

APPENDIX B: HAZARDOUS MATERIALS MANUAL

Purpose

The purpose of this policy is to provide University faculty, staff, and students with guidance in the safe and proper storage, handling and disposal of Hazardous Materials. While this document does not cover all regulatory requirements concerning the handling storage and disposal of hazardous materials, it provides the basic information necessary for most laboratories or chemical use areas to comply with applicable regulations. Additional information is available in the references listed in *Appendix F*. Contact Environmental Health and Safety (EH&S) for help in accessing the references.

Definition of Hazardous Materials

A hazardous material is a substance, which is capable of producing harmful physical or health effects. Harmful physical effects include: fire, sudden release of pressure, explosion, and other violent reactions. Harmful health effects include: acute conditions and chronic conditions. Acute conditions develop soon after an over-exposure to hazardous materials and include: burns, rashes, respiratory distress, convulsions, and possibly even death. Chronic conditions develop after long term exposure to hazardous materials and include; cancers, nervous system disorders, and damage to other organ systems.

Classification of Hazardous Materials

In order to safely handle and store hazardous materials, it is important to know the hazards. The hazards of most materials fall into one or more of the following classifications:

Flammable Liquid. Any liquid having a flash point below 100°F (37.8°C); i.e., at 100°F or less the liquid produces enough vapors to ignite if exposed to an ignition source.

Combustible Liquid. Any liquid which has a flash point between 100 and 200°F (37.8-93.3°C).

Flammable Solid. A substance that can cause a fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, will burn so vigorously that it creates a hazard e.g. sodium borohydride, coal, etc.

Oxidizer. A substance that readily yields oxygen or other electron acceptor to stimulate the combustion of organic matter (fuel) e.g. nitrates, permanganates, etc.

Corrosive. A liquid that corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 in.) per year at a test temperature of 130°F (55°C) or has a pH less than 2 or greater than 12.5 e.g. acids, bases, anhydrides, etc.

Organic Peroxide. An organic compound containing the chemical bond -O-O- (oxygen joined to oxygen).

Poison. A substance so toxic that it presents a risk to life or health.

Explosive. Any chemical compound, mixture or device that reacts or decomposes with substantial instantaneous release of gas and heat.

Compressed Gas. A substance in gas or liquid form contained in a vessel under pressure. This includes cylinders, lecture bottles, and aerosol cans. These substances may be flammable, non-flammable, or poisonous.

Cryogenics. Substances which are extremely cold such as liquid nitrogen, liquid helium and dry ice. These

substances may also become asphyxiation hazards if spilled in non-ventilated areas.

Radioactive. Any material that emits radiation including solid waste, liquid waste, and scintillation materials. Solid waste includes contaminated glassware, plastic ware, paper, gels, animal carcasses, and plant tissue. Liquid waste includes materials readily soluble in water or material dissolved in organic solvents. Scintillation materials include toluene-based and water miscible cocktails as well as scintillation vials containing them. See the [FAU Radiation Safety Manual](#) for specific information on the generation and proper disposal of radioactive material.

Biomedical/Biohazards. Biological agents and materials which are potentially infectious to humans, animals, or plants. Any hazard arising from inadvertent human biological processes (e.g. accidental inoculation, needle stick injury).

Hazardous Materials Training Requirements

Laboratory personnel working with any of the mentioned hazardous materials must receive Laboratory Safety Training. **EH&S** provides general Laboratory Safety Training. The Principal Investigator or Lab Manager is responsible for training other lab personnel about specific hazards and Standard Operating Procedures in their areas. Federal and State regulations may require other training, such as Hazard Communication, Hazardous Waste Disposal, Radiation Safety, Biological Safety, and Bloodborne Pathogens, which are offered by **EH&S**. See also the section *Employee Information and Training* for more information.

Storage and Handling of Hazardous Materials

Hazardous materials must be stored based on their compatibility, not simply in alphabetical order. Store materials of the same hazard together i.e. flammables with flammables, oxidizers with oxidizers etc. Refer to the section on *Proper Storage and Handling of Chemicals in the main body of the CHP and Appendix D, Storing Chemicals Safely* for additional guidelines.

Accidents, Spills, and Emergencies

Hazardous chemical spills can be handled effectively when a plan of action has been developed. For accidents, emergencies and spill awareness and/or procedures see *Appendix G, Hazardous Materials Emergencies and Spills*.

Disposal of Chemical Hazardous Materials

- Federal, state and local laws strictly regulate the disposal of hazardous materials. The disposal of any hazardous material in the sewer, on the ground or in the regular trash is illegal. See the [EPA List of Hazardous Waste](#) section and the [City of Boca Raton Sewer Use Policy](#) at the end of this appendix for additional information.
- **EH&S** is responsible for collecting hazardous waste and preparing it for shipment to an approved hazardous waste disposal facility.
- Waste storage containers must be non-leaking, chemically compatible, safe, and clearly labeled with the words "Hazardous Waste." The label must also include the complete name(s) of the container's chemical constituents. Labeled waste containers should be placed in the collection tote(s) which are located at the satellite accumulation area. Call **EH&S** (7-3129) for pickup or use the online form at www.fau.edu/ehs under "Forms." Waste totes, containers, and labels can be obtained free of charge from **EH&S**. In addition, each year waste generators must submit a hazardous waste and materials profile identifying funding associated with waste (chemical, biological, radiological) disposal for their area. **EH&S** will contact each waste generator concerning profile submittal.

