metallic bar. All seemed very old, very dry, unstable; had leaking metal lids, moisture, labels vanished, and violent reaction, and explosion.

Picture 167- UPR PHYSICS DEPARTMENT- At the Physics Lab F-123, one (1) 1-L ambar bottle containing Triton X-100, which is a nonionic surfactant oxide, harmful if swallowed, should not be stored together where acids can be inadvertently mixed or spill or leak can cause danger and possibility of hazardous reactions.



Picture 168 - UPR PHYSICS DEPARTMENT— At the Physics Lab F-123, there were three (3) 4-L ambar bottles containing Acetic Anhydride (Aceti Acid Glacial) in deteriorated conditions and labels being vanished, not in use and abandoned not compatible with Sulfuric Acid.

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Picture 169 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-123, there were two (2) 4-L ambar bottles containing Hydrochloric Acid in deteriorated conditions and labels being vanished not compatible with Acetic Anhydride they can be inadvertently mixed or where a spill or leak can cause danger.

Picture 170 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-123, there was one (1) 4-L ambar bottle Ammonium Hydroxide stored in the cabinet may read violently with strong acids such as hydrochloric, sulfuric, and nitric, dimethyl sulfate, halogens and an abandoned sodium metallic bar since year 2004.

Picture 171 - UPR PHYSICS DEPARTMENT - At the Physics Lab F-458, there were numerous "Unwanted Materials," containing discarded or spent chemical reagents generated at the laboratories not properly labeled as "Unwanted Materials," nor dated with its accumulation start date.

Picture 172 - UPR PHYSICS DEPARTMENT - At the Physics Lab F-458, there was one (1) 4-liter container with a spent Orthophosphoric Acid, next to one (1) 4-liter container with a spent Chloroform, next to a HPLC bottle and stored next to one (1) 4-liter crystal container with a spent Hydrochloric Acid.

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Picture 173 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-458, there was one (1) ½-liter ambar container with a spent Hydrogen Peroxide stored, next to 0ne (1) 1-liter ambar container with a spent Octadecene, and next to one (1) 4-L Hexane which are incompatible chemical reagents stored together.

Picture 174 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-458, there were potassium iodide, vinyl alcohol, malonic acid, lithium metallic bar (reactive), thiourea, oleylamine among many others stored together in an incompatible manner that can be inadvertently mixed or where a spill or leak can cause danger.

Picture 175 - UPR PHYSICS DEPARTMENT - At the Physics Lab F-458, there was one (1) 4-liter ambar container with a spent Ethanol mixed with water abandoned in a laboratory sink not labeled as "Unwanted Material" nor dated with its accumulation start date.

Picture 176 - UPR PHYSICS DEPARTMENT - At the Physics Lab F-458, there was oleylamine next to one (1) 4-L dimethylformamide next one (1) 4-L hexane, next to one (1) 4-L hydrobromic acid next to one (1) 4-L hydrofluoric acid among other reagents stored together in an incompatible manner.

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Picture 177 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-458, there was cadmium stearate (toxic) next to malonic acid (corrosive) among many other chemical reagents stored together in an incompatible manner where they can be inadvertently mixed or where a spill or leak can cause danger or explosion.

Picture 178 - UPR PHYSICS DEPARTMENT- At the Physics Lab F-458, there were sodium sulfite, activated carbon, flourene, yttrium nitrate stored next of potassium dichromate, and strontium hydroxide, strontium acetate, lanthanum chloride in an incompatible manner at risk of fire or explosion.

Picture 179 - UPR PHYSICS DEPARTMENT - At the Physics Lab F-458, there was mercuric choride (toxic and corrosive), zinc iodide (highly flammable on contact with air and cause fire or explosion), chromium potassium sulfate (highly toxic), cesium iodide stored in a incompatible manner, old and abandoned.

Picture 180 - UPR PHYSICS DEPARTMENT - At the Physics Laboraty, Inspectors observed numerous expired chemical, discarded, contaminated, various unused chemical reagents, deteriorated and stored for a very long time (2004) in shelves without any protection, or incompatibility of waste characteristics

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Picture 181 - UPR PHYSICS DEPARTMENT- At the Physics Labs, there were one (1) 1-L bottle phosphoric acid, and one (1) 1-L bottles hydrochloric acid, next to two (2) 1-L bottles of hydrogen peroxide and to one(1) 1-L bottle sodium dodecyl sulfate (explosive mixture in air) and not used since year 2004.

