FILE FOLDER

DESCRIPTION ON TAB:

Electrolyte

☒ **Outside/inside of actual folder did not contain hand written information**

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***Scanned as next image**

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11800
FAC

8 NOV 1985

Assistant Chief of Staff, Facilities, Marine Corps Base, Camp Lejeune
Assistant Chief of Staff, Base Operational Support Management Assistance Division

MIP 85-414-FAC, NEUTRALIZATION OF BATTERY ACID

Encl: (1) AC/S, Fac ltr 11800 FAC dtd 16Aug85 (w/Encl)

1. Request the approval of this MIP be expedited and status provided by 15 November 1985.

2. This MIP proposal presents a solution to a pressing pollution and safety problem which must be corrected. Further, approval of the MIP needs to be expedited in order to comply with hazardous waste and wastewater rules.

R. A. TIEBOUT

Copy to:
BMO
NREAD
EnvEngr

T-11800

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

11800
FAC

16 AUG 1985

FIRST ENDORSEMENT on EnvEngr Memo 11800 FAC dtd 15 Aug 1985

From: Assistant Chief of Staff, Facilities, Marine Corps Base, Camp Lejeune
To: Assistant Chief of Staff, Base Operational Support Management Assistance Division

Subj: MIP 85-414-FAC, NEUTRALIZATION OF BATTERY ACID

Encl: (1) MIP 85-414-FAC w/1st End Dir, NREA 11800 NREAD dtd 19 Jul 85
(2) BMaintO Memo 11800 MAIN dtd 19 Jul 85

1. Forwarded for further action. Concur with Mr. Alexander's remarks in basic correspondence. Enclosures (1) and (2) are provided as additional information.

BAE

R. A. TIEBOUT

Drafter: Col Tiebout
Typist: H Foster

Enclosure T

11800
FAC

15 AUG 1985

Environmental Engineer

Assistant Chief of Staff, Facilities
Via: Deputy Assistant Chief of Staff, Facilities

MIP 85-414-FAC, Neutralization of Battery Acid

Encl: (1) "Waste Watcher", Piedmont Waste Exchange, Winter 1985

1. I discussed this with Mrs. Smith. The acid would be transported to the fenced area at Coal Pile Runoff Facility and natralized by batch method as the coal pile runoff is treated.

2. Several regulatory issues involved:

a. RCRA Part B Permit - would probably need permit revision to be requested from N.C. Solid and Hazardous Waste Management Branch.

b. NPDES Permit - a notification of the proposal, as a minimum and possibly a permit revision should be sent to the N.C. Division of Environmental Management. (Note: Coal Pile Runoff Facility also should be sent by A/E and approved by NCDEM - not done yet, I think.)

c. Sludge produced by this operation will need to be tested for hazardous characteristics, mainly heavy metals, on a recurring basis (NREAD could assist).

3. Alternatives to this MIP are:

a. Turn in to DRMO for disposition.
b. Finding a reuse/recycle operation through Piedmont Waste Exchange.

The DRMO option will be very expensive - they have been unable to accomplish anything other than service contract disposal. The advantage to MCB is - no costs involved (yet).

The PWE option will only cost $40 to list the acid in their publication as available for donation to any industrial operation which can reuse/recycle the acid. The industries would either contact MCB directly or through PWE to obtain the acid. The enclosure describes the process. This option will also involve DRMO for record-keeping and disposition of excess federal property.

A
8/15

4. In summary, this idea should be approved and the above issues regarding permits and monitoring should be addressed.

R. E. Alexander

Writer: Mr. Alexander
Typist: S. Schmitz, 14Aug85

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

11800
NREAD
19 Jul 85

FIRST ENDORSEMENT on AC/S FAC ltr 11800 FAC dtd 12 Jul 1985

From: Director, Natural Resources and Environmental Afffairs Division
To: Assistant Chief of Staff, Facilities

Subj: MODEL INSTALLATION PROGRAM PROPOSAL 85-CLNC-414-FAC

Encl: (1) Copy of MIP No. 85-CLNC-414-FAC

1. Returned. Recommend approval.

2. Comments: This would require some expense at generator location for DOT approved containers. Transportation on public highway is an issue but does not preclude successful implementation.

C. D. PETERSON
Acting

Enclosure (1)

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

Memorandum

11800
FAC

DATE: 12 JUL 1985

FROM: Assistant Chief of Staff, Facilities, Marine Corps Base, Camp Lejeune

TO: Base Maintenance Officer
Director, Natural Resources & Environmental Affairs

SUBJ: MODEL INSTALLATION PROGRAM PROPOSAL 85-CLNC-414-FAC

Encl: (1) Copy of MIP No. 85-CLNC-414-FAC

1. Please review the enclosed Model Installation Program (MIP) proposal and let me know what you recommend. If you think the proposal has merit and should be approved, only a brief comment is necessary. If you recommend disapproval, or a variation of the proposal, a fuller justification will be required. When another department would be affected by approval of this proposal, and the MIP number does not indicate dual cognizance, please coordinate your response informally with them.

2. In either case, please cite any applicable directives which would have to be waived if the proposal were approved. If practical, enclose a copy of the pertinent portions.

3. Response is due to this office by 19 July.

B. W. ELSTON
By direction

Writer: CAPT J. M. VANCAMP
Typist: D. W. MCGUIRE, FAC, 9JUL85

* U.S. GOVERNMENT PRINTING OFFICE: 1983-605-010:8484

MODEL INSTALLATION PROGRAM

PROPOSAL

MARINE CORPS BASE
CAMP LEJEUNE

INSTRUCTIONS:
1. COMPLETE ALL INFORMATION REQUESTED.
2. PLEASE PRINT OR TYPE LEGIBLY.
3. USE ADDITIONAL SHEETS IF NECESSARY.
4. FORWARD COMPLETED PROPOSAL TO AC/S, BOSMAD, MCB

DO NOT WRITE IN THIS SPACE

DATE RECEIVED
JUN 21 1985

TITLE OR SUBJECT OF PROPOSAL

NEUTRALIZATION OF WASTE BATTERY ACID

PROPOSAL NUMBER
85-CLNC-414-FPC

NAME, TITLE, GRADE/RANK OF SUBMITTER(S)
Glenee Lanier Smith, Chemist, GS-9 Maint Div.

PHONE
3252, 5161

CURRENT PROCEDURE: A 55 gallon polyethylene drum, electric transfer pump, electric mixer, two supplied air respirators, personal protective equipment, extension cords, water hoses, and several 100 lb. bags of soda ash are currently being loaded into a truck. This equipment and chemical is transported to approximately 40 collection sites, spread throughout the Marine Corps Base Complex and New River Air Station. Approximately 30 gallons of waste battery acid is pumped from the units' holding tank into the 55 gallon polyethylene drum; the proper amount of soda ash is added to the acid, and the neutralized acid is pumped into a sanitary sewer drain. (NOTE: Not all storage sites are near sanitary sewer drains, in which case, the material must be transported to the nearest drain or oil and water separator.) The quantities of acid neutralized in 1984 and so far in 1985 are 2700 gal. and 2550 gal., respectively.

PROPOSED PROCEDURE (If a directive/order must be waived to implement proposal-identify the specific reference.)

Careful consideration should be given to the concept of establishing one or more permanent neutralizing locations which can be equipped with all required safety devices. On Marine Corps Base Complex, waste acid could be transported by the using units or by other approved methods, to the holding pond under construction behind Bldg. 1700, which is designed to collect the sulfuric acid run-off from the coal pile. A small building with electricity and compressed air could be designed to store the equipment and chemicals necessary to perform the work. The holding pond will be fenced in, therefore units could make an appointment to deliver the waste acid to this centralized location with the Utilities Chemist. The acid could be neutralized any time.

BENEFITS/ADVANTAGES: Emergency showers and eyewash stations should be provided. Most of the sites do not have this safety equipment. Reducing the number of times that an employee must physically handle a hazardous waste is important. The greater the exposure to a hazard, the greater the risk of an accident. Many more gallons could be neutralized in a work day if there was a centralized location. A lot of time is spent searching for sites, unloading and setting up equipment and hauling the acid to a potential drain site.

I (WE) **UNDERSTAND** THAT THE ACCEPTANCE OF A CASH AWARD FOR THE USE OF THIS PROPOSAL BY THE UNITED STATES GOVERNMENT SHALL NOT FORM THE BASIS OF A FURTHER CLAIM OF ANY NATURE UPON THE UNITED STATES BY ME (US), MY (OUR) HEIRS, OR ASSIGNS.

Glenee L Smith June 18, 1985
(SIGNATURE AND DATE)

(SIGNATURE AND DATE)

MODEL INSTALLATION PROPOSAL
MCBCL 11800

Excellent Installations — The Foundation Of Defense

OPNAV 5216/T44A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

Memorandum

11800
MAIN

DATE: 19 JUL 1985

FROM: Base Maintenance Officer

TO: Assistant Chief of Staff, Facilities

SUBJ: MODEL INSTALLATION PROGRAM PROPOSAL 85-CLNC-414-FAC

Ref: (a) AC/S, Fac memo 11800 FAC of 12 Jul 85

1. As requested in the reference, the subject proposal was reviewed and Base Maintenance concurs with the proposal. However, the Environmental Engineer should be tasked with investigating the transporting of acid along Base roadways, and selecting an appropriate site for neutralization.

W. M. RICE

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

BATTERY ACID INVENTORY*
as of
11 April 1984

Command	Building Number	Volume (gals)	Container
MCAS(H)	AS-4146	50	55 gal polyethylene
	S-4 Storage List	110	" "
	AS-4106	35	" "
	AS-4158	40	" "
	CG-1	20	55 gal fiberglass
	Subtotal	255	
2d Mar Div	1505	55	55 gal metal drum
	1810	30	55 gal fiberglass
	HP-100	25	55 gal plastic
	1780	2	55 gal metal
	1755	10	55 gal fiberglass
	1775	25	" "
	1775	70	55 gal plastic
	Subtotal	217	
MCB	M119/120	40	55 gal plastic drum
	BB-51	55	55 gal fiberglass
	Subtotal	95	
2d FSSG	FC-100	50	55 gal plastic drum
	131C	67	" "
	913	50	" "
	FC-200	50	" "
	FC-190	700	Underground tank
	FC-251	40	55 gal plastic
	902	55	" "
	1817	50	" "
	Subtotal	1062	
	TOTAL	1619	

*Contact Hazardous Material Disposal Coordinator as needed.

MCAS(H)	Mrs. Wheat	6686/6518
2d MarDiv	MGySgt Kaup	2755/2302
MCB	Lt Torres/Capt Owens	2507/2508
2d FSSG	MGySgt Tootle	1042/3456

-5001

11014
FAC
3 DEC 1984

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Defense Property Disposal Office

Subj: REQUEST FOR CONSTRUCTION OF COVERED STORAGE FOR RECYCLABLE BATTERIES

1. Request the subject construction requirement be forwarded for consideration of FY-85 construction on a reimbursable basis. Unfortunately, the request submitted on 28 November 1983 has been misplaced and must be resubmitted.

2. We regret any inconvenience created by this request. Please contact Mr. Bob Alexander, ext. 3034, should you have questions regarding this project.

J. G. FITZGERALD
By direction

Blind Copy to:
Env Engr

PDO
memo on
Battery
storage.

-5001

11014
FAC
3 DEC 1984

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Defense Property Disposal Office

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By direction

Blind Copy to:
Env Engr

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U U C L A S S I F I E D U
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ROUTINE

R 121336Z SEP 83

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SIXTH MAB

CG SECOND FSSG
MCAS H NEW RIVER NC

finally got something moving

UNCLAS //N06280//

FOR HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC)
SUBJ: HANDLING/DISPOSAL OF WASTE BATTERY ACID

A. MTG BTWN COMD HMDC'S; AC/S, FAC, AND AC/S, LOG ON 30 JUN 83

1. DISPOSAL PROCEDURES FOR THE SUBJ HAZARDOUS MATERIALS WERE DISCUSSED DURING THE REF. THIS MSG REQUESTS COOPERATIVE ACTIONS OF ALL COMDS FOR DISPOSAL OF ACCUMULATED BATTERY ACID TO IMPROVE STORAGE AND SAFETY CONDITIONS.

2. USED BATTERY ACIDS ARE PRESENTLY BEING STORED AT MANY MAINT SHOPS IN 55 GAL FIBERGLASS DRUMS. THESE DRUMS DO NOT MEET DEPT OF TRANS STANDARDS FOR TRANS OF HAZARDOUS MATERIALS ON PUBLIC HIGHWAYS. THE WEIGHT OF THESE DRUMS WHEN FILLED ALSO PRECLUDES SAFE HANDLING OF ACIDS BY MAINT PERSONNEL.

3. THE FOLLOWING ACTIONS WILL BE TAKEN TO DISPOSE OF ACCUMULATED QUANTITIES OF USED BATTERY ACID:
A. ADDRESSEES ARE REQUESTED TO REPORT BY 16 SEP 83 TO MCB (ATTN AC/S, FAC) THE QUANTITY OF USED ACIDS STORED BY STORAGE SITE, AND TYPE AND SIZE OF EACH CONTAINER.
B. UPON RECEIPT OF THE DATA FROM PARA 3A, BASE MAINT DIV WILL NEUTRALIZE THE ACIDS ON-SITE. A SCHEDULE OF LOCATIONS TO BE SERVICED WILL BE PROMULGATED.

4. FUTURE DISPOSAL OF USED BATTERY ACIDS WILL BE AS FOLLOWS:
A. BASE MAINT DIV WILL NEUTRALIZE BATTERY ACID ON-SITE APPROX EVERY SIX MONTHS.
B. COMDS ARE RESPONSIBLE FOR PROVIDING SAFE STORAGE CONTAINERS

DLVR:CG SIXTH MAB(7)...ACT

BFAC(2)...ORIG FOR CG MCB CAMP LEJEUNE(3)
BLOG(1)

FAC ROUTING

FACO	ACTION	INFO	INT
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RTD:000-000/COPIES:0010

030531/255 1 OF 2 MATA0168 255/21:48Z
CSN:RXIA00110

121336Z SEP 83
CG MCB CAMP LE

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AT THE WORK SITE.
C. COMDS ARE RESPONSIBLE FOR NOTIFYING MCB (ATTN: AC/S, FAC) OF ANY CHANGES IN LOCATIONS OF BATTERY ACID STORAGE SITES.

5. THESE MEASURES ARE DIRECTED AT PROVIDING AN ADEQUATE METHOD OF DISPOSAL, PERSONNEL SAFETY, AND ENVIRONMENTAL PROTECTION AT THE LEAST COST. QUESTIONS OR CLARIFICATIONS OF THIS MSG SHOULD BE ADDRESSED TO MR. BOB ALEXANDER, MCB FAC, EXT. 3034.

BT

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542

FAC/REA/nh
6280/2

From: Assistant Chief of Staff, Facilities
To: Base Maintenance Officer

Subj: Neutralization and Disposal of Battery Acid

Ref: (a) CG MCB ltr FAC/REA/hf over 6280/2 dtd 5 April 84
(b) BSafMgr ltr SAFD/TR/mrh over 5100 dtd 22 Nov 83

Encl: (1) Battery Acid Inventory, 11 April 84

1. In accordance with reference (a), the enclosure is forwarded for implementation by Base Maintenance Division of the subject work. Reference (b) applies for provision of personal protection equipment.

2. Point of contact for this matter is Mr. Alexander, ext 3034/5.

M. G. LILLEY

Copy to:
SAFD
NREAD

Blind copy to:
EnvEng

BATTERY ACID INVENTORY*
as of
11 April 1984

Command	Building Number	Volume (gals)	Container
MCAS(H)	AS-4146	50	55 gal polyethylene
	S-4 Storage List	110	" "
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	Subtotal	217	
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	131C	67	" "
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	FC-190	700	Underground tank
	FC-251	40	55 gal plastic
	902	55	" "
	1817	50	" "
	Subtotal	1062	
	TOTAL	1619	

*Contact Hazardous Material Disposal Coordinator as needed.

MCAS(H)	Mrs. Wheat	6686/6518
2d MarDiv	MGySgt Kaup	2755/2302
MCB	Lt Torres/Capt Owens	2507/2508
2d FSSG	MGySgt Tootle	1042/3456

COMMAND
HAZARDOUS MATERIALS COORDINATORS
MEETING
11 APRIL 84

Name	Representing	Phone #
LT. Torres	AC/S Logistics	2507, 2508
LCDR ANMONS	NAVHOSP	4690
John McCloskey	NavHosp	5707
ELMER PIDGETT	BASE FIRE DEPT.	5815
Linda Cunningham	CPD	1539
ELIZABETH DETZ	NREAD	5977
MARY WHEAT	MCAS, NR	6686/6519
George Eggers	DPDO	
Willie B. HENDERSON	PP&P MSGT	1628/5224
MGySgt M.P. KAUP	2d MARDIV	2755/2302
Capt A.G. OWENS	AC/S Log.	2507
Capt M.A. NALL	PMO	2455/2456
KEN JOLLY	NREAD	2083/1690
MGySGT TOOTLE	2dFSSG	1042/3456
BOB ALEXANDER	AC/S FAC, MCB	3034

MCB

Battery Acid requiring pickup.

Location	Qty	Telephone #
(1) H+S Co Transportation & Maintenance (MCSSS) Camp Johnson BLDG M119/120	40 gals	0710
(2) Engineer Equipment Instruction (MCES Courthouse Bay) BB-51	55 gals	7233

MCB Coordinator
R. Torres

MCAS

Waste Electrolyte

MAG-26

50 gallons GSE (AS-4146)

110 gallons - Open storage lot

MAG-29

35 gallons GSE (AS-4106)

Det "A"

40 gallons (AS-4158)

MATCS-28

20 gallons (CG-1) 55-gal fiberglass cont.