Disposal of Empty Containers

- Hazardous chemical containers cannot be discarded until they are considered “empty.”
- In order to be considered empty, containers holding acutely hazardous "P" waste (see the [EPA List of Hazardous Waste](#) at the end of this appendix) must be tripled rinsed and the rinsate must be collected and disposed of as hazardous waste. This can create much more waste than just disposing of the empty container as a hazardous waste. Call **EH&S** for pickup and **do not** put this type of container in the regular trash.
- Compressed gases including, non-returnable cylinders, and aerosol cans are not considered empty until they reach atmospheric pressure. **EH&S** will dispose of these types of cylinders. Empty Aerosol cans must be managed according to the requirements in the section entitled [Special Waste](#).
- Other hazardous chemical containers less than 110 gallon capacity are considered empty when as much material as possible has been removed through ordinary means (pouring, pumping, scraping, etc.), and there is less than 3% by weight of the original contents left in the container. Once these types of containers are empty, rinse out the container, let it air dry (preferably in a hood), and finally remove or deface the label prior to recycling or placing in the regular trash.

Biomedical Waste Disposal

Personnel who handle biomedical waste, sharps or work in areas which handle human blood, tissues and body fluids must comply with the policy and procedures for the handling and disposal of biomedical waste as required by **Florida Administrative Code 64E-16**. The regulation requires, among other things, waste containment, marking and labeling, and disposal of potentially contaminated material. For specific disposal information refer to the [FAU Biological Waste Program](#) or call **EH&S**.

For a biological/biohazardous waste pickup, call **EH&S** (7-3129) or use the online form at www.fau.edu/ehs under “Forms.”

Disposal of Radiological Waste

Only “Authorized Users” may purchase and use radioactive material in designated facilities. Disposal of radioactive waste must be in compliance with **Florida Administrative Code 64E-5** and with the rules contained in the FAU [Radiation Safety Manual](#). For more information, call the Radiation Safety Officer at **EH&S**.

For a radioactive waste pickup, call **EH&S** (7-3129) or use the online form at www.fau.edu/ehs under “Forms.”

Laboratory Animal Waste Disposal Procedures

All research using animals at FAU must be done in accordance with the *Animal Protocol Manual* and in compliance with the guidelines set forth by the Institutional Animal Care and Use Committee. These requirements include but are not limited to the following:

Fixed Animal Tissues

Preserved specimens generated from teaching or research labs will be disposed of as biomedical waste. Disposal procedures will adhere to waste disposal guidelines within the FAU [Biological Waste Program](#). For more information contact **EH&S**.

Research Animal Carcasses, Feces and Bedding

The guidelines for animal carcass waste disposal can be found in the FAU *Animal Protocol Manual*. These guidelines will vary depending upon how the animal tissue was used. For more information on specific laboratory disposal requirements contact **EH&S**.

Mixed Waste

The creation of mixed waste (radioactive and chemical) is highly discouraged because of regulatory constraints and the extreme costs of disposal. Please consult with the **EH&S** Radiation Safety Officer before generating mixed waste.

Waste Minimization

The University is required by regulations to reduce the amount of hazardous chemical waste it generates. Departments should implement the following waste minimization measures: For more detailed information on waste minimization consult the FAU EH&S Waste Minimization Plan.

1. Only purchase chemicals in quantities that can be used before the expiration date of the material.
2. Recycle surplus or unwanted chemicals. **EH&S** maintains a list of available surplus chemicals. Surplus chemicals are available free of charge and on a first come, first served basis (see the Waste Minimization/Chemical Surplus section on the **EH&S** web site at: www.fau.edu/ehs).

Florida Atlantic University Hazardous Chemical Waste Disposal Requirements

Failure to comply with hazardous waste regulations can result in fines of \$50,000 per day per offense and possible criminal charges against the responsible person(s).

1. All employees working with hazardous waste must receive initial training and annual refresher training.
2. Each lab will appoint a lab manager/alternate and designate a waste collection area (Satellite Accumulation Area).
3. All chemical containers must be properly labeled. An unlabelled chemical becomes an unknown and disposal is expensive. Hazardous waste containers must be marked with the words, "hazardous waste" and the chemical and/or chemicals inside (i.e. 100 ml acetone, 500 ml. hexane, 500 ml. ethyl acetate). Labels can be obtained from **EH&S**.
4. Only compatible wastes shall be collected in the same container. Containers must have tight fitting lids, foil or film closures are not acceptable. **EH&S** provides 20 L containers for halogenated or non-halogenated solvents, acids, bases, metals, etc. The use of glass or plastic containers for smaller amounts is acceptable. Containers must be closed except when adding waste to a container. Place labeled waste containers into the collection totes at the satellite accumulation area while awaiting pickup
5. Laboratories must not accumulate more than 40 L of waste or 500 ml or 500 grams of acutely hazardous "P" waste at any one time. Treat empty containers that contained "P" waste as "hazardous waste".
6. Keep waste containers near the process generating the waste. Keep open flame and ignition sources away from all chemicals. Do not overfill waste containers. When full, place in the collection tote at the satellite accumulation area.

7. Certain chemicals should be disposed of as waste before the expiration date on the label to prevent the formation of shock-sensitive peroxides. See *Appendix D, Storing Chemicals Safely* for information about peroxide formers.
8. Only **EH&S** is permitted to dispose of hazardous waste. Do not dispose of waste down the drain. Empty bottles may be placed in the normal waste stream or recycled after they are cleaned and the labels removed. The exception is bottles that contained a “P” listed waste; these are always to be treated as “hazardous waste”.
9. Major laboratory chemical clean-outs must be planned in advance. Contact EH&S for detailed information on lab clean-outs.
10. All discharged, damaged, