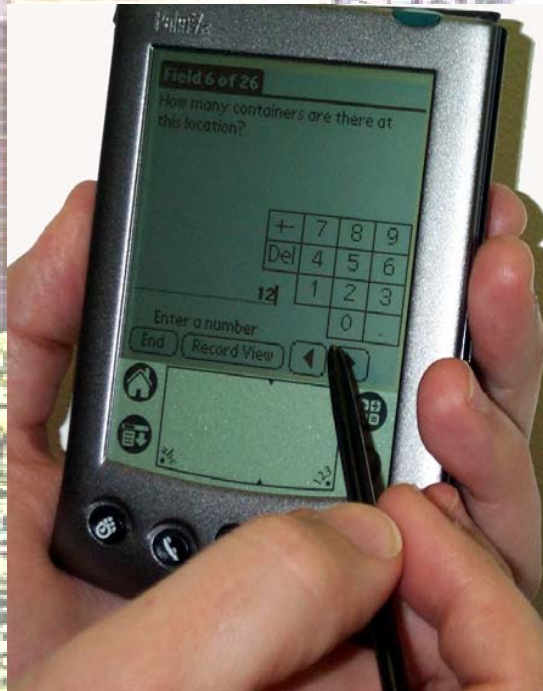


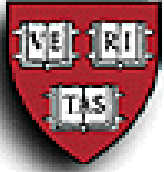
# PDA Captured Data - EHS Database Integration & Analysis



Presented by:

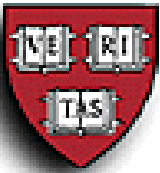
Sean Reagan, Harvard EH&S

Chris Centrella, Harvard EH&S



# Background

- ◆ **Harvard HW program info/metrics**
  - over 30,000 personnel/staff/students
  - over 1,700 labs
  - over 1,000 HW storage areas (satellite & main)
- ◆ **EH&S HW Operational Services (~4 FTEs)**
  - Waste Pickup Service, Monthly SAA Inspections, Weekly MAA Inspections
- ◆ **PDA HW Inspection Program initiated in 1996**
  - Fume Hoods, Ergonomics, Biosafety, ER



# The PDA Inspection Process

<input type="checkbox"/> Lab coats/gowns	<input type="checkbox"/> Disposable gloves	<input type="checkbox"/> Respirators (List type)
<input type="checkbox"/> Goggles with side/temple shields	<input type="checkbox"/> Utility Gloves	
<input type="checkbox"/> Safety glasses	<input type="checkbox"/> Hearing protection	
<input type="checkbox"/> Face shield		
<b>Emergency Procedures</b>		
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Staff has been trained and is capable of handling biological spills.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Concentrated disinfectants and paper towels are available (at a convenient location) in the laboratory.	
<b>Laboratory Work Practices</b>		
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Staff are forbidden to eat, drink, store food, apply make-up (including lip balm), insert contact lenses, etc., in the lab.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Mechanical pipetting devices are in use; mouth pipetting is forbidden.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Work surfaces are wiped down with disinfectant at the end of work and after spills. The following disinfectants are used and their dilutions are:	
<b>BL-2</b>		
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	Doors to the lab are kept closed when BL-2 experiments are in progress.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	If a work surface cover is used it is discarded when dirtied or contaminated.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	If potentially infectious materials are centrifuged, safety containment cups or sealed rotors with O-rings are available for use.	
<b>University Policies</b>		
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<b>Chemical Hygiene Plan</b> has been adopted and is easily accessible.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<b>Emergency Response Flipchart</b> has been customized for lab-specific issues and is easily accessible.	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	University Policy regarding the use and disposal of <b>sharps</b> (e.g. hypodermic needles, scalp blades, Pasteur pipettes) has been adopted and is easily accessible.	

## Inspection Criteria



## Collect Data



## Distribute/Analyze Reports

CONFIDENTIAL

### Hazardous Waste Storage Assessment Report

Dec. 2001

Total # of Containers Inspected:  Total # of Exceptions Observed:  Exception Score:

**HAZARDOUS WASTE STORAGE EVALUATION CRITERIA**

	Labeling Issues				Container Management				
	Unlabeled Containers	Humal Box Not Checked	Humal Box Checked	Waste Not Made in Work	Improper Secondary Container	Inadequate Container Conditions	Improper Closure of Containers	Inadequate Segregation of Incompatibles	Improper Storage Vials/ Chemicals/ Waste
Number of Exceptions	2	0	1	2	0	0	0	0	0
Running Total Exceptions	30	27	19	20	16	4	16	5	10

DEPT      EXCEPTIONS TREND

Key:  
 0 - No Exceptions  
 1-9 - Minimal Exceptions  
 10 or above - Exceedance of Immediate Action Threshold

This graph tracks the monthly Exception Scores for your area over the past twelve months. Exception scores are calculated as follows: (Total # of exceptions of containers) x 1000. EHSIS has established an Exception Score Action Threshold of 10 as a means to assist you in determining the relative levels of compliance action necessary. If your Exception Score exceeds this action threshold, EHSIS recommends communicating the exceptions and necessary corrective actions to affected personnel as one way of improving continuous compliance.