Picture 182 - UPR PHYSICS DEPARTMENT- At the Physics Labs, there were two (1) 4-L bottle hydrochloric acid, next to bottles of ammonium hydroxide, and potassium hydroxide (corrosive) not stored in a compatible manner and not used since year 2004.

Picture 183 - UPR PHYSICS DEPARTMENT - At the Physics Labs, there was one (1) 4-L bottle and various containers with phosphoric acid (corrosive), next to a bottle of nitric acid, and to chromium solution (toxic) and vanadium metal solution not stored in a compatible manner and not used since year 2004.

Picture 184 - UPR PHYSICS DEPARTMENT - At the Physics Labs, there were two (2) 4-L bottle with hydrochloric acid, next to a one (1) 4-L with acetic acid , next of one (1) 4-L bottle of ammonium hydroxide, next to one (1) bottle of acetone not stored in a compatible manner and not used since year 2004.

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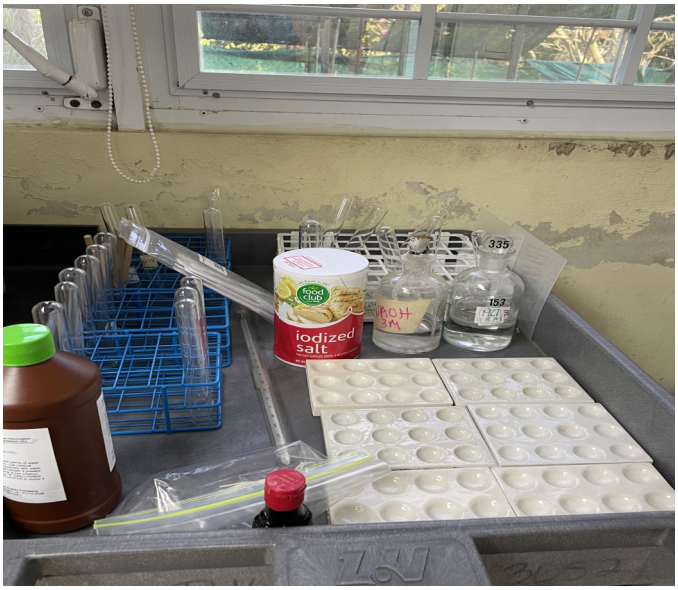
Picture 185 - UPR BIOLOGY DEPARTMENT - At the Lab B-020 there were a refrigerator with chemical reagents such as phytagel-plant cell culture (tested powder), albumin, saccharose, fructose, hematoxylin, glucose, and kinetin solution.



Picture 186 - UPR BIOLOGY DEPARTMENT - At the Lab B-020 there was on a testing table, EPA Inspector observed iodized salt, NAOH liquid solution, and HCl stored next to each other.

Picture 187 - UPR BIOLOGY DEPARTMENT - At the Lab b-020 there were expired chemicals (since < 2010 - 2018), discarded, unlabeled, contaminated, leaking, various unused chemical reagents, deteriorated and stored for a very long timein shelves without any physical means to protect compatibility.

Picture 188 - UPR BIOLOGY DEPARTMENT - At the Lab B-026 there was a yellow cabinet identified as “Flammable” with methanol, butanol, ethanol, propanol, ethyl alcohol, sodium sulfite, paraffin oil, mercuric iodine red and buffer solution non compatible (i.e., Acetic Acid Glacial, Ethanol, Sodium Sulfite).

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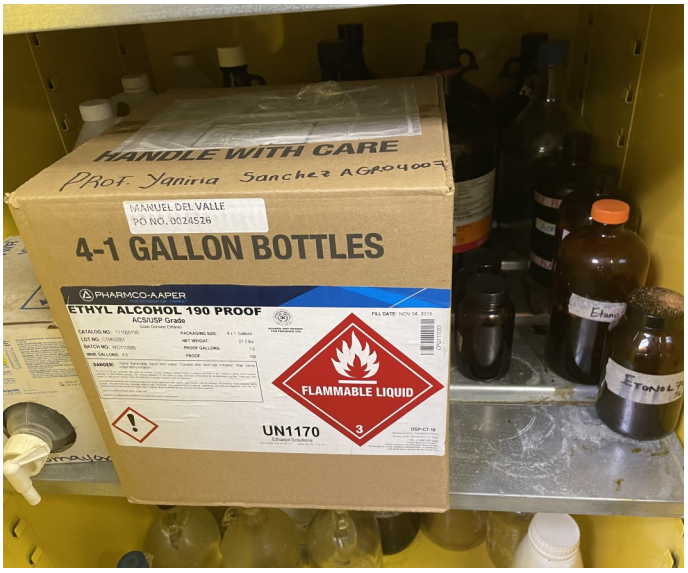

Picture 189 - UPR BIOLOGY DEPARTMENT At the Lab B-026 there was a second shelf containing a box of ethyl alcohol 190 proof containing four (4) 1-gallon bottles, and a smaller box containing a yellow buffer solution. Also, behind the boxes there were glass bottles of ethanol and acetic acids.

Picture 190 - UPR BIOLOGY DEPARTMENT At the Lab CB-026, in an extractor hood there was one (1) 1-liter plastic bottle with "COTEX" labeled as "Hazardous Waste'" and dated with its accumulation start date of August 2019 (over 3—4 years old)

Picture 191 - UPR BIOLOGY DEPARTMENT At the Lab B-026 , there were various expired chemicals (since < 1999 - 2001), discarded, unlabeled, various unused chemical reagents, deteriorated and stored for a very long time in shelves without any physical means to protect each other from incompatibility .

Picture 192 - UPR BIOLOGY DEPARTMENT - At the Lab B-073, EPA Inspectors observed that some chemical reagents were deteriorated, leaking, corroded, and spilling its content.

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Picture 193 - UPR BIOLOGY DEPARTMENT At the Lab B-073, inside a cabinet there were numerous small cap bottles with algae destroyer, 1-Benzylaminopurine, boileezers (dated May 20, 2000), carbowax, and activated charcoal.

Picture 194 - UPR BIOLOGY DEPARTMENT At the Lab B-073, there were chemical reagents were deteriorated with vanished labels, corroded, spilling its content, and stored for a very long time in shelves without any physical means to protect each other from incompatibility of waste characteristics.

Picture 195 - UPR BIOLOGY DEPARTMENT At the Lab B-073, there were chemical reagents were deteriorated with vanished labels, corroded, and spilling its content and stored for a very long time (April 2015) without any physical means to protect each other from incompatibility of waste characteristics.

Picture 196 - UPR BIOLOGY DEPARTMENT - At the Lab B-073, there were chemical reagents were deteriorated with vanished labels, corroded, spilling its content and stored for a very long time.

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Picture 197 - UPR BIOLOGY DEPARTMENT At the Lab B-086, there were some chemical reagents were stored for a very long time (i.e., over a year or more October 20, 2015) in shelves without any physical means to protect each other from incompatibility of waste characteristics.

Picture 198 - UPR BIOLOGY DEPARTMENT At the Lab B-086, there were other chemical reagents stored in shelves without any physical means to protect each other from incompatibility of waste characteristics deteriorated, leaking, corroded, and spilling its content.

Picture 199 - UPR BIOLOGY DEPARTMENT At the Lab B-086, there were some chemical reagents were stored for a very long time (i.e., over a year or more November 2006) in shelves without any physical means to protect each other from incompatibility of waste characteristics.

Picture 200 - UPR BIOLOGY DEPARTMENT - At the Lab B-086, Inside the freezer compartment there was a box with testing tubes. Next to the freezer compartment there was one (1) five 5 -gallon container labeled as "Hazardous Waste," not dated with its accumulation start date or waste content information.

