



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

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September 14, 2021

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

CERTIFIED MAIL
9489 0090 0027 6129 2698 36
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 August 24, 2021, the Division of Solid Waste Management (DSWM) conducted a hazardous waste follow-up inspection at the University of Tennessee. The inspection was conducted to evaluate the University of Tennessee regarding compliance with the July 22, 2021, notice of violation (NOV)

During the inspection, outstanding violations #1, and #5 cited in the Division's July 22, 2021, were observed to have been corrected. However, violations #2, #3, #4, #6, #7, and #8 have been partially but not fully corrected.

The attached inspection report/NOV details inspection findings. The University of Tennessee must initiate immediate actions to correct outstanding violations. The DSWM will conduct a follow-up inspection within approximately *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 865-722-0025 or by email: craig.smith@tn.gov.

Sincerely,

Craig Smith, CHMM
Environmental Consultant

Enclosure

cc: Beverly Philpot, DSWM/Nashville
Rob Ashe, 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: August 24, 2021
Time: 8:15 a.m.

INSPECTION PARTICIPANTS:

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REPORT PREPARED BY:

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Knoxville Environmental Field Office
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Fax: 865-594-6105

PURPOSE OF INSPECTION:

This follow-up 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:

According to the report submitted to the Division of Solid Waste Management, the following hazardous waste streams were generated during 2020. All laboratory waste streams are profiled by the UT waste management section; these waste profiles include hazardous waste, universal waste, and non-hazardous waste profiles. Lab wastes are classified, accumulated, collected, and handled according to the profiles.

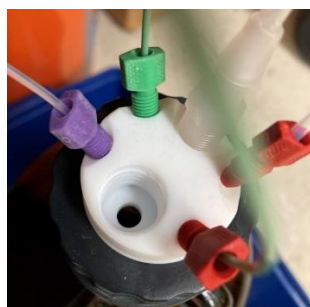
Waste Number/ Name	EPA Waste Codes	How is the waste generated?	Lb Generated in 2020
1/ Mixed Lab Waste	D001, D002, D004, D005, D011, D022, F003, F005, P030, P098, F027	Research and teaching lab waste	5418
2/ Waste Organic Solvents	D001, D018, D019, D022, D035, D039, D040, F002	“	29164
3/ Metal Acid Waste	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:

Science and Engineering Research Facility (SERF)

SERF Central Accumulation Area (CAA) -- As stated in the initial inspection report, the SERF CAA serves to accumulate hazardous waste from all the labs in SERF and Dabney-Buehler. At the time of the initial inspection, aisle-space had initially been found inadequate (Photo 1). However, on August 24, the aisle-space was found adequate and corrected (Photo 2).

SERF 408 – On June 8, one bottle stationed to accumulate discharge waste tetrahydrofuran from various lab machines via thin plastic tubes through a multi-ported lid was not marked “hazardous waste.” (Photos 3-5). On August 24, this bottle was found closed and correctly labeled (Photo 6).



Photos 3-5, waste tetrahydrofuran bottle, open, without hazardous waste marking or hazard label, SERF 408, June 8



Photo 6, waste tetrahydrofuran bottle, closed, correctly marked, and labeled, SERF 408, August 24

A white plastic bag with a yellow and red patterned border, lying on a white surface. The bag is crumpled and appears to be a piece of evidence.



A large, crumpled white plastic bag is positioned on a light-colored tiled floor. A yellow label with a red border is affixed to the bag. The label contains text in both English and Spanish, including 'FARMACIA' and 'FARMACIA'.

