



AD-A234 862

**ARMSTRONG
LABORATORY**

**HAZARDOUS WASTE TECHNICAL
ASSISTANCE SURVEY
ANDREWS AFB MD**

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**OCCUPATIONAL AND ENVIRONMENTAL
HEALTH DIRECTORATE
Brooks Air Force Base, Texas 78235-5000**

March 1991

Final Technical Report for Period 9 December 1990 - 13 December 1990

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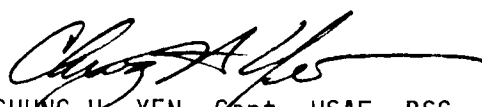
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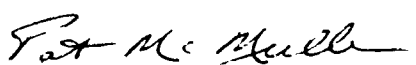
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REPORT DOCUMENTATION PAGE			Form Approved OMB No 0704 0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE March 1991	3. REPORT TYPE AND DATES COVERED Final 9 - 13 Dec 90		
4. TITLE AND SUBTITLE Hazardous Waste Technical Assistance Survey, Andrews AFB MD			5. FUNDING NUMBERS	
6. AUTHOR(S) Chung H. Yen, Capt, USAF, BSC Patrick T. McMullen, Capt, USAF, BSC Benjamin Hernandez, MSgt, USAF				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Armstrong Laboratory Occupational and Environmental Health Directorate Brooks AFB TX 78235-5000 (Formerly: AF Occupational and Environmental Health Laboratory (AFOEHL))			8. PERFORMING ORGANIZATION REPORT NUMBER AL-TR-91-0008	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Same as Blk 7			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Statement A. Unlimited, approved for public release			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) At the request of HQ MAC/LGMW, the AFOEHL conducted a hazardous waste technical assistance survey at Andrews AFB (AAFB) from 9 - 13 Dec 90. The scope of this survey was to address hazardous waste management practices, explore opportunities for waste minimization, and to determine wastestreams. The survey team performed a shop-by-shop evaluation of waste management practices and met with hazardous waste managers to discuss their waste programs. Recommendations include: (1) Base CE to shred out disposal costs for each organization; (2) SGPB to prepare a Waste Analysis Plan (WAP) as required by 40 CFR 265.13; (3) Base to evaluate other alternatives for segregated waste oil disposal; (4) Implement a comprehensive program to dramatically reduce the amount of oil that goes to the Oil Water Separators; (5) Base CE to prepare a talking paper on their program and submit it to HQ MAC/DEV/LGMW/SGPB as a training guide throughout the command; (6) Those shops that use shop rags for heavy cleaning utilize those lightly soiled rags from other shops; (7) The spent Citrikleen disposed through the sanitary sewer should be analyzed for hazardous characteristics.				
14. SUBJECT TERMS Hazardous Waste Minimization		Andrews AFB MD Yen McMullen Hernandez		15. NUMBER OF PAGES 39
				16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

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ACKNOWLEDGEMENTS

The authors wish to thank the personnel at Andrews AFB who provided information and logistics support during the survey. Maj Lawrence McGowan, Chief; Capt Jeffrey Cornell, OIC; and the entire Bioenvironmental Engineering Services (BES) staff, Malcolm Grow Med Center/SGPB, were extremely supportive of the mission during the survey. We would also like to thank Capt Gabriel Lifschitz, Chief, and his staff in the Environmental and Contract Planning Office in Civil Engineering, 1776 CES/DEEV, for their escort support of shop visits and provision of corporate knowledge on the waste accumulation practices on base.



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I. INTRODUCTION

The Weapons Systems Division, Director of Maintenance Engineering, Headquarters Military Airlift Command (HQ MAC/LGMW) requested the Air Force Occupational and Environmental Health Laboratory, Environmental Quality Division (AFOEHL/EQE), conduct a series of five Hazardous Waste Technical Assistance Surveys throughout MAC during 1990, (Appendix A). The surveys will be used to establish a baseline for their waste minimization program. The survey was conducted by Capt Patrick T. McMullen, Capt Chung H. Yen, and MSgt Benjamin Hernandez from 9-13 December 1990.