255

55-gal polyethylene drums

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
Memorandum

DATE: 11 April 1984

FROM: Hazardous Material Disposal Coordinator

TO: Facilities Officer, Marine Corps Base, Camp Lejeune, North Carolina 28542

SUBJ: Report of Waste Battery Acid

Ref: (a) CG MCB Cp Lej ltr FAC/REA/hf over 628012 dtd 5 Apr 84

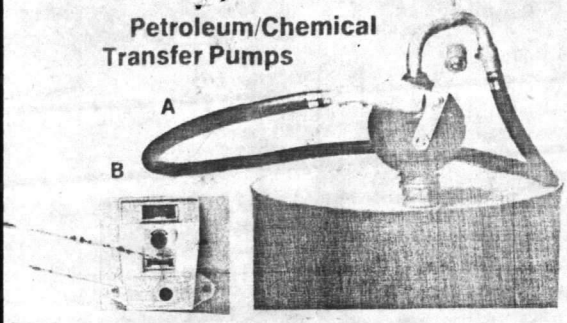
1. As requested by reference (a) the following information is provided:

POC	Qty	Storage Site	Type Container	Size Container
GySgt Kniss 3476	55gal	Bldg 1505	Metal Drum	55gal
Capt Kutta 5223	30gal	Bldg 1810	Fiberglass Drum	55gal
Capt Hoshea 2222	25gal	Bldg HP-100	Plastic Drum	55gal
MSgt Thomas 1926	2gal	Bldg 1780	Metal Drum	55gal
Sgt Foose 1965	25gal	Bldg 1775	Fiberglass Drum	55gal
SSgt Miller 3938	10gal	Bldg 1755	Fiberglass Drum	55gal
Sgt Stearns 1569	70gal	Bldg 1775	Plastic Drums	55gal

Milton P. Kaup
M. P. KAUP

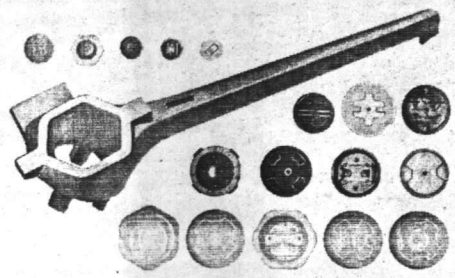
☆U.S. GOVERNMENT PRINTING OFFICE: 1982-505-106:8483

Petroleum/Chemical Transfer Pumps



A. Safe, efficient and accurate way to transfer industrial liquids from drum to another container. Two model pumps: petroleum with 8 ft. hose and chemical with 6 ft. hose. Both have ¾" dia. anti-static hoses and are (FM) approved and comply with OSHA requirements. Rugged cast iron housing with durable, self-compensating carbon vanes. 20 P.S.I. maximum pressure.
B. Optional 20 ga. counter for transfer pumps.

		Each 1-3	4-9
K 11-422	(A) Petroleum Pump, 24 lbs.	$149.00	$134.00
K 11-424	(A) Chemical Pump, 23 lbs.	189.00	170.00
K 11-423	(B) Counter for above pumps, 1 lb.	49.50	44.55



Safe Non-Sparking Drum Wrench

New bronze alloy, fool proof wrench. Removes 17 different types of drum plugs. Offset handle for hand protection. 3 times stronger than aluminum alloy. Corrosion resistant.

		Each 1-3	4-9
K 71-503	Spark Free Plug Wrench, 3 lbs.	$22.50	$20.25

Upright Drum Carrier

Designed especially for moving 55-gallon drums in a vertical or upright position. Especially useful when containers are open and filled with liquid, small parts, or other spillable contents. Welded steel frame has two 8" diameter molded-on rubber load wheels and 4" diameter rubber swivel caster. Pivoting handle pulls load along like a wagon, 1,000 lbs. capacity.

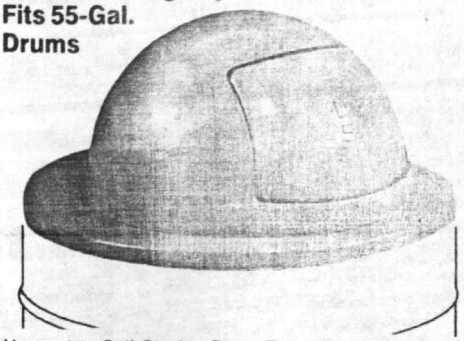
		Each 1-3	4-9
K 61-121	Drum Carrier, 40 lbs.	$109.00	$98.00

Steel Drum Lifter

Provides non-tilt lifting of either "closed head" or "open head" steel drums, with or without their tops in place. The heavier the drum load, the tighter the grip. Designed for a one-man operation with any overhead lift system, including forklift using single tine hook attachment. Made of rugged ductile iron. 3,000 lb. capacity.

		Each 1-3	4-9
K 61-123	Drum Lifter, 31 lbs.	$109.00	$98.00

Self-Closing Top Fits 55-Gal. Drums

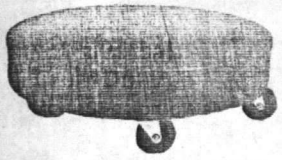


Heavy duty Self-Closing Drum Top converts any open-top empty 55-gallon drum into a self-extinguishing low cost waste container. Fastens with thumb screws. Dia. 24⅝" .22 gauge metal; baked enamel finish. *Indicate color(s) desired by code in parenthesis: white (WH); green (GR); red (RD); light blue (BU); orange (OG).

		Each 1-5	6-9
K 12-121*	Drum Top, 12 lbs.	$39.50	$35.55

Rubbermaid

Universal Drum Dolly



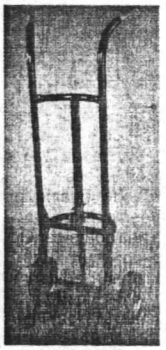
Move 55-gallon metal, fiber or plastic drums, quickly and easily. Five 3" replaceable casters provide great strength and stability. Rugged, seamless Duramold™material. Won't dent, rust or bend; no welds or sharp edges. 24⅜" dia. x 7⅛" high. Black color. 500 lb. capacity.

		Each 1-5	6-9
K 12-185	Universal Drum Dolly, 17 lbs.	$49.75	$44.80

Drum Cradle

Lift 55-gal. drum or barrel up to 800 lbs. Hook onto drum rim; put weight of the drum on curved part of cradle; drum is now ready to roll anywhere. Comes knocked down for easy handling, storage. Assembles in minutes.

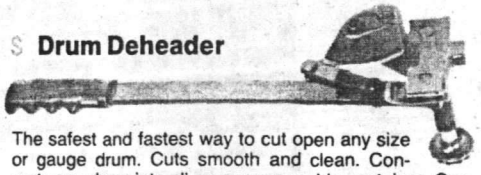
		Each 1-3	4-9
K 61-101	Drum Cradle, 32 lbs.	$79.95	$71.95



Drum Truck

Handy accessory for moving drums or barrels up to 40" tall. Tapered bottom tines slip under the drum, adjustable sliding center hook secures drum in transportation. Durable molded-on rubber wheels are 10H x 2.5"W. One person can easily move a 55-gal. drum or barrel weighing as much as 800 lbs. Color bright Red.

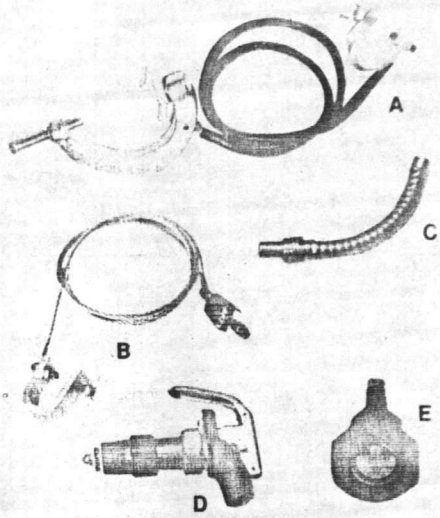
		Each 1-5	6-9
K 61-102	Drum Truck, 73 lbs.	$149.00	$134.00



Drum Deheader

The safest and fastest way to cut open any size or gauge drum. Cuts smooth and clean. Converts any drum into all-purpose reusable container. Constructed of forged steel with alloy steel blade for dependable long life.

		Each 1-5	6-9
K 71-501	Deheader, 5 lbs.	$59.50	$53.95



A. Insulated Grounding Wire

Grounding of containers is required by Federal Standards for transfer of flammable liquids. Connect containers to constant ground with "C" clamp and 3¼" pipe clamp (included). Wire 3-ft. long.

		Each 1-5	6-24
K 11-121	Grounding Wire, 8 oz.	$19.50	$17.55

B. Flexible Bonding Wire

Prevent static sparking by bonding containers to flammable liquid drums. 3 ft. wire with ⅝" "C" clamp and alligator clips.

		Each 1-5	6-24
K 11-120	Bonding Wire, 8 oz.	$15.95	14.35

C. Faucet Extension

Flexible 6" brass extension with flame arrester, eliminates static electricity by direct contact.

		Each 1-5	6-11
K 11-118	Faucet Extension, 1 lb.	$9.95	$8.95

D. Brass Faucets

Self-closing and adjustable flow to eliminate hazardous leaks. Teflon seal and internal flame arrester reduce fire hazards. Choice of Rigid or Swivel-Head, adjustable flow faucets.

		Each 1-5	6-9
K 11-124	Faucet, Swivel-head, 2 lbs.	$35.00	$31.50
K 11-125	Faucet, Rigid head, 2 lbs.,	24.50	22.00

E. Brass Bung Vent

Designed for horizontally cradled drums. FM approved with flame arrester screen, automatic pressure relief and manual vacuum relief. Install in 2" drum bung; no adapters needed.

		Each 1-5	6-9
K 11-119	Brass Bung Vent, 1 lb.	$36.50	$32.85

Brass Dual-Action Drum Vent

FM approved vent for petroleum liquids. Automatic pressure relief at 5 psi and vacuum relief allowing 4 gpm flow through ¾" faucet. All brass. Order 2" EL fitting for right angle installation.

		Each 1-5	6-9
K 11-122	Dual Action Vent, 2½ lb,	$49.50	$44.55
K 11-123	EL Fitting, 1 lb.	8.95	8.05

Non-Metallic Dual-Action Drum Vents

Two inch drum vents w/ metal flame arrestor and base, provide automatic pressure relief at 5 PSIG internal pressure and vacuum relief permitting 4 GPM flow through standard ¾" faucet. Two models: cad-plated flame arrestor and metal base for petroleum base liquids; or stainless steel flame arrestor and base for chlorinated solvents. FM approved.

		Each 1-5	6-9
K 11-128	Vent w/ Cad Plated Hdwr.,1 lb	$15.75	$14.20
K 11-129	Vent w/Stainless Hdwr., 1 lb	28.75	25.90

ADMIN:
To: BMO after
sighting by FACO+
Mr. Alexander

20 SEP 1983

FAC ROUTING			
	ACTION	INFO	
FACO			
4A			
4B			
4C			
4D			
4E			
4FC			
4LC			
SEC			
CLK			

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
(HELICOPTER)
NEW RIVER, JACKSONVILLE
NORTH CAROLINA 28545

IN REPLY REFER TO
222:MEW:jml
6280
16 Sep 1983

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542 (Attn: Assistant Chief of Staff, Facilities)

Subj: Disposal of Waste Battery Acid

Ref: (a) CG MCB CL msg 121336Z Sep 83

1. In response to the reference, waste battery acid is stored at the following locations:

a. Ground Support Equipment, Marine Aircraft Group 26. Approximately 20 gallons on-hand, stored in a 55-gallon fiberglass drum, located at building AS-4146.

b. Detachment "A", Marine Wing Support Group 27. 55 gallons on-hand, stored in polyethylene 55-gallon drum located adjacent to AS-4158.

c. Marine Air Traffic Control Squadron 28. Approximately 20 gallons on-hand, stored in polyethylene 55-gallon drum, located in fenced lot adjacent to CG-1.

2. Point of contact for further information is Mary Wheat, 455-6518/6686.

Donald A. Hodgen
DONALD A. HODGEN

UNITED STATES MARINE CORPS
2D MARINE DIVISION, FLEET MARINE FORCE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
15/MPK/moc
6280
19 Sept 1983

From: Commanding General
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542

Subj: Handling/Disposal of Waste Battery Acids

Ref: (a) CG, MCB, CLNC, msg 121336Z Sep 83

1. As requested by reference (a) the following information is provided:

PRIORITY	QTY	STORAGE SITE	TYPE CONTAINER	SIZE CONTAINER
1	50 Gal	Bldg 1703	Metal Drum	55 Gal
2	30 Gal	Bldg 1780	Metal Drum	55 Gal
3	200 Gal	Bldg 1750	Fiberglass Drum	55 Gal
4	187 Gal	Bldg 1775	Fiberglass Drum	55 Gal
5	110 Gal	Bldg 1501	Plastic Drum	55 Gal
6	30 Gal	Bldg 1810	Fiberglass Drum	55 Gal
7	20 Gal	Bldg A-2 Court Bay	Plastic Drum	55 Gal
8	20 Gal	Bldg 1206	Fiberglass Drum	55 Gal
9	15 Gal	Bldg 1450 Rm115	Plastic Drum	30 Gal
10	15 Gal	Bldg 429	Plastic Drum	55 Gal
11	8 Gal	Bldg 1841 (Parking)	Fiberglass Drum	55 Gal
12	5 Gal	Bldg GP-1	Fiberglass Drum	55 Gal
13	5 Gal	Bldg 1755	Fiberglass Drum	55 Gal
14	2 Gal	Bldg 1775	Plastic Drum	30 Gal
	55 Gal	Bldg ~~1841~~ 909	Fiberglass Drum	55 Gal

D. J. Keirstead

D. J. KEIRSTEAD
By direction

Copy to :
AC/S, G-4
DSO

UNITED STATES MARINE CORPS
2D FORCE SERVICE SUPPORT GROUP (REIN)
FLEET MARINE FORCE, ATLANTIC
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
42/RDB/vao
5100
16 Sept 1983

From: Commanding General
To: Commanding General, Marine Corps Base, Camp Lejeune NC
(Attn: Assistant Chief of Staff, Facilities)

Subj: Handling/Disposal of Waste Battery Acid

Ref: (a) CG, MCB CLNC msg 131336Z Sept 1983

Encl: (1) Listing of Storage Sites of Used Battery Acid

1. In response to the request contained in the reference, enclosure (1) provides the storage location, type and size of containers within maintenance facilities of 2d FSSG.

R. D. BOURQUE
By direction

LISTING OF STORAGE SITES OF USED BATTERY ACID

2d MaintBn

Bldg's 1601
TP-448
902
909
901

Fiberglass barrel 55 gal drum 1 ea. located at ea. Bldg 5-drums-550 gals.

2dLandSptBn

Bldg's 1871 (PASCO #2)-Fiberglass drum 55 gal 1-drum 20 gals

1817 Fiberglass drum 55 gal 3-drums 120 gals

H&SBn

Bldg 1310 Fiberglass drum 55 gal 2-drums 90 gals

2dSupplyBn

Bldg 909 Fiberglass drum 55 gal 1-drum 50 gals

2dRadioBn

Bldg FC-241 Hard plastic container with liner and cap drum 55 gal 1-drum 3 gals

8thEngrSptBn

Bldg FC-200 Neopryme drum 55 gal 2-drums 110 gals

2dMedBn

Bldg 1828 Fiberglass drum 55 gal 1-drum 55 gals

8thMTBn

Bldg FC-100 Fiberglass drum 55 gal 1-drum 40 gals

8thCommBn

Bldg FC-100 Fiberglass drum 55 gal 1-drum 20 gals

2dForReconCo & 2dANGLICo

Bldg Fc-251 Hard plastic container drum 55 gal 1-drum 0 gals

ENCLOSURE (1)

UNITED STATES MARINE CORPS
2D MARINE DIVISION, FLEET MARINE FORCE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO:

4/GWC/acs
6280
21 Sep 1983

SECOND ENDORSEMENT on CO, 2dBn, 6thMar ltr 4/DAN/als 6280 dtd 19 Sep 83

From: Commanding General
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542 (Attn: AC/S Facilities)

Subj: Handling/Disposal of Waste Battery Acid

1. Forwarded.

G. W. COLLENBORNE
By direction

Copy to:
CO, 2dBn, 6thMar

UNITED STATES MARINE CORPS
6th Marines, 2d Marine Division, FMF
Camp Lejeune, North Carolina 28542

In Reply Refer To
4/RGY/rgy
6280
20 Sep 83

FIRST ENDORSEMENT on CO, 2dBn, 6thMar ltr 4/DAN/als over 6280 dtd 19 Sep 83

From: Commanding Officer
To: Commanding General, Marine Corps Base (Attn: AC/S Fac)
Via: Commanding General, 2d Marine Division, FMF (Attn: AC/S Fac)

Subj: Handling/Disposal of Waste Battery Acid

1. Forwarded.

D. E. KOLBERG
By direction

Copy to:
CO, 2dBn, 6thMar

UNITED STATES MARINE CORPS
2d Battalion, 6th Marines
2d Marine Division, FMF
Camp Lejeune, N. C. 28542

4:DAN:als
6280
19 Sep 1983

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, N. C. (Attn: AC/S Fac)
Via: (1) Commanding Officer, 6th Marines (Attn: S-4)
(2) Commanding General, 2d Marine Division, FMF (Attn: AC/S Fac)

Subj: Handling/Disposal of Waste Battery Acid

Ref: (a) CG MCB Lejeune msg 121336Z Sep 83

1. In accordance with the reference, this command uses electrolyte battery acid at it's Motor Transport section. The procedure for disposing of this acid includes removing the battery, containing the electrolyte, from the vehicle and transporting it to waste disposal. These batteries are transported once an entire pallet of batteries is collected.

2. Point of contact for additional information is Sgt NEWBERRY, Ext. 3759/3872.

J. M. TAYLOR
By direction

UNITED STATES MARINE CORPS
2D MARINE DIVISION, FLEET MARINE FORCE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

4/GWC/acs
6280
21 Sep 1983

SECOND ENDORSEMENT on CO, 2dBn, 6thMar ltr 4/DAN/als 6280 dtd 19 Sep 83

From: Commanding General
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542 (Attn: AC/S Facilities)

Subj: Handling/Disposal of Waste Battery Acid

1. Forwarded.

G. W. COLLENBORNE
By direction

Copy to:
CO, 2dBn, 6thMar

UNITED STATES MARINE CORPS
6th Marines, 2d Marine Division, FMF
Camp Lejeune, North Carolina 28542

In Reply Refer To
4/RGY/rgy
6280
20 Sep 83

FIRST ENDORSEMENT on CO, 2dBn, 6thMar ltr 4/DAN/als over 6280 dtd 19 Sep 83

From: Commanding Officer
To: Commanding General, Marine Corps Base (Attn: AC/S Fac)
Via: Commanding General, 2d Marine Division, FMF (Attn: AC/S Fac)

Subj: Handling/Disposal of Waste Battery Acid

1. Forwarded.

D. E. KOLBERG
By direction

Copy to:
CO, 2dBn, 6thMar

UNITED STATES MARINE CORPS
2d Battalion, 6th Marines
2d Marine Division, FMF
Camp Lejeune, N. C. 28542

4:DAN:als
6280
19 Sep 1983

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, N. C. (Attn: AC/S Fac)
Via: (1) Commanding Officer, 6th Marines (Attn: S-4)
(2) Commanding General, 2d Marine Division, FMF (Attn: AC/S Fac)

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2. Point of contact for additional information is Sgt NEWBERRY, Ext. 3759/3872.

J. M. TAYLOR
By direction

From: Ac/S Fac

To: Ac/S Log

Subject: Procurement of Battery Acid in Re-usable Containers

Ref (a) ~~MCB~~ _____ (message on acid)
(b) Site visit, SMU Flammable Storage Bldg, TP-457, by Envir Engr, 21 July 93

1. Ref a provides procedures for disposal of used battery acid and proposes future storage of these acids in re-usable 5-gallon and 15-gallon containers. Ref (a) further described the re-usable containers which have been provided through recent purchases by SMU of acid and appear to be suitable for future storage. This data was obtained during ref b.

2. Additional information on these recent purchases is shown below:

Volume	NSN	DLA Contract No	Manufacturer
5 GALLON	6810-00-823-8007	400-82-C-4705	Octagonal Processing Inc., Edgewater, NJ.
5 GALLON	6810-00-823-1640	400-82-C-2656	Dominion Chemical CO., Petersburg, Va.

15 GALLON	6810-00-893-8130	400-82-C-5517	Liberty Chemical Co., Jersey City, NJ
15 GALLON	6810-00-893-8130	400-82-C-3068	Dominion Chemical Co., Petersburg, Va. 23803

3. Request your assistance in the coordination of procurement by DSSC/MCB and SMU/2dFSG of battery acid in Re-usable containers as described above. We recognize that ~~there~~ issue to all units in this quantity may not be desired and that certain quantities of acid must be procured in 1-gallon containers. We further recognize that the cost of the electrolyte in these ~~containers~~ packages may be greater. However, when handling and disposal costs are considered, there may be an advantage over the long term. For each 5 gallon package purchased in a re-usable container at $10.19, a savings of $12.69 is realized by not purchasing a suitable 5-gallon container.

4. For further information regarding this Request, please contact Mr. Bob Alexander, ext 3034. The cooperation extended by the Bulk Storage personnel and the Logistics Operations Officer during the study of this matter is greatly appreciated

M. G. Lilley

Copy to:
CG, 2d FSSG/SMU
NREAD
BMO
BSafety
[redacted]

26 MAY '83

Col. M.

Yours for comment. I agree w/ Alex that reusing the sewage plant - after neutralizing electrolyte - is the way to go. The mechanics of handling the material needs to be worked out.

L

BASE MAINTENANCE DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

MAIN/FEC/rn
6240
JUL 14 1983

From: Base Maintenance Officer
To: Assistant Chief of Staff, Facilities

Subj: Disposal of battery acid

Ref: (a) AC/S, Fac ltr NREAD/DDS/th 6240 of 25 May 1983

Encl: (1) Proposal for Disposal of Battery Acid in Sewage Treatment Plants

1. As requested by the reference, the enclosure provides information regarding disposal of battery acid through existing sewage treatment plants.

2. This proposal does not analyze other methods of disposal that may be more practical or economical.

R. F. CALTA

Proposal for Disposal of Battery Acid
in
Sewage Treatment Plants

1. Background. Approximately 3000 gallons of used battery acid are accumulated annually at motor transport shops throughout Camp Lejeune. The acid is presently being collected and stored in drums (approximately 55-gallon) located at individual shops. One solution to the acid disposal problem is to neutralize the acid, precipitate out any lead content, and dispose the neutralized liquid through existing sewage plants.

2. Information

a. Experiments have been conducted to determine the most practical base to use for neutralization of the acid. The following bases were tested using typical used battery acid:

(1) Lime - Generates considerable heat (increase of 20^{o}-40^{o}F). A precipitate ($CaSO_4$) is formed. Large amounts of lime required to neutralize the acid because lime is not very soluble. Lime is relatively cheap.

(2) Sodium Bicarbonate (baking soda) - Generates no heat (slight drop in temperature). Sodium bicarbonate causes a fizzing action. Care must be taken to avoid bubbling over. Very little precipitate formed. Much less sodium bicarbonate required to neutralize the acid compared to lime. Sodium carbonate (soda ash) could also be used with similar results.

(3) Sodium Hydroxide - Generates heat (60^{o}-80^{o}F rise). Does not produce precipitate. Sodium hydroxide is soluble.

b. Fort Bragg is presently disposing of battery acid through sewage treatment plants. The acid is carried to one of three sites and pumped into a 500-gallon tank. The acid is then neutralized with sodium bicarbonate and drained to the sanitary sewer system. Lead and other solids precipitate to the bottom of the tank. To date, Fort Bragg has not removed the precipitate from the tanks. Toxicity tests are run approximately every six months. Small traces of silver have been detected in the process.

3. Recommendation

If a decision is made to dispose of the battery acid at sewage treatment plants, the following procedure is recommended.

Motor Transport personnel collect battery acid from broken/damaged batteries in small containers (5-13 gallons) located at each battery shop. Acid should remain in undamaged batteries for disposal with the battery. A 500-gallon polyethylene tank should be installed at the Camp Geiger Sewage Treatment Plant and the Hadnot Point Sewage Treatment Plant. Polyproplyene pumps should also be installed at the plants. Upon collection of the acid in small containers, Motor Transport personnel should transport the containers to the sewage treatment plant nearest their shop. The sewage plant operator would then pump the acid from the containers into the 500-gallon tank. Periodically, under the supervision of the Utilities Chemist, the acid would be neutralized and drained to

the sanitary sewer. Necessary testing would be performed by the chemist. Lead precipitate in the tanks would be handled using appropriate hazardous waste procedures. Estimated costs associated with the procedure are provided below:

(2) 500-gallon polyethylene tanks ($800 each)	-	$1600
(2) Polyproplyene pumps (may require stainless steel trim) (700 each)	-	$1400
5 gallon, polyethylene tanks NSN 8125-00-888-7069 (Quantity unknown)	-	-
13 gallon, Polyethylene tanks NSN 8125-00-731-6016 (Quantity unknown)	-	-
Electrical and piping requirements	-	$1000
5200 lbs Sodium carbonate annually required to neutralize 3000 gallons of battery acid $24/100 lbs	-	$1248

$12.69 ea June '83
$41.02

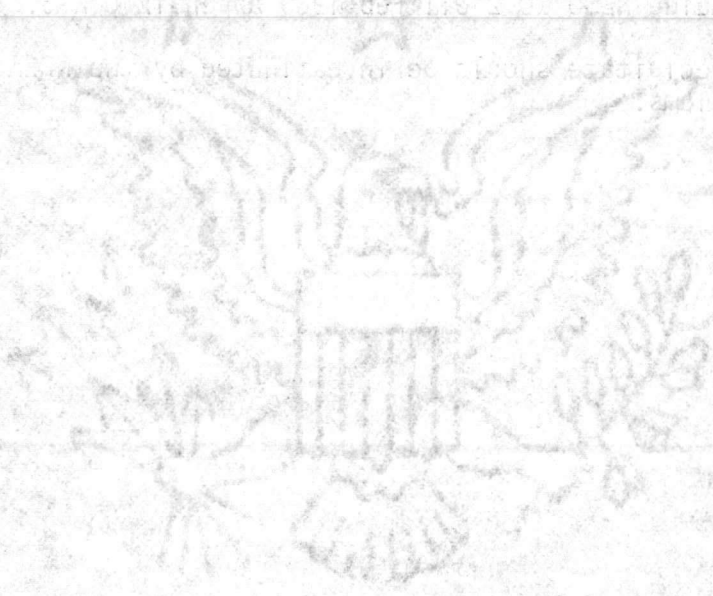
4. Additional Information

a. Conversation with Bob Alexander (AC/S, Fac Office) indicates that there are presently no DOT specifications available for containers used to transport battery acid. The proposed containers meet the requirements of the Navy Hazardous Waste Disposal Guide NESO 20.2-011 Feb 1980 Appendix U-H-6.

b. Disposal of the lead precipitate should be investigated by the NREA Division to prevent future problems.

1500 gal/5gal = 300 x 12.69 =

1500 gal/13 = x =



MAIN/FEC/rn
6240

JUL 14 1983

From: Base Maintenance Officer
To: Assistant Chief of Staff, Facilities

Subj: Disposal of battery acid

Ref: (a) AC/S, Fac ltr NREAD/DDS/th 6240 of 25 May 1983

Encl: (1) Proposal for Disposal of Battery Acid in Sewage Treatment Plants

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2. This proposal does not analyze other methods of disposal that may be more practical or economical.

R. F. CALTA

22 JUN 1983

FAC ROUTING			
	ACTION	INFO	INT
FACO			JR
4A			
4B			
4C			
4D			
4E		23 JJ	A
4FC			
4LC			
SEC			
CLK			

MR Alexander:
This does NOT get rid of it
just plays a paper game.
Pls get with MR King and
get something going.

JM

ASSISTANT CHIEF OF STAFF, LOGISTICS
Marine Corps Base
Camp Lejeune, North Carolina 28542

LOG/RT/bwj
6240
JUN 22 1983

From: Assistant Chief of Staff, Logistics
To: Defense Property Disposal Office (DPDO)

Subj: Battery Acid Disposal

Ref: (a) FONECON between Mr. Sharpe (Environmental Protection Agency) and 1stLt Torres (AC/S, Logistics)

Encl: (1) Base Maintenance letter MAIN/DDS/spk 6240 dtd 3 Aug 1982

1. During the reference, the enclosure was discussed. Although a solution being considered by the AC/S, Facilities (Mr. Alexander) is underway, alternative solutions are as follows:

a. Units generating the waste (50 battery shops) obtain suitable containers then transfer the battery acid into these containers from the fiberglass container presently used. The waste then would be turned in to the Defense Property Disposal Office (DPDO) or

b. Have DPDO establish a service contract for pick up on a regular basis from the approximate 50 waste generating activities.

2. Alternative a. would require the purchase of suitable containers for handling of the waste inlieu of the fiberglass containers presently in use. PP&P will have to check and prepare the waste for transfer by Traffic Management Officer to DPDO. Disposal action will still have to take place from DPDO storage site. By using alternative b. the present containers can be used for storage of waste without purchasing suitable containers and moved from the waste generating activity by the contractor to an approved hazardous waste disposal facility.

3. This matter is forwarded for consideration. POC at this office is Mr. Parker/1stLt Torres, ext 2535/2507.

S. C. PARKER
By direction

Copy to:
Base Maintenance Officer
AC/S, Facilities

BASE MAINTENANCE DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

MAIN/DDS/spk
6240

AUG 0 3 1982

From: Base Maintenance Officer
To: Assistant Chief of Staff, Logistics

Subj: Fiberglass Waste Battery Acid Collection Tanks

Ref: (a) Industrial Waste Collection and Treatment Facilities Project(P996)
(b) FONECON btn Mr. Gerald Augst, Austin Brockenbrough and Assoc, and Mr. Tim Stamps, BMaintDiv of 1 July 1982
(c) DOT regulations contained in Code of Federal Regulations, Title: 49, Parts 100-179
(d) BO 6240.5
(e) MCO 4570.24A

1. Questions have arisen recently regarding the legality of transporting the subject tanks, while filled, on public highways. The tanks were provided as collateral equipment under reference (a) to be utilized to collect and transport waste acid to an approved industrial waste treatment facility. During reference (b), it was learned that the tanks were not designed to meet transportation requirements of reference (c). The tanks were only designed for collection/storage requirements within the battery shops.

2. Based on the above information, the tanks should not be utilized for transportation of battery acid on public highways. The containers may continue to be used for collection/storage.

3. In accordance with reference (d), the above matter is forwarded for appropriate action. A recommended solution is the Defense Property Disposal Officer (DPDO) establish a service contract to empty the tanks and transport the waste acid to an approved hazardous waste disposal facility. DPDO responsibility to provide this type service is outlined in reference (e).

R. F. CALTA

Copy to:
TMO

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542

NREAD/DDS/th
6240
25 MAY 1983

From: Assistant Chief of Staff, Facilities
To: Base Maintenance Officer

Subj: Disposal of battery acid

Ref: (a) BO 6240.5

1. The subject disposal is a serious problem for military maintenance shops on base. It is requested that the Base Maintenance Officer develop capability to neutralize the subject materials (which will precipitate out most of the lead content) and to disposal of liquids through the Camp Geiger and Hadnot Point Sewage Treatment Plants. Recoverable sludges must be disposed of as a hazardous waste per reference (a).

2. It is requested that procedures to be followed and facilities required be furnished to this office not later than 30 July 1983. Point of contact in this matter is Mr. Danny Sharpe, Natural Resources and Environmental Affairs Division, extension 5003.

J. H. Fitzgerald
FOR.
J. T. MARSHALL

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

Memorandum

alt - with mail
Get with Mark
and work out details
then let me know.
and we will see which
way to go i.e. wed spons
or you support of we
get containers that
we can ship in.
J-m

DATE: 24 May 83

FROM: Env Engr

TO: FacO
Via DepFacO

SUBJ: Battery Acid Disposal *

Ref(a) NREAD/DDS/th 6240 24 Feb 83
(b) mtg w/ BMO, 6 Apr 83
(c) CO, MCAS ltr 222:MEW:jml 5100 13 Apr 83
(d) LANTDIV ltr 114:560:ssw 6280 26 Apr 83

1. After reviewing ref(a) & enclosure, the best solution appears to be collection of the acid from the shops, transport to Hadnot Point and Gp. Geiger sewage plants, neutralize with lime and discharge with sewage. Collection and transport should be done in either small containers weighing less tha 100 lbs or in a large trailer, i.e. fiberglass water trailer. Quantities involved are not known at the present time, but are estimated as 1,000 - 3,000 gals on-hand; quantities generated over time are not known, except that no shop generates more than 55 gals per 90 days.

* for leaking/cracked & drained batteries only - "serviceable" batteries will still be turned in to PDO containing acid.

2. Although this acid could be disposed through PDO as any other haz. mat'l / waste, the costs could be very high for packaging - labeling, handling and probable service-contract disposal. Assuming that personnel safety can be assured through the use of protective gear and proper training, the treatment & discharge represents the most cost-effective, environmentally sound alternative. Per ref (b), coordination w/ BMAIN personnel must be done.

3. The treatment + discharge should have no effect on operation of the wastewater plant or on the effluent or sludge produced, provided that reasonable discharges to the plants are maintained to avoid shock loads. Routine analyses of the effluent and sludge would assure no problems develop.

4. Ref (c) problems w/ containers may be solved by this.
5. Ref (d) policy on PDO handling - still awaiting complete copy from LANT (mailed last Friday).

V/R

A.

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
(HELICOPTER)
NEW RIVER, JACKSONVILLE
NORTH CAROLINA 28545

222:MEW:jml
5100
13 Apr 83

From: Commanding Officer
To: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina 28542 (Attn: AC/S, Facilities)

Subj: Repackaging of electrolyte for disposal; request for

Ref: (a) Logistics/Support Services Agreement for MCB, Camp Lejeune/MCAS(H), New River Consolidation, Revision #1, Change #3

1. Approximately one year ago, your command provided 55-gallon fiberglass collection barrels for waste electrolyte. One of these barrels was positioned at Marine Air Traffic Control Squadron 28 (building CG-1) and is currently filled with their waste electrolyte. When the command attempted to dispose of the waste via the established procedures, they were informed that the barrel is not approved by the Department of Transportation for transportation over public road, and the waste would have to be repackaged for certification.

2. This installation does not possess the materials (DOT-approved container) and acid-resistant transfer pump) to repackage electrolyte. Therefore, in accordance with the provisions of the reference, it is requested that the waste be repackaged to allow certification for transportation. It is recommended that alternate collection containers be provided that will also permit certification for transportation without transfer of contents.

D. W. Nelson

D. W. NELSON
By direction

Copy to:
CO, MATCS-28

ELECTROLYTE

NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

NREAD/DDS/th
6240
24 Feb 1983

From: Director
To: Assistant Chief of Staff, Facilities

Subj: Disposal of used/waste electrolyte

Encl: (1) BMO ltr MAIN/DDS/spk 6240 of 3 Aug 1982
(2) Electrolyte Disposal Information

1. Enclosure (1) was submitted to initiate action to resolve problems associated with the subject disposal. In that no progress has been made, it is recommended that a joint meeting coordinated by the Environmental Engineer be held involving the Base Maintenance Officer (Utilities Branch), Defense Property Disposal Officer (DPDO), Assistant Chief of Staff, Logistics, hazardous material disposal coordinators (Second Marine Division and Second Force Service Support Group only) and NREAD, to develop a procedure to accomplish the subject disposal.

2. Enclosure (2) provides several available alternatives. The recommended alternatives discussed in paragraph b of enclosure (2) were selected because it minimized possibility of adverse impact on the sewers, involves the least paperwork/red tape, gives Utilities personnel control required to prevent damage to the domestic waste treatment plants and places the least requirement on military personnel in battery shops.

3. Coordination with the Base Maintenance Officer should be done prior to involving other organizations named above.

J. I. Wooten

J. I. WOOTEN

MAIN/DDS/apk
6240
AUG 03 1982

From: Base Maintenance Officer
To: Assistant Chief of Staff, Logistics

Subj: Fiberglass Waste Battery Acid Collection Tanks

Ref: (a) Industrial Waste Collection and Treatment Facilities Project(P996)
(b) FONECON btn Mr. Gerald Augat, Austin Brockenbrough and Assoc, and Mr. Tim Stamps, BMaintDiv of 1 July 1982
(c) DOT regulations contained in Code of Federal Regulations, Title: 49, Parts 100-179
(d) BO 6240.5
(e) MCO 4570.24A

1. Questions have arisen recently regarding the legality of transporting the subject tanks, while filled, on public highways. The tanks were provided as collateral equipment under reference (a) to be utilized to collect and transport waste acid to an approved industrial waste treatment facility. During reference (b), it was learned that the tanks were not designed to meet transportation requirements of reference (c). The tanks were only designed for collection/storage requirements within the battery shops.

2. Based on the above information, the tanks should not be utilized for transportation of battery acid on public highways. The containers may continue to be used for collection/storage.

3. In accordance with reference (d), the above matter is forwarded for appropriate action. A recommended solution is the Defense Property Disposal Officer (DPDO) establish a service contract to empty the tanks and transport the waste acid to an approved hazardous waste disposal facility. DPDO responsibility to provide this type service is outlined in reference (e).

R. F. CALTA

Copy to:
TMO

BCC:
AC/S, FAC

See Note #1.

