



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
KNOXVILLE ENVIRONMENTAL FIELD OFFICE
DIVISION OF SOLID WASTE MANAGEMENT

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July 22, 2021

Ms. Sandra Prior
University of Tennessee
1425 Tee Martin Drive
511 East Stadium Hall
Knoxville, Tennessee 37996

CERTIFIED MAIL
7017 0190 0000 3446 9331
RETURN RECEIPT REQUESTED

Re: Hazardous Waste Compliance Evaluation Inspection
Notice of Violation
University of Tennessee, Knox County, TN0 00 087 9809

Dear Ms. Prior:

On June 8, 2021, the Division of Solid Waste Management (DSWM) conducted a hazardous waste compliance evaluation inspection at University of Tennessee to evaluate the facility's compliance with the Tennessee Hazardous Waste Management Act, T.C.A. §68-212-101 et seq., with the Used Oil Collection Act of 1993 T.C.A. 68-211, Part 10, and with Tennessee's Hazardous Waste Regulations (Division Rule Chapter 0400-12-01) promulgated pursuant to those acts. During the inspection, violations of Tennessee's hazardous waste management regulations were identified. The attached inspection report/notice of violation details inspection findings. University of Tennessee must initiate immediate actions to correct outstanding violations. The DSWM will conduct a follow-up inspection within thirty days to verify the facility's compliance status.

The DSWM appreciates the courtesy and cooperation shown by University of Tennessee during the inspection. Should you have any questions concerning this report, please do not hesitate to contact me at 865-594-5467 or by email: craig.smith@tn.gov.

Sincerely,

Craig Smith, CHMM
Environmental Consultant

Enclosure

cc: Rob Ashe, DSWM/Nashville
Beverly Philpot, DSWM/Nashville
Chris Lagan, DSWM/Nashville
Jessi Mitchell, DSWM/Nashville
Alan Newman, USEPA, Atlanta Georgia

HAZARDOUS WASTE INSPECTION REPORT

SITE/PHYSICAL LOCATION:

University of Tennessee
Knoxville, TN 37996
EPA ID # TN0 00 087 9809
County: Knox

PRIMARY CONTACT:

Mike Rotella, Supervisor, Hazardous Waste Management
University of Tennessee, Environmental Health & Safety
1425 Tee Martin Drive
414 East Stadium Hall
Knoxville, TN 37996
Telephone: 865-974-5084
Email Address: mrotella@utk.edu

DATE AND START TIME OF INSPECTION:

Date: June 8 and June 9, 2021
Time: 8:15 a.m.

INSPECTION PARTICIPANTS:

Mike Rotella, Supervisor, Hazardous Waste Management University of Tennessee Phone: 865-974-5084 Email: mrotella@utk.edu	J. Aaron Lee, Hazardous Waste Specialist University of Tennessee Phone: 865-974-5986 Email: jlee239@utk.edu
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REPORT PREPARED BY:

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PURPOSE OF INSPECTION:

This routine inspection was conducted to evaluate the University of Tennessee (UT) main campus in Knoxville regarding compliance with the applicable requirements of Tennessee's Hazardous Waste Management Act T.C.A. 68-212, Parts 1 and 3, with the Used Oil Collection Act of 1993 T.C.A. 68-211, Part 10, and with the regulations adopted pursuant to those acts. Inspection findings are based upon site observations, file review, and verbal and written information provided by facility personnel during the inspection (including the identification of all physical locations where wastes are generated and managed by the facility). The facility is encouraged to advise the Division of Solid Waste Management (DSWM) of any information in the report or attached letter that the facility deems to be incorrect. Any such communication should be submitted to the Division within 15 days following receipt of this report.

FACILITY DESCRIPTION:

The EPA ID number assigned to "University of Tennessee Austin Peay Building" comprises several buildings on the UT campus, including Hesler Hall Biology, Science and Engineering Research Facility ("SERF"), Dougherty, Dabney-Buehler Hall, Mossman Building, Strong Hall, and the Fleming Center. Hazardous waste is primarily generated from research and

teaching laboratories located throughout the referenced buildings. Universal waste is generated at many locations throughout the campus and is accumulated for transport at the Fleming Center.

GENERATOR STATUS:

Large quantity generator (LQG)
 Universal waste small quantity handler (SQH)
 Used oil generator (UOG)

HAZARDOUS WASTE STREAMS GENERATED:

The hazardous waste stream and annual report for the year 2020 was available for review. According to the report submitted to the Division of Solid Waste Management, the following hazardous waste streams were generated during 2020.

Waste Number/ Name	EPA Waste Codes	How is the waste generated?	Lb Generated in 2020
1/ Mixed Lab Waste	D001, D002, D004, D005, D011, D022, F003, F005, P030, P098, F027	Research and teaching lab waste	5418
2/ Waste Organic Solvents	D001, D018, D019, D022, D035, D039, D040, F002	“	29164
3/ Metal Acid Waste	D001, D002, D005, D008, D011	“	7205
4/ Waste Flammable Liquid, Corrosive	D001, D002, F003, F005	“	0
5/ Waste Scintillation Vials	F003, F005, D001	“	99
6/ Waste Compressed Gas	D001, D002, D003, U029, U135	“	1540
7/ Waste Compressed Gas, Corrosive Oxidizer	D001, D002, D003, U135	Disposal of unused research material	1
8/ Waste mixed pesticides	D001, D020	Research and teaching facilities	0
9/ Debris & Various Solid Waste	D001, D004, D008, U122, U238	Research	676
10/ Waste building components & soil contaminated with lead	D008	Demolition project	0

INSPECTION FINDINGS:

Prior to performing this site visit, Division personnel contacted the facility by telephone per the DSWM Field Office Operations COVID-19 guidelines. The site inspection was conducted according to those guidelines.

DSWM personnel met Alan Newman of US EPA, and University of Tennessee personnel Mike Rotella and Sandra Prior at a university parking lot to discuss the plan for the inspection.

Hesler Hall

The site-inspection process began at Hesler Hall, which has several biology labs, storage areas, and maintenance areas.

Due to the large quantity of labs inspected, labs will be listed according to those which had no hazardous or universal waste, those which had hazardous and universal waste without any compliance issues, and those with compliance issues.

Hesler Hall labs with no hazardous waste

No hazardous waste was found in the following laboratory rooms, listed in the order they were inspected.

608, 603, 602, 515, 523, 522, 508, 433, 438, 413, 409, 407, 129, 127, 142, 143, 116, 106, 102, 103, 104, 105.

Hesler Hall labs with hazardous waste containers, no violations:

528, 502, 503, 506, 507, 114

Hesler Hall labs with hazardous waste containers, and violation(s) observed:

Hesler Hall 606 – One 30-gallon container marked “hazardous waste” with the hazards indicated and fitted with a drain funnel, but the funnel does not attach to the container of liquid hazardous waste. This sort of connection does not meet the standard of “closed” for liquid hazardous containers, Photo 1.