II. BACKGROUND

A. Base Description

Andrews AFB is located 10 miles southeast of Washington D. C. The host unit is the 1776 Air Base Wing. They are responsible for the overall operation of the base, and provide support and services for tenant units. The 89th Military Airlift Wing (MAW) provides VIP air transportation, including the President, Vice President, and other government officials. Other tenant units are the 113th Tactical Fighter Wing of the District of Columbia Air National Guard, the 459th Military Airlift Wing (Air Force Reserves), the First Heli, Headquarters Air Force Systems Command, 231st Combat Communications Squadron, Malcom Grow Medical Center, 2045th Communications Group and the DC ANG Det 1.

B. Hazardous Waste Program

The hazardous waste program at Andrews AFB is managed primarily through the Environmental and Contract Planning Office in Civil Engineering, 1776 CES/DEEV. Bioenvironmental Engineering Services (BES) helps monitor the program through industrial shop surveys and is responsible for waste sampling at the request of the base DEEV.

Individual shops are responsible for identifying, segregating, handling, packaging, and labeling the wastes generated by their shop. The wastes are usually placed in a 55-gallon drum or bowser located at an accumulation site.

When wastes require disposal, the generator completes a DD Form 1348-1. This is then given to the 1776 CES/DEM representative at turn-in.

C. Procedure

The first step of the survey was to review the base's hazardous waste management plan and the Bioenvironmental Engineer's industrial shop folders to determine which shops generated chemical waste. Next, approximately 50 industrial shops were visited to observe industrial operation, discuss

Note: This report was accomplished by the Air Force Occupational and Environmental Health Laboratory (AFOEHL), which is now the Armstrong Laboratory, Occupational and Environmental Health Directorate.

chemical waste disposal practices with shop personnel, and survey forms were completed. They provided additional information for subsequent discussions with shop personnel.

The Central Hazardous Waste Storage Area and each accumulation site were visited and evaluated.

The overall Hazardous Waste Management program was discussed with the following individuals: Capt J. Cornell, Bioenvironmental Engineer; Capt Lifshitz, Chief, 1776 CES/DEEV; Sgt T. Tang, CE; and Sgt A. Achenbac, CE.

III. OBJECTIVES

- A. Identify opportunities for waste minimization.
- B. Evaluate Management of Hazardous Waste Program.

IV. SUMMARY OF WASTE DISPOSAL PRACTICES AT ANDREWS AFB

The waste disposal practices for different categories of wastes are summarized in this section. A shop-by-shop summary of disposal practices is contained in Appendix C.

1. Waste oils and fluids are accumulated in 55-gallon drums or bowsters at or near the points of generation. Once full, the drums are transported to the central accumulation point operated by base Civil Engineering (1776 CES/DEMO, Sgt Achenbach). A contractor contacts 1776 CES/DEMO weekly to pick up the waste oils and fluids.
2. Waste paints, thinners, and strippers are placed in 55-gallon drums, transported to the central accumulation site, and stored until disposal as hazardous waste through CE.
3. Soap and detergents are rinsed down the drain into the sanitary sewer. In many instances, they run into the oil/water separators before final runoff into the creeks.
4. Waste emulsifier and dye penetrant from NDI shops are drummed and disposed as hazardous waste through the base CE.
5. Waste fuels consisting of JP-4, mogas, diesel, etc., are accumulated in either 55-gallon drums or fuel bowsters at or near the shop areas. When full, the waste fuels are transported, with the supervision of the organizational hazardous waste manager, to the CE central accumulation site. The CE site manager contacts Potomac Environmental for contract disposal. It is at the discretion of Potomac Environmental if the waste fuel is used for energy recovery or reclaimed for fuel other than for energy recovery. The 89 AGS Support Equipment Shop collects waste fuels in bowsters then transports to an underground storage tank before pumping by Petroleum, Oil & Lubricants (POL) into POL yard for disposal pick up.

6. Most waste or spent batteries are turned in or swapped for new batteries at an agreed-on cost per unit basis with local vendors. The 89 MAW Battery Shop drains the NiCad cells until contractor transports them off base for disposal. The battery shop neutralizes their spent battery acid fluids before contract disposal.

V. OBSERVATIONS AND RECOMMENDATIONS

A. Lack of Unit Accountability

All hazardous waste and waste oil disposal are handled through a central contract monitored by Civil Engineering (DEEE and DEEV). Individual organizations do not have a disposal budget; therefore, there is no incentive for individual units to minimize nor is there a mechanism to detect uncontrolled increases in unit disposal.

Rec: No one has ever been successful in waste minimization without implementing a generator accountability system. Conversely, everyone who has ever implemented an accountability system has been successful at waste minimization. We recommend CE shred out disposal costs for each organization. The Environmental Protection Committee should develop a system to reward units and individuals for waste minimization.