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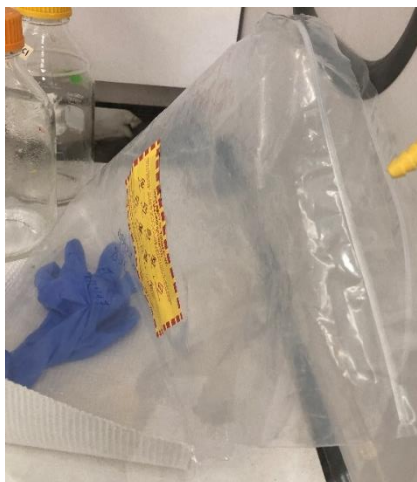


Photo 10, plastic bag containing hazardous waste, open, SERF 604, June 8



Photo 11, plastic bags containing hazardous waste, both closed and marked, SERF 604, August 24

SERF 635 – On June 8, one of four hazardous waste containers, a plastic bag marked “hazardous waste,” was found open (Photo 12). On August 24, this same bag was found open again (Photo 13). It was closed immediately (Photo 14).

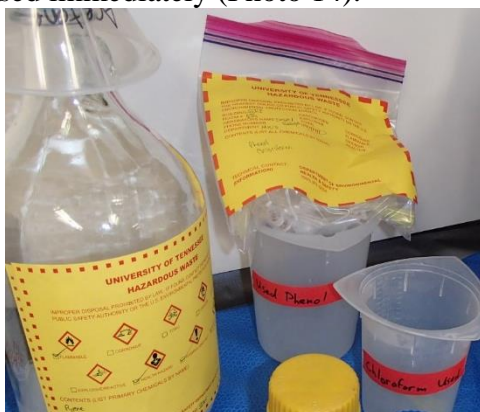


Photo 12, hazardous waste containers with open plastic bag, SERF 635, June 8

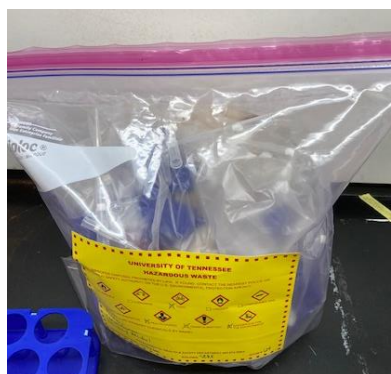


Photos 13 and 14, plastic bag hazardous waste container, found open (left) and promptly closed (right), SERF 635, August 24

SERF 624/626 – On June 8, two metal containers were found in adjoining labs 624 and 626 marked “hazardous waste” and with hazard indication, but not closed, (Photos 15 and 16). The container in 624 was promptly replaced with a plastic bag and closed, with marks applied, etc. (Photo 17). On August 24, the plastic container in 624 remained in good condition; the metal container in 626 remained and was found closed and empty (photos 18 and 19).



Photos 15 - 17, two metal containers with plastic-bag liners that contain hazardous waste, not effectively closed (left, center) and with the 624 container replaced (right), SERF 624 and 626, June 8



Photos 18 and 19, closed plastic bag in 624, closed empty metal container in 626, SERF 624/626, August 24

SERF 616 – On June 8, two plastic bags marked “hazardous waste” and with hazard indication, of which one was found open (no photo available). These same containers were found open on August 24 (Photos 20 and 21); they were closed immediately (Photo 22).



Photos 20 – 22, plastic bag containers found open, left and center; containers closed immediately, right; SERF 616, August 24

Buehler Hall

Buehler Hall, hallway – The marking on the used battery container observed in a hallway on Buehler 3 was corrected during the initial inspection on June 9 and as documented in the initial inspection report; this container remained in good condition on August 24.

Buehler Hall 602 and 603 – On June 9, three four-liter hazardous waste containers were fitted with a lidded-funnel with vent ports that render the container “open” for regulatory purposes, (Photo 23). On August 24, the containers were found closed (Photos 24 - 26).

As with other labs mentioned in the initial report, several reagent bottles on the shelves appear to be unused and very old. A plan to address this situation has been initiated, and a collection/disposal event is planned for September of 2021.



Photos 23 – 26, Example of the open-port funnel as seen on June 9, left. All three containers were found closed, center left, center right, and right, Buehler 602/603 on August 24

Buehler Hall 630 – an open container was found in the hazardous waste storage area in this lab in June (Photo 27); the open container was gone on August 24, but two of the bottle-caps were loose (Photo 28). These were tightened immediately.



Photos 27 and 28, open container found in June, left, and same lab but with two of the lids found loose, Buehler 630, August 24

The initial inspection report regarding this area mentioned two containers without an indication of the hazard, but after that report, it was subsequently determined that one of these containers held a waste stream that the university had profiled as non-hazardous despite being marked as hazardous in this lab. The remaining container of waste chromium oxalate was not marked to indicate the hazard (Photos 29, 29a, and 29b). During the follow-up inspection on August 24, the chromium oxalate container was again found without a mark to indicate the hazard (Photo 30); the correct hazard indication was marked immediately (Photo 31).

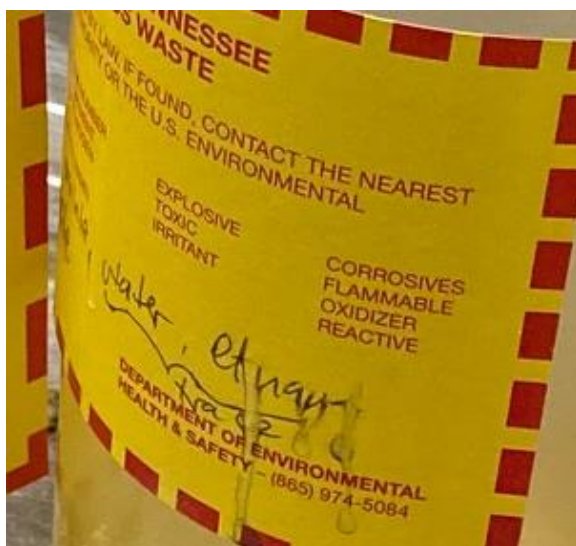


Photo 29, upper left, with details in 29a, upper right, and 29b, lower center; chromium oxalate container, Buehler 630, June 9



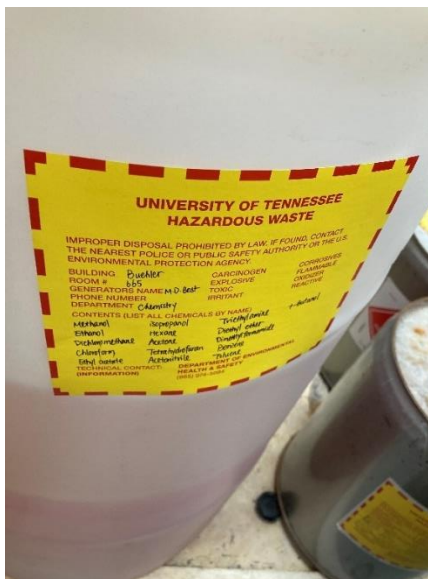
Photos 30 and 31 – Chromium oxalate container not marked to indicate the hazard, left, and corrected, right, Buehler 630, August 24

Buehler 665 – This lab is a large graduate research lab with hazardous waste containers in the hazardous waste storage hood; it was noted during the follow-up inspection that the metal containers hold a waste-stream that is profiled as non-hazardous “silica gel and sand” (Photo 32), so the hazardous waste labels shown on these containers are erroneous.



Photo 32, containers of non-hazardous waste profile “silica gel and sand” with hazardous waste labels

The 30-gallon accumulation container in the Buehler 665 hazardous waste fume hood was found without an indication of the hazard on June 9 (Photos 33 and 34).



Photos 33 and 34, hazardous waste accumulation container without hazard indication, Buehler 665, June 9

The same 30-gallon container in the Buehler 665 hazardous waste fume hood was observed with the corrected hazard indication, but the container was open while not in use (Photo 35).



Photo 35, 30-gallon hazardous waste accumulation container, hazard indication is corrected vs. the June 9 initial inspection, but the container was found open, Buehler 665, August 24

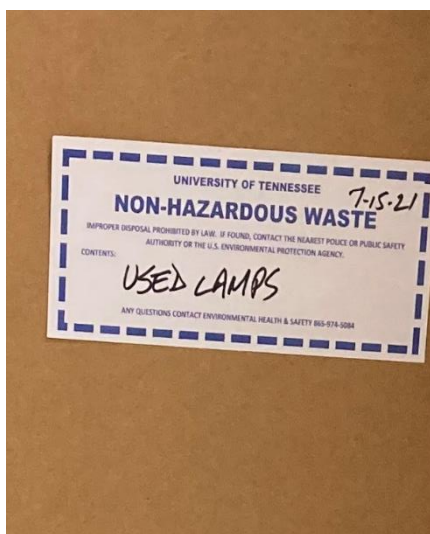
Open satellite hazardous waste containers were also found in Buehler 665 under fume hoods numbered one and four (Photos 36 and 37) while no one was present or apparently working in or around these areas.



Photos 36 and 37, open hazardous waste satellite accumulation containers under hood numbers one (left) and four (right), Buehler 665, August 24

Hesler Hall

Hesler Hall room 414 – On June 8, a universal waste lamp box was observed open, without marking and no observed accumulation start-date tracking system (Photo 38) This container was observed corrected on August 24 (Photo 39 and detail in 39a).



Photos 38, 39, and 39a, open unmarked universal waste lamp container, left, on June 8. Same container, corrected, center and right, Hesler Hall 414, August 24

Hesler Hall 434 – On June 8, three containers marked as waste were observed; two were marked “hazardous waste,” a third was not marked “hazardous waste,” and two of these containers were not labeled with an indication of the nature of the hazard. On August 24, all containers including a fourth were found corrected (Photos 40 and 41).



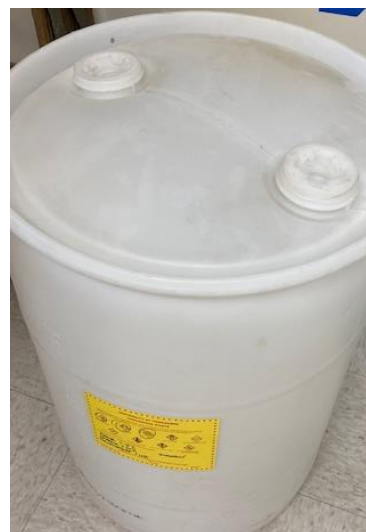
Photos 40 and 41-- On June 8, two containers not marked “hazardous waste,” three containers without an indication of the hazard (left). These containers were found corrected with hazard markings and indications during the follow-up inspection (right) Hesler Hall 434, August 24

Hesler Hall 614 – several containers of universal waste lamps are accumulated in this area from this and other campus buildings. On June 8, several closed containers were observed, but many containers did not meet requirements for closure, marking, or accumulation start-date tracking (Photos 42 and 43). All containers were observed closed and correctly marked during the follow-up inspection on August 24 (Photo 44).



Photos 42 and 43, open container of universal waste lamps and unmarked container, observed on June 8; left and center. Photo 44, corrected containers, right, Hesler Hall 614, August 24

Hesler Hall 606 – On June 8, one 30-gallon container marked “hazardous waste” was found fitted with a drain-funnel, but the funnel does not attach to the container of liquid hazardous waste. As stated in the initial inspection report, this connection does not meet the standard of “closed” for liquid hazardous containers (Photo 45). During the August 24 follow-up inspection, this container was found corrected (Photos 46 and 47).



Photos 45 to 47, on June 8, left, the drain-funnel was inserted into an open hazardous waste container, but does not attach to the container; during the follow-up inspection the funnel was found resting on top of the closed container, center and right, Hesler Hall 606, August 24

Hesler Hall room 126 – On June 8, a large quantity of universal waste lamps, open containers, and uncontained lamps, without correct marking or date-tracking were observed in this room. During the August 24 follow-up inspection, most of the bad and uncontained lamps had been removed (Photos 48 and 49), and many of the open unlabeled boxes observed on June 8 (Photo 50) were found labeled “good lamps” on August 24 (Photo 51). However, at least one open container marked “bad – old” lamps remained, open and not correctly labeled, and a few uncontained lamps of uncertain status also remain (Photos 52 – 55).