Photo 1, the pictured drain-funnel is inserted into the hazardous waste container, but does not attach to the container, Hesler Hall, room 606

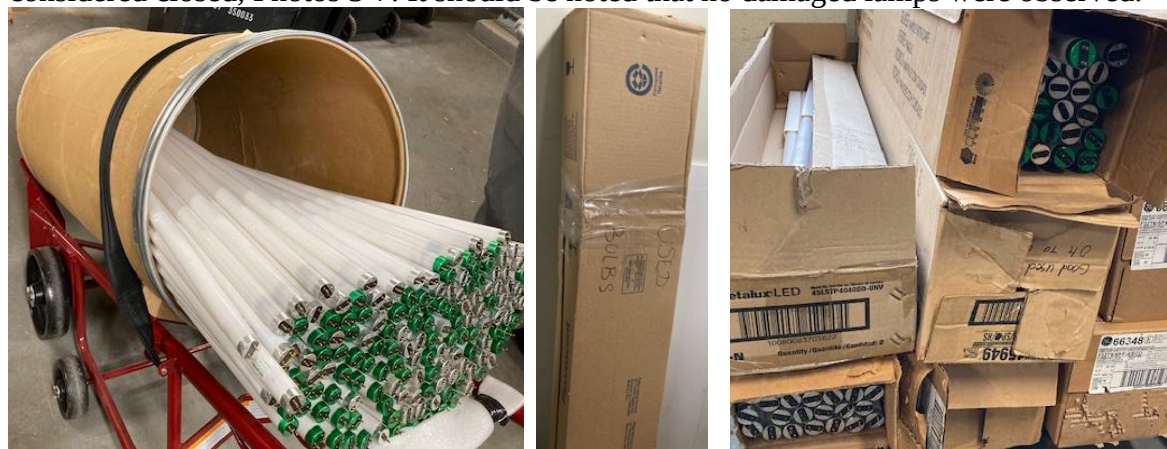
Hesler Hall 434 – Three containers marked as waste were observed; two were marked “hazardous waste,” a third was not marked “hazardous waste.” Two of these containers were not labeled with an indication of the nature of the hazard, Photo 2.



Photo 2 Hesler Hall 434, one container not marked “hazardous waste,” two containers without an indication of the hazard. The fourth bottle marked “acetic acid ?” may be waste because it appears unknown.

Universal waste violations:

Hesler Hall 614 -- several containers of universal waste lamps are accumulated in this area from this and other campus buildings; several closed containers were observed, but many containers did not meet requirements for marking, accumulation start-date tracking, or to be considered closed, Photos 3-7. It should be noted that no damaged lamps were observed.



Photos 3-5, open containers of universal waste lamps, unmarked, plus a closed container without marking (center), Hesler Hall 614.



Photos 6 and 7, open containers without labeling or marking, Hesler Hall 614.

Hesler Hall room 414 – A universal waste lamp box was observed open, without marking and no observed accumulation start-date tracking system, Photo 8.



Photo 8, open universal waste lamp container, open, and apparently without start-date tracking, Hesler Hall, room 414

Hesler Hall room 126 – A large quantity of universal waste lamps, several open containers, no marks or date-tracking, Photos 9-13.



Photos 9 to 13, universal waste lamps in open containers, uncontained, in unmarked containers, and without apparent method of tracking accumulation start-dates, Hesler Hall 126.

Science and Engineering Research Facility (SERF)

SERF Central Accumulation Area (CAA)

The SERF CAA serves to accumulate hazardous waste from all the labs in both SERF and Dabney-Buehler. At the time of the inspection, there were five active hazardous waste accumulation drums (three 55-gallon drums and two 30-gallon drums), a used oil container, and 22 smaller containers of lab waste sorted into accumulation bins, to be transported as lab-packs. All containers were observed as closed, marked “hazardous waste,” labeled with an indication of the hazard, and marked with accumulation start-dates, of which the oldest date was in May of 2021. One hazardous waste container was for accumulating spent aerosol residue; this container was also closed, marked “hazardous waste,” labeled with a “flammable” pictogram, and with an accumulation start-date of March 22, 2021. Aisle-space was not found adequate between the hazardous waste drums, in this room.



Photo 14, hazardous waste accumulation drums, inadequate aisle-space, SERF CAA

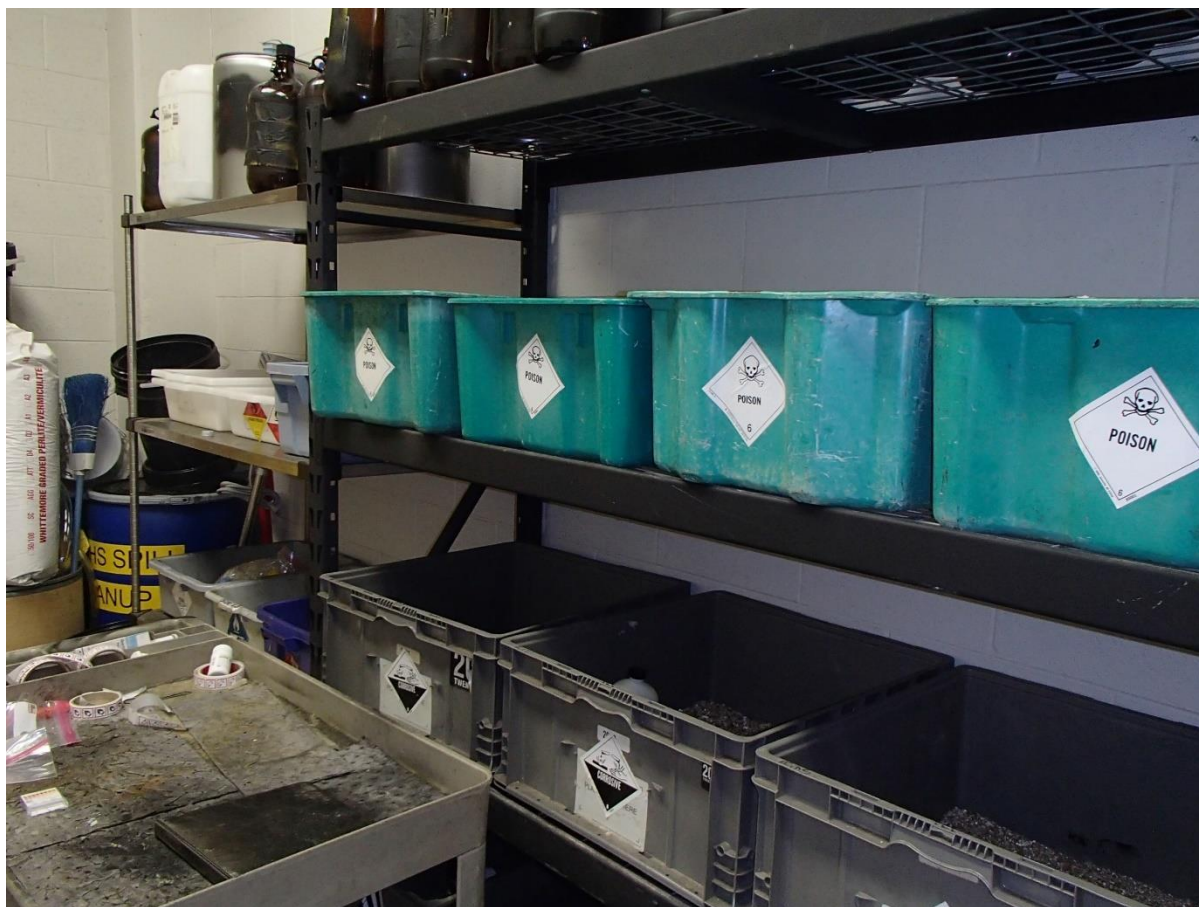


Photo 15, Hazardous laboratory waste accumulation bins, SERF CAA

SERF labs with no hazardous waste

No hazardous waste was found in the following SERF laboratory rooms, listed in the order they were inspected.

628, 633, 623, 622, 621, 612, 610, 608, 602, 403, 402, 401, 430, 431, 433, 434

SERF labs with Hazardous waste containers, no violations:

634, 614, 603, 410, 407, 434C

SERF 603 – During the inspection, a question was raised regarding a few unmarked vials stationed with the hazardous wastes, Photo 16. After the inspection, Mr. Rotella followed-up regarding the unmarked vials, and reported that they are not waste material.