B. Tracking the Cost of Hazardous Waste Analysis

There is no method for tracking the analysis costs for Hazardous Waste nor is there any standardized program for baseline and periodic analysis. It is common throughout the Air Force for waste analysis to equal the costs of disposal. On Andrews AFB, disposal costs approximately \$600,000 yearly. This suggests an equally significant cost for disposal.

Rec: We recommend the base prepare a Waste Analysis Plan (WAP) as required by 40 CFR 265.13. In AFR 19-11, Hazardous Waste Management and Minimization, this plan is the responsibility of Bioenvironmental Engineering Services (BES). We are able to provide further consultation to BES on this plan if necessary. Using the WAP as a guide, the base can develop a sampling and analysis plan that is comprehensive, well documented, and economical.

C. Segregated Waste Oil Disposal

The base does an excellent job of segregating some 12,000 gallons of waste oil and fluids yearly. These are disposed at a cost of \$4.50 per gallon compared to \$0.10 at most other bases. We assume the cost is higher due to the amount of waste oil generated in this region of the country versus availability of waste oil recyclers.

Rec: We recommend the base evaluate other alternatives for segregated waste oil disposal. The University of Auburn has a program where they will pick up properly segregated waste oil at little or no cost. Waste oil burners for local heating may also be an alternative. Details were previously forwarded to the base on both alternatives.

D. Waste Oil from Oil/Water Separators (OWS):

The base does not have an effective program for tracking the generation and disposal of waste oil from the OWS's. From a review of waste oil manifests, we estimate the base generates 50,000 gallons yearly at a disposal cost of \$230,000. This is excessive for a base this size.

Rec: We recommend a comprehensive program to dramatically reduce the amount of oil that goes to the OWS's. This should include securing Building 1774 to prevent unauthorized dumping of oil directly to the separator; posting notices in the shops which explain why oil should be segregated; and training the employees on segregation of oil.

E. TCLP Requirements:

There was some confusion regarding the classification of waste oil now that the new Toxicity Characteristic Leaching Procedure (TCLP) is in effect.

Rec: Appendix F provides an overview discussing when segregated waste oil can become hazardous and what analysis is required for waste oil.

F. Spreading the Word:

Andrews AFB has several excellent elements in their Hazardous Waste Management Program. It was the best program.

Rec: We recommend Civil Engineering prepare a talking paper on their program and submit it to HQ MAC/DEV/LGMW/SGPB as a training guide throughout the command. We specifically ask that they address:

- the employee training
- effectiveness of generator waste logs
- the system for tracking drums
- literature and a description of their Accumulation Storage Facilities
- their experiences with using a disposal contractor outside the DRMO system.

G. Waste Shop Rags: Some shops generated between 50-150 lbs of waste rags in a given month. Most of these shop rags are lightly saturated with oils, fluids, lubricants, and/or water.

Rec: We recommend those shops that use shop rags for heavy cleaning operations utilize, if appropriate, those lightly soiled rags from other shops. In some cases, it may be more advantageous and feasible to contract a local linen supplier for exchanging cleaning rags.

H. Citrikleen Disposal: Numerous shops across the base generated spent Citrikleen. Some shops contract the disposal of waste Citrikleen on an exchange basis. Some shops disposed via the sanitary sewer system.

Rec: Spent Citrikleen disposed through the sanitary sewer should be analyzed to determine if it is hazardous. The sludge layer needs to be sampled separately from the liquid phase. The benefit of this sampling procedure is that only the sludge segment is hazardous and would alleviate the actual cost of hazardous waste disposal due to reduced volumes of hazardous waste generated.

References

1. "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA-600/2-80-018, Jan 1980.
2. United States Environmental Protection Agency, "Identification and Listing of Hazardous Waste," Title 40 Code of Federal Regulations Part 261.
3. Occupational Safety and Health Administration, "Hazardous Waste Operations and Emergency Response," Title 29 Code of Federal Regulations, Section 1910.120.