Photos 48 and 49 – on June 8, uncontained and unlabeled lamps were in open containers (left). These had been removed for recycling (right) prior to the follow-up inspection, Hesler Hall 126, Aug. 24



Photo 50, unmarked containers of lamps of uncertain status, Hesler Hall 126, June 8



Photo 51, same containers as in Photo 50, now mostly marked “good lamps,” Hesler Hall 126, August 24



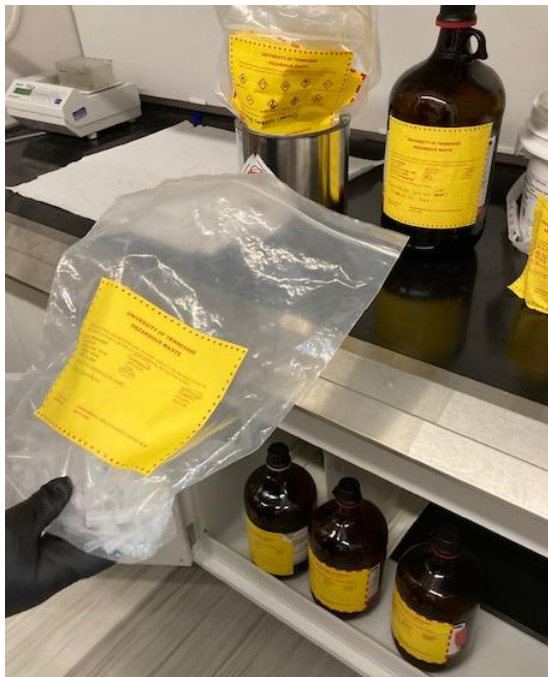
Photos 52 and 53, one open container of “bad – old” lamps (left) observed on June 8; during the follow-up inspection, this same container (right) was observed open and not properly marked on August 24. Uncontained lamps of uncertain condition are visible in both photos. Hesler Hall 126, August 24.



Photos 54 and 55, Uncontained lamps of uncertain status first observed on June 8 (left) and as observed on August 24 (right), Hesler Hall 126, August 24.

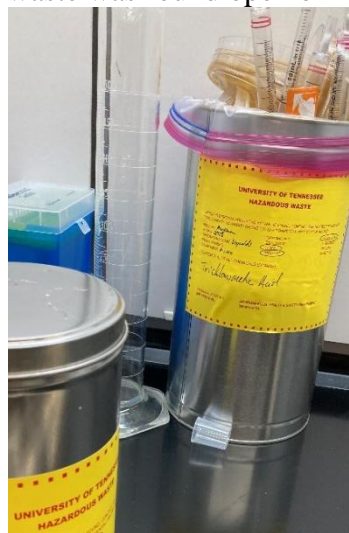
Mossman Building

Mossman 641A – One plastic bag marked hazardous waste and labeled to indicate the hazard was found open on June 9 (Photo 56); this same container, or one identical to it, was found open on August 24 (Photo 57). The container was closed immediately.



Photos 56 and 57, hazardous waste container found open during the initial inspection (left) and the follow-up inspection (right), Mossman 641A, August 24

Mossman 641B – On June 9, two steel cans used to accumulate hazardous waste were found open (Photos 58 and 59), and a plastic bag of hazardous waste was not labeled to identify the hazard. Those containers were found corrected on August 24, but one plastic bag of hazardous waste was found open on August 24 (Photo 60).



Photos 58 and 59, open steel hazardous waste containers with plastic liners, Mossman 641B, June 9



Photo 60, one plastic bag of hazardous waste found open, Mossman 641B, August 24

Mossman 641C – On June 9, one hazardous waste container was found open; this container was found correctly closed on August 24.