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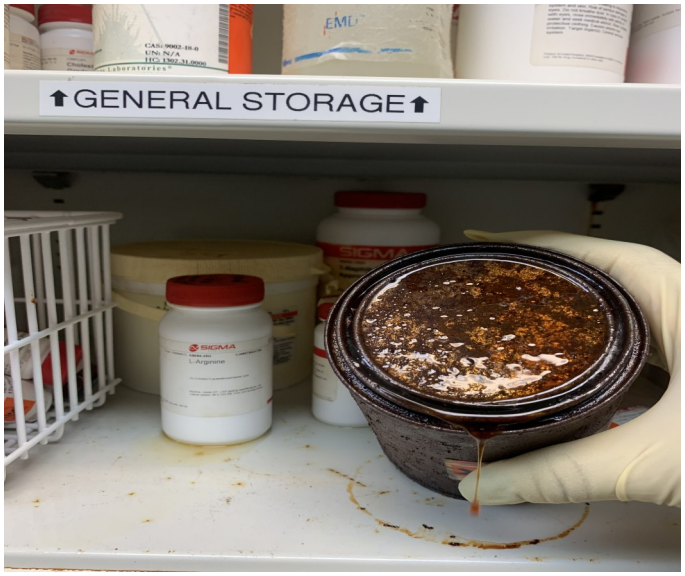

Picture 201 - UPR BIOLOGY DEPARTMENT At the Lab B-086, it was observed a very rusty can labeled Melittin, from Bee Venon (approximately 70% for HPLC) with evident signs of leaks. The shelf was completely spilled with the leak solution.

Picture 202 - UPR BIOLOGY DEPARTMENT At the Lab B-086, there were some chemical reagents were stored for a very long time (i.e., over a year or more January 14, 2009) in shelves without any physical means to protect each other from incompatibility of waste characteristics (Explosive vs. Corrosive).

Picture 203 - UPR BIOLOGY DEPARTMENT- At the Lab B-086, EPA Inspectors observed that the cabinet was identified as "Flammable," instead of "Explosive," and some chemical reagents stored in the cabinets did not match with what it was inside the cabinet.

Picture 204 - UPR BIOLOGY DEPARTMENT- At the Lab B-086, EPA Inspectors also observed that the cabinet stored some explosive chemical reagents such as ammonium hydroxide and nitric acids, and not "Flammable."

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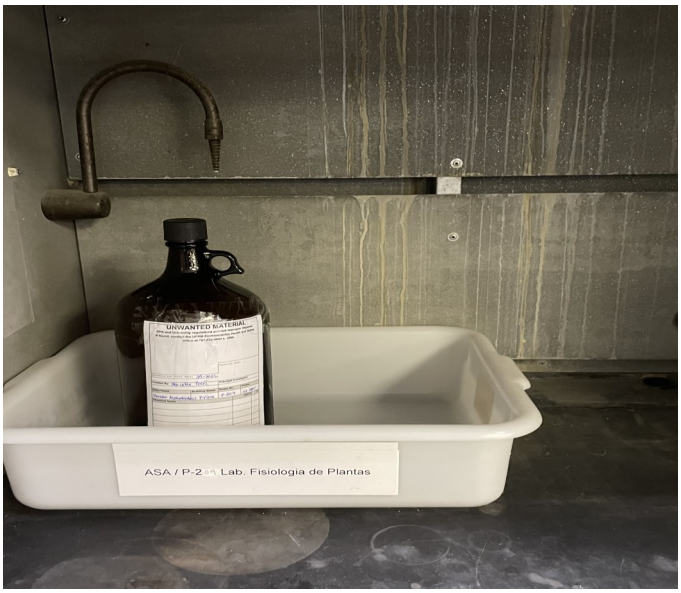
Picture 205 - UPR AGRICULTURAL DEPARTMENT - At the Plant Physiology Laboratory, there were a cabinet containing numerous of chemical reagents that were used for various plant and physiology testing.



Picture 206 - UPR AGRICULTURAL DEPARTMENT - At the Plant Physiology Laboratory, inside a hood there was one (1) 1-gallon glass container labeled unwanted material with a contact telephone number and accumulation start date of September 2022, but it didn't provide the content information.

Picture 207 - UPR AGRICULTURAL DEPARTMENT - At the Phytopathology Laboratory, inside one of the refrigerators there were sodium glass bottles, date February 2011, stored with sodium hydroxide and acid solutions, and solution B Griess glass bottles.