Please note that the goal for all operating areas is to yield a 0 Exception Score or 100% compliance. As such a score below 10 does not necessarily indicate acceptable performance. EHSIS utilizes this data University-wide to identify and implement program improvement (e.g. training program and on page 0001/0002, etc.). Department should use this data to improve the compliance of their local area operations.



# Graphical Summary Report

## Hazardous Waste Storage Assessment Report

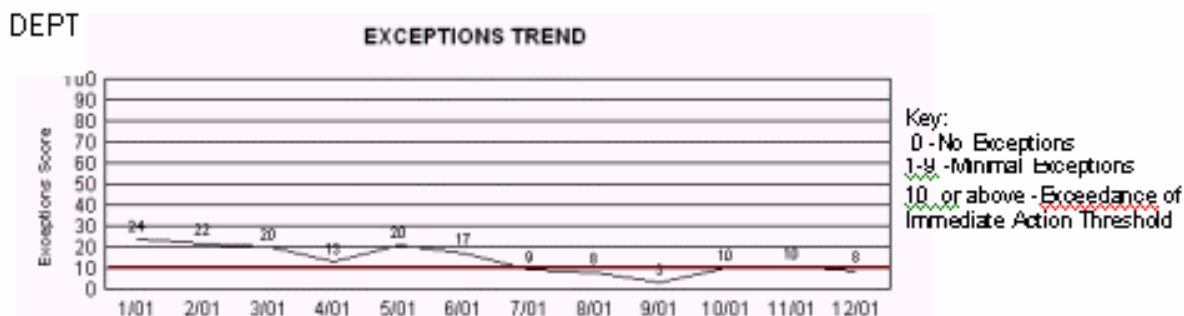
CONFIDENTIAL

Dec, 2001

Total # of Containers Inspected  Total # of Exceptions Observed  Exception Score:

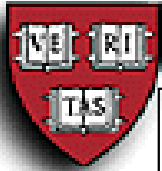
### HAZARDOUS WASTE STORAGE EVALUATION CRITERIA

	Labeling Issues				Container Management				
	Unlabeled Containers	Hazard Box Not Checked	Incorrect Hazard Box Checked	Waste Not Marked in Words	Improper Secondary Containment	Inadequate Container Conditions	Improper Closure of Containers	Inadequate Segregation of Incompatibles	Improper Storage of Virgin Chemicals/Waste
Number of Exceptions	2	0	1	2	0	0	0	0	0
Running Total Exceptions	30	27	19	20	16	4	16	5	10



This graph tracks the monthly Exception Scores for your area over the past twelve months. Exception scores are calculated as follows:  $(\# \text{ of exceptions} / \# \text{ of containers}) \times 100$ . EH&S has established an Exception Score Action Threshold of 10 as a means to assist you in determining the relative levels of corrective action necessary. If your Exception Score exceeds this action threshold, EH&S recommends communicating the exceptions and necessary corrective actions to affected personnel as one way of improving continuous compliance.

Please note that the goal of all operating areas should be '0' Exceptions Score or 100% compliance. As such, a score below 10 does not necessarily indicate acceptable performance. EH&S utilizes this data University-wide to identify and implement program improvements (e.g. training program and web page modifications, etc.) Departments should use this data to improve the compliance of their local area operations.



# Department Tracking Report

## School/Department Detail Report

Apr, 2004

Department	----- Running 12 Month Totals -----			----- Current Month Totals -----			
XXXXXX	Containers	Exceptions	Exceptions Score	Containers	Exceptions	Exceptions Score	Exception Indicator
<b>PI's</b>	9	0	0	0	0	0	=
<b>PI Name</b>	216	8	4	17	2	12	-
	12	0	0	1	0	0	=
	0	0	0	0	0	0	=
	50	10	20	4	0	0	+
	0	0	0	0	0	0	=
	215	3	1	12	0	0	+
	79	13	16	12	3	25	-
	30	9	30	1	0	0	+
	88	7	8	4	0	0	+
	90	19	21	11	1	9	+
	21	2	10	0	0	0	+
	142	4	3	11	0	0	+
	0	0	0	0	0	0	=
	41	0	0	3	0	0	=
	6	0	0	0	0	0	=
	110	8	7	9	0	0	+
	16	0	0	0	0	0	=
	4	0	0	0	0	0	=
	297	55	19	36	8	22	-
	71	1	1	0	0	0	+
	43	3	7	18	3	17	-
<b>Totals</b>	<b>1,540</b>	<b>142</b>	<b>9</b>	<b>139</b>	<b>17</b>	<b>12</b>	

This report tracks the 12 month rolling performance of Department PI(s)/Manager(s) and compares it to the present month's compliance performance. This report is designed to assist Lab Directors and Administrative Managers to identify areas in their operations where the most improvement is necessary, as well as help EH&S to target its assistance efforts.

The Exception Indicator serves as a Trend Indicator

"+" indicates that this PI/Manager's performance score for this month is better than his/her 12 month average.

"-" indicates that this PI/Manager's performance score for this month is worse than his/her 12 month average.

"=" indicates that this PI/Manager's performance score for this month is equal to his/her 12 month average.



# Room Detail Report

<ul style="list-style-type: none"> <li><input type="checkbox"/> School Of Public Health</li> <li><input type="checkbox"/> Cancer Biology</li> <li><input type="checkbox"/> Center for Cancer Preventio</li> <li><input type="checkbox"/> Endotoxin Research</li> <li><input type="checkbox"/> Environmental Health</li> <li><input type="checkbox"/> Immunology and Infectious</li> <li><input checked="" type="checkbox"/> Nutrition</li> <li><input type="checkbox"/> Occupational Health</li> <li><input type="checkbox"/> Physiology</li> <li><input type="checkbox"/> Respiratory</li> <li><input type="checkbox"/> SPH Facilities</li> <li><input type="checkbox"/> Toxicology</li> <li><input type="checkbox"/> Tropical Public Health</li> </ul>	<p><b>Room</b> 245</p> <p><b>Date</b> April 13, 2004 1:32 pm</p> <p><b>PI</b></p> <p><i>Comment:</i> No corrections needed</p> <p><i>Corrective Actions</i></p>	9	<b>Containers Inspected</b>	
		0	<b>Violation(s) Found</b>	
	<p><b>Room</b> 257</p> <p><b>Date</b> April 13, 2004 1:30 pm</p> <p><b>PI</b></p> <p><i>Comment:</i> No corrections needed</p> <p><i>Corrective Actions</i></p>	14	<b>Containers Inspected</b>	
		0	<b>Violation(s) Found</b>	
	<p><b>Room</b> 353</p> <p><b>Date</b> April 13, 2004 1:29 pm</p> <p><b>PI</b></p> <p><i>Comment:</i> No corrections needed</p> <p><i>Corrective Actions</i></p>	2	<b>Containers Inspected</b>	
		0	<b>Violation(s) Found</b>	
	<p><b>Room</b> 361</p> <p><b>Date</b> April 13, 2004 1:28 pm</p> <p><b>PI</b></p> <p><i>Comment:</i> No corrections needed</p> <p><i>Corrective Actions</i></p>	6	<b>Containers Inspected</b>	
		0	<b>Violation(s) Found</b>	
	<p><b>Room</b> 365</p> <p><b>Date</b> April 13, 2004 1:28 pm</p> <p><b>PI</b></p> <p><i>Comment:</i> No corrections needed</p> <p><i>Corrective Actions</i></p>	1	<b>Containers Inspected</b>	
		0	<b>Violation(s) Found</b>	
	<b>Assessment Summary</b>			
	<b>Report Totals</b>	<b>Containers Inspected:</b>	<b>32</b>	<b>Total Violations: 0</b>
	<b>Unlabeled Containers</b>	<b>0</b>	<b>Improper Secondary Containment</b>	<b>0</b>
	<b>Hazard Box Not Checked</b>	<b>0</b>	<b>Inadequate Container</b>	<b>0</b>
	<b>Incorrect Hazard Box Checked</b>	<b>0</b>	<b>Improper Closure of Containers</b>	<b>0</b>
	<b>Waste not Marked in Words</b>	<b>0</b>	<b>Inadequate Segregation of Chemicals</b>	<b>0</b>
			<b>Improper Storage of Virgin Chemicals/Waste</b>	<b>0</b>