Mossman 420D – On June 9, one bottle was observed with a hazardous waste mark but without indication of the type of hazard; this same bottle had been removed prior to the follow-up inspection on August 24. However, several smaller containers marked “PFA waste” were observed, which are profiled as hazardous waste, and therefore are not labeled as required (Photo 61).



Photo 61, hazardous waste container not marked “hazardous waste” nor to indicate the hazard, Mossman 420D, August 24

Mossman 441A – During the June 9 inspection, there appeared to be roughly 150 containers of various chemicals in this small lab, including five containers marked “hazardous waste,” (Photos 62 and 63). During the follow-up inspection on August 24, this lab was found empty of waste chemicals, which had been disposed of (Photo 64).



Photos 62 and 63, hazardous waste containers and multiple containers of unmarked waste material, Mossman 441A, June 9



Photo 64, former waste chemical accumulation area, observed as cleaned-out during the follow-up inspection, Mossman 441A, August 24

Mossman 441B – During the initial inspection on June 9, four out of six hazardous waste containers were observed in this lab that were not labeled to indicate the type of hazard; all containers were found correctly labeled and closed during the follow-up inspection on August 24.

Strong Hall

Strong Hall general chemistry labs – As observed on June 9, all of the three hazardous waste accumulation containers in all of the undergraduate general chemistry labs were fitted with lidded funnels that have a “vent port” between the top of the bottle and the bottom of the funnel such that the containers were not properly closed (Photos 65 and 66).



Photos 65 and 66, hazardous waste containers in the general chemistry labs showing the detail of the vent-port (left) and the three-bottle accumulation setup (right) with the vent-ports attached, Strong Hall general chemistry labs, June 9

During the August 24 follow-up inspection, it was observed that all vent-ports had been removed from all containers except when in use. Hazard indications had not been applied to the aqueous waste containers, but these were applied immediately (Photos 67 and 68).



Photo 67, example of a hazardous waste accumulation containers in the undergraduate labs, closed. The hazard indication marking was absent, Strong Hall undergraduate general chemistry lab, August 24

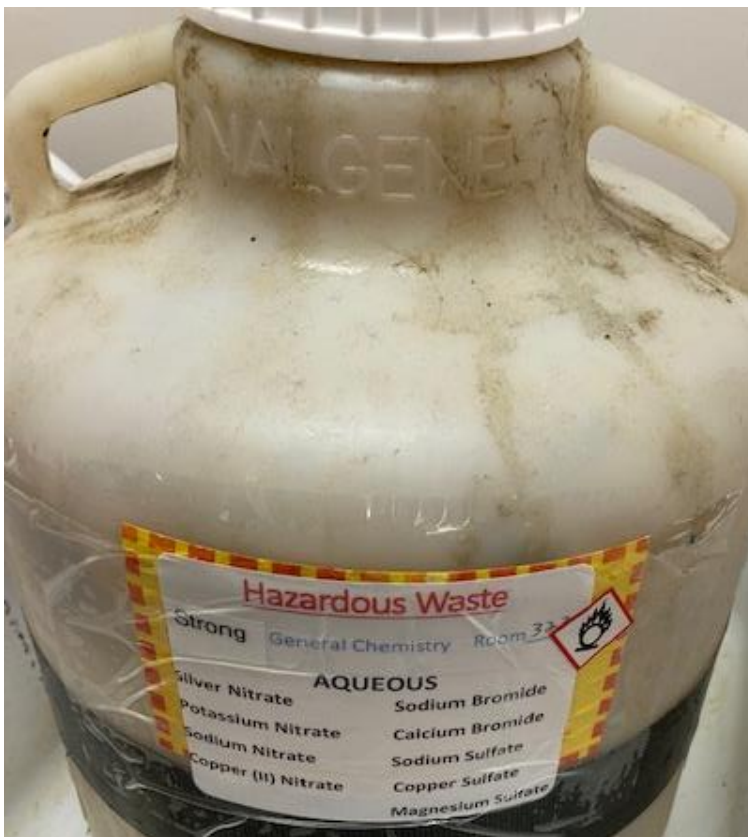


Photo 68, an example of an aqueous hazardous waste accumulation container with corrected hazard indicator label applied, Strong Hall undergraduate general chemistry labs, August 24

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 Initial Observation, June 8 and 9:

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 1).