Photo 16, non-waste vials stored with the hazardous waste containers, SERF 603

SERF labs with hazardous waste containers, and violation(s) observed:

SERF 624/626 – two metal containers were marked “hazardous waste” and with hazard indication, but not closed, Photos 17 and 18. One of these containers was promptly replaced with sealed ziplock type plastic bags, with marks applied, etc.



Photos 17 and 18, two metal containers with plastic-bag liners that contain hazardous waste, not effectively closed, SERF 624 and 626.



Photo 19, metal can container from Photo 18, immediately replaced with closed ziplock plastic bag, SERF 624

SERF 635 – four containers marked “hazardous waste,” of which one, a ziplock type bag, was found open, Photo 20.

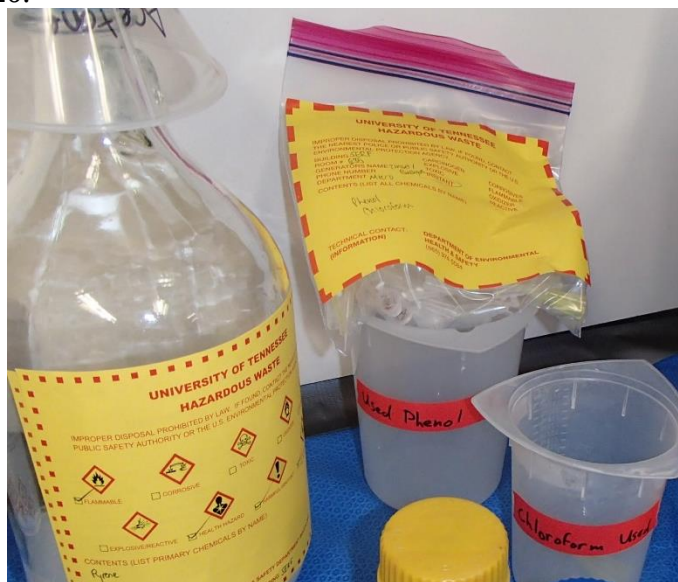
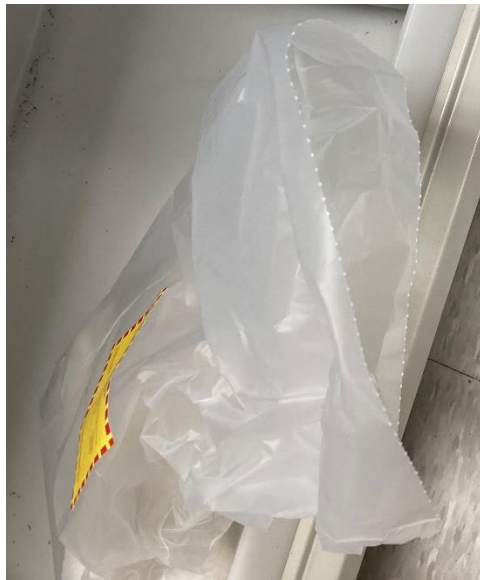


Photo 20, hazardous waste containers with open ziplock container, SERF 635

SERF 616 – two ziplock type bags marked “hazardous waste” and with hazard indication, of which one was found open (no photo available).

SERF 606 – one plastic bag, open, marked “hazardous waste” but not labeled to indicate the hazard, Photos 21 and 22.



Photos 21 and 22, open plastic bag container marked hazardous waste, but not labeled to indicate the type of hazard, SERF 606

SERF 604 – One plastic bag marked “hazardous waste” was found with hazard indication, but not closed, Photo 23.



Photo 23, plastic bag containing hazardous waste, open, SERF 604

SERF 431 – This lab is currently inactive, but an apparent hazardous waste container was found in the lab, marked with the name of a professor who has been retired for a few years: “Feigerle,” Photo 24. Consequently, this lab was initially considered in violation because of this container; however, when Mr. Rotella removed this container after the inspection, he says he found it empty and free from visible residue, which suggests that this container was not used to hold hazardous waste.

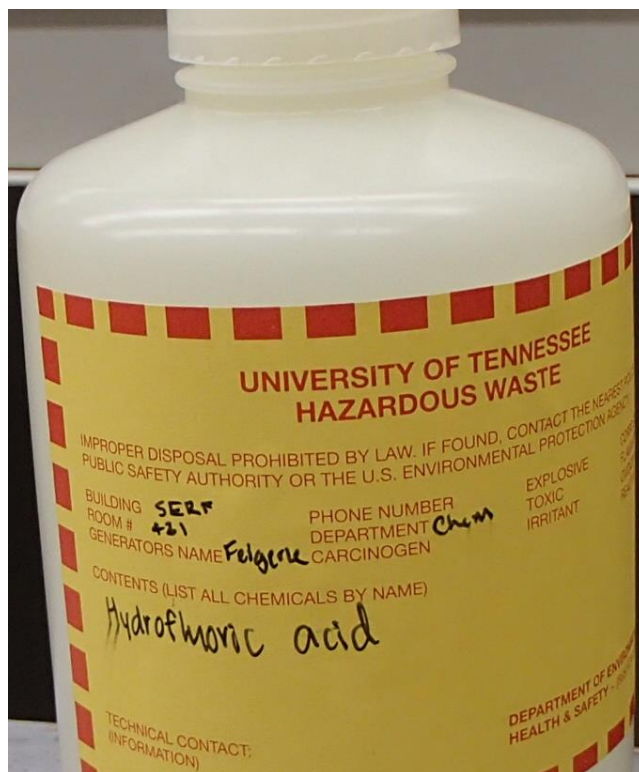


Photo 24, hazardous waste bottle marked “hydrofluoric acid,” however, when this container was removed from the lab after the inspection, it was found empty, without contents or visible residue, SERF 431.

SERF 433A – Several hazardous waste bottles are stored under the lab hood, all in good condition with proper marks, etc., Photo 25. However, two plastic tubs marked “hydrofluoric acid” were found under another hood without hazardous waste marks, Photo 26. These containers were unknown at the time of the inspection and were considered a potential violation. However, after the inspection and upon inquiry from the DSWM, Mr. Rotella investigated these containers further; he replied via email that they contain only residual baking soda. He included two images of the contents of the containers, Photos 27 and 28.