Picture 208 - UPR AGRICULTURAL DEPARTMENT - At the Phytopathology Laboratory, inside a 5-shelve gray cabinet there were nutrient broth bottles, nutrient agar, maltose agar, BD™ Bacto™ Tryptic Soy Broth agarose, benzoic acid, glucose anhydrous, calcium chloride, pectin, and glycerol among other reagents.

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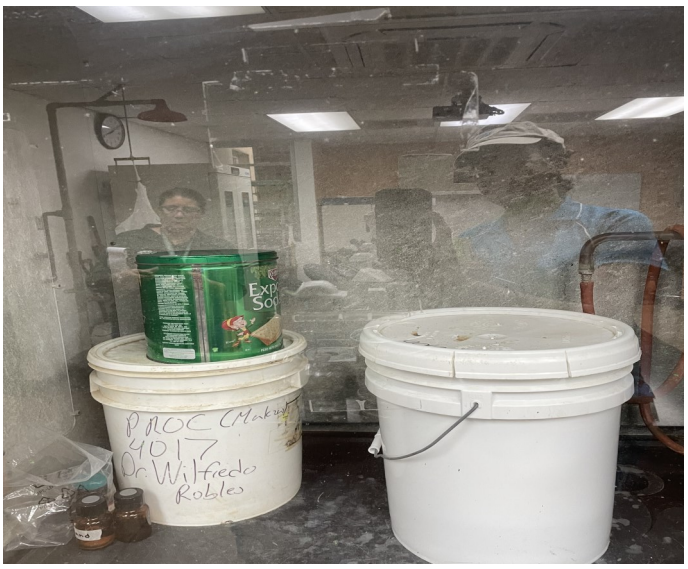
Picture 209 - UPR AGRICULTURAL DEPARTMENT - At the Phytopathology Laboratory, there were glass bottle containing Amina stored with glycerol in plastic bottles, permethrin in glass bottle, distilled water in glass bottle, glycerol diluted in glass water, and formaldehyde in glass bottles.

Picture 210 - UPR AGRICULTURAL DEPARTMENT - At the Nematology Laboratory, inside the extractor fume hood there were two (2) 5-gallon white plastic containers one container was empty and the other did not identify its residual content nor labeled as "Hazardous Waste," or dated.



Picture 211 - UPR AGRICULTURAL DEPARTMENT - At the Nematology Laboratory, inside the extractor fume hood there three (3) 200g bottles with discarded reagents without any hazardous determination or characterization as, "Hazardous Waste," or "Unwanted Wastes."

Picture 212 - UPR AGRICULTURAL DEPARTMENT - At the Nematology Laboratory, there three (3) 1-gallon crystal containers with radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," stored for years without no hazardous waste determination nor managed as hazardous waste due to corrosivity.

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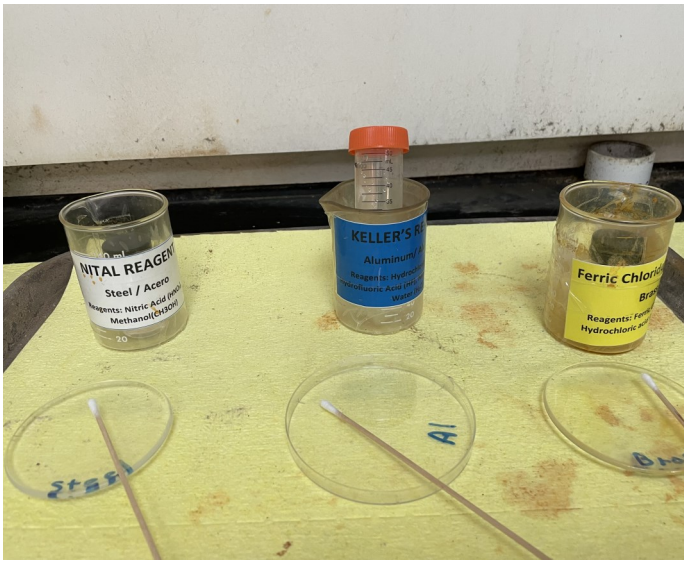
Picture 213 - UPR AGRICULTURAL DEPARTMENT - At the Nematology Laboratory, there three (3) 1-gallon crystal containers with radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," stored for years without no hazardous waste determination nor managed as hazardous waste due to corrosivity.