Action Taken, June 8 and 9:

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 #1 Follow-Up Observations, August 24

As indicated, the aisle-space was corrected prior to the August 24 inspection (Photo 2).

Required Action, August 24:

No further action required.

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 initial observation, June 8 and 9:

Most hazardous waste satellite accumulation containers were found closed; however, a significant number of containers were found open in the following labs, as described in the report.

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

Initial Action Taken/Required Action, June 8 and 9:

Some containers were promptly closed during the inspection, such as SERF 624, but some require a change in the type of closure, such as the ported funnels in Strong Hall undergraduate chemistry labs (315 and 316, and others) and in Buehler 630.

Violation #2 Follow-up Observations, August 24:

Several satellite hazardous waste accumulation containers that had been found open on June 8/9 were found closed, disposed of, or otherwise corrected on August 24 at SERF 408, SERF 604, SERF 624/626, Buehler 602/603, Hesler 606, Mossman 641C, and Strong Hall general chemistry labs. As recommended, the containers in Buehler 602/603 and in the Strong Hall general chemistry labs were found closed with new types of lids to effect closure.

Satellite hazardous waste accumulation containers were found open at SERF 606, SERF 635, SERF 616, Buehler 630 (two lids were in place but not tightened), Buehler 665 (three containers found open), Mossman 641A (closed immediately), and Mossman 641B.

Required Action, August 24:

All satellite hazardous waste accumulation containers must remain closed at all times except when hazardous waste is being added or removed.

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 Initial Observation, June 8 and 9:

A 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, and multiple containers of waste chemicals in Mossman 441A

Initial Action Taken/Required Action, June 8 and 9:

The waste-accumulation bottle in SERF 408 was marked “hazardous waste” at least as of June 13. 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. All hazardous waste containers must be marked with the words “hazardous waste” as described in the regulation.

Violation #3 Follow-up Observations, August 24:

Satellite hazardous waste accumulation containers that had not been marked “hazardous waste” on June 8/9 were found marked “hazardous waste,” disposed of, or otherwise corrected on August 24 at SERF 408, Hesler 434, and Mossman 441A.

Satellite hazardous waste accumulation containers that had not been marked “hazardous waste” on June 8/9 were observed as not marked “hazardous waste” at Mossman 420D, and Mossman 641B.

Required Action, August 24:

All satellite hazardous waste accumulation containers must be marked with the words “hazardous waste.”

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 Initial Observation, June 8 and 9:

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 441B

Strong Hall 315 and 316 aqueous waste containers

Buehler 665, 630

Initial Required Action, June 8 and 9:

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

Violation #4 Follow-up Observation, August 24:

Satellite hazardous waste accumulation containers that had not been marked with an indication of the hazard on June 8/9 were found marked with an indication of the hazard(s), disposed of, or otherwise corrected on August 24 at SERF 408, SERF 604, Buehler 665, Hesler 434, Mossman 341B, Mossman 441B, Mossman 641B, and Mossman 441A. The aqueous waste containers in the Strong Hall general chemistry labs were marked during the inspection.

Satellite hazardous waste accumulation containers that had not been marked with an indication of the hazard on June 8/9 remained without an indication of the hazard(s) at SERF 606, Buehler 630 (the marking was applied immediately), and Mossman 420D.

Required Action, August 24:

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 Initial Observation:

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

Initial Action Taken, June 8 and 9:

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

Violation #5 Follow-up Observations, August 24:

The container was found in the same condition as had been shown in the photograph received on July 7. This container was observed in corrected condition on August 24.

Required Action, August 24:

No further action required.