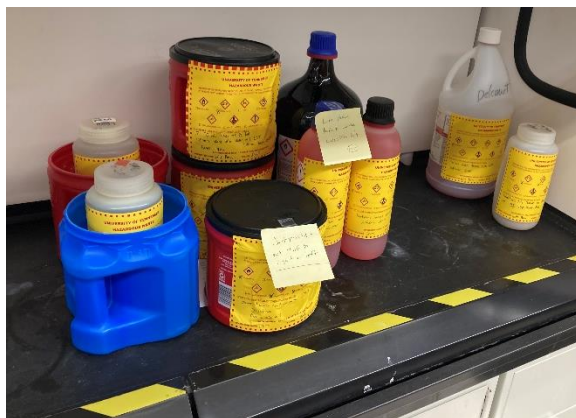


Photo 25, hazardous waste containers in good condition, SERF 433A

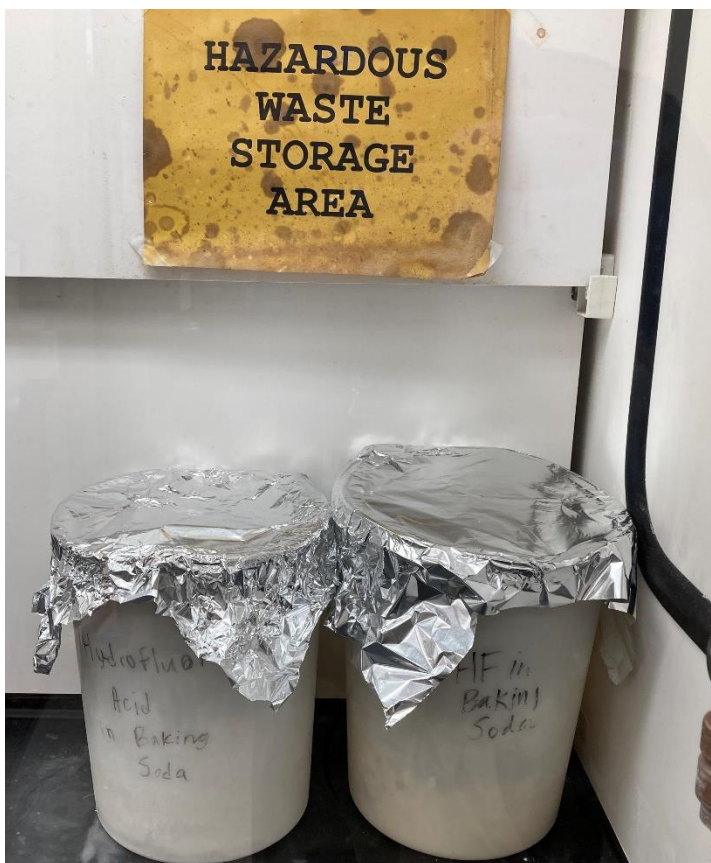
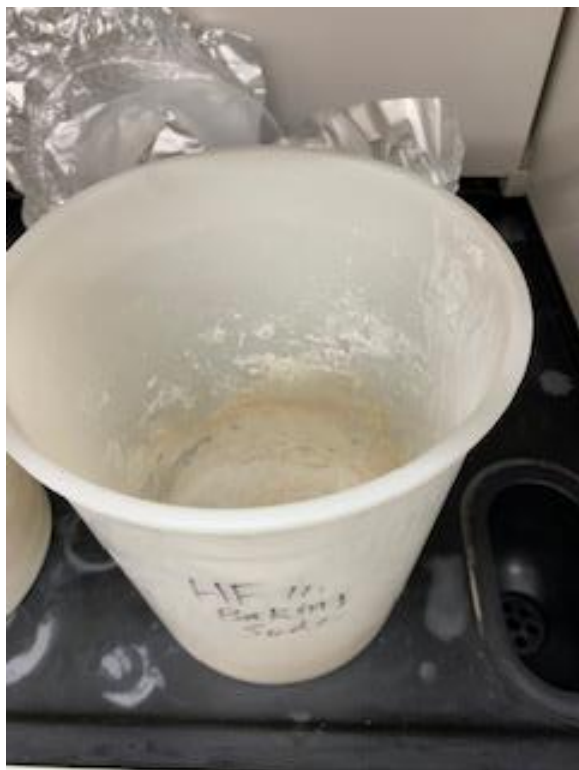
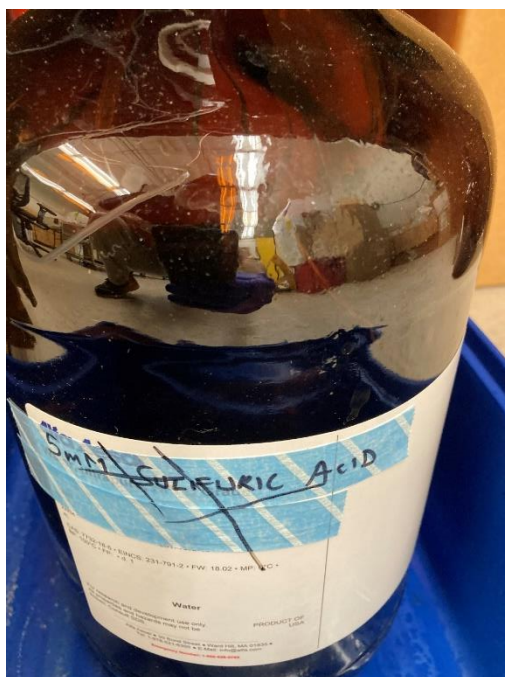
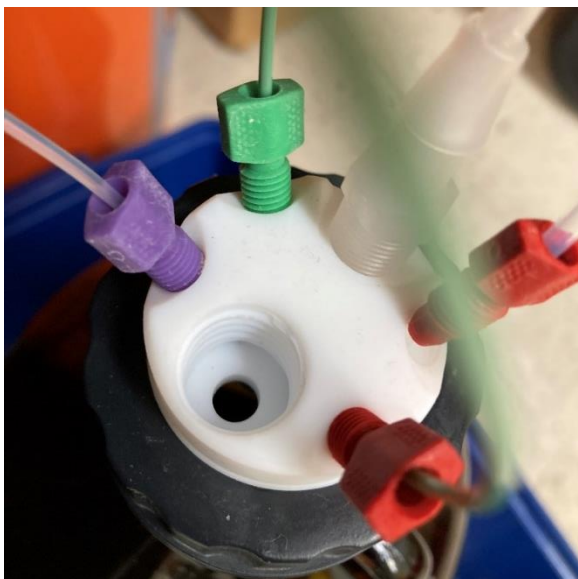


Photo 26 white tub containers in the hazardous waste storage area, SERF 433A



Photos 27 and 28: images of the interior of the two white tubs containing residual baking soda, received from Mike Rotella. SERF 433A

SERF 408 – one bottle and one plastic bag, both marked “hazardous waste” with a hazard indication, however there was a bottle stationed to accumulate discharge from various lab machines via thin plastic tubes through a multi-ported lid. This container was not marked “hazardous waste,” although such containers often receive hazardous waste, and one of the fill-ports was open, Photos 27-29. Upon further inquiry from the DSWM about this container after the onsite inspection, Mr. Rotella informed the DSWM via email on July 13 that this was a container of waste tetrahydrofuran, which is hazardous waste. The July 13 email also included photo documentation of the new hazardous waste marking and hazard indication, Photo 30.



Photos 27-29, waste tetrahydrofuran bottle, open, without hazardous waste marking or hazard label, SERF 408.

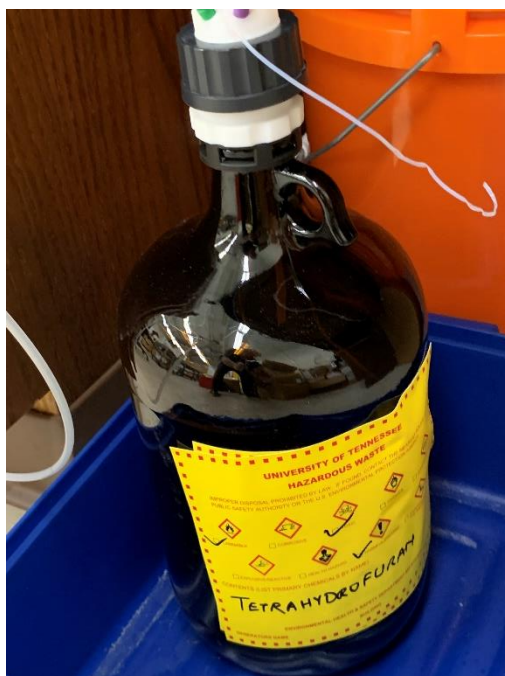


Photo 30, hazardous waste accumulation bottle with new hazardous waste marking and hazard indications, SERF 408.

Mossman Building

Mossman Building Central Accumulation Area

One hazardous waste bottle in good condition, closed, marked, etc. The hazardous waste accumulation trays on the shelves were found empty.