# Report Generator

Inspection Management System

File Reports Locations Utilities Admin Help

- ⊕ Art Museums
- ⊕ FAS
- ⊕ Graduate School of Design
- ⊕ Graduate School of Education
- ⊕ Harvard Business School
- ⊕ Harvard Divinity School
- ⊕ Harvard Law School
- ⊕ Harvard Medical School
- ⊕ HPRE Commercial
- ⊕ HPRE Residential
- ⊕ HUPD
- ⊕ Kennedy School of Government
- ⊕ NERPC
- ⊕ Radcliffe Institute
- ⊕ School Of Public Health
- ⊕ University Health Services
- ⊕ UOS

**Manager**

**Recent Inspections**

**Report: SAA Graphical**

Action Items: Double Click to edit					
Building	Room	Date	Action	Respon...	Completed
Gordon McKey La...	122a-closet	03/31/04	Inaccessi...		
Lyman	130	03/31/04	Inaccessi...		
Gordon McKey La...	222	03/31/04	Inaccessi...		
Lyman	23	03/31/04	Inaccessi...		
Cruft	311	03/31/04	Inaccessi...		
Biological Laborat...	4018	03/22/04	Inaccessi...		
D	512	04/20/04	EHS alert...		
Lyman	B-31	03/31/04	Inaccessi...		
Cruft	B23	03/31/04	Inaccessi...		
Gordon McKey La...	clean rm-bsmnt.	03/31/04	Inaccessi...		
HPPS	Outside Shed	03/01/04	Inaccessi...		
HPPS	Outside Shed	04/07/04	Inaccessi...		
HPPS	Outside Shed	03/02/04	Inaccessi...		
219 Western Ave	Range	03/01/04	Inaccessi...		
219 Western Ave	Range	03/02/04	Inaccessi...		
219 Western Ave	Range	04/07/04	Inaccessi...		



# Data Analysis - 3 Yr Trends

- ◆ Inspected over 100,000 containers
- ◆ Avoided significant potential \$\$
- ◆ Improved compliance scores by 45%
- ◆ Issues with Labelling - Hazard Box designation
- ◆ Issues with Communication



# EHS Hazardous Waste Website

**HARVARD UNIVERSITY** UNIVERSITY OPERATIONS SERVICES

Harvard Home Customer Work Request Paging System Advisory

UOS HOME Campus Services Environmental Health & Safety UOS Information Reports & Documents Online Training Transportation

SEARCH IN Environmental Health & Safety FOR  GO

Environmental Health & Safety Our Service Approach Program Areas Training

**HAZARDOUS WASTE - Program Areas - Environmental Affairs - Environmental Health & Safety**

**Environmental Health & Safety**

- About Us
- Radiation Safety
- Environmental Affairs
- Safety
- Industrial Hygiene
- Biosafety
- Pest Control
- Online Resources



Hazardous wastes are generated by various University operations including lab research, building operation and maintenance, as well as construction projects. Typical hazardous wastes include spent solvents, acids and bases, heavy metal substances (e.g. mercury or lead containing), paints, oils, and chemical spill clean-up materials.

To ensure that your workplace is safe and adequately protective of the environment, University personnel must ensure that hazardous wastes they generate are properly managed. Proper management of hazardous waste includes:

- Correctly identifying wastes as hazardous
- Storing wastes in a properly labelled and closed container
- Adequately segregating waste containers and ensuring secondary containment to reduce spills
- Performing weekly visual inspection of waste areas
- Ensuring the timely removal from operating areas through EH&S waste pick-up service

**General Hazardous Waste Program Information**

- [Harvard University Hazardous Waste Program Supervisor's Reference Manual](#)
- [Hazardous Waste Responsibilities Matrix - Understand Your Role](#)
- [University Operations/Laboratory Hazardous Waste General Fact Sheet](#)
- [Frequently Asked Questions for Laboratories and Building Operations](#)
- [Hazardous Waste Picture Guide](#)
- [Tips for Laboratory Waste/Cost Minimization](#) (Also, refer to the [Pollution Prevention section](#))

**Hazardous Waste Training**

- [Classroom Training Schedule](#)
- [Web-Based Hazardous Waste Training](#) (For Laboratories and University Operations. Requires Harvard ID and password)