ELECTROLYTE DISPOSAL INFORMATION

A. BASE ALTERNATIVES	PROS	CONS
1. Package and transfer to DPDO in accordance with BO 6240.5	DPDO responsible for disposal.	Packaging is controversial. Cost to Government. Slow accumulation rate. Lack of quality control for resale.
2. DPDO Service Contract	Fewer requirements for generating unit.	Base dependence on DPDO. Unpredictable service. Cost.
3. Treat and discharge to Base POTW	Less Cost Less hazardous waste generation. More control over service program.	Lead (Pb++) discharge. Details about accumulation points, treatment & discharge.
a. Collection at every battery shop of MCB collection; treatment and discharge.	Good control over systems. Potentially good service.	Development of treatment systems. Training of person(s) to collect, transfer, treat, and discharge the acid.
b. Treatment and discharge at shop site.	Less personnel for Base. No accumulation or transportation.	Variety of shop conditions preclude one SOP for all units. Failure of personnel to follow specific SOP may result in hazard to personnel safety and to damage to sewer. Some facilities not adequate.

ENCLOSURE (2)

B. RECOMMENDED METHODS

1. Marine Corps Base will provide person(s) to collect (i.e., pump out storage tanks), treat and discharge acid to the Base sewage treatment plants at appropriate rates.

2. Fiberglass drums will have lower drain valve sealed shut and will continue to be used to store waste acid in authorized battery shops. Acid in broken batteries only will be collected.

3. Base Maintenance personnel will collect acid from every accumulation point at least every 90 days (there is no location known to currently generate more than 55 gallons per 90 days). Personnel will have proper hazardous material spill training, safety equipment and leak-proof containers.

4. Collected materials will be treated (neutralized) at Geiger or Hadnot Point Sewage Treatment Plant or released into a sewer carrying domestic sewage to these two large plants. Sludges from neutilization will be disposed of as hazardous waste through DPDO.

5. Amount of work: 35 shop visits per 90 days (1 1/2 hours per visit)

Treatment and discharge (2 hours per 5 shop visits)

Total = 66.5 hours per 90 days

NOTE #1: This is for disposal of acid drained from leaking batteries. Non-leaking batteries will continue to be turned in to DPDO undrained.

NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

NREAD/DDS/th
6240
24 Feb 1983

From: Director
To: Assistant Chief of Staff, Facilities

Subj: Disposal of used/waste electrolyte

Encl: (1) BMO ltr MAIN/DDS/spk 6240 of 3 Aug 1982
(2) Electrolyte Disposal Information

1. Enclosure (1) was submitted to initiate action to resolve problems associated with the subject disposal. In that no progress has been made, it is recommended that a joint meeting coordinated by the Environmental Engineer be held involving the Base Maintenance Officer (Utilities Branch), Defense Property Disposal Officer (DPDO), Assistant Chief of Staff, Logistics, hazardous material disposal coordinators (Second Marine Division and Second Force Service Support Group only) and NREAD, to develop a procedure to accomplish the subject disposal.

2. Enclosure (2) provides several available alternatives. The recommended alternatives discussed in paragraph b of enclosure (2) were selected because it minimized possibility of adverse impact on the sewers, involves the least paperwork/red tape, gives Utilities personnel control required to prevent damage to the domestic waste treatment plants and places the least requirement on military personnel in battery shops.

3. Coordination with the Base Maintenance Officer should be done prior to involving other organizations named above.

J. I. WOOTEN

MAIN/DDS/epk
6240
AUG 03 1982

From: Base Maintenance Officer
To: Assistant Chief of Staff, Logistics

Subj: Fiberglass Waste Battery Acid Collection Tanks

Ref: (a) Industrial Waste Collection and Treatment Facilities Project(P996)
(b) FONECON btn Mr. Gerald Augat, Austin Brockenbrough and Assoc, and Mr. Tim Stamps, BMaintDiv of 1 July 1982
(c) DOT regulations contained in Code of Federal Regulations, Title: 49, Parts 100-179
(d) BO 6240.5
(e) MCO 4570.24A

1. Questions have arisen recently regarding the legality of transporting the subject tanks, while filled, on public highways. The tanks were provided as collateral equipment under reference (a) to be utilized to collect and transport waste acid to an approved industrial waste treatment facility. During reference (b), it was learned that the tanks were not designed to meet transportation requirements of reference (c). The tanks were only designed for collection/storage requirements within the battery shops.

2. Based on the above information, the tanks should not be utilized for transportation of battery acid on public highways. The containers may continue to be used for collection/storage.

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R. F. CALTA

Copy to:
TMO

BCC:
AC/S, FAC

See Note #1.

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a. Collection at every battery shop of MCB collection; treatment and discharge.	Good control over systems. Potentially good service.	Development of treatment systems. Training of person(s) to collect, transfer, treat, and discharge the acid.
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OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
Memorandum

DATE: 5 Aug 83

FROM: Env Engr

TO: FACO

Via: Dep FACO

SUBJ: Battery Acid Disposal

Your review prior to discussion w/ LOG, BMAIN, & OPOO is requested.

Issues which will come up are:

① BMAIN futil wants to delay until tanks, piping, electrical is set up at plants ⇒ this could take 3-6 months.

Cancel & Recommend we move the barrels to the plants, neutralize the barrels & discharge, while the eqpt is being ordered & installed.

② Base could/should purchase the replacement 5-gal containers on the front end ⇒ OK by me, cost ≈ $6,000 for 500 purchased; this would simplify & encourage the transition to smaller, re-usable, safer containers.

P.S. Would you prefer to announce this at a mtg rather than a MSG; to allow Q&A, discuss, etc.?

V/R
Alep

LIST OF SHOPS GENERATING USED ELECTROLYTE
(See Note 1)

1. 2d FSSG (Point of Contact, Engineer Support Office, Maj Bourque, extension 3456)

FC 100	909
FC 190 (See Note 2)	913
FC 200	1309-1310
FC 241	1601
FC 251	New Landing Support Battalion facilities
TP-448	
901-902	

12

2. 2d MARDIV (Point of Contact, Division Engineers, Capt Kirsted, extension 2755)

TC-774	1703
BA-130	1750
GP-1	1775 (3 shops)
952	1780
1206	1755
1450	1809
1505-1506	1841
	GP-1 (to be replaced by new Tank/Auto Maint Shop)

15

3. MCAS(H) New River (Point of Contact, S-4 Office, Mary Wheat, extension 455-6518)

AS-4146
AS-4106
AS-3534
AS-4157

4

4. Marine Corps Base

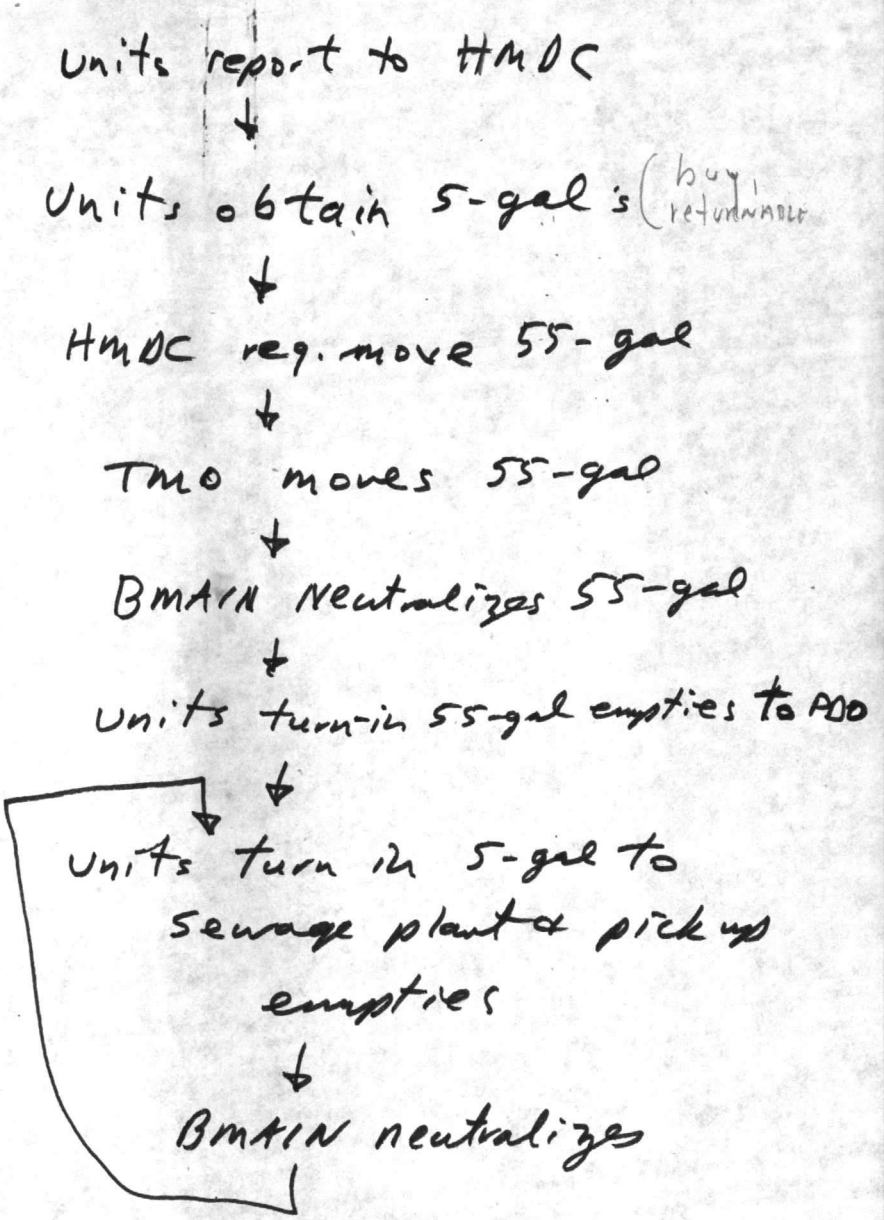
3

Base Maintenance - Bldg 45
Base Motor T - Bldg 1502, AS 119
Engineer School - BB 51

Note 1. There may be additional small shops, however, the above shops represent bulk of used battery acid generation.

Note 2. This facility has 400 gallon underground storage tank requiring pumping out.

TOTAL
34


Units report to HMDC
Units obtain 5-gal's (buy / return made)
HMDC req. move 55-gal
TMO moves 55-gal
BMAIN Neutralizes 55-gal
Units turn-in 55-gal empties to AOD
Units turn in 5-gal to sewage plant & pick up empties
BMAIN neutralizes

POLLUTION SOLUTION

NAVAL ENVIRONMENTAL PROTECTION SUPPORT SERVICE

NEPSS

Naval Energy and Environmental Support Activity
Port Hueneme, California 93043

December 1980 PS-014

Disposal of Secondary Storage (Lead-Acid) Batteries Without Removing Electrolyte

I. DEFINITION

There are four major types of batteries: (1) primary (dry cell); (2) secondary storage (lead acid); (3) nuclear and solar cell; and (4) fuel cell. Secondary storage (lead acid) batteries are rechargeable and have an anode (-) composed of lead sponge, a cathode (+) composed of lead oxide, and sulfuric acid as an electrolyte.

II. PROBLEM

Before the Defense Property Disposal Office (DPDO) can accept physical custody of secondary storage batteries, the electrolyte must be removed. Since environmental laws prohibit the discharge of untreated electrolyte, it must be collected for disposal. The most common electrolyte collected is "battery acid," which contains sulfuric acid and dissolved metals. The shop submitting these batteries must empty, collect, and store the waste electrolyte. Typical, costly, but effective, means of electrolyte disposal include chemical neutralization or hauling the waste battery acid to a hazardous waste landfill.

III. SOLUTION

The DPDO can accept accountability of property without accepting physical custody (reference 1). Reclaimers will purchase used batteries with, or without, electrolyte, and pick them up at the shop. The Defense Property Disposal Service (DPDS) concurs with this approach, though the arrangements must be made with the local DPDO and the activity (reference 2).

After local arrangements have been made, shops utilizing storage batteries would no longer remove the electrolyte. These batteries should be stored at the battery shop, with the required paperwork turned in to DPDO. When DPDO sells the batteries to a reclaimer, they will be picked up at the shop.

IV. BENEFITS

By establishing the practice of retaining physical custody of the batteries at the shop without removing the electrolyte, and with DPDO accepting accountability for processing and sale, several savings may be realized.

- Reduces personnel handling and exposure to battery acid by eliminating the need to drain batteries prior to disposal.
- Eliminates the need to collect and store spent electrolyte.
- Eliminates manpower required to drain electrolyte.
- Eliminates the need to neutralize waste electrolyte or to haul electrolyte to a hazardous waste landfill.
- Eliminates handling and storage by DPDO personnel.
- In some market areas, the DPDO may not be able to sell used batteries filled with electrolyte. Battery reclaimers in most marketing areas are willing to purchase batteries with or without electrolyte. However, the sale proceeds for filled batteries may be lower than for unfilled batteries due to the added costs to the purchaser for disposal of the spent electrolyte. The DPDO and activity must compare these costs with the costs for the activity maintaining storage, processing, and disposal of the spent electrolyte to determine the net benefit to DOD.

V. CONTACT

Activities that presently have an accumulation of spent electrolyte requiring disposal, see Pollution Solution PS-015, Disposal of Lead-Acid Battery Electrolyte, which is available from the Naval Energy and Environmental Support Activity (NEESA), Code 2113/Thomas, AUTOVON 360-5952, FTS 799-5952, or commercial 805-982-5952. Additional information may be obtained from the NEESA Hazardous Materials Division, Code 212, AUTOVON 360-4267, FTS 799-4267, or commercial 805-982-4267.

VI. REFERENCES

1. DOD 4160.21M, Defense Disposal Manual, chapter IV, paragraph D.

2. DLA Battle Creek, MI, ltr DPDS-R of 2 December 1980 NOTAL.

212:WSE:ed

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

TELEPHONE NO.
(804) 444-9565
IN REPLY REFER TO:

114:SGO:ssw
6280

26 APR 1983

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Distribution

Subj: Battery Disposal

Ref: (a) COMNAVFACENGCOM ltr 1121A/TJZ of 24 Mar 1983

Encl: (1) Change No. 5 to DPDS 6050.1, Environmental considerations in the DPDO Disposal Process.

1. In accordance with reference (a), enclosure (1) is forwarded for Activity information and implementation as appropriate. Enclosure (1) provides guidance for the turn-in, identification, packaging, labeling, handling, storage and disposal of various types of batteries commonly disposed of through local Defense Property Disposal Offices.

2. Point of contact on this matter is Mr. Steve Olson telephone (804) 444-9565, AUTOVON 690-9565, FTS 954-9565.

J. R. Bailey
J. R. BAILEY
By direction

Distribution: (5216.10G CH-1)
Part II
List A (only 6, 7, 11, 16, 18, 31, 33)
List B (only 1, 2, 3, 4, 5)
List C
List D
List E
List F (only 1, 2)
List G
List H (only 2)
List I (only 2, 3, 5, 7, 8, 11)
List K (only 2, 6)
List L (only 1)
List M
List Q (only 3)
List R (only 2, 3, 6, 13-17)

2 MAY 1983

FAC ROUTING	ACTION	INFO	INT
FACO			
4A			
4B			
4C			
4D			
4E	A		
4FC			
4LC			
SEC			
CLK			

4 May - req. copy of all pgs from LANT.

Part III
List A (only 3, 5, 7, 9, 10, 11, 14, 16, 17, 18, 19, 20, 22, 25, 26)
List B (only 8, 10, 11, 12, 15, 18, 20, 21)

Distribution continued on next page:

114:SGO:ssw
6280

Distribution continued:
List C
List F (only 1, 2, 4, 8)
List G
List H

Part IV
List DD

COMEODGRU TWO FORT STORY
AFXTRACTY CAMP PEARY

Copy to:
Part II
List A (only 5, 9, 10, 12, 15)
FMFLANT
LANTFLT HEDSUPPACT
NAVENENVSA
CINCLANTFLT

Part III
List A (only 1, 8, 13, 21)
List B (only 1, 9)

Part IV
List B (only 1)
List C (only 1)
List D (only 1)
List E (only 1)
List F (only 1)
List G (only 1)
List H (only 1)
List I
List L
List M (only 1)
List Q (only 1)
List R (only 1)

SECTION V - PROCEDURES
CHAPTER 6 - BATTERIES

A. PURPOSE

1. This chapter provides guidance for the turn-in, identification, packaging, marking and labeling, handling, storage and disposal of batteries, consistent with DPDS mission requirements and in an environmentally safe manner in accordance with all applicable laws and regulations. It is applicable to all echelons of DPDS.

2. This chapter also provides an overview of the batteries commonly found in DPDS inventories, including hazardous properties associated with them. Particular emphasis is placed upon the different requirements for handling of "wet cell" batteries (see paragraphs B and D), mercury batteries (paragraph D) and lithium - sulfur dioxide batteries (paragraph D). A special summary sheet for batteries is found at Appendix A.

3. In some parts of this chapter, reference is made to other DPDS regulations; however, references to those regulations or laws which DPDOs may not have in their possession have been minimized.

B. DEFINITIONS

1. ANODE. The terminal of a battery or cell which releases electrons during the production of an external current; the negative terminal of a primary cell or battery.

2. BATTERY. Technically, a combination of two or more cells electrically connected to transform chemical energy into electrical energy. In everyday usage, however, a single cell, such as one found in a flashlight, is also referred to as a battery.

3. CATHODE. The terminal of a battery or cell which accepts electrons during the production of an electric current; the positive terminal of a primary cell or battery.

4. CELL. A device which generates electricity, consisting of two different substances placed in an electrolyte.

5. DRY CELL. A cell in which the electrolyte exists in a paste, is absorbed in a porous medium, or is otherwise restrained from flowing.

6. ELECTROLYTE. The conducting medium for the flow of current in a cell.

7. NON-RECHARGEABLE. A characteristic of a primary battery which can convert chemical energy into electrical energy irreversibly.

8. PRIMARY BATTERY. One which can convert chemical energy into electrical energy irreversibly.

9. RECHARGEABLE. A characteristic of a storage battery which can convert chemical energy into electrical energy and vice versa.

(5) Laboratory analysis is not required for batteries; however, adequate information must be provided on the DTID to permit valid identification of the type of battery, its electrolyte, and any other hazardous chemicals within its internal construction (e.g., lithium hydroxide in $LiSO_2$ batteries).

b. Packaging

(1) Batteries turned in to the DPDO should be non-leaking and safe-to-handle or placed/overpacked in containers of this nature. Also, the containers must be able to withstand normal handling, otherwise the turn-in should be rejected, using DPDS Form 917, Property Disposal Reject/Advice.