Picture 214 - UPR AGRICULTURAL DEPARTMENT - At the Nematology Laboratory, inside a plastic tray there were three (3) 50-ml (30-g) crystal containers containing radioactive waste of "Uranyl Nitrate" and/or "Uranyl Acetate," being stored for years without no hazardous waste determination.



Picture 215 - UPR MECHANICAL ENGINEERING - At the Metallurgy Teaching Laboratory, there were small Erlenmeyer's beakers with metals (steel, aluminum, and brass) submerged in various solutions of ferric chloride, hydrochloride acid, and nitric acid/ methanol.

Picture 216 - UPR MECHANICAL ENGINEERING - At the Metallurgy Teaching Laboratory, inside an extractor fume hood there was one (1) 2.5-gallong plastic container with spent etching solution from washing metal etching testing containing solution wastes of HCl, HF, $FeCl_3$, and HNO_3

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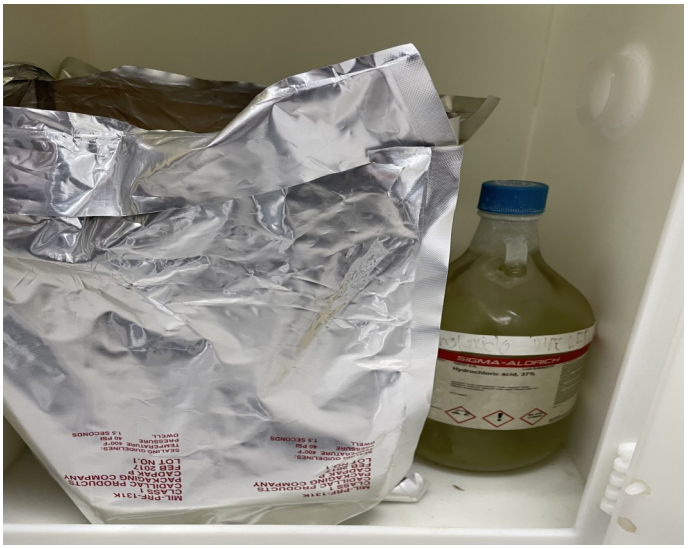
Picture 217 - UPR MECHANICAL ENGINEERING - At the Metallurgy Laboratory, there was one (1) 4-liter plastic bottle containing spent Nitric acid, Hydrochloric Acid, Ferric Chloride, Methanol, Ethanol from etching chemical analysis properly labeled as "Unwanted Materials," and dated May 6, 2022.

Picture 218 - UPR MECHANICAL ENGINEERING - At the Biosensing and Microfluid Laboratory, inside a yellow cabinet there were one gallon bottle with Microposit Remover dated of January 2, 2011; two (2) 1-gallon bottle with Isopropyl Alcohol; and 1 -gallon glass bottle with ethanol and Acetone.



Picture 219 - UPR MECHANICAL ENGINEERING - At the Biosensing and Microfluid Laboratory, inside a 2-shelve white cabinet, labeled as "Corrosive," there were one (1) 1-gallon bottle with Hydrochloride Acid 37% one (1) metal can with solid Hydrofluoric Acid and one beakers with pure Hydrofluoric Acid.

Picture 220 - UPR GENERAL ENGINEERING - At the Synthesis Laboratory, there were numerous "Unwanted Material," including acetic, glacial, NaOH, $FeCl_3$, cobalt with start accumulation date of August 31, 2018; and NaOH with start accumulation date of January 12, 2018. None dated,

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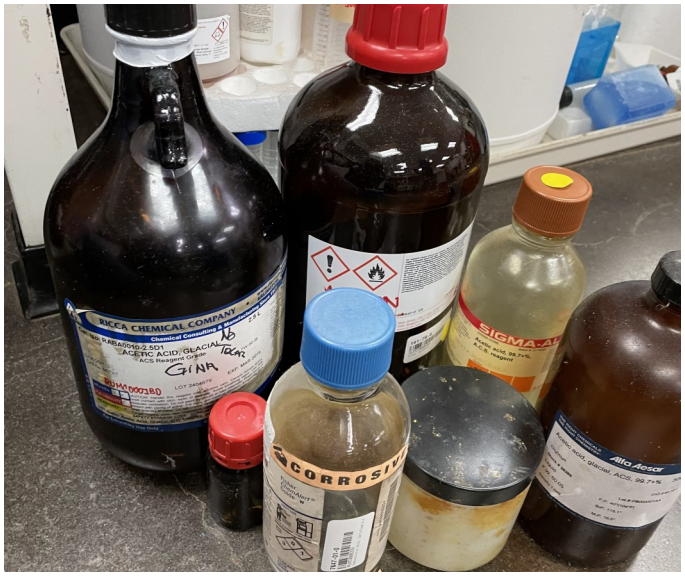

Picture 221 - UPR GENERAL ENGINEERING -At the Synthesis Laboratory, there were numerous spent reagents without compatibility characteristics (Flammable, Corrosives and Toxics – Ethyl Acetate, Acetone next to Hydrochloric Acid, Sodium Hydroxide) failing to minimize the possibility of a fire, explosion.

Picture 222 - UPR GENERAL ENGINEERING - At the Synthesis Laboratory, there were various container bottles were not identified with its content and stored for a very long time (i.e., over a year or more August 31, 2018) with expiration dates .

Picture 223 - UPR GENERAL ENGINEERING - At the Material Engineering and Characterization Lab, EPA Inspectors explained that Acetic Anhydride was not compatible with Hydrochloric Acid and should not be stored together where they can be inadvertently mixed or where a spill or leak can cause danger.

Picture 224 - UPR GENERAL ENGINEERING - At the Material Engineering and Characterization Lab, there were various container bottles deteriorated and not identified with its content and stored for a very long time such as 3-aminopropyltriethoxysilane which is extremely dangerous.

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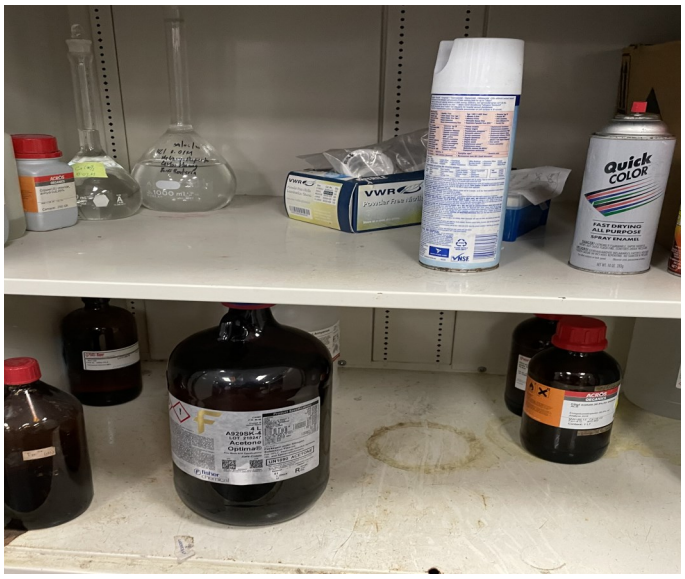

Picture 225 - UPR GENERAL ENGINEERING -At the Material Engineering and Characterization Lab, there were various chemical reagents including iron III chloride anhydrous, cooper II chloride anhydrous, acetone optima, ethyl acetate, methanol, calcium chloride dihydrate, and sodium hydroxide, incompatible.

Picture 226 - UPR GENERAL ENGINEERING - At the Material Engineering and Characterization Lab, there was SAA with discarded hazardous wastes unlabeled, not dated, or managed under the LMP, which included three (3) 5-gallon white containers with corrosive wastes (pH>12.5) stored next organic wastes.

Picture 227 - UPR GENERAL ENGINEERING - At the Material Engineering and Characterization Lab, there was a Satellite Accumulation Area with two trays containing numerous "Unwanted Materials," unlabeled, undated, nor identified with its hazardous waste content not in compliance with LMP.

Picture 228 - UPR GENERAL ENGINEERING - At the Material Engineering and Characterization Lab, there were discarded, contaminated, unused chemical reagents, stored for a very long time (2008 in trays without any physical means to protect each other from incompatibility of waste characteristics.

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