**Hazardous Waste Identification**

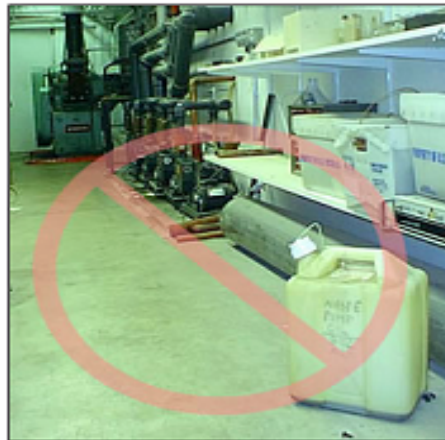
- [EPA/DEP List of Hazardous Waste](#)
- [EPA/DEP Toxicity Characteristic Table \(TCLP\)](#)



# HW Storage Picture Guide

## Poor Practice

These hazardous waste containers are not stored within a bin or secondary containment device. In the event of an accidental spill or leak from the container, a bin ensures secondary containment and an impervious storage surface for hazardous waste. Bins are available through most area stockrooms or safety suppliers.



## Good Practice

These containers are properly stored within or on a secondary containment bin. Secondary containment provides an impervious surface in the event of a leak or spill. They are available through most area stockrooms or safety suppliers.





# HW Services Request System

**HARVARD UNIVERSITY** UNIVERSITY OPERATIONS SERVICES

Harvard Home Customer Work Request Paging System Advisory

UOS HOME Campus Services Environmental Health & Safety UOS Information Reports & Documents Online Training Transportation


SEARCH IN Environmental Health & Safety FOR

Our Service Approach Program Areas Training

**HAZARDOUS WASTE PICKUP / SERVICES REQUEST FORM** - Environmental Affairs - Environmental Health & Safety

**Environmental Health & Safety**

- About Us
- Radiation Safety
- Environmental Affairs
- Safety
- Industrial Hygiene
- Biosafety
- Pest Control
- Online Resources

 Please Note: To request *radioactive* or *biological* waste pickups or assistance, please contact appropriate campus service provider:

- Cambridge Radiological and Biological Waste Pickup: 495-2345
- Longwood Radiological Waste Pickup: 432-2250
- Harvard Medical School Pickup: 432-1901
- Harvard School of Public Health Pickup: 432-1152 or 432-4270

Fill out the Hazardous Waste Pickup/Services Request Form below for:

- Requesting hazardous waste pickup/removal from your area
- Requesting hazardous waste supplies (i.e. labels, signs, etc)
- Obtaining technical assistance pertaining to sink disposal, waste identification, compliance, etc.

\* Denotes Required Fields

* Name	<input type="text"/>
* E-Mail Address (for request verification)	<input type="text"/>
* Telephone Number	<input type="text"/>
* Campus	<input type="radio"/> Cambridge/Allston <input type="radio"/> Longwood
* Operation	<input type="radio"/> Laboratory <input type="radio"/> Building / Facilities Operations
* Department	<input type="text"/>
Principal Investigator or Supervisor	<input type="text"/>
* Building	NONE <input type="button" value="v"/>
* Waste Pickup Location (room number or area/location)	<input type="text"/>
* Select One or More of the Hazardous Waste Services	<input type="checkbox"/> Hazardous Waste Pickup Request <input type="checkbox"/> Hazardous Waste Supplies Request <input type="checkbox"/> Technical Assistance



# HW Labeling Reference System

The screenshot shows the Harvard University Environmental Health & Safety website. The top navigation bar includes links for Home, Customer Work Request, Paging System, and Advisory. The main navigation menu lists UOS HOME, Campus Services, Environmental Health & Safety, UOS Information, Reports & Documents, Online Training, and Transportation. A search bar is set to 'Environmental Health & Safety'. The left sidebar contains links for About Us, Radiation Safety, Environmental Affairs, Safety, Industrial Hygiene, Biosafety, Pest Control, and Online Resources. The main content area is titled 'HAZARDOUS WASTE LABELING REFERENCE TOOL - Environmental Affairs - Environmental Health & Safety'. It features a search box with 'Sodium Hydroxide' entered, and 'Search' and 'Reset' buttons. Below the search box is an 'Introduction' section and an 'Instructions' section. A sample hazardous waste label is shown on the left, with a red box highlighting the 'HAZARDS' section. An arrow points to this section with the text '\* HAZARD BOX DESIGNATION'. The 'HAZARDS' section includes checkboxes for Ignitable/Flammable, Corrosive, Oxidizer, and Toxic/Poison, along with a field for 'OTHER (SPECIFY)'. The label also includes a 'CONTENTS' section with a list of components and a 'DATE' field.