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 Initial Observation, June 8 and 9:

On June 8 and 9, universal waste lamps were found uncontained and in open containers in Hesler Hall 614, 414, and 126.

Required Action, June 8 and 9:

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

Violation #6 Follow-up Observation, August 24:

Universal waste lamps that were uncontained or in open containers on June 8 were found in closed containers, disposed of, or otherwise corrected on August 24 at Hesler Hall 414 and Hesler Hall 614.

Many uncontained universal waste lamps that had been observed in Hesler Hall 126 in on June 8 had been corrected by removal prior to August 24 (Photos 40 and 41). However, some of the universal waste lamps that were in an open container on June 8 remained in an open container on August 24 (Photos 44 and 45). Other lamps of uncertain status also remained uncontained or in open containers in Hesler 126 on August 24 (Photos 43 and 47).

Required Action, August 24:

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:

On June 8, universal waste lamps in Hesler Hall were found unmarked or in unmarked containers in Hesler Hall 614, 414, and 126.

Required Action/Action Taken, June 8 and 9:

Universal waste lamps and accumulation containers must be marked according to the regulations.

Violation #7 Follow-up Observation, August 24:

Universal waste lamps or accumulation containers that had not been marked on June 8/9 were found corrected on August 24 at Hesler Hall 414 and Hesler Hall 614.

Many unmarked universal waste lamps that had been observed in Hesler Hall 126 in on June 8 had been corrected by removal prior to August 24 (Photos 40 and 41). However, a universal waste lamp accumulation container that was that was not correctly marked on June 8 (“bad – old”) remained incorrectly marked on August 24 (Photos 44 and 45). Other lamps of uncertain status also remained unmarked or in unmarked containers in Hesler 126 on August 24 (Photos 43 and 47).

Required Action, August 24:

Universal waste lamps and accumulation containers must be marked according to the regulation.

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 Initial Observation, June 8 and 9:

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, June 8 and 9:

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.

Violation #8 Follow-up Observation, August 24:

Universal waste lamps or accumulation containers that had not been marked with an indication of the accumulation start-date on June 8 were found correctly marked or otherwise tracked on August 24 at Hesler Hall 414 and 614. Also, the accumulation start-date tracking had been initiated for the universal waste battery collection container in Buehler Hall.

Many universal waste lamps that had been observed in Hesler Hall 126 without a method of tracking the accumulation start-date on June 8 had been corrected by removal prior to August 24 (Photos 40 and 41). However, one container without a method of tracking the accumulation start-date on June 8 remained uncorrected on August 24 (Photos 44 and 45). Other lamps of uncertain status also remained in Hesler 126 on August 24 (Photos 43 and 47).

Required Action, August 24:

Accumulation start-dates must be tracked by one of several possible means for all universal waste in order to demonstrate that it has not been accumulating beyond one year. Universal waste of unknown accumulation start-date must be transported for recycling immediately.

REMARKS / RECOMMENDATIONS:

During the follow-up inspection, almost all of the labs that had been found in violation during the initial inspection, were found in compliance or at least improved over the initial conditions. However, despite the improvements, some uncorrected compliance issues remain from the initial inspection, and should be corrected immediately.

During both initial and follow-up inspections, it was noted that a few waste streams determined as “hazardous waste” by the university, perhaps through an abundance of caution, are not necessarily hazardous waste according to Tennessee Rule Chapter 0400-12-01-.02 “Identification and Listing of Hazardous Waste.” For examples, gloves and empty equipment such as pipettes that have contacted hazardous wastes that are NOT on the “acute toxicity” list (the P-list) are not considered hazardous due only to such contact.

During both initial and follow-up inspections, it was noted that a few containers of non-hazardous waste-streams as profiled by the university had been accumulated at the point of generation in containers that were marked “hazardous waste,” perhaps through an abundance of caution or perhaps because the hazardous label was at hand, such as were observed in Buehler 630 and Buehler 665 (Photos 29 and 32). This practice should be avoided as it causes confusion.

Signed _____
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