Appendix A
Request Letter

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS MILITARY AIRLIFT COMMAND
SCOTT AIR FORCE BASE, ILLINOIS 62225-5001



REPLY TO
ATTN OF: LGMW

12 JAN 1990

SUBJECT: Request for Hazardous Waste Technical Assistance Survey

HQ MAC/SGPB *12 JAN 90*
TO: USAF OEHL/ECQ *KS*
IN TURN

1. We are extremely interested in having hazardous waste technical surveys accomplished at our MAC bases. Request your assistance in adding the following bases to your survey schedule:

Little Rock AFB AR
Kirtland AFB NM
Andrews AFB MD
Scott AFB IL
McChord AFB WA

2. We appreciate your assistance in this matter. If at all possible, accomplish this survey at Little Rock AFB at your earliest possible convenience.

3. For additional information, feel free to contact our HQ MAC/LGMWF POC SMSgt Annis, AUTOVON 576-3254.

GORDON W. SMITH, JR. Lt Col, USAF
Asst Ch, Weapon Systems Division
Dir of Maintenance Engineering

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Appendix B
Hazardous Waste Technical Assistance Survey
Shop Supervisor Interview Form

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HAZARDOUS WASTE TECHNICAL ASSISTANCE SURVEY
SHOP SUPERVISOR INTERVIEW FORM

SHOP & OFFICE SYMBOL _____ EXT _____
BUILDING _____ CONTACT _____
MISSION _____

WORKLOAD _____

<u>WASTE STREAM</u>	<u>TYPE/NSN</u>	<u>QTY/MO.</u>	<u>DISPOSAL METHOD</u>
FUEL	_____	_____	_____
7808 MOTOR OIL	_____	_____	_____
SYNTHETIC OIL	_____	_____	_____
FLUIDS (B,T,or H)	_____	_____	_____
SOLVENTS	_____	_____	_____
WASTE PAINTS (TYPE)	_____	_____	_____
THINNERS (TYPE)	_____	_____	_____
STRIPPERS (TYPE)	_____	_____	_____
SOAPS (dil ratio)	_____	_____	_____
BATTERIES	_____	_____	_____
SPEEDY DRY	_____	_____	_____
SHOP RAGS	_____	_____	_____

O/W SEPARATORS (NO.,USE,CLEANOUT FREQ & DISPOSAL) _____
(ADD INFO ON BACK AS REQ'D)

RECOMMENDATIONS _____

OTHERS

PENETRANT EMULSIFIER ANTIFREEZE CARBON REMOVER

MAG PARTICLE DEVELOPER O/W SLUDGE ACIDS

TANKS

CHEMICAL SIZE CHANGE FREQ DISPOSAL MIS.

UST'S

USE SIZE LOCATION PUMP OUT FREQ LEAK TESTED

Appendix C
Disposal Practices by Shop at Andrews AFB

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE

SHOP: 113 TFW AGE Building: 3032

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	36	REC
Oil & Fluid	90	CD
Lead Acide Batteries	90	DRMO
PD-680	120	CD
TOTAL: 336		

SHOP: 113 TFW Engine Shop Building: 3031

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Degreaser	120	CD
Oil & Fluid	420	CD
TOTAL: 540		

SHOP: 113 TFW NDI Building: 3032

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fixer	12	REC
Penetrant	60	CD
Developer	300	CD
Emulsifier	12	SS
TOTAL: 384		

SHOP: 113 TFW Pneudraulics Building: 3119

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Degreaser	180	CD
Oil & Fluid	60	CD
TOTAL: 240		

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 113 TFW Structural Maint Building: 3119

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Waste Paint	360	CD
TOTAL:		360

SHOP: 113 TFW Vehicle Maint Building: 3217

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	720	CD
Lead Acid Batteries	12	CD
TOTAL:		732

SHOP: 1361 AVS Photo Laboratory Building: 3821

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Developer	4	SS
Silver	75	DRMO
Fixer	4	SRDD
TOTAL:		79

SHOP: 1776 ABW Hobby Shop Building: 3537

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	2400	CD
Safetykleen	240	CD
Antifreeze	1200	CD
Waste Paint	300	CD
TOTAL:		4140

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 1776 ABW Golf Course Main Building: 4883

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Solvent 140	50	CD
Lead Acid Batteries	60	CD
Oil & Fluid	120	CD
TOTAL:		240

SHOP: 1776 CES Entomology Building: 3305

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	12	CD
TOTAL:		12

SHOP: 1776 TRANS Allied Trades Building: 3345

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Waste Paint	60	CD
TOTAL:		60

SHOP: 1776 TRANS Fire Truck Mai Building: 1206

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Safety Kleen	600	REC
Oil & Fluid	300	CD
Antifreeze	120	SS
TOTAL:		1020