No hazardous waste

No hazardous waste was found in the following laboratory rooms, listed in the order they were inspected.

620D, 620C, 420B, 420A, 440E, 441D (note: several bottles of old reagents were found in the 441D lab; these might be likely candidates for disposal.)

Mossman labs with hazardous waste containers, in good condition, no violations:

620F, 620E, 620B, 620A, 641E, 420F, 420E, 441C (seven bottles, one five-gallon can).

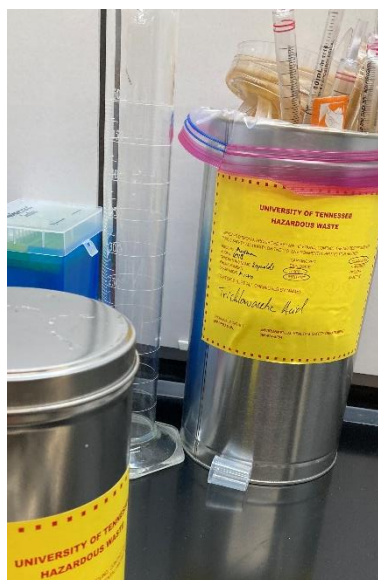
Mossman labs with hazardous waste containers, and violation(s) observed:

Mossman 641C – One open hazardous waste container, Photo 31.



Photo 31, open hazardous waste container, Mossman 641C

Mossman 641B – Four steel cans used to accumulate hazardous waste were observed, of which, two were closed and two were found open, Photos 32 and 33. Also, the plastic bag of hazardous waste was not labeled to identify the hazard, Photo 34.



Photos 32 and 33, two open steel hazardous waste containers with plastic liners, Mossman 641B

UNIVERSITY OF TENNESSEE HAZARDOUS WASTE			
IMPROPER DISPOSAL PROHIBITED BY LAW. IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.			
BUILDING	PHONE NUMBER	EXPLOSIVE	CORROSIVES
ROOM #	DEPARTMENT	TOXIC	FLAMMABLE
GENERATOR'S NAME	CARCINOGEN	IRRITANT	OXIDIZER
REYNOLDS Lab			REACTIVE
CONTENTS (LIST ALL CHEMICALS BY NAME)			
Formaldehyde & Formamide			
TECHNICAL CONTACT: FORMATION)			
ENVIRONMENTAL HEALTH & SAFETY DEPARTMENT (865) 974-5084			

Photo 34, hazardous waste container not labeled with the hazard type, Mossman 641B

Mossman 641A – One plastic bag marked hazardous waste and labeled to indicate the hazard was found open, Photo 35.



Photo 35, hazardous waste container found open, Mossman 641A

Mossman 420D – one bottle with a hazardous waste mark, but without indication of the type of hazard, Photo 36.

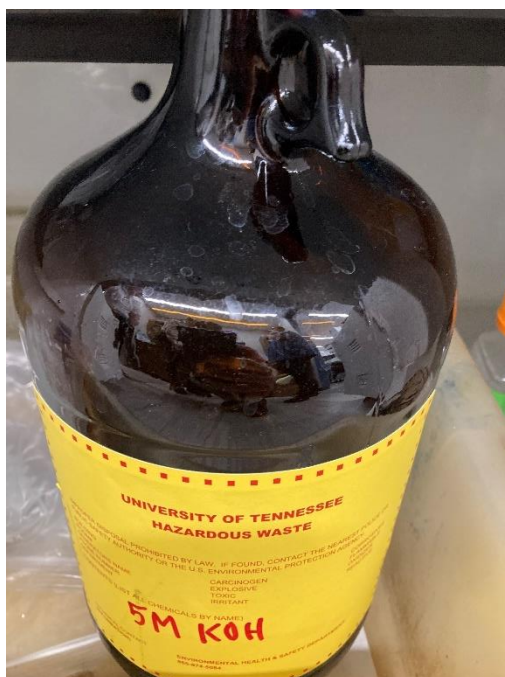


Photo 36, hazardous waste container not marked to indicate the hazard, Mossman 420D



Mossman 441A – This small lab is not currently in use for research, and it appeared that other labs had used this space to dump extra or expired chemicals for disposal. At the time of the inspection, there appeared to be roughly 150 containers of various chemicals in this small lab, including five containers marked “hazardous waste,” Photos 39 and 40. According to Mr. Rotella, this lab space had been cleaned out of waste chemicals not very long before.



Mossman Building AC Shop – The main HVAC and maintenance room on the ground floor includes a used oil accumulation container; this container was found in good condition and marked “used oil” as required.

Strong Hall

Strong Hall features the undergraduate general chemistry labs.

Strong Hall room 317 – This is the stockroom for the general chemistry lab. Hazardous waste chemicals from the general chemistry lab next door are accumulated in a 55-gallon hazardous waste accumulation drum. This container was observed as marked “hazardous waste,” labeled to indicate the hazard, and marked with an accumulation start-date.

Strong Hall general chemistry labs 316 and 315 – Hazardous waste containers were observed in room 316 arranged as in Photo 41. These containers are fitted with lidded funnels that were in the closed position but did not appear well attached to the funnels. Each funnel fitting has a “vent port” between the bottom of the funnel and the top of the bottle, Photo 42. Because of the vent ports, the containers are not properly closed.



Photo 41, hazardous waste containers in the 316 general chemistry lab (the other general chemistry lab in 315 uses the same set-up).

Hazardous waste marks are fixed to the back of each bottle, with the type of waste on the front (“acid,” “base,” and “aqueous”). The terms “acid” and “base” can indicate the nature of the hazard, but “aqueous” does not, and that container was not otherwise labeled to indicate the hazards of the contents, Photo 43.

Room 315 has the same types of containers and funnels arranged, marked, and labeled in the same way.



Photo 42, a detail of the funnel vent-port as seen on all the containers in 316 and 315

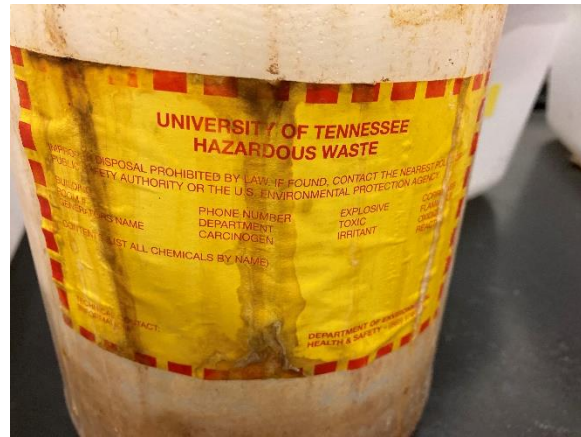


Photo 43, the hazardous waste mark on the aqueous waste container does not indicate the hazard

Dabney-Buehler Hall

Buehler 665 – This lab is a large graduate research lab with several hazardous waste containers in the hazardous waste storage hood, Photos 44 to 47. Some of these containers were found without an indication of the hazard, detailed in Photos 45 and 47.