(2) Department of Transportation (DoT) specified containers are not required for battery turn-in to the DPDO; however, the transporting activity does have the rewponsibility to comply with DoT requirements in case of transport off-site and over public highways.

c. Marking, Labeling and Placarding. It is the responsibility of the generator to assure that batteries/electrolytes/containers which are turned in to the DPDO are marked and labeled in conformance with established regulations (49 CFR part 172, subparts D, E, and F, Transportation of Hazardous Materials, Marking, Labeling, and Placarding), should the generator be required to transport the property off-site and over public highways. (NOTE: More specific guidance may be found in DPDS-M 6050.1, section V, chapter 5, Transportation (and Packaging chapter to be published).)

2. HANDLING

a. The liquid electrolyte in most storage batteries (most notably sulfuric acid in automotive batteries) is hazardous because it is corrosive. The DPDO will accept physical custody of either serviceable or drained, unserviceable batteries*, based on the principles of conforming storage (as specified in paragraph C 1) and based on the availability of:

(1) Splash-proof goggles, face shields, acid proof gloves, aprons, boots, and battery carriers.

(2) Adequate water sources to neutralize/wash down inadvertent spills.

(3) Eyewash and shower facilities.

(4) Powered material handling equipment to load/unload batteries safely.

If any of the above equipment or facilities are not available, the DPDO Chief should make every effort to obtain them prior to handling batteries. This will require the DPDO Chief to forward requests for such upward through the DPDO chain-of-command or to the hosts.

*The policy for handling undrained, unserviceable batteries is being finalized at the time of this publication. Once determined, it will be issued as a change to this chapter.

remember that battery acids (sulfuric acid), batteries with electrolytes which are bases (such as potassium hydroxide), and flammable solids (such as lithium).

4. Diposal Cycle

a. Batteries will not be disposed of by abandonment or destruction (A or D) until Reutilization/Transfer/Donation (R/T/D) and sales attempts have been undertaken, unless specifically excluded by regulation or policy.* Accordingly, requests for service contract funding will not be submitted until hazardous property has survived screening and sales efforts, or DPDR personnel have coordinated cycle by-pass with DPDS-U and DPDS-M.

b. The DPDO will initiate DPDS Form 1634, Request for Environmental Service Contract, when hazardous property becomes eligible for A or D service contract preparation and funding for the action is required. The Form 1634 will be forwarded through the DPDR to DPDS-H, along with a completed copy of DPDS Form 953, Hazardous Material Documentation. This form provides essential information for hazardous property identification as well as for required environmental documentation. Both forms are available through normal supply channels. DPDOs may obtain assistance in filling out germane portions of either form from the DPDR Operations Division.

5. ABANDONMENT OR DESTRUCTION (A OR D)

Should surplus batteries or electrolytes survive the reutilization, transfer, donation and sales cycle, they must be disposed of through A or D by a service contract. Possible ways that contractors may dispose of batteries, including electrolytes, are:

a. Neutralization of electrolyte.

b. Deep well injection of electrolyte.

c. Conversion of electrolyte into sludge and landfill burial.

d. Packaging or containerizing batteries for landfill burial.

e. Incineration.

D. PROPERTIES OF BATTERIES

1. INTRODUCTION

a. There are several different kinds of batteries in use today throughout DoD. Their construction and/or chemistry differs from one type of battery to another. For example, a battery may consist of a single cell (a typical flashlight battery) in the most general sense, or several cells (a 6-cell automobile battery). An individual cell will consist of a metal which tends to release or give up electrons (the anode), another metal which tends to attract to or accept electrons (the cathode), and an electrolyte, which acts as the

*It should be noted that lithium-sulfur dioxide batteries which are expended through use or have exceeded their shelf lives, will go directly to A or D.

(2) As the use of the NICAD battery varies, so does the physical state of its electrolyte, potassium hydroxide, which may be in either "wet cell" or "dry cell" form. In either case, potassium hydroxide is a strong base that will corrode many materials and attack the skin. Furthermore, the cadmium cathode itself can be highly toxic, especially if inhaled as dust or fume.

(3) The same precautions in handling wet cell lead-acid batteries, described in paragraph C 2 a, also apply to wet cell NICAD batteries.

c. Magnesium-Carbon Batteries

(1) Often used in field radios, the magnesium-carbon battery is nonrechargeable and usually a dry cell. Its chemical components include primarily magnesium dioxide (which is moderately toxic and may ignite organic materials) magnesium perchlorate; (which is a fire and explosion risk in contact with organic materials), and magnesium perchlorate carbon black, according to Sax's Dangerous Properties of Industrial Materials.

(2) If hermetically sealed, these batteries should be safe to handle. a certain type of this magnesium battery (BA 4386, NSN 6135-00-926-8322) has been classified as ignitable. In a fire, the battery could rupture and spread corrosive contents over a wide area. In the event of battery rupture, all released material should be collected in a plastic bag for disposal (Magnesium - carbon battery Material Safety Data Sheet). For more specific guidance as to rupture clean-up procedures, consult the host's spill contingency plan.

d. Carbon-Zinc (Leclanche) Batteries

(1) This type of battery often consists of one dry cell. It is used in such everyday devices as flashlights, portable radio sets, etc. Most likely the battery will consist of a zinc can (anode), a centrally located carbon rod (cathode), and an electrolyte paste of ammonium chloride, zinc chloride, and manganese dioxide.

(2) When corroded these batteries may be hazardous to personnel. As a solid, zinc is a skin irritant. Seeping ammonium chloride is also a skin irritant.

e. Silver-Bearing Batteries

(1) Some batteries turned in for disposal contain silver. These include the silver oxide cell battery as well as the alkaline zinc battery. Further, they may be either primary or secondary, usually with a potassium hydroxide electrolyte.

(2) One of the designated precious metals, silver has considerable potential for recovery. When these batteries are turned in, DPDO personnel should refer to the special handling procedures for batteries in DoD 4160.21-M (chapter VI, paragraph B 9). More specific guidance may be obtained from DPDS-RP or DPDM-R.

(3) The silver oxide in the battery is a strong oxidizer. It thus constitutes a fire and explosion risk, particularly if it should come in contact with ammonia or organic materials.

potential safety hazard. For this reason, handling and disposal of these batteries are of particular concern to DoD and DPDS. In fact, DPDS has informed the military services that DPDOs will only take physical custody of lithium - sulfur dioxide batteries which the turn-in activity identifies as "balanced". (The unbalanced battery is BA-5590/U, NSN 6135-01-036-3495, produced by Power Conversion Incorporated under contracts DAAB07-80-D-6504 and DAAB07-78-D-6353 and P. R. Mallory, Inc. under contract DAAB07-77-C-0464.)

(3) Both varieties of $LiSO_2$ batteries consist of the following:

(a) Hermetically sealed nickel plated steel casing.

(b) Over-pressure relief devices (vents) to prevent rupturing and internal fuses to prevent short-circuiting and overheating.

(c) Lithium anode.

(d) Carbon cathode, consisting of an aluminum support screen and a carbon or acetylene black/teflon mixture.

(e) Electrolyte of acetonitrile, sulfur dioxide and lithium bromide, all potentially hazardous.

(4) Vented or leaking batteries may release sulfur dioxide gas (toxic), lithium hydroxide (corrosive), and methane gas (flammable). Some unbalanced batteries are also reported to have released cyanide when disposed of improperly.

(5) Special DoT shipping instructions are provided for both unexpended and depleted $LiSO_2$ batteries. These are summarized below. (For more specific explanation, contact your DPDR Environmental Protection Specialist.)

(a) Transportation (depleted and unexpended battery cells) - Depleted cells may be shipped by motor vehicle; unexpended cells by motor vehicle, rail freight, cargo vessel, and cargo only aircraft. Where unexpended and expended battery cells are comingled, they will be shipped by motor vehicle only and placarded "FLAMMABLE SOLID" if the total quantity of unexpended cells exceeds 1,000 pounds. The proper shipping name is "lithium batteries" or "lithium batteries (depleted)", as appropriate.

(b) Safety control measures (depleted cells) - Packaging for transportation prescribed is a DoT specification 12 B fiberboard box with a gross weight not to exceed 65 pounds; or any metal or fiber drum which meets the requirements of 49 CFR 173.24, standard requirements for all packages.

(c) Safety control measures (unexpended cells) - Packaging for transportation is prescribed as follows:

(1) Cells and batteries must be packed in strong inner fiberboard containers limited to a maximum of 500 grams of lithium in one inner container. No cell containing more than 12 grams of lithium may be shipped under this exemption.

BATTERY OVERVIEW

Type	DPDO Will ACCEPT?	Special Turn-In Requirement?	Wet Cell/ Dry Cell?	General Warehouse Storage?	Common Electrolyte	Chief Hazards
Lead-Acid	Yes	(2)	Wet	No (4)	Sulfuric Acid	Corrosive
Nickel-Cadmium	Yes	No	Varies	Yes	Alkaline Solution/Gel	Corrosive
Magnesium	Yes	No	Dry	Yes	Neutral/ Alkaline Gel	Flammable, Corrosive
Carbon-Zinc	Yes	No	Dry	Yes	Chloride Paste/ Gel	Corrosive
Silver	Yes	Yes	Varies	Yes (5)	Alkaline Solution/Gel	Corrosive, Reactive
Mercury	Yes	(3)	Dry	Yes	Alkaline Gel	Corrosive
Lithium	(1)	Yes	Dry	Yes (6)	Acetonitrile	Flammable, Corrosive, Reactive
Thermal	No	- -	- -	- -	- -	- -

(1) Consult Paragraph D 2 g.
(2) Personal Protective Equipment should be worn; final turn-in responsibilities being determined.
(3) Consult section D 2 f.
(4) Drained/Unserviceable Batteries may be stored outdoors.
(5) Consult DPDM-R/DPDS-RP for specific precautions.
(6) With Sprinkler System, Class D Fire Extinguisher; or, as second choice, Noncombustible Warehouse with Class D Extinguisher.

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

TELEPHONE NO.
(804) 444-9565

IN REPLY REFER TO:
114:SGO:pkk
6280

5 MAY 1983

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Distribution

Subj: Battery Disposal

Encl: (1) LANTNAVFACENGCOM 114:SGO 6280 of 26 Apr 1983

1. Previous distribution of enclosure (1) contained missing pages due to duplicating problems.

2. Enclosure (1) forwards complete copies of "Change No. 5 to DPDS 6050.1, Environmental Considerations in the DPDO Disposal Process" for information/implementation.

3. Point of Contact on this matter is Mr. Steve Olson, telephone (804) 444-9565, AUTOVON 690-9565, and FTS 954-9565.

J. R. BAILEY
By direction

Distribution: (5216.10G CH-1)
Part II
List A (only 6, 7, 11, 16, 18, 31, 33)
List B (only 1, 2, 3, 4, 5)
List C
List D
List E
List F (only 1, 2)
List G
List H (only 2)
List I (only 2, 3, 5, 7, 8, 11)
List K (only 2, 6)
List L (only 1)
List M
List Q (only 3)
List R (only 2, 3, 6, 13-17)
Part III
List A (only 3, 5, 7, 9, 10, 11, 14, 16, 17, 18, 19, 20, 22, 25, 26)
List B (only 8, 10, 11, 12, 15, 18, 20, 21)
List C
List F (only 1, 2, 4, 8)
List G
List H
(continued on next page)

Distribution: (continued)
Part IV
  List DD
COMEODGRU TWO FORT STORY
AFXTRACTY CAMP PEARY

Copy to:
Part II
  List A (only 5, 9, 10, 12, 15)
FMFLANT
LANTFLT HEDSUPPACT
NAVENENVSA
CINCLANTFLT
Part III
  List A (only 1, 8, 13, 21)
  List B (only 1, 9)
Part IV
  List B (only 1)
  List C (only 1)
  List D (only 1)
  List E (only 1)
  List F (only 1)
  List G (only 1)
  List H (only 1)
  List I
  List L
  List M (only 1)
  List Q (only 1)
  List R (only 1)

SECTION V - PROCEDURES
CHAPTER 6 - BATTERIES

A. PURPOSE

1. This chapter provides guidance for the turn-in, identification, packaging, marking and labeling, handling, storage and disposal of batteries, consistent with DPDS mission requirements and in an environmentally safe manner in accordance with all applicable laws and regulations. It is applicable to all echelons of DPDS.

2. This chapter also provides an overview of the batteries commonly found in DPDS inventories, including hazardous properties associated with them. Particular emphasis is placed upon the different requirements for handling of "wet cell" batteries (see paragraphs B and D), mercury batteries (paragraph D) and lithium - sulfur dioxide batteries (paragraph D). A special summary sheet for batteries is found at Appendix A.

3. In some parts of this chapter, reference is made to other DPDS regulations; however, references to those regulations or laws which DPDOs may not have in their possession have been minimized.

B. DEFINITIONS

1. ANODE. The terminal of a battery or cell which releases electrons during the production of an external current; the negative terminal of a primary cell or battery.

2. BATTERY. Technically, a combination of two or more cells electrically connected to transform chemical energy into electrical energy. In everyday usage, however, a single cell, such as one found in a flashlight, is also referred to as a battery.

3. CATHODE. The terminal of a battery or cell which accepts electrons during the production of an electric current; the positive terminal of a primary cell or battery.

4. CELL. A device which generates electricity, consisting of two different substances placed in an electrolyte.

5. DRY CELL. A cell in which the electrolyte exists in a paste, is absorbed in a porous medium, or is otherwise restrained from flowing.

6. ELECTROLYTE. The conducting medium for the flow of current in a cell.

7. NON-RECHARGEABLE. A characteristic of a primary battery which can convert chemical energy into electrical energy irreversibly.

8. PRIMARY BATTERY. One which can convert chemical energy into electrical energy irreversibly.

9. RECHARGEABLE. A characteristic of a storage battery which can convert chemical energy into electrical energy and vice versa.

10. SECONDARY BATTERY. One which can convert chemical energy into electrical energy and vice versa.

11. SERVICABLE BATTERY. One which can be used for its originally intended purpose.

12. STORAGE BATTERY. Same as a secondary battery.

13. UNSERVICABLE BATTERY. One which is in such a condition or state that it cannot be used for its originally intended purpose.

14. WET CELL. A cell whose electrolyte is in liquid form and free to flow.

C. GENERAL PROCEDURES

1. TURN-IN REQUIREMENTS

a. Indentification

(1) Prior to or with battery turn-in, the turn-in activity is required to complete the Disposal Turn-In Document (DTID), DD Form 1348-1, DoD Single Line Item Release/Receipt Document, in a minimum of four legible copies to the DPDO as stated in DoD 4160.21-M, chapter IV. The turn-in activity will deliver the batteries to the DPDO whenever the latter takes physical custody.

(2) The DPDO will accept the turn-in of all batteries as follows: If the DPDO possesses conforming storage for the batteries, the DPDO will accept physical custody at the time it accepts accountability.* If the DPDO does not possess conforming storage and the generating activity has conforming storage in support of mission requirements, the generating activity will retain physical custody, while the DPDO will accept accountability. In those instances where neither DPDO nor the generating activity possesses conforming storage, the activity with the "most nearly" conforming storage will retain physical custody and the DPDO will accept accountability. The installation commander is responsible for resolving all storage/custody disputes between DPDOs and turn-in activities and shall make the final determination for any dispute in writing. The results of a conforming storage check sheet shall be used as the basis for this determination. For more information specific to battery storage, refer to paragraph C 3.

(3) Special turn-in requirements are established for certain batteries (silver-bearing batteries, mercury, and lithium - sulfur dioxide batteries). These are addressed in paragraph D.

(4) Before acceptance, the DPDO receiving personnel will assure that the batteries/components (such as drained electrolyte) are identified by National Stock Number (NSN), Local Stock Nember (LSN), or Federal Supply Class (FSC). Noun name is required with NSN on the DTID. LSNs and FSCs must include complete description including manufacturer's part number, if available.

* Note protective equipment requirements in paragraph C 2 a and lithium battery policy in paragraph D 2 g.

(5) Laboratory analysis is not required for batteries; however, adequate information must be provided on the DTID to permit valid identification of the type of battery, its electrolyte, and any other hazardous chemicals within its internal construction (e.g., lithium hydroxide in $LiSO_2$ batteries).

b. Packaging

(1) Batteries turned in to the DPDO should be non-leaking and safe-to-handle or placed/overpacked in containers of this nature. Also, the containers must be able to withstand normal handling, otherwise the turn-in should be rejected, using DPDS Form 917, Property Disposal Reject/Advice.

(2) Department of Transportation (DoT) specified containers are not required for battery turn-in to the DPDO; however, the transporting activity does have the responsibility to comply with DoT requirements in case of transport off-site and over public highways.

c. Marking, Labeling and Placarding. It is the responsibility of the generator to assure that batteries/electrolytes/containers which are turned in to the DPDO are marked and labeled in conformance with established regulations (49 CFR part 172, subparts D, E, and F, Transportation of Hazardous Materials, Marking, Labeling, and Placarding), should the generator be required to transport the property off-site and over public highways. (NOTE: More specific guidance may be found in DPDS-M 6050.1, section V, chapter 5, Transportation (and Packaging chapter to be published).)

2. HANDLING

a. The liquid electrolyte in most storage batteries (most notably sulfuric acid in automotive batteries) is hazardous because it is corrosive. The DPDO will accept physical custody of either serviceable or drained, unserviceable batteries*, based on the principles of conforming storage (as specified in paragraph C 1) and based on the availability of:

(1) Splash-proof goggles, face shields, acid proof gloves, aprons, boots, and battery carriers.

(2) Adequate water sources to neutralize/wash down inadvertent spills.

(3) Eyewash and shower facilities.

(4) Powered material handling equipment to load/unload batteries safely.

If any of the above equipment or facilities are not available, the DPDO Chief should make every effort to obtain them prior to handling batteries. This will require the DPDO Chief to forward requests for such upward through the DPDO chain-of-command or to the hosts.

*The policy for handling undrained, unserviceable batteries is being finalized at the time of this publication. Once determined, it will be issued as a change to this chapter.

b. Non-leaking, dry cell batteries require no special protective equipment to be handled safely.

c. For additional battery handling safety guidance, consult chapter 12, DPDS Supplement 1 to DLAM 1000.1, DLA Safety and Health Manual.

3. STORAGE

a. Physical Location

(1) Caution must be exercised in the storage of batteries. In general, batteries and their containers should be stored in a well-ventilated, dry place. A general-purpose warehouse is an acceptable storage area and should meet the criteria for conforming storage, except as noted in the following paragraphs.

(2) Empty wet cell storage batteries may be stored out-of-doors. In this case, they must be positioned in such a manner to prevent rainwater from entering into the casing. (Sideways or upside-down storage in or under a shelter is the recommended means.) If stored on pallets, batteries should be stacked as evenly as possible, banded or otherwise secured. These precautions should prevent the batteries from falling.

(3) Lithium batteries require special storage consideration. They should be segregated from other flammables and kept in a cool, dry facility which is sprinklered and well ventilated. (Lithium metal will react exothermically with water (from sprinklers); however, because each cell is hermetically sealed and pressurized, direct contact of the cell contents with water is prevented under normal situations. If fire should occur within a storage facility, there is the possibility that the heat generated from combustion of other materials will cause the cells to vent or rupture. This is a far greater hazard than the possible reaction of lithium and water. If a sprinklered facility is not available, a second storage choice would be a noncombustible warehouse. In either case, a class D fire extinguisher or a dry, graphite-based compound for metal fires must be available for local use.)

(4) Those mercury batteries identified as potential safety hazards require special storage procedures (refer to paragraph D). Other mercury batteries may be stored in a general-purpose warehouse, as previously stated.

b. Chemical Compatibility

The chemical makeup of different batteries can vary considerably (refer to paragraph D). When incompatible chemicals react with each other, fire or explosion may occur. In storing batteries, spent electrolytes or components, the DPDO should consult the Guide for Determining the Compatibility of Chemicals in Storage, DPDS Supplement to DLAM 1000.1, Safety and Health Manual or DPDS-M 6050.1 chapter on Storage (to be published)*. These list chemical groups and subgroups which will be separated by either distance or barriers. In the case of batteries and electrolytes, DPDO personnel should

*It should be noted that lithium-sulfur dioxide batteries which are expended through use or have exceeded their shelf lives, will go directly to A or D.

remember that battery acids (sulfuric acid), batteries with electrolytes which are bases (such as potassium hydroxide), and flammable solids (such as lithium).

4. Diposal Cycle

a. Batteries will not be disposed of by abandonment or destruction (A or D) until Reutilization/Transfer/Donation (R/T/D) and sales attempts have been undertaken, unless specifically excluded by regulation or policy.* Accordingly, requests for service contract funding will not be submitted until hazardous property has survived screening and sales efforts, or DPDR personnel have coordinated cycle by-pass with DPDS-U and DPDS-M.

b. The DPDO will initiate DPDS Form 1634, Request for Environmental Service Contract, when hazardous property becomes eligible for A or D service contract preparation and funding for the action is required. The Form 1634 will be forwarded through the DPDR to DPDS-H, along with a completed copy of DPDS Form 953, Hazardous Material Documentation. This form provides essential information for hazardous property identification as well as for required environmental documentation. Both forms are available through normal supply channels. DPDOs may obtain assistance in filling out germane portions of either form from the DPDR Operations Division.

5. ABANDONMENT OR DESTRUCTION (A OR D)

Should surplus batteries or electrolytes survive the reutilization, transfer, donation and sales cycle, they must be disposed of through A or D by a service contract. Possible ways that contractors may dispose of batteries, including electrolytes, are:

a. Neutralization of electrolyte.

b. Deep well injection of electrolyte.

c. Conversion of electrolyte into sludge and landfill burial.

d. Packaging or containerizing batteries for landfill burial.

e. Incineration.

D. PROPERTIES OF BATTERIES

1. INTRODUCTION

a. There are several different kinds of batteries in use today throughout DoD. Their construction and/or chemistry differs from one type of battery to another. For example, a battery may consist of a single cell (a typical flashlight battery) in the most general sense, or several cells (a 6-cell automobile battery). An individual cell will consist of a metal which tends to release or give up electrons (the anode), another metal which tends to attract to or accept electrons (the cathode), and an electrolyte, which acts as the

*It should be noted that lithium-sulfur dioxide batteries which are expended through use or have exceeded their shelf lives, will go directly to A or D.

cell's medium for the conduction or flow of current. If the electrolyte is a liquid (e.g., sulfuric acid), the battery is categorized as a "wet cell". If the electrolyte is a paste or semisolid which does not behave like a fluid (as in most carbon-zinc batteries), it is considered to be a "dry cell".

b. Batteries may be also categorized as either primary (FSC 6135) or secondary (FSC 6140). The primary (or voltaic) battery cell is designed to convert chemical energy into active, electrical energy irreversibly. It should be noted that primary cells normally cannot be recharged, and that attempts to do so could result in leaking of contents, venting, or explosion. The secondary battery cell, however, is both reversible in transformation and also rechargeable. Secondary batteries are commonly called storage batteries. Both primary (e.g., lithium-sulfur dioxide) and storage (e.g., lead-acid) batteries are described in the second part of this section.

2. TYPES OF BATTERIES

a. Lead-Acid Batteries

(1) Perhaps the most commonly known battery is the lead-acid storage battery used in automobiles and other motorized vehicles. It is both rechargeable and of the "wet" variety (usually six-celled). Inside each cell are plates made of sponge lead (anode) and lead dioxide (cathode), immersed in a sulfuric acid electrolyte. Although one would seldom handle the inner parts of the battery itself, DPDO personnel should remember that lead and lead dioxide are toxic whether ingested or inhaled as dust or fume. The primary danger with the battery, however, rests with the sulfuric acid electrolyte, often referred to as "battery acid". Not only is the chemical highly corrosive, but it is also a strong irritant to the skin and reacts exothermically with water. Special personal protective equipment to be used when handling these batteries are outlined in paragraph C 2 a.

(2) The sealed automotive battery is a special type of lead battery. Some of these batteries are either hermetically sealed or so constructed that to obtain access to the electrolyte would require breaking the case. Since it has its electrolyte securely encased, cell leakage or spillage is very unlikely to occur. Other purportedly "sealed" batteries, however, can be opened by simply unscrewing the covering and cell caps. Therefore, all sealed batteries should be handled using the personal protective equipment recommended for the regular storage battery. Procedures for the disposal of sealed automotive batteries are found in DPDS-H 4160.3, Vol. I, Disposal Operating Procedures, Chapter II, Disposal Processing Prior to Sale.

b. Nickel-Cadmium (NICAD) Batteries

(1) NICAD batteries are known to function throughout a wide range of temperatures, possess minimum weight, and are powerful enough to assure the non-assisted starting of engines. Therefore, they may be used in airplanes or helicopters as a standby source of electrical energy. Usually, they are rechargeable and can be rebuilt into serviceable batteries, thus making them generally worth several times the value of the nickel component contained in the plates. There are also small, pocket-sized NICAD batteries in use.

(2) As the use of the NICAD battery varies, so does the physical state of its electrolyte, potassium hydroxide, which may be in either "wet cell" or "dry cell" form. In either case, potassium hydroxide is a strong base that will corrode many materials and attack the skin. Furthermore, the cadmium cathode itself can be highly toxic, especially if inhaled as dust or fume.

(3) The same precautions in handling wet cell lead-acid batteries, described in paragraph C 2 a, also apply to wet cell NICAD batteries.

c. Magnesium-Carbon Batteries

(1) Often used in field radios, the magnesium-carbon battery is nonrechargeable and usually a dry cell. Its chemical components include primarily magnesium dioxide (which is moderately toxic and may ignite organic materials) magnesium perchlorate; (which is a fire and explosion risk in contact with organic materials), and magnesium perchlorate carbon black, according to Sax's Dangerous Properties of Industrial Materials.

(2) If hermetically sealed, these batteries should be safe to handle. a certain type of this magnesium battery (BA 4386, NSN 6135-00-926-8322) has been classified as ignitable. In a fire, the battery could rupture and spread corrosive contents over a wide area. In the event of battery rupture, all released material should be collected in a plastic bag for disposal (Magnesium - carbon battery Material Safety Data Sheet). For more specific guidance as to rupture clean-up procedures, consult the host's spill contingency plan.

d. Carbon-Zinc (Leclanche) Batteries

(1) This type of battery often consists of one dry cell. It is used in such everyday devices as flashlights, portable radio sets, etc. Most likely the battery will consist of a zinc can (anode), a centrally located carbon rod (cathode), and an electrolyte paste of ammonium chloride, zinc chloride, and manganese dioxide.

(2) When corroded these batteries may be hazardous to personnel. As a solid, zinc is a skin irritant. Seeping ammonium chloride is also a skin irritant.

e. Silver-Bearing Batteries

(1) Some batteries turned in for disposal contain silver. These include the silver oxide cell battery as well as the alkaline zinc battery. Further, they may be either primary or secondary, usually with a potassium hydroxide electrolyte.

(2) One of the designated precious metals, silver has considerable potential for recovery. When these batteries are turned in, DPDO personnel should refer to the special handling procedures for batteries in DoD 4160.21-M (chapter VI, paragraph B 9). More specific guidance may be obtained from DPDS-RP or DPDM-R.

(3) The silver oxide in the battery is a strong oxidizer. It thus constitutes a fire and explosion risk, particularly if it should come in contact with ammonia or organic materials.

f. Mercury Batteries

(1) This is a primary dry-cell battery found in various portable electronic equipment. Its component parts typically consist of a zinc anode and a mercuric oxide cathode (which may be mixed with graphite). A common electrolyte is potassium hydroxide saturated with zinc oxide. With carefully purified and balanced amounts of the two oxides, the cell makes effective use of its active materials.

(2) The dangers of the mercury battery are still being documented. For example, cases of defective mercury batteries bulging or venting have been reported in DoD. These batteries are BA-1567/U and BA-1100/U, purchased under contract numbers DAAB07-77-D-6328, DAAB07-77-D-6125, and DAAB07-76-D-6352. Most of these batteries are commonly used in night-vision sight equipment. By message of July 79, DPDS has previously instructed DPDOs not to accept subject batteries from generators unless rendered innocuous.

(3) The Army developed a turn-in procedure for these defective batteries which has also been coordinated with DPDS, the Navy, and the Air Force. Basically, this procedure requires the generator to place the batteries in a steel drum or barrel of appropriate size, depending upon the number of defective battery cells for disposal, filling the barrel with water, and neutralizing the potassium hydroxide electrolyte with boric acid or white vinegar. The drums are then labeled "Waste Mercury Batteries and Water Contaminated with Residue of Leaking Mercury Batteries" and pose no explosion hazard. They are considered safe for turn-in to the DPDO for processing through the disposal cycle. (The water in the drums, however, may be contaminated with residue from leaking batteries, i.e., mercury, mercurous oxide - both of which are toxic - and potassium hydroxide. In case of leaking barrels, consult the host's spill contingency plan.)

(4) Despite the dangers inherent in defective or corroded batteries, DPDO personnel should note that the mercury in a safe-to-handle battery is likely to have some resale value.

g. Lithium - Sulfur Dioxide Batteries ($LiSO_2$)

(1) The lithium primary battery is a relatively recent development. It is used in DoD as a power source for portable electronic equipment, missiles, mines, sonobuoys, and torpedoes. Its advantages over other primary cell systems include high current density, consistently high voltage, light weight, and an ability to operate at low temperatures.

(2) The high reactivity of lithium metal, however, creates a potential hazard. Depending on the proportion of lithium to sulfur dioxide, the battery's chemistry is considered either as "balanced" (2.6 – 3.0 grams Li to 23.5 - 24.5 grams SO_2) or "unbalanced" (4.2 grams Li to 24.5 grams SO_2). In the unbalanced variety, lithium metal can react with the electrolyte in the absence of sulfur dioxide to produce lithium cyanide, heat, and methane gas, which may cause rupturing; therefore, this battery has been documented to be a

potential safety hazard. For this reason, handling and disposal of these batteries are of particular concern to DoD and DPDS. In fact, DPDS has informed the military services that DPDOs will only take physical custody of lithium - sulfur dioxide batteries which the turn-in activity identifies as "balanced". (The unbalanced battery is BA-5590/U, NSN 6135-01-036-3495, produced by Power Conversion Incorporated under contracts DAAB07-80-D-6504 and DAAB07-78-D-6353 and P. R. Mallory, Inc. under contract DAAB07-77-C-0464.)

(3) Both varieties of $LiSO_2$ batteries consist of the following:

(a) Hermetically sealed nickel plated steel casing.

(b) Over-pressure relief devices (vents) to prevent rupturing and internal fuses to prevent short-circuiting and overheating.

(c) Lithium anode.

(d) Carbon cathode, consisting of an aluminum support screen and a carbon or acetylene black/teflon mixture.

(e) Electrolyte of acetonitrile, sulfur dioxide and lithium bromide, all potentially hazardous.

(4) Vented or leaking batteries may release sulfur dioxide gas (toxic), lithium hydroxide (corrosive), and methane gas (flammable). Some unbalanced batteries are also reported to have released cyanide when disposed of improperly.

(5) Special DoT shipping instructions are provided for both unexpended and depleted $LiSO_2$ batteries. These are summarized below. (For more specific explanation, contact your DPDR Environmental Protection Specialist.)

(a) Transportation (depleted and unexpended battery cells) - Depleted cells may be shipped by motor vehicle; unexpended cells by motor vehicle, rail freight, cargo vessel, and cargo only aircraft. Where unexpended and expended battery cells are comingled, they will be shipped by motor vehicle only and placarded "FLAMMABLE SOLID" if the total quantity of unexpended cells exceeds 1,000 pounds. The proper shipping name is "lithium batteries" or "lithium batteries (depleted)", as appropriate.

(b) Safety control measures (depleted cells) - Packaging for transportation prescribed is a DoT specification 12 B fiberboard box with a gross weight not to exceed 65 pounds; or any metal or fiber drum which meets the requirements of 49 CFR 173.24, standard requirements for all packages.

(c) Safety control measures (unexpended cells) - Packaging for transportation is prescribed as follows:

(1) Cells and batteries must be packed in strong inner fiberboard containers limited to a maximum of 500 grams of lithium in one inner container. No cell containing more than 12 grams of lithium may be shipped under this exemption.

(2) When drums are used, the inner containers must be separated from each other and all inner surfaces of the drum by at least one inch thickness of vermiculite or other equivalent noncumbustible cushioning materials.

(3) Inside boxes must be further overpacked as specified in paragraph (e) of this section.

(4) Packages must be marked as prescribed in subpart "D" of 49 CFR part 172, Marking. Packages must be labeled with the FLAMMABLE SOLID label shown in 49 CFR 172.420.

(5) Each cell and battery must be equipped with an effective means of preventing external short circuits.

(d) Special provisions (depleted cells) - Outside packages should be marked "ORM-C"; each cell and battery must be equipped with an effective means to prevent eternal short circuits.

(e) Special provisions (unexpended cells) - For shipment by water, motor vehicle, or rail freight, the outside container must be either a (1) strong wooden box, (2) DoT Specification 12B fiberboard box (or equivalent), (3) DoT Specification 21C fiber drum (or equivalent), or (4) metal drum as authorized in paragraph (c) above.

h. Thermal batteries. Such batteries will not be accepted by DPDOs until they are rendered inert by the generating activity or service designated collection points. (For additional guidance, consult DoD 4160.21-M, Chapter VI, Property Requiring Special Handling.)

BATTERY OVERVIEW

Type	DPDO Will ACCEPT?	Special Turn-In Requirement?	Wet Cell/ Dry Cell?	General Warehouse Storage?	Common Electrolyte	Chief Hazards
Lead-Acid	Yes	(2)	Wet	No (4)	Sulfuric Acid	Corrosive
Nickel-Cadmium	Yes	No	Varies	Yes	Alkaline Solution/Gel	Corrosive
Magnesium	Yes	No	Dry	Yes	Neutral/ Alkaline Gel	Flammable, Corrosive
Carbon-Zinc	Yes	No	Dry	Yes	Chloride Paste/ Gel	Corrosive
Silver	Yes	Yes	Varies	Yes (5)	Alkaline Solution/Gel	Corrosive, Reactive
Mercury	Yes	(3)	Dry	Yes	Alkaline Gel	Corrosive
Lithium	(1)	Yes	Dry	Yes (6)	Acetonitrile	Flammable, Corrosive, Reactive
Thermal	No	- -	- -	- -	- -	- -

(1) Consult Paragraph D 2 g.
(2) Personal Protective Equipment should be worn; final turn-in responsibilities being determined.
(3) Consult section D 2 f.
(4) Drained/Unserviceable Batteries may be stored outdoors.
(5) Consult DPDM-R/DPDS-RP for specific precautions.
(6) With Sprinkler System, Class D Fire Extinguisher; or, as second choice, Noncombustible Warehouse with Class D Extinguisher.

APPENDIX H

SHIPPING AND STORAGE CONTAINERS

This appendix provides a list of Department of Transportation (DOT) shipping container specification numbers and titles with cross references to Federal and military specifications.

Also included is a partial listing of National Stock Numbered containers suitable for storage and transportation of hazardous materials.

SOURCE: HAZ. WASTE DISPOSAL GUIDE
NESO 20.2-011
Feb 1983

CONTAINER SPECIFICATIONS

DOT Specification	DOT Section	Federal and Military Specifications	DOT Title of Specification
1A	178.1	PPP-B-585, PPP-B-621	Boxed carboys.
1B	178.2	none	Boxed lead carboys.
1C	178.3	none	Carboys in kegs.
1D	178.4	PPP-B-621, PPP-B-601	Boxed glass carboys.
1E	178.7	MIL-D-112	Glass carboys in plywood drums.
1EX	178.6	MIL-D-112	Glass carboys in plywood drums.
1H	178.13	none	Polyethylene carboys in low carbon steel of equivalent metal crates.
1K	178.14	none	Glass carboys cushioned with expandable polystyrene in wooden wirebound box outside container.
1X	178.5	PPP-B-601, PPP-B-621	Boxed carboys, 5 to 6½ gallons, for export only.
2A	178.20	MIL-C-38756	Inside containers; metal cans, pails and kits.
2C	178.22	PPP-B-636, Type CF-DW 275	Inside containers, corrugated fiberboard carton.
2D	178.23	UU-S-48	Inside containers, duplex paper bags.
2F	178.25	PPP-C-96	Inside metal containers and liners.
2G	178.26	MIL-C-3955 MIL-C-12804	Inside containers, fiber cans and boxes.
2J	178.28	PPP-B-1055	Inside containers, waterproof paper bags for linings.
2K	178.29	none	Inside containers, paper bags for lining.
2L	178.30	none	Lining for boxes.
2M	178.31	none	Waterproof paper lining.
2N	178.32	none	Inside containers, metal can.
2P	178.33	none	Inside nonrefillable metal containers.
2Q	178.33A	none	Inside nonrefillable metal containers.
2R	178.34	none	Inside metal containers, metal tubes.
2S	178.35	MIL-D-40030, Styles A and B	Polyethylene containers.
2SL	178.35a	PPP-C-569	Molded or thermoformed polyethylene container.
2TL	178.27	none	Polyethylene container.
2T	178.21	none	Polyethylene container.
2U	178.24	none	Molded or thermoformed polyethylene containers having rated capacity of over 1 gallon, removable head containers, etc.
3A	178.36	MIL-C-7905, MIL-C-11732	Seamless steel cylinders, or 3AX; seamless steel cylinders of capacity over 1,000 pounds water volume.
3AA	178.37	RR-C-901, MIL-C-11732, MIL-C-7905.	Seamless steel cylinders made of definitely prescribed steels or 3AAX; seamless steel cylinders made of definitely prescribed steels of capacity over 1,000 pounds water volume.
3B	178.38	none	Seamless steel cylinders.
3BN	178.39	none	Seamless nickel cylinders.
3C	178.40	none	Seamless steel cylinders.
3D	178.41	none	Seamless steel cylinders.
3E	178.42	none	Seamless steel cylinders.
3A 480X	178.43	none	Seamless steel cylinders.
3HT	178.44	none	Inside containers, seamless steel cylinders for aircraft use made of definitely prescribed steel.
4	178.48	non	Forge-welded steel cylinders.
4A	178.49	none	Forge-welded steel cylinders.
4AA 480	178.56	MIL-C-11733	Welded steel cylinders made of definitely prescribed steels.
4B	178.50	RR-C-910	Welded and brazed steel cylinders.
4BA	178.51	none	Welded or brazed steel cylinders made of definitely prescribed steels.
4B-240-ET	178.55	none	Welded and brazed cylinders made from electric resistance welded tubing.
4B-240-FLW	178.54	none	Welded or welded and brazed cylinders with fusion-welded longitudinal seam.

DOT Specification	DOT Section	Federal and Military Specifications	DOT Title of Specification
4BW	178.61	none	Welded steel cylinders made of definitely prescribed steels with electric arc welded longitudinal seams.
4C	178.52	none	Welded and brazed steel cylinders.
4D	178.53	none	Inside containers, welded steel for aircraft use.
4DA	178.58	none	Inside containers, welded steel for aircraft use.
4DS	178.47	none	Inside containers, welded stainless steel for aircraft use.
4E	178.68	RR-C-910	Welded aluminum cylinders.
4L	178.57	none	Welded cylinders, insulated.
5	178.80	PPP-P-704, Type I, Class 8 and 12	Steel barrels or drums.
5A	178.81	PPP-D-700, Type I	Steel barrels or drums.
5B	178.82	PPP-D-729, Type I; PPP-D-705, Type I; Class 8 and 12.	Steel barrels or drums.
5C	178.83	PPP-D-700, Type II	Steel barrels of drums.
5D	178.84	PPP-D-700, Type III	Steel barrels or drums, lined.
5F	178.85	none	Steel drums.
5H	178.87	none	Steel drums or drums, lead-lined.
5K	178.88	none	Nickel barrels or drums.
5L	178.89	MIL-C-1283, 5 gal cans	Steel barrels or drums.
5M	178.90	none	Monel drums.
5P	178.92	none	Lagged steel drums.
5X	178.91	none	Steel drums, aluminum-lined.
6A	178.97	PPP-D-736	Steel barrels or drums.
6B	178.98	PPP-D-736	Steel barrels or drums.
6C	178.99	none	Steel barrels or drums.
6D	178.102	none	Cylindrical steel overpack, straight sided for inside plastic container.
6J	178.100	none	Steel barrels or drums.
6K	178.101	none	Steel barrels or drums.
6L	178.103	none	Metal container for fissile radioactive material.
7A	178.350	none	General packaging, Type A
8	178.59	MIL-C-3701	Steel cylinders with approved porous filling for acetylene.
8AL	178.60	MIL-C-3701	Steel cylinders with approved porous filling for acetylene.
9	178.63	none	Inside containers, seamless or welded or brazed steel cylinders.
10A	178.155	none	Wooden barrels and kegs (tight).
10B	178.156	none	Wooden barrels and kegs (tight).
10C	178.157	none	Wooden barrels and kegs (tight).
11A	178.160	NN-K-231	Wooden barrels and kegs (slack).
11B	178.161	NN-K-231	Wooden barrels and kegs (slack).
12A	178.210	none	Fiberboard boxes.
12B	178.205	PPP-B-636, Type CF or SF	Fiberboard boxes.
12C	178.206	PPP-B-636, Type CF or SF	Fiberboard boxes.
12D	178.207	none	Fiberboard boxes.
12E	178.208	none	Fiberboard boxes.
12H	178.209	none	Fiberboard boxes.
12P	178.211	none	Fiberboard boxes, nonreusable containers for one inside plastic container greater than 1 gallon capacity, etc.
12R	178.212	none	Paper-faced expanded Polystrene board boxes, nonreusable containers.
13	178.140	none	Metal kegs.
13A	178.141	none	Metal drums.
14	178.165	none	Wooden boxes, nailed.
15A	178.168	PPP-B-621, Styles 1, 2, 2½, 3, 6, and 7.	Wooden boxes, nailed.
15B	178.169	PPP-B-621, Styles 1, 2, 2½, 3, 6, and 7.	Wooden boxes, nailed.
15C	178.170	PPP-B-621, Styles 1, 2, 2½, 3, 6, and 7.	Wooden boxes, nailed.

DOT Specification	DOT Section	Federal and Military Specifications	DOT Title of Specification
15D	178.171	PPP-B-621, Styles 1, 2, 2½, 3, 6, and 7.	Wooden boxes, nailed.
15E	178.172	none	Wooden boxes, fiberboard lined.
15L	178.176	none	Wooden boxes with inside containers for desensitized liquid explosives.
15M	178.177	none	Wooden boxes, metal lined, with inside containers for desensitized liquid explosives.
15P	178.182	none	Glued plywood, or wooden box for inside containers.
15X	178.181	none	Wooden boxes for two 5 gallon cans.
16A	178.185	PPP-B-585	Plywood or wooden boxes, wirebound.
16B	178.186	PPP-B-585	Wooden boxes, wirebound.
16D	178.187	PPP-B-585	Wooden wirebound overwrap for inside containers.
17C	178.115	PPP-P-704; Type I, Class 4 and 11	Steel drums.
17E	178.116	PPP-D-729; PPP-D-705, Type I and II; PPP-P-704, Type I, Class 3 and 9.	Steel drums.
17F	178.118	none	Steel drums.
17H	178.118	PPP-D-729, Type IV; PPP-D-705, Type V; PPP-P-704, Type II, Class 8.	Steel barrels or drums.
17X	178.119	none	Steel barrels or drums.
18B	178.193	none	Wooden kits.
19A	178.190	PPP-B-601	Wooden boxes, glued plywood, cleated.
19B	178.191	none	Wooden boxes, glued plywood, nailed.
21P	178.225	none	Fiber drum, overpack for inside plastic container.
21C	178.224	none	Fiber drums.
22A	178.196	none	Wooden drums, glued plywood.
22B	178.197	none	Wooden drums, glued plywood.
22C	178.198	none	Plywood drum for plastic inside container.
23F	178.214	PPP-B-636, Type CF and SF	Fiberboard boxes.
23G	178.218	none	Special cylindrical fiberboard box for high explosives.
23H	178.219	PPP-B-636, Type SF	Fiberboard boxes.
28	178.8	none	Metal jacketed lead carboys.
28A	178.9	none	Metal jacketed lead carboys.
29	178.226	PPP-T-495, Type I	Marking tubes.
31	178.15	none	Jugs in tubs.
32A	178.146	MIL-C-3082, Style C	Metal cans, riveted or locked seamed.
32B	178.147	none	Metal cases, welded or riveted.
32C	178.149	none	Metal trunks.
32D	178.148	none	Metal boxes for old and worn-out motion picture film no longer exhibitable.
33A	178.150	none	Polystyrene cases, nonreusable containers.
34	178.19	none	Reusable molded Polyethylene container for use without overpack, removable head not authorized.
34B	178.12	none	Aluminum carboys.
36A	178.230	PPP-B-35	Lined cloth bags (triplets).
36B	178.233	PPP-B-35	Burlap bags, lined.
36C	178.234	PPP-B-35	Burlap bags, paper lined.
37A	178.131	PPP-D-705; PPP-P-704, Type II, Class 1, 3, and 5.	Steel drums*.
37B	178.132	none	Steel drums*.
37C	178.135	none	Steel drums*.
37K	178.130	none	Steel drums*.
37M	178.134	none	Cylindrical steel overpack, straight sided for inside plastic container; nonreusable containers*.
37P	178.133	PPP-O-1337	Steel drums with polyethylene liner*.
40	178.66	none	Inside containers, non-refillable seamless or welded or brazed steel cylinders*.
41	178.67	none	Inside containers, non-refillable seamless or welded or brazed steel cylinders*.
42B	178.107	none	Aluminum drums*.
42C	178.108	none	Aluminum barrels or drums*.

DOT Specification	DOT Section	Federal and Military Specifications	DOT Title of Specification
42D	178.109	none	Aluminum drums*.
42E	178.136	none	Aluminum drums*.
42F	178.110	none	Aluminum barrels or drums*.
42G	178.111	none	Aluminum drums*.
42H	178.112	none	Aluminum drums, removable head containers not authorized*.
43A	178.13	none	Rubber drums.
44B	178.236	none	Multiwall paper bags.
44C	178.237	none	Multiwall paper bags.
44D	178.238	none	Multiwall paper bags.
44E	178.239	none	Multiwall paper bags.
44P	178.241	none	All plastic bags.
45B	178.240	none	Bags, cloth and paper, lined.

HAZARDOUS WASTE CONTAINERS

Type	National Stock Number	Item Description	Applicable Specifications (DOT, Mil, Fed)
Bag	8105-00-848-9631	Polyolefin, single wall, 5 mil, 36 in. x 54 in., flat, wire tie	PPP-B26 TY 2
Bottle	8125-00-174-0852	Polyethylene, 1 gal, round, screw cap closure	MIL B 26701
	8125-00-888-7069	Polyethylene, 5 gal, round, screw cap closure	Not available
	8125-00-731-6016	Polyethylene, 13 gal, round, screw cap closure	Not available
Box	8115-01-012-4597	Fiberboard, RSC sytle, 34 in. x 26 in. x 16 in., burst-strength 400 lbs	DOT 2C PPPB-636
Can	8110-00-879-7182	Tin, 1 gal, oblong, screw cap closure, enamel outside surface treatment	DOT 2F MIL PPP C 96
	8110-00-128-6819	Steel, 24 gauge, 1 gal, screw cap w/neoprene liner closure, epoxy resin interior lining	DOT 17C
Can	8110-01-060-6464	Steel, 1 gal, screw cap, tinned	PPP-C-96
	8110-00-879-7182	Steel, 1 gal, screw cap, tin, enamel exterior surface	PPP-C-96 TY5 CL 4
	8110-00-178-8282	Steel, 1 gal, screw cap, tin, enamel exterior surface 1.25 in. opening	PPP-C-96 TY5 CL 4
	8110-00-248-9624	Steel, 5 gal, screw cap, tin	PPP-C-96 TY5 CL 4
	8110-00-400-5748	Steel, 24 gauge, 5 gal, screw cap w/neoprene liner enclosure, epoxy resin interior lining	DOT 17C PPP-P-704
Carboy	8125-00-598-9380	Glass, 5 gal, wood box overpack	MIL C 17932 TY B

HAZARDOUD WASTE CONTAINERS CONTD.

Type	National Stock Number	Item Description	Applicable Specifications (DOT, Mil, Fed)[1]
Drum	8110-00-254-5713	Steel, 22 gauge, 6.0 gal, removable cover w/lock ring, enamel inside/outside surface treatment	MIL D 6054
	8110-00-574-9641	Steel, 24 gauge, 5.0 gal, w/ bung and vent, enamel outside surface treatment	DOT 17C PPP-P-704
	8110-00-282-2520	Steel, 5 gal, enamel exterior treatment, spout	PPP-D-704 TY I CL 8
	8110-00-254-5715	Steel, 22 gauge, 9.0 gal, removable cover w/lock ring, enamel inside/outside surface treatment	MIL D 6054
	8110-00-519-5618	Steel, 20 gauge 10 gal, w/bung and vent	DOT 17C PPP-P-704
	8110-00-050-1848	Steel, 18 gauge, 16.0 gal, removable cover w/bolt, enamel inside/outside surface treatment	Not available
	8110-00-030-7779	Steel, 18 gauge, 30 gal enamel exterior treatment, removable cover	PPP-D-705 DOT-17 H
	8110-00-366-6809	Steel, 18 gauge, 30 gal, removable cover, locking ring	PPP-D-705
	8110-00-030-7780	Steel, 16 gauge, 55 gal, removable cover/w/lock ring, enamel outside surface treatment	DOT 17C
	8110-00-292-9783	Steel, 18 gauge, 55 gal, w/bung and vent, enamel outside surface treatment	DOT 17E PPPD729 TY 2
	8110-00-042-9834[2]	Steel, 55 gal, polyethylene lined, w/bung and vent	Not available

Continued

HAZARDOUS WASTE CONTAINERS CONTD.

Type	National Stock Number	Item Description	Applicable Specifications (DOT,[1] Mil, Fed)
Drum (cont)	8140-01-054-6702	Steel, 18 gauge, 55 gal, removable cover w/bolt ring, cover w/bung and vent openings; drum has polyethylene insert, 1/16 in. thick, w/bung and vent	DOT 6D (drum) DOT 2SL (insert)
	8110-00-292-9783	Steel, 18 gauge, 55 gal, enamel exterior treatment, B/V[3]	PPP-D-729 TY 2
	8110-00-592-2353	Steel, 16 gauge, 55 gal, paint exterior surface treatment, B/V	PPP-D-729
	8110-01-101-4056	Hazardous material recovery, 85 gal, open head	none
	8110-01-101-4055	Hazardous material recovery 85 gal, open head	none

NOTES

[1] DOT: Department of Transportation.

[2] The 55 gal polysteel (steel overpack with polyethylene insert) drum, NSN 8140-01-054-6702, is the preferred choice due to the strength of its polyethylene insert and its potential for reuse. If unavailable, the polyethylene-lined steel drum, NSN 8110-00-042-9834, may be used.

[3] With bung and vent

BASE MAINTENANCE DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

MAIN/FEC/rn
6240
JUL 1 4 1983

From: Base Maintenance Officer
To: Assistant Chief of Staff, Facilities

Subj: Disposal of battery acid

Ref: (a) AC/S, Fac ltr NREAD/DDS/th 6240 of 25 May 1983

Encl: (1) Proposal for Disposal of Battery Acid in Sewage Treatment Plants

1. As requested by the reference, the enclosure provides information regarding disposal of battery acid through existing sewage treatment plants.

2. This proposal does not analyze other methods of disposal that may be more practical or economical.

R. F. CALTA

Proposal for Disposal of Battery Acid
in
Sewage Treatment Plants

1. Background. Approximately 3000 gallons of used battery acid are accumulated annually at motor transport shops throughout Camp Lejeune. The acid is presently being collected and stored in drums (approximately 55-gallon) located at individual shops. One solution to the acid disposal problem is to neutralize the acid, precipitate out any lead content, and dispose the neutralized liquid through existing sewage plants.

2. Information

a. Experiments have been conducted to determine the most practical base to use for neutralization of the acid. The following bases were tested using typical used battery acid:

(1) Lime - Generates considerable heat (increase of 20°-40°F). A precipitate ($CaSO_4$) is formed. Large amounts of lime required to neutralize the acid because lime is not very soluble. Lime is relatively cheap.

(2) Sodium Bicarbonate (baking soda) - Generates no heat (slight drop in temperature). Sodium bicarbonate causes a fizzing action. Care must be taken to avoid bubbling over. Very little precipitate formed. Much less sodium bicarbonate required to neutralize the acid compared to lime. Sodium carbonate (soda ash) could also be used with similar results.

(3) Sodium Hydroxide - Generates heat (60°-80°F rise). Does not produce precipitate. Sodium hydroxide is soluble.

b. Fort Bragg is presently disposing of battery acid through sewage treatment plants. The acid is carried to one of three sites and pumped into a 500-gallon tank. The acid is then neutralized with sodium bicarbonate and drained to the sanitary sewer system. Lead and other solids precipitate to the bottom of the tank. To date, Fort Bragg has not removed the precipitate from the tanks. Toxicity tests are run approximately every six months. Small traces of silver have been detected in the process.

3. Recommendation

If a decision is made to dispose of the battery acid at sewage treatment plants, the following procedure is recommended.

Motor Transport personnel collect battery acid from broken/damaged batteries in small containers (5-13 gallons) located at each battery shop. Acid should remain in undamaged batteries for disposal with the battery. A 500-gallon polyethylene tank should be installed at the Camp Geiger Sewage Treatment Plant and the Hadnot Point Sewage Treatment Plant. Polyproplyene pumps should also be installed at the plants. Upon collection of the acid in small containers, Motor Transport personnel should transport the containers to the sewage treatment plant nearest their shop. The sewage plant operator would then pump the acid from the containers into the 500-gallon tank. Periodically, under the supervision of the Utilities Chemist, the acid would be neutralized and drained to

the sanitary sewer. Necessary testing would be performed by the chemist. Lead precipitate in the tanks would be handled using appropriate hazardous waste procedures. Estimated costs associated with the procedure are provided below:

(2) 500-gallon polyethylene tanks ($800 each)	-	$1600
(2) Polyproplyene pumps (may require stainless steel trim) (700 each)	-	$1400
5 gallon, polyethylene tanks NSN 8125-00-888-7069 (Quantity unknown)	-	-
13 gallon, Polyethylene tanks NSN 8125-00-731-6016 (Quantity unknown)	-	-
Electrical and piping requirements	-	$1000
5200 lbs Sodium carbonate annually required to neutralize 3000 gallons of battery acid $24/100 lbs	-	$1248

$ 12.69 ea June '93
$ 41.02

4. Additional Information

a. Conversation with Bob Alexander (AC/S, Fac Office) indicates that there are presently no DOT specifications available for containers used to transport battery acid. The proposed containers meet the requirements of the Navy Hazardous Waste Disposal Guide NESO 20.2-011 Feb 1980 Appendix U-H-6.

b. Disposal of the lead precipitate should be investigated by the NREA Division to prevent future problems.

1500 gal / 5 gal = 300 x 12.69 =

1500 gal / = x =

OPNAV 5216/144 (REV. 6-70)
S/N 0107-LF-778-8097
DEPARTMENT OF THE NAVY

Memorandum

DATE: 6 SEP

FROM: Env Engr

TO: FACO

SUBJ: BATTERY ACID DISPOSAL

Col. MARSHALL revised to begin neutralizing by BMAINT;
he recommends suspense of 16 Sep to get data
on quantities of acid.

Looks good to me —
Recommend signature.

☆ U.S. Government Printing Office: 1981 783-005/1150

A 3 0 6 5 3 1 0


6810-00-823-8007
SULFURIC ACID ELECTROLYTE
O-S-801C CLASS 2
5 GALLONS, 1 DR. A-8/82
WT 61 CU 1.1
SULFURIC ACID
MFD-8/82
INSPECT/TEST DATE-8/85
CORROSIVE
CORROSIVE
CORROSIVE

UTINE

R 111421Z MAR 87

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SIXTH MAB
NAVHOSP CAMP LEJEUNE NC

CG SECOND FSSG
CG II MAF
NAVDENCLINIC CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC

UNCLAS //N06280//

SUBJ: DISPOSAL OF USED WET CELL BATTERIES AND RELATED ELECTROLYTE

A. BO 6240.5A

1. THE PURPOSE OF THIS MSG IS TO PROVIDE REVISED GUIDANCE FOR SUBJ DISPOSAL. EFFECTIVE IMMEDIATELY THE FOLLOWING ACTION WILL BE TAKEN TO ENSURE COMPLIANCE WITH STATE AND FEDERAL HW REGULATIONS.

A. USED ELECTROLYTE DRAINED FROM BATTERIES SHALL BE MANAGED AS HW IAW THE REF. THE ELECTROLYTE SHALL BE DISPOSED OF IAW THIS MSG WITHIN 90 DAYS OF THE DATE DRAINED FROM BATTERY.

B. DRAINAGE OF INTACT, NONLEAKING BATTERIES IS PROHIBITED WITHOUT THE SPECIFIC WRITTEN APPROVAL OF THE COGNIZANT HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC). LOCATIONS WHERE BATTERIES ARE DRAINED ARE HAZARDOUS WASTE GENERATION SITES. LOCATIONS WHERE USED ELECTROLYTE DRAINED FROM BATTERIES IS STORED ARE HW ACCUMULATION AREAS. BOTH TYPES OF LOCATIONS ARE SUBJECT TO PERSONNEL TRAINING REQUIREMENTS OF THE REF. ACCUMULATION AREAS ARE ALSO SUBJECT TO WEEKLY INSPECTION REQUIREMENTS OF THE REF. FACILITIES USED FOR STORAGE OF BATTERIES AWAITING DISPOSAL THROUGH THE DEFENSE REUTILIZATION AND MARKETING OFFICER (DPMO) ARE NOT REGULATED BY THE REF UNLESS ALSO USED FOR HANDLING OF OTHER TYPES OF HW.

C. BATTERIES SHALL BE STORED UPRIGHT AT ALL TIMES.

DLVR:CG SIXTH MAB(6)...ACT
DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

NREA(2)...ORIG FOR CG MCB CAMP LEJEUNE(109) /15/
BTMO(1) BFAC(1) BSJA(1) BCOS(1) BCEO(1) OICB(1) SSTF(85) DRMO(1)
FMSS(1) BITS(1) MCES(1) MCSS(4) BRSU(1) RRDT(1) SPBN(4) HOBN(1)
CEOA(1)

RTD:000-000/COPIES:0123

D. FACILITIES WHERE BATTERIES ARE DRAINED AND WHERE CONTAINERS SED ELECTROLYTE ARE STORED ARE REQUIRED TO HAVE HW SPILL CONTIN- Y PLANS POSTED.

BATTERY DISPOSAL PROCEDURES:

A. CAREFULLY INSPECT ALL BATTERIES REQUIRING DISPOSAL AND GREGATED INTO "LEAKING" AND "NONLEAKING" LOTS.

B. NONLEAKING BATTERIES SHALL BE STACKED ONE LAYER HIGH ON LLETS. WHEN PALLET IS FULL, THE BATTERIES WILL BE COVERED WITH A EET OF 3/4" PLYWOOD THE SIZE OF THE PALLET. PLYWOOD AND BATTERIES ALL BE SECURED TO PALLETS WITH BANDING MATERIAL.

C. FULL PALLETS OF BATTERIES WILL BE TURNED IN TO THE DRMO PER E REF AS A HAZARDOUS MATERIAL (HM). REFER ANY QUESTIONS REGARDING ESE PROCEDURES TO THE COGNIZANT HAZARDOUS MATERIAL DISPOSAL OFFICER MDO).

D. LEAKING BATTERIES WILL BE IMMEDIATELY DRAINED INTO DEPT OF ANSPORTATION APPROVED CONTAINERS. DRAINED BATTERIES WILL BE STORED RIGHT, ONE LAYER HIGH ON PALLETS. BATTERIES WILL BE COVERED WITH SHEET OF PLYWOOD TO PREVENT ACCUMULATION OF RAIN WATER. TTERIES WILL BE INSPECTED WEEKLY TO ENSURE PROPER STORAGE. WHEN LLET IS FULL, BIND PLYWOOD AND BATTERIES TO PALLET SECURELY WITH NDING MATERIAL AND TURN IN TO DRMO AS A HM PER THE REF.

E. KEEP ELECTROLYTE STORAGE CONTAINERS TIGHTLY SEALED AT ALL MES WHEN NOT DRAINING THE BATTERIES. PLACE A PROPERLY MPLETED HW LABEL ON THE CONTAINER IAW THE REF PRIOR TO COMMENCING LLING. ENSURE THAT "CORROSIVE" LABELS ARE USED TO WARN OF HAZARD ERSONNEL SAFETY.

F. BE SURE THAT ACCUMULATION START DATE IS CLEARLY SHOWN ON CH HW LABEL. NOTIFY COGNIZANT HMDO WEEKLY OF THE NUMBER OF CON- INERS OF ELECTROLYTE ON HAND WHICH ARE FULL OR WHICH HAVE ACCUMULA- ON START DATES WHICH ARE 45 DAYS OLD OR OLDER.

G. INSPECT CONTAINERS ON A WEEKLY BASIS IAW THE REF. MAINTAIN WRITTEN LOG WHICH PROVIDES DATE OF INSPECTION, THE PERSON CONDUCT- NG INSPECTION, PROBLEMS FOUND AND CORRECTIVE ACTION TAKEN. HMDO'S LL FURNISH PROPER FORMS FOR MAINTAINING LOG.

H. BATTERY DRAINING ACTIVITIES AND RELATED INSPECTIONS WILL BE ERFORMED BY OR UNDER DIRECT SUPERVISION OF HW HANDLERS HAVING PRO- ERLY DOCUMENTED HW TRAINING IAW WITH THE REF. HMDO'S WILL MONITOR DEQUACY OF HW TRAINING AND DOCUMENTATION CONTINUOUSLY.

I. HW SPILL CONTINGENCY PLANS WILL BE CONSPICUOUSLY POSTED AT ACH LOCATION USED FOR THE DRAINAGE OF USED BATTERIES OR FOR THE ORAGE OF USED ELECTROLYTE. HMDO'S WILL FURNISH GUIDANCE. PERSON- EL WILL BE EQUIPPED AND TRAINED TO RESPOND TO SPILLS OF ELECTROLYTE AFELY.

J. TRANSPORTATION OF USED BATTERIES (DRAINED OR UNDRAINED) IS OT REGULATED BY THE REF. YOU MAY TRANSPORT AS REQUIRED.

K. CONTAINERS OF USED ELECTROLYTE WILL BE TURNED IN TO DRMO AS HAZARDOUS WASTE PER THE REFERENCE.

. DISPOSAL BY DRMO CONTRACTOR WILL BE DONE UNTIL SUCH TIME AS

ADEQUATE PRETREATMENT AND DISPOSAL FACILITIES MEETING STATE AND FEDERAL REGULATORY AND PERMIT REQUIREMENTS CAN BE DESIGNED AND INSTALLED. DISPOSAL THROUGH SANITARY SEWER WILL BE USED ONLY IN THE EVENT OF EMERGENCY. DRMO, BMO AND NREAD WILL COOPERATE IN ENSURING ADEQUATE SERVICES ARE AVAILABLE TO ACCOMPLISH THE SUBJECT DISPOSAL.

4. ADDRESSES ARE REQUESTED TO TAKE IMMEDIATE ACTION TO LIMIT THE NUMBER OF LOCATIONS WITHIN THEIR COMMANDS WHERE BATTERIES ARE DRAINED AND ELECTROLYTE IS ACCUMULATED. TECHNICAL ASSISTANCE WITH THIS MATTER IS AVAILABLE FROM THE BASE SAFETY OFFICER; DIR, NREAD; BASE FIRE CHIEF AND THE PUBLIC WORKS OFFICER.

5. QUESTIONS REGARDING IMPLEMENTATION OF THIS MSG SHOULD BE REFERRED TO THE COGNIZANT HMDO FOR RESOLUTION. UNRESOLVED QUESTIONS AND ISSUES SHOULD BE REFERRED VIA COGNIZANT HMDC TO THE DIR, NREAD, EXTS 2083/2195. HMDC'S AND DIR, NREAD, WILL COOPERATE IN RESOLUTION OF SIGNIFICANT ISSUES. POC IS MR. DANNY SHARPE, NREAD, EXT 2083.

BT

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DTG RELEASER TIME			PRECEDENCE		CLASS				ORIG MSG IDENT
	DATE TIME	MONTH	YR	ACT	INFO					
01 OF 05				RR		UUUU				3500800

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: CG MCB CAMP LEJEUNE NC

TO: CG SECOND MARDIV

CG SECOND FSSG

CG SIXTH MAB

CG II MAF

NAVHOSP CAMP LEJEUNE NC

NAVDENCLINIC CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC

UNCLAS //N06280//

SUBJ: DISPOSAL OF USED WET CELL BATTERIES AND RELATED ELECTROLYTE

A. BO 6240.5A

1. THE PURPOSE OF THIS MSG IS TO PROVIDE REVISED GUIDANCE FOR SUBJ DISPOSAL. EFFECTIVE IMMEDIATELY THE FOLLOWING ACTION WILL BE TAKEN TO ENSURE COMPLIANCE WITH STATE AND FEDERAL HW REGULATIONS.

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B. DRAINAGE OF INTACT, NONLEAKING BATTERIES IS PROHIBITED WITHOUT THE SPECIFIC WRITTEN APPROVAL OF THE COGNIZANT HAZARDOUS MATERIAL

DISTR
|NREA|BTMO|BFAC|BSJA|BCOS|BCEO|OICB|SSTF|DRMO|FMSS|BITS|MCES|MCSS|
|BRSU|RRDT|SPBN|HQBN|

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE
J. Wooten
J WOOTEN, NREA, DIR, GS-12, 5003

SPECIAL INSTRUCTIONS
AS Log Approved via Telephone TJO
BMO ____ SJA ____ TMO ____
2dFSSG ____ 2DMARDIV ____

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
T J DALZELL, AC/S FAC, 3034
SIGNATURE
T. J. Dalzell

SECURITY CLASSIFICATION: UNCLASSIFIED

DATE TIME GROUP

DD FORM 1731 PREVIOUS EDITION IS OBSOLETE S/N 0102-LF-000-1735

*U.S.GPO 1985-0-484-105

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

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	DATE TIME	MONTH	YR	ACT	INFO					
02 OF 05				RR		UUUU				3500800

BOOK

MESSAGE HANDLING INSTRUCTIONS

DISPOSAL COORDINATOR (HMDC). LOCATIONS WHERE BATTERIES ARE DRAINED ARE HAZARDOUS WASTE GENERATION SITES. LOCATIONS WHERE USED ELECTROLYTE DRAINED FROM BATTERIES IS STORED ARE HW ACCUMULATION AREAS. BOTH TYPES OF LOCATIONS ARE SUBJECT TO PERSONNEL TRAINING REQUIREMENTS OF THE REF. ACCUMULATION AREAS ARE ALSO SUBJECT TO WEEKLY INSPECTION REQUIREMENTS OF THE REF. FACILITIES USED FOR STORAGE OF BATTERIES AWAITING DISPOSAL THROUGH THE DEFENSE REUTILIZATION AND MARKETING OFFICER (DRMO) ARE NOT REGULATED BY THE REF UNLESS ALSO USED FOR HANDLING OF OTHER TYPES OF HW.

C. BATTERIES SHALL BE STORED UPRIGHT AT ALL TIMES.

D. FACILITIES WHERE BATTERIES ARE DRAINED AND WHERE CONTAINERS OF USED ELECTROLYTE ARE STORED ARE REQUIRED TO HAVE HW SPILL CONTINGENCY PLANS POSTED.

2. BATTERY DISPOSAL PROCEDURES:

A. CAREFULLY INSPECT ALL BATTERIES REQUIRING DISPOSAL AND SEGREGATE INTO "LEAKING" AND "NONLEAKING" LOTS.

B. NONLEAKING BATTERIES SHALL BE STACKED ONE LAYER HIGH ON PALLETS. WHEN PALLET IS FULL, THE BATTERIES WILL BE COVERED WITH A SHEET OF 3/4" PLYWOOD THE SIZE OF THE PALLET. PLYWOOD AND BATTERIES

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SHALL BE SECURED TO PALLETS WITH BANDING MATERIAL.

C. FULL PALLETS OF BATTERIES WILL BE TURNED-IN TO THE DRMO PER THE REF AS A HAZARDOUS MATERIAL (HM). REFER ANY QUESTIONS REGARDING THESE PROCEDURES TO THE COGNIZANT HAZARDOUS MATERIAL DISPOSAL OFFICER (HMDO).

D. LEAKING BATTERIES WILL BE IMMEDIATELY DRAINED INTO DEPT OF TRANSPORTATION APPROVED CONTAINERS. DRAINED BATTERIES WILL BE STORED UPRIGHT, ONE LAYER HIGH ON PALLETS. BATTERIES WILL BE COVERED WITH A SHEET OF PLYWOOD TO PREVENT ACCUMULATION OF RAIN WATER. BATTERIES WILL BE INSPECTED WEEKLY TO ENSURE PROPER STORAGE. WHEN PALLET IS FULL, BIND PLYWOOD AND BATTERIES TO PALLET SECURELY WITH BANDING MATERIAL AND TURN-IN TO DRMO AS A HM PER THE REF.

E. KEEP ELECTROLYTE STORAGE CONTAINERS TIGHTLY SEALED AT ALL TIMES WHEN NOT DRAINING THE BATTERIES. PLACE A PROPERLY COMPLETED HW LABEL ON THE CONTAINER IAW THE REF PRIOR TO COMMENCING FILLING. ENSURE THAT "CORROSIVE" LABELS ARE USED TO WARN OF HAZARD TO PERSONNEL SAFETY.

F. BE SURE THAT ACCUMULATION START DATE IS CLEARLY SHOWN ON EACH HW LABEL. NOTIFY COGNIZANT HMDO WEEKLY OF THE NUMBER OF CON-

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TAINERS OF ELECTROLYTE ON HAND WHICH ARE FULL OR WHICH HAVE ACCUMULATION START DATES WHICH ARE 45 DAYS OLD OR OLDER.

G. INSPECT CONTAINERS ON A WEEKLY BASIS IAW THE REF. MAINTAIN A WRITTEN LOG WHICH PROVIDES DATE OF INSPECTION, THE PERSON CONDUCTING INSPECTION, PROBLEMS FOUND AND CORRECTIVE ACTION TAKEN. HMDO'S WILL FURNISH PROPER FORMS FOR MAINTAINING LOG.

H. BATTERY DRAINING ACTIVITIES AND RELATED INSPECTIONS WILL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF HW HANDLERS HAVING PROPERLY DOCUMENTED HW TRAINING IAW WITH THE REF. HMDO'S WILL MONITOR ADEQUACY OF HW TRAINING AND DOCUMENTATION CONTINUOUSLY.

I. HW SPILL CONTINGENCY PLANS WILL BE CONSPICUOUSLY POSTED AT EACH LOCATION USED FOR THE DRAINAGE OF USED BATTERIES OR FOR THE STORAGE OF USED ELECTROLYTE. HMDO'S WILL FURNISH GUIDANCE. PERSONNEL WILL BE EQUIPPED AND TRAINED TO RESPOND TO SPILLS OF ELECTROLYTE SAFELY.

J. TRANSPORTATION OF USED BATTERIES (DRAINED OR UNDRAINED) IS NOT REGULATED BY THE REF. YOU MAY TRANSPORT AS REQUIRED.

K. CONTAINERS OF USED ELECTROLYTE WILL BE TURNED IN TO DRMO AS A HAZARDOUS WASTE PER THE REFERENCE.

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3. DISPOSAL BY DRMO CONTRACTOR WILL BE DONE UNTIL SUCH TIME AS ADEQUATE PRETREATMENT AND DISPOSAL FACILITIES MEETING STATE AND FEDERAL REGULATORY AND PERMIT REQUIREMENTS CAN BE DESIGNED AND INSTALLED. DISPOSAL THROUGH SANITARY SEWER WILL BE USED ONLY IN THE EVENT OF EMERGENCY. DRMO, BMO AND NREAD WILL COOPERATE IN ENSURING ADEQUATE SERVICES ARE AVAILABLE TO ACCOMPLISH THE SUBJECT DISPOSAL.

4. ADDRESSES ARE REQUESTED TO TAKE IMMEDIATE ACTION TO LIMIT THE NUMBER OF LOCATIONS WITHIN THEIR COMMANDS WHERE BATTERIES ARE DRAINED AND ELECTROLYTE IS ACCUMULATED. TECHNICAL ASSISTANCE WITH THIS MATTER IS AVAILABLE FROM THE BASE SAFETY OFFICER; DIR, NREAD; BASE FIRE CHIEF AND THE PUBLIC WORKS OFFICER.

5. QUESTIONS REGARDING IMPLEMENTATION OF THIS MSG SHOULD BE REFERRED TO THE COGNIZANT HMDO FOR RESOLUTION. UNRESOLVED QUESTIONS AND ISSUES SHOULD BE REFERRED VIA COGNIZANT HMDC TO THE DIR, NREAD, EXTS 2083/2195. HMDC'S AND DIR, NREAD, WILL COOPERATE IN RESOLUTION OF SIGNIFICANT ISSUES. POC IS MR. DANNY SHARPE, NREAD, EXT 2083.

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