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 1776 TRANS Gen Purpose Building: 3354

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Antifreeze	1320	SS
Oil & Fluid	1320	CD
TOTAL:		2640

SHOP: 1776 TRANS Mino. Maint Building: 3342

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	360	CD
TOTAL:		360

SHOP: 1776 TRANS Refuel Truck Building: 3257

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	1320	CD
Antifreeze	60	SS
TOTAL:		1380

SHOP: 1776 TRANS Spec Purpose Building: 3355

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Lead Acid Batteries	72	CD
Safety Kleen	600	REC
Oil & Fluid	840	CD
Antifreeze	600	SS
TOTAL:		2112

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 1776 TRANS Vehicle Maint Building: Hanger 15

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Antifreeze	60	SS
Oil & Fluid	1320	CD
TOTAL: 1380		

SHOP: 1st HELI Building: 3032

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	25	CD
Oil & Fluid	50	CD
TOTAL: 75		

SHOP: 231 CCSQ Elect/Power Pro Building: 3227

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	240	CD
TOTAL: 240		

SHOP: 231 CCSQ Vehicle Maint Building: 3227

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Antifreeze	120	SS
Oil & Fluid	500	CD
TOTAL: 620		

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 459 CAMS AGE Building: 3639

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Lead Acid Batteries	120 Batteries	DRMO
Antifreeze	240	CD
Carbon Remover	60	CD
Citrikleen	360	CD
Oil & Fluid	1440	CD
Fuel	600	REC
TOTAL:	2820	

SHOP: 459 CAMS Aero Repair Building: 3640

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
PD 680	180	CD
Citrikleen	180	CD
Oil & Fluid	60	CD
TOTAL:	420	

SHOP: 459 CAMS Fuel Systems Building: 3629

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	120	CD
TOTAL:	120	

SHOP: 459 CAMS Hydraulic Building: 3635

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Safetykleen	120	CD
Carbon Remover	360	CD
Oil & Fluid	480	CD
TOTAL:	960	

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 459 CAMS Jet Engine Building: 3635

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	12	REC
Oil & Fluid	360	CD
Citrikleen	300	SS

TOTAL: 672

SHOP: 459 CAMS NDI Building: 3640

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Developer	12	CD
Mag Particle	12	CD

TOTAL: 24

SHOP: 459 CAMS Structural Maint Building: 3640

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Naptha	60	CD
Paint Thinners	240	CD
Waste Paint	600	CD
Paint Strippers	360	CD

TOTAL: 1260

SHOP: 89 AGS Flight Line Maint Building: 1280

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	650	CD
Fuel	1200	REC

TOTAL: 1850

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 113 EMS AGE

Building: 1933

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	600	CD
Fuel	60	REC
PD-680	120	CD
TOTAL:		780

SHOP: 89 EMS Battery Shop

Building: 1714

WASTE PRODUCT	QTY	DISPOSAL
Neutrlz Electrolyte	600 GAL	CD
Ni Cad Cells	250	CD
Lead Acid Batteries	120	DRMO
TOTAL:		970

SHOP: 89 EMS Jet Engine

Building: 1932

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	600	CD
Fuel	25	REC
TOTAL:		625

SHOP: 89 EMS NDI

Building: 1791

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Penetrant	50	CD
Emulsifier	50	CD
Mag Part. Oil	60	CD
Developer	50	CD
TOTAL:		210

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: 89 EMS Pneudraulics Building: 1714

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	12	CD
PD-680	50	CD
TOTAL: 62		

SHOP: 89 EMS Structural Maint Building: 1791

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Paint Sludge	12	CD
Solvents	300	CD
Amine Stripper	240	CD
Booth Rinse Water	200	SS
Caustic Stripper	240	CD
Waste Paint	600	CD
TOTAL: 1592		

SHOP: 89 EMS Wheel & Tire Building: 1734

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
PD-680	250	CD
Citri Kleen HD	360	SS
TOTAL: 610		

SHOP: DC ANG AGE Building: 3121

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Fuel	60	CD
Oil & Fluid	180	CD
Citrikleen	120	SS
PD-680	12	CD
TOTAL: 372		

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: DC ANG Flightline Mainten Building: 1228

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	180	DRMO
Skydrol	180	CD
TOTAL:		360

SHOP: DC ANG Hydraulic Building: 1228

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Oil & Fluid	600	CD
Fuel	60	CD
TOTAL:		660

SHOP: DC ANG Structural Building: 1228

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Paint Strippers	12	CD
Waste Paint	12	CD
Paint Thinners	12	CD
TOTAL		36

SHOP: DC ANG Vehicle Maintenance Building: 3121

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Lead Acid Batteries	60 Batteries	REC
Oil & Fluid	60	CD
Antifreeze	600	CD
Fuel	240	CD
TOTAL:		960

DISPOSAL PRACTICES BY SHOP AT ANDREWS AIR FORCE BASE (Cont'd)

SHOP: DC ANG Wheel & Tire Building: 1228

WASTE PRODUCT	QTY (GAL/YR)	DISPOSAL
Solvent 140	120	CD
TOTAL:		120

Appendix D
Summary of Waste Disposal Practices
for Each Waste Category

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SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: FUEL

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
113 TFW AGE	Fuel	36	REC
DC ANG Hydraulic	Fuel	60	CD
1st HELI	Fuel	25	CD
459 CAMS AGE	Fuel	600	REC
DC ANG AGE	Fuel	60	CD
89 EMS Jet Engine	Fuel	25	REC
89 AGS Flight Line Maint	Fuel	1200	REC
459 CAMS Fuel Systems	Fuel	120	CD
DC ANG Vehicle Maintenance	Fuel	240	CD
459 CAMS Jet Engine	Fuel	12	REC
89 EMS AGE	Fuel	60	REC

TOTAL: 2438

WASTE: OIL & FLUID

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
DC ANG Vehicle Maintenance	Oil & Fluid	60	CD
231 CCSQ Electric/Power P	Oil & Fluid	240	CD
1776 TRANS Minor Maintenance	Oil & Fluid	360	CD
113 TFW Pneudraulics	Oil & Fluid	60	CD
89 EMS NDI	Mag Part. Oil	60	CD
459 CAMS Hydraulic	Oil & Fluid	480	CD
DC ANG Flightline Maintenance	Oil & Fluid	180	DRMO
1776 TRANS Fire Truck Mai	Oil & Fluid	300	CD
89 EMS AGE	Oil & Fluid	600	CD
1776 TRANS Vehicle Maint	Oil & Fluid	1320	CD
459 CAMS Jet Engine	Oil & Fluid	360	CD
89 EMS Pneudraulics	Oil & Fluid	12	CD
231 CCSQ Vehicle Maint	Oil & Fluid	500	CD
DC ANG AGE	Oil & Fluid	180	CD
459 CAMS AGE	Oil & Fluid	1440	CD
1st HELI	Oil & Fluid	50	CD
1776 ABW Golf Course Main	Oil & Fluid	120	CD
1776 TRANS Refueling Truc	Oil & Fluid	1320	CD
1776 TRANS Special Purpos	Oil & Fluid	840	CD
1776 CES Entomology	Oil & Fluid	12	CD
DC ANG Hysraulic	Oil & Fluid	600	CD
1776 ABW Auto Hobby	Oil & Fluid	2400	CD
89 EMS Jet Engine	Oil & Fluid	600	CD
89 AGS Flight Line Maint	Oil & Fluid	650	CD
459 CAMS Aero Repair	Oil & Fluid	60	CD
113 TFW Engine Shop	Oil & Fluid	420	CD
1776 TRANS General Purpos	Oil & Fluid	1320	CD
113 TFW Vehicle Maintenance	Oil & Fluid	720	CD
113 TFW AGE	Oil & Fluid	90	CD

TOTAL: 15354

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: PD-680

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
89 EMS Wheel & Tire	PD-680	250	CD
DC ANG AGE	PD-680	1	CD
459 CAMS Aero Repair	PD-680	180	CD
89 EMS AGE	PD-680	120	CD
113 TFW AGE	PD-680	120	CD
89 EMS Pneudraulics	PD-680	50	CD
TOTAL:		721	

WASTE: CITRIKLEEN

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
459 CAMS Jet Engine	Citrikleen	300	SS
459 CAMS AGE	Citrikleen	360	CD
DC ANG AGE	Citrikleen	120	SS
89 EMS Wheel & Tire	Citrikleen HD	360	SS
459 CAMS Aero Repair	Citrikleen	180	CD
TOTAL:		1320	