Photo 44, hazardous waste and other containers, Buehler 665



Photo 45, large hazardous waste container not labeled to indicate the hazard, Buehler 665



Photo 46, Other hazardous waste containers, Buehler 665

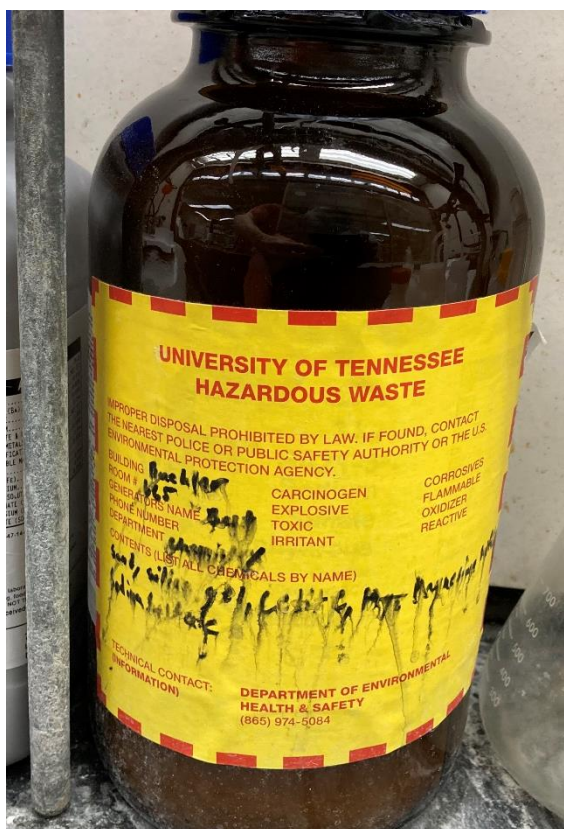


Photo 47, hazardous waste container on one of the active lab hoods, not labeled to indicate the hazard, Buehler 665

Buehler Hall 631 – This room is another former general chemistry lab, where some old bottles of reagents were observed. These bottles do not constitute a violation but the dates on these bottles suggest that a clean-out of older containers may be overdue, Photo 48.

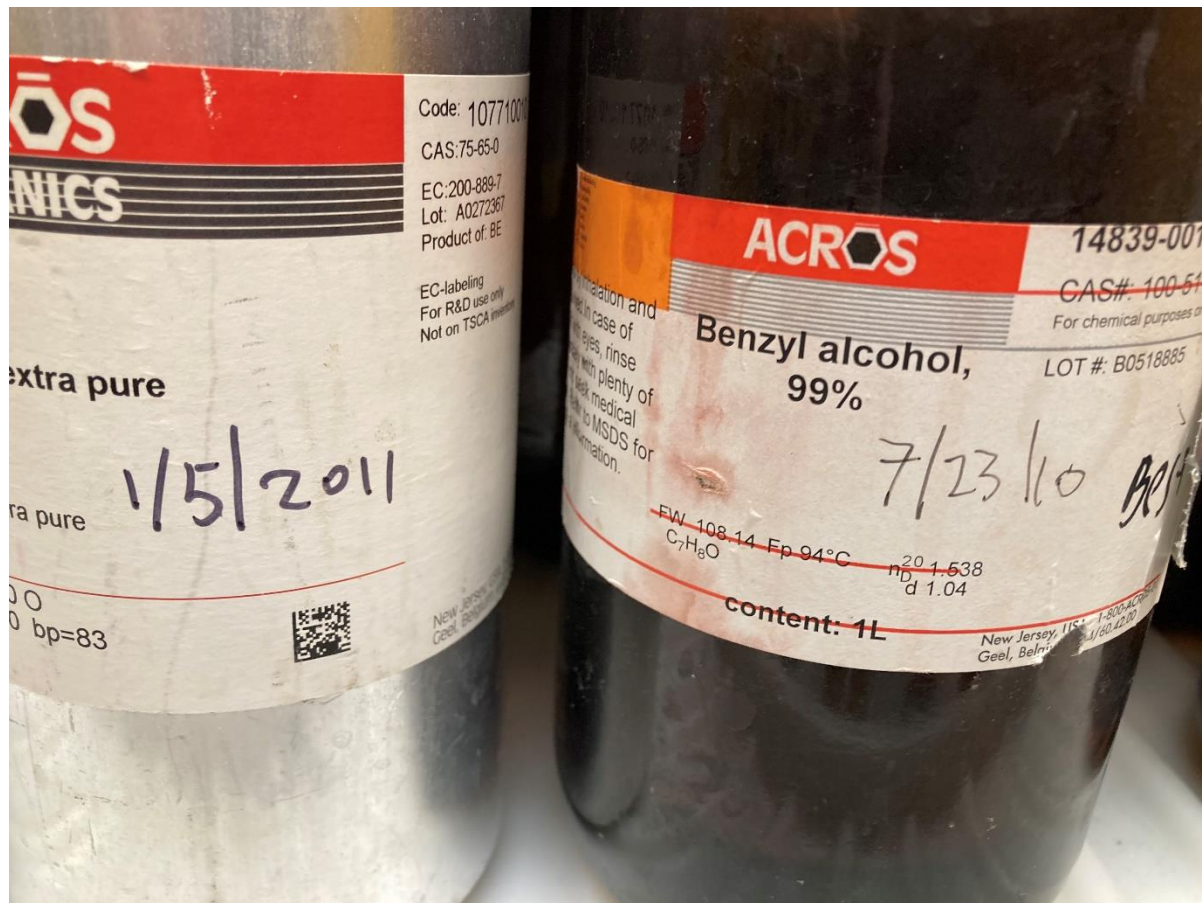


Photo 48, aged unused reagent bottles, Buehler 631

Buehler Hall 630 – Twelve containers of hazardous waste were observed under a hood in this lab. Of these, one was found open, and eight of the twelve were not labeled to indicate the hazard, Photos 49 and 50.



Photo 49, several hazardous waste containers, one open (center), and some not labeled to indicate the hazard, Buehler 630



Photo 50, four additional dry hazardous waste containers, some not labeled to indicate the hazard, Buehler 630

Buehler Hall 602 and 603 – One thirty-gallon container and several four-liter containers of hazardous waste were observed in this lab. Each four-liter container was fitted with a lidded-funnel with vent port, like the ones observed in Strong Hall 315 and 316 described earlier in this report. As with the containers at Strong Hall, the vent-port renders the container “open” for regulatory purposes, Photo 51.

As with other labs mentioned earlier in this report, several reagent bottles on the shelves appear to be unused and very old, including, for example, the bottle of imidazole, which appears to have a hand-written and very faded date of 8/78, presumably for the month it was opened. Other containers in the same bin appear to be quite old. As stated previously, if these containers are out of use for very long periods, it might be best to dispose of them, Photos 52 and 53.

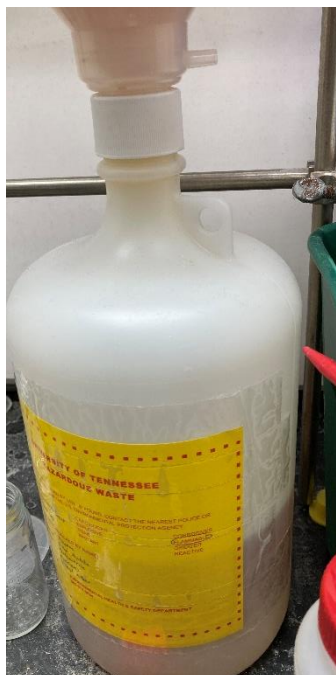


Photo 51, liquid hazardous waste container, open due to the vent port, Buehler 602/603



Photo 52, several very old reagent bottles, apparently unused for a long time, including the imidazole bottle shown in detail below, Buehler 602/603

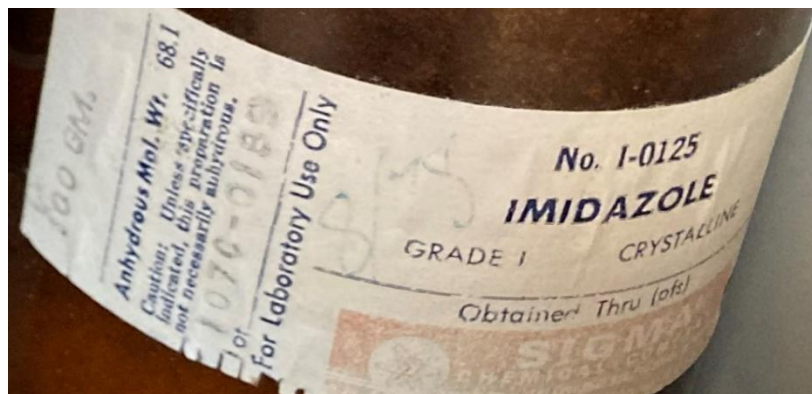
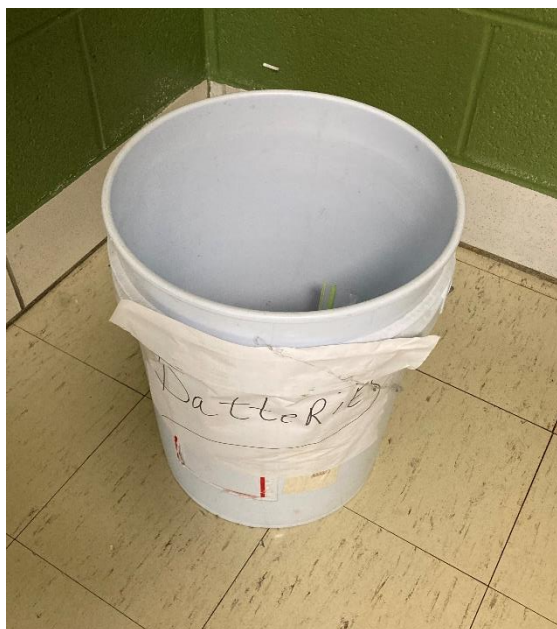


Photo 53, detail of imidazole label; faded with age, Buehler 602/603

Buehler Hall, hallway – A container to accumulate spent batteries was observed in a hallway in Buehler Hall. This container was in good condition, but it was not marked “waste batteries,” or similar language as required, but simply as “batteries,” Photos 54 and 55.



Photos 54 and 55 of the used battery collection bucket in Buehler Hall, sixth floor, showing the exterior of the container (54) and interior (55); the latter shows at least one universal waste battery in the bucket (upper left quadrant). Note: carbon and alkaline batteries are not regulated as universal waste, though recycling of all batteries is encouraged.

A universal waste marking was added to the bucket following the inspection, and a photograph of the new marking was sent to this office on July 7 (Photo 56).



Photo 56, universal waste battery container, marked “used batteries,” July 7, Buehler Hall.

Fleming Center

The Fleming Center is a very large ware-house-like structure, divided within into storage areas and bays that are used for surplus material, maintenance material, all universal waste, and e-waste, all accumulated from around the university. Universal waste containers mostly include universal waste lamps and universal waste batteries; each container is closed, marked correctly, and marked with an accumulation start-date. Virtually all of the containers had been marked with the date prior to the inspection; this was apparently due to a misunderstanding of what the accumulation start-dates are intended to represent, but the matter was cleared-up by discussion with the site manager.

Facility File Review:

The following documents were reviewed in conjunction with the facility inspection:

- Annual hazardous waste stream reports for the previous three years
- Weekly hazardous waste storage area inspection logs
- Hazardous-related training records for Mike Rotella and for Aaron Lee, and for lab managers and users
- Universal waste lamp transport and recycling records
- Hazardous waste shipping records for the previous three years

VIOLATIONS:

Violation #1 – Rule 0400-12-01-.03(12)(f) states:

- (12) Preparedness, Prevention, and Emergency Procedures for Large Quantity Generators [40 CFR 262, Subpart M]
- (f) Required aisle space. [40 CFR 262.255]
- The large quantity generator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

Violation #1 Observation:

Aisle-space was not an issue in the labs, but the central accumulation area in SERF (SERF CAA) was found without adequate aisle-space between the hazardous waste drum containers, Photo 14.

Action Taken:

The drum containers were promptly re-arranged to allow adequate aisle-space. Further plans were discussed to utilize the limited space in the SERF CAA to ensure adequate aisle-space for the larger containers, now and in the future.

Violation #2 - Rule 0400-12-01-.03(1)(f)1.(iv) states:

- (f) Satellite accumulation area regulations for small and large quantity generators. [40 CFR 262.15]
1. A generator may accumulate as much as 55 gallons of non-acute hazardous waste or either (i) one quart of liquid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 or (ii) 1 kg (2.2 lbs) of solid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 in containers at or near any point of generation where wastes initially accumulate which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of Rules 0400-12-01-.05 through 0400-12-01-.07 and 0400-12-01-.09, provided that all of the conditions for exemption in this subparagraph are met. A generator may comply with the conditions for exemption in this subparagraph instead of complying with the conditions for exemption in part (g)2 or (h)1 of this paragraph, except as required in subparts (vii) and (viii) of this part. The conditions for exemption for satellite accumulation are:
 - (iv) A container holding hazardous waste must be closed at all times during accumulation, except:
 - (I) When adding, removing, or consolidating waste; or
 - (II) When temporary venting of a container is necessary
 - I. For the proper operation of equipment, or
 - II. To prevent dangerous situations, such as build-up of extreme

Violation #2 Observation:

A large majority of hazardous waste satellite accumulation containers were found closed; however, a significant number of containers were found open, as described in the report. These include

Hesler Hall: 606

SERF: 624/626, 635, 616, 606, 604, and 408

Mossman Building: 641A, 641C, 641B

Strong Hall: 315 and 316, due to the vent ports, and some with ill-fitting lids

Buehler Hall: 630 and 602/603

Required Action/Action Taken:

Some containers were promptly closed during the inspection, such as SERF 624, but some would require a change in the type of container, such as the ported funnels in Strong Hall 315/316 and in Buehler 630.

Violation #3 - Rule 0400-12-01-.03(1)(f)1.(v)(I) states:

- (f) Satellite accumulation area regulations for small and large quantity generators. [40 CFR 262.15]

1. A generator may accumulate as much as 55 gallons of non-acute hazardous waste or either (i) one quart of liquid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 or (ii) 1 kg (2.2 lbs) of solid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 in containers at or near any point of generation where wastes initially accumulate which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of Rules 0400-12-01-.05 through 0400-12-01-.07 and 0400-12-01-.09, provided that all of the conditions for exemption in this subparagraph are met. A generator may comply with the conditions for exemption in this subparagraph instead of complying with the conditions for exemption in part (g)2 or (h)1 of this paragraph, except as required in subparts (vii) and (viii) of this part. The conditions for exemption for satellite accumulation are:
 - (v) A generator must mark or label its container with the following
 - (I) The words “Hazardous Waste” and

Violation #3 Observation:

A large majority of the hazardous waste containers were marked “hazardous waste” as required, but some were observed that were not. Unmarked hazardous waste containers include containers found in the following labs.

Hesler Hall 434

SERF 408

Mossman Building: multiple containers of waste chemicals in 441A

Required Action/Action Taken:

The waste chemicals in Mossman Building 441A were cleared-out by June 22 following the site-inspection and disposed of as hazardous waste lab packs. The waste-accumulation bottle in SERF 408 was marked “hazardous waste” at least as of July 13. All hazardous waste containers must be marked with the words “hazardous waste” as described in the regulation.

Violation #4 - Rule 0400-12-01-.03(1)(f)1.(v)(II) states:

- (f) Satellite accumulation area regulations for small and large quantity generators. [40 CFR 262.15]
 1. A generator may accumulate as much as 55 gallons of non-acute hazardous waste or either (i) one quart of liquid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 or (ii) 1 kg (2.2 lbs) of solid acute hazardous waste listed in subparagraph (4)(b) or part (4)(d)5 of Rule 0400-12-01-.02 in containers at or near any point of generation where wastes initially accumulate which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of Rules 0400-12-01-.05 through 0400-12-01-.07 and 0400-12-01-.09, provided that all of the conditions for exemption in this subparagraph are met. A generator may comply with the conditions for exemption

in this subparagraph instead of complying with the conditions for exemption in part (g)2 or (h)1 of this paragraph, except as required in subparts (vii) and (viii) of this part. The conditions for exemption for satellite accumulation are:

- (v) A generator must mark or label its container with the following
 - (II) An indication of the hazards of the contents (examples include, but are not limited to, the applicable hazardous waste characteristic(s) (i.e., ignitable, corrosive, reactive, toxic); hazard communication consistent with the Department of Transportation requirements at 49 CFR part 172 subpart E (labeling) or subpart F (placarding); a hazard statement or pictogram consistent with the Occupational Safety and Health Administration Hazard Communication Standard at 29 CFR 1910.1200; or a chemical hazard label consistent with the National Fire Protection Association code 704).

Violation #4 Observation:

As with the previous violations, a majority of hazardous waste containers were labeled to indicate the hazards of the contents, but several were observed that were not so labeled, in the following lab rooms.

Hesler Hall 434

SERF 408, 606

Mossman Building 641B, 420D, 441A and B

Strong Hall 315 and 316 aqueous waste containers

Buehler 665, 630

Required Action:

All hazardous waste containers must be marked to indicate the hazards of the contents, as described in the regulation.

Violation #5 - Rule 0400-12-01-.12(2)(e)1 states:

- (2) Standards for Small Quantity Handlers of Universal Waste [40 CFR 273 Subpart B]
 - (e) Labeling/Marking [40 CFR 273.14]

A small quantity handler of universal waste must label or mark the universal waste to identify the type of universal waste as specified below:

 - 1. Universal waste batteries (i.e., each battery), or a container in which the batteries are contained, must be labeled or marked clearly with any one of the following phrases: "Universal Waste - Battery(ies)" or "Waste Battery(ies)" or "Used Battery(ies)."

Violation #5 Observation:

Buehler Hall battery accumulation container was found marked "batteries" without other marks, Photos 54 and 55.

Action Taken:

Universal waste battery containers must be marked as indicated in the regulation. At least as of July 7, the container had been marked as “used batteries,” according to the regulation, Photo 56.

Violation #6 - Rule 0400-12-01-.12(2)(d)4(i)(I) states:

- (2) Standards for Small Quantity Handlers of Universal Waste [40 CFR 273 Subpart B]
 - (d) Waste Management [40 CFR 273.13]
 - 4. Universal Waste Lamps.
 - (i) A small quantity handler of universal waste must manage lamps in a way that prevents releases of any universal waste or component of a universal waste to the environment as follows:
 - (I) A small quantity handler of universal waste must contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.

Violation #6 Observation:

Universal waste lamps in Hesler Hall were found uncontained and in open containers. Hesler Hall 614, 414, 126

Required Action:

All universal waste lamps must be stored in closed containers, as described in the regulation.

Violation #7 - Rule 0400-12-01-.12(2)(e)5 states:

- (2) Standards for Small Quantity Handlers of Universal Waste [40 CFR 273 Subpart B]
 - (e) Labeling/Marking [40 CFR 273.14]
 - A small quantity handler of universal waste must label or mark the universal waste to identify the type of universal waste as specified below:
 - 5. Universal waste lamps (i.e., each lamp), or a container or package in which such lamps are contained, must be labeled or marked clearly with any one of the following phrases: “Universal Waste - Lamp(s)” or “Waste Lamp(s)” or “Used Lamp(s)” or “Universal Waste - Bulbs(s)” or “Waste Bulb(s)” or “Used Bulb(s)”. Containers or packages destined for out-of-state shipment shall use the term “Lamps” in lieu of “Bulbs”.

Violation #7 Observation:

Many universal waste lamps in Hesler Hall were found unmarked: Hesler Hall 614, 414, 126

Required Action/Action Taken:

Universal waste lamps or their containers must be marked according to the regulations.

Violation #8 - Rule 0400-12-01-.12(2)(f)3 states:

- (2) Standards for Small Quantity Handlers of Universal Waste [40 CFR 273 Subpart B]
 - (f) Accumulation Time Limits [40 CFR 273.15]
 - 3. A small quantity handler of universal waste who accumulates universal waste must be able to demonstrate the length of time that the universal waste has been accumulated from the date it becomes a waste or is received. The handler may make this demonstration by:
 - (i) Placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received;
 - (ii) Marking or labeling each individual item of universal waste (e.g., each battery or thermostat) with the date it became a waste or was received;
 - (iii) Maintaining an inventory system on-site that identifies the date each universal waste became a waste or was received;
 - (iv) Maintaining an inventory system on-site that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received;
 - (v) Placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received; or
 - (vi) Any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date it becomes a waste or is received.

Violation #8 Observation:

Some of the universal waste lamps in Hesler Hall were found without a record of an accumulation start-date. Also, the universal waste battery accumulation bucket in Buehler Hall did not have any apparent means of tracking the accumulation start-date.

Required Action/Action Taken:

Universal wastes, including certain lamps and batteries, may be accumulated on site for up to one year, but the accumulation time must be tracked according to the regulation.

REMARKS / RECOMMENDATIONS:

Note that universal waste accumulation start-dates must be tracked from the date of generation, which is distinct from hazardous waste satellite accumulation containers (as used in almost all of the labs), where the start-date is not tracked until the volume exceeds 55 gallons at the point of generation, or until it is removed from the point of generation. Also, universal waste accumulation start-dates may be recorded by various means as described in the rule, but hazardous waste accumulation start-dates, when applicable, are marked on the containers themselves.

The new regulation for labeling containers with “An indication of the hazards of the contents” [Rule 0400-12-01-.03(1)(f)1.(v)(II)] includes the statement: “(examples include, but are not limited to, the applicable hazardous waste characteristic(s)...” [emphasis added]. It was noted during the inspection that the hazard indicators on the hazard labels of several containers were not circled, checked, or otherwise marked to indicate the hazard of the material, and many of these are cited as violations. However, among those containers of hazardous waste where the hazard was not marked, the labels and marks were further examined to identify other words that could be effective to describe the hazard. From this process, it was determined that the words “acid” and “base” are considered suitable to “indicate the hazard of the contents;” consequently, containers with those words on the container are not cited in violation of the rule, even though they do not meet the standard practice of the university (see, for example, Photo 24, SERF 431; the hazardous characteristic is not circled or marked, but the word “acid” serves to indicate the hazard). Nevertheless, circling or marking the hazard according to current university policy is commended in all cases as a ‘best management practice,’ and for the sake of consistent labeling.

During the inspection, many containers of reagents were observed in many labs that appear to be several years old, such as those observed in Buehler Hall 630 and 631 (Photos 48, 52, and 53). Of course, chemical reagents might remain usable indefinitely, and the DSWM agrees that the determination of what is or is not useful or necessary is the prerogative of researchers and managers of the different labs, but at times it seems questionable that a material that has not been used up after several years, is a material that is ‘in use,’ and some materials seem to have been purchased by personnel who have left or retired. It is recommended that at least some of the older reagent containers be examined and evaluated for disposal, because allowing them to remain unused on the shelves indefinitely could lead to a build-up of hazardous materials.

Signed _____
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