**Chemical Waste Name or Mixture Component:**  
Sodium Hydroxide

**Search** **Reset**

**Introduction**

This reference tool is designed to assist laboratory and other personnel to accurately label their chemical hazardous wastes. Specifically, this tool provides you with the appropriate HAZARDS to be checked off on Harvard's Hazardous Waste Label.

**Instructions**

Type in the chemical waste name or mixture component in the search box above. Use full chemical name or part of chemical name (e.g. acetone). Do not type in formulas or abbreviations. The search engine will find your waste (and/or matches).

**For additional container management guidance:**

[Harvard Hazardous Waste Label](#)

[Lab and Building Operations: Guidelines for Sink/Drain Disposal](#)

**\* HAZARD BOX DESIGNATION**



# HW Labeling Reference System

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SEARCH IN Environmental Health & Safety FOR  GO

Our Service Approach Program Areas Training

**HAZARDOUS WASTE LABELING REFERENCE TOOL -**  
Environmental Affairs - Environmental Health & Safety

**Search Results:**

[Printer Friendly Version of Results](#)

Total of **58 records** of '**Sodium Hydroxide**' were found. If you have any questions or comments regarding the results, please send an e-mail to the [Hazardous Waste Reference Tool Administrator](#).

*If chemical has "PROHIBITED \*" in "Sink Disposal" column, please refer to the [Sink Disposal Guide for Laboratories and Building Operations](#) for additional information.*

Chemical Waste	Hazard Box Designation	Sink Disposal	Additional Info
Sodium hydroxide / Methylene chloride	Corrosive, Toxic	PROHIBITED *	Corrosive- The pH must be < 2 or >12
Sodium hydroxide / Ethyl acetate	Corrosive, Ignitable	PROHIBITED *	Corrosive- The pH must be < 2 or >12
Sodium hydroxide / Tetrahydrofuran	Corrosive, Ignitable	PROHIBITED *	Corrosive- The pH must be < 2 or >12
Tetrahydrofuran / Sodium hydroxide / Dichloromethane	Ignitable, Corrosive, Toxic	PROHIBITED *	Corrosive- The pH must be < 2 or >12
Potassium permanganate / Sodium hydroxide	Oxidizer, Corrosive	PROHIBITED *	Corrosive- The pH must be < 2 or >12
Sodium hydroxide / Sodium fluoride	Corrosive, Toxic	PROHIBITED *	Corrosive- The pH must be < 2 or >12

**Environmental Health and Safety**



# Standard Harvard HW Label

## CONTAINER LABELING

*Poor Practice*

REFER TO LABELING INSTRUCTIONS ON REVERSE SIDE **C** 08062

### HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.

**CONTENTS**  
USE FULL CHEMICAL NAME  
NO FORMULAS OR ABBREVIATIONS

1. ETOH % \_\_\_\_\_  
2. H<sub>2</sub>O % \_\_\_\_\_  
3. \_\_\_\_\_ % \_\_\_\_\_  
4. \_\_\_\_\_ % \_\_\_\_\_

**HAZARDS** (SEE REVERSE SIDE)

IGNITABLE/FLAMMABLE     OXIDIZER  
 CORROSIVE                 TOXIC/POISON  
 OTHER (SPECIFY) \_\_\_\_\_

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Building \_\_\_\_\_ Room No. \_\_\_\_\_  
PI/Manager \_\_\_\_\_  
Phone \_\_\_\_\_

Hazardous Waste is

- 90% Ethanol
- 10% Water

Formulas have been used instead of chemical names. In addition approximate % should be included.

Hazard box has not been checked. Use the [HW characteristic labeling reference tool](#) for assistance.

*Good Practice*

REFER TO LABELING INSTRUCTIONS ON REVERSE SIDE **C** 08062

### HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.

**CONTENTS**  
USE FULL CHEMICAL NAME  
NO FORMULAS OR ABBREVIATIONS

1. Ethanol % 90  
2. Water % 10  
3. \_\_\_\_\_ % \_\_\_\_\_  
4. \_\_\_\_\_ % \_\_\_\_\_

**HAZARDS** (SEE REVERSE SIDE)

IGNITABLE/FLAMMABLE     OXIDIZER  
 CORROSIVE                 TOXIC/POISON  
 OTHER (SPECIFY) \_\_\_\_\_

MARK DATE WHEN FULL OR READY FOR PICK UP

DATE 01 / 13 / 2004

Building \_\_\_\_\_ Room No. \_\_\_\_\_  
PI/Manager \_\_\_\_\_  
Phone \_\_\_\_\_