WASTE: SAFETY KLEEN

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
1776 TRANS Special Purpos	Safety Kleen	600	REC
1776 TRANS Fire Truck Mai	Safety Kleen	600	REC
459 CAMS Hydraulic	Safety Kleen	120	CD
1776 ABW Auto Hobby	Safety Kleen	240	CD
TOTAL:		1560	

WASTE: NEUTRALIZED ELECTROLYTE

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
89 EMS Battery Shop	Neutrliz Electrolyte	600	CD
TOTAL:		600	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: NI CAD CELLS

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
89 EMS Battery Shop	Ni Cd Cells	250	CD
TOTAL:		250	

WASTE: NDI AND PHOTO LAB

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
113 TFW NDI	Developer	300	CD
89 EMS NDI	Emulsifier	50	CD
113 TFW NDI	Penetrant	60	CD
89 EMS NDI	Developer	50	CD
89 EMS NDI	Penetrant	50	CD
113 TFW NDI	Fixer	12	REC
1361 AVS Photo Laboroary	Developer	4	SS
459 CAMS NDI	Developer	12	CD
113 TFW NDI	Emulsifier	12	SS
1361 AVS Photo Laboratory	Fixer	4	SRDD
459 CAMS NDI	Mag Particle	12	CD
1361 AVS Photo Laboratory	Silver	75	DRMO
TOTAL:		641	

WASTE: LEAD ACID BATTERIES

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
DC ANG Vehicle Maintenanc	Lead Acid Batteries	60	REC
113 TFW AGE	Lead Acid Batteries	90	DRMO
1776 TRANS Special Purpos	Lead Acid Batteries	72	CD
459 CAM AGE	Lead Acid Batteries	120	DRMO
1776 ABW Golf Course Main	Lead Acid Batteries	60	CD
113 TFW Vehicle Maintenan	Lead Acid Batteries	12	CD
89 EMS Battery Shop	Lead Acid Batteries	120	DRMO
TOTAL:		534	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: ANTIFREEZE

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
459 CAMS AGE	Antifreeze	240	CD
1776 TRANS Refueling Truc	Antifreeze	60	SS
DC ANG Vehicle Maintenanc	Antifreeze	600	CD
1776 TRANS Fire Truck Mai	Antifreeze	120	SS
1776 ABW Auto Hobby	Antifreeze	1200	CD
1776 TRANS Special Purpos	Antifreeze	600	SS
1776 TRANS Vehicle Maint	Antifreeze	60	SS
231 CCSQ Vehicle Maint	Antifreeze	120	SS
1776 TRANS General Purpos	Antifreeze	1320	SS
TOTAL:		4320	

WASTE: CARBON REMOVER

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
459 CAMS AGE	Carbon Remover	60	CD
459 CAMS Hydraulic	Carbon Remover	360	CD
TOTAL:		420	

WASTE: WASTE PAINT

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
DC ANG Structural	Waste Paint	12	CD
89 EMS Structural Maint	Waste Paint	600	CD
113 TFW Structural Maint	Waste Paint	360	CD
1776 ABW Auto Hobby	Waste Paint	300	CD
459 CAMS Structural Maint	Waste Paint	600	CD
1776 TRANS Allied Trades	Waste Paint	60	CD
TOTAL:		1932	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: PAINT THINNERS

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
459 CAMS Structural Maint	Paint Thinners	240	CD
DC ANG Structural	Paint Thinners	12	CD
89 EMS Structural Maint	Solvents	300	CD
TOTAL:		552	

WASTE: PAINT SLUDGE

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
89 EMS Structural Maint	Paint Sludge	12	CD
TOTAL:		12	

WASTE: RINSE WATER

SHOP	WASTE	QTY(GAL/YR/	DISPOSAL
89 EMS Structural Maint	Booth Rinse Water	200	SS
TOTAL:		200	

WASTE: STRIPPER

SHOP	WASTE	QTY(GAL/YR/	DISPOSAL
459 CAMS Structural Maint	Paint Stripper	360	CD
89 EMS Structural Maint	Amine Stripper	240	CD
DC ANG Structural	Paint Stripper	12	CD
89 EMS Structural Maint	Caustic Stripper	240	CD
TOTAL:		852	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: DEGREASER

SHOP	WASTE	QTY (GAL/YR/	DISPOSAL
113 TFW Engine Shop	Degreaser	120	CD
DC ANG Wheel & Tire	Solvent 140	120	CD
1776 ABW Golf Course Main	Solvent 140	60	CD
113 TFW Pneudraulics	Degreaser	180	CD
TOTAL:		480	

WASTE: NAPHTHA

SHOP	WASTE	QTY (GAL/YR/	DISPOSAL
459 CAMS Structural Maint	Naptha	60	CD
TOTAL:		60	

WASTE: SKYDROL

SHOP	WASTE	QTY (GAL/YR/	DISPOSAL
DC ANG Flightline Mainten	Skydrol	180	CD
TOTAL:		180	

Appendix E
Master List of Shops

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MASTER LIST OF SHOPS

SHOP	CONTACT	BUILDING	PHONE NUMBER
<u>89 EMS</u>			
AGE	TSgt Buckmon	1933	981-5563
Structural Maintenance	MSgt Walker	1791	981 5603
NDI	SSgt Homon	1791	981-5607
Pneudraulics	SSgt Yashur	1714	981-3596
Battery	Mr Coulter	1714	981-5591
Wheel and Tire	SSgt Conner	1734	981-2470
Jet Engine	TSgt Pratt	1932	981-5366
<u>89 AGS</u>			
Flightline Support	TSgt Geary	1280	981-6522
<u>1st Heli</u>	SSgt Kyle	1914	981-5812
<u>MGMC</u>			
Facilities Management	Mr Haynes	1050	981-5302
<u>231 CMBTCS</u>			
Vehicle Maintenance	MSgt Phillips	3227	981-4050
Electric Power Production	SMSgt Griggs	3227	981-3166
<u>1776 Transportation</u>			
Fire Truck Maintenance	Mr Umphries	1206	981-2530
Refueling Truck Maintenance	Mr Umphries	3257	981-2493
Base Vehicle Maintenance	TSgt Kontich	Hgr 15	981-3086
Allied Trades	Mr Furman	3345	981-3367
Minor Maintenance	Mr Volack	3342	981-6442
General Purpose	Mr Browning	3354	981-6210
Special Purpose	Mr Young	3355	981-4554
<u>113 TFW</u>			
Pneudraulics	MSgt Childress	3119	981-9739
Structural Maintenance	TSgt Swann	3119	981-2748
Vehicle Maintenance	SMSgt Hill	3217	981-4542
NDI	SSgt Davis	3032	981-5396
AGE	MSgt Kirin	3032	981-3303
Engine Shop	SMSgt Thornburg	3031	981-4432
<u>1361 AVS</u>			
Photo Lab	SSgt Wiseman	3821	981-5776
<u>459 CAMS</u>			
NDI	Mr Schofield	3640	981-6070
AGE	Mr Bell	3639	981-3280
Jet Engine	Mr Bowen	3635	981-3570
Hydraulic	Mr Mauger	3635	981-2620
Fuel Systems	Mr Geen	3629	981-6301
Aero Repair	Mr Bandzerewicz	3640	981-3720
Structural Maintenance	Mr Vanada	3640	981-5196

MASTER LIST OF SHOPS

SHOP	CONTACT	BUILDING	PHONE NUMBER
<u>1776 CES</u>			
Entomology	TSgt Atkinson	3305	981-5548
<u>1776 ABW</u>			
Golf Course Maintenance	Mr Pierre	4883	981-4208
Auto Hobby	Mr Whittington	3537	981-3917
<u>DCANG</u>			
Vehicle Maintenance	TSgt Wall	3121	981-4349
AGE	MSgt Sheppard	3121	981-4349
Hydraulics	SSgt Yarborough	1228	981-3921
Wheel and Tire	Sgt Buckle	1228	981-3114
Structural	MSgt Bishop	1228	981-3643
Flightline Maintenance	CMSgt Garofalo	1225	981-5275

Distribution List

	Copies
HQ AFSC/SGPB Andrews AFB DC 20334-5000	1
HQ USAF/SGPA Bolling AFB DC 20332-6188	1
HQ MAC/SGPB Scott AFB IL 62225-5001	2
HQ MAC/DEV Scott AFB IL 62225-5001	1
AAMRL/TH Wright-Patterson AFB OH 45433-6573	1
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Defense Technical Information Center (DTIC) Cameron Station Alexandria VA 22304-6145	2
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Malcolm Grow Med Center/SGPB Andrews AFB MD 20331-5300	2
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HSD/XA Brooks AFB TX 78235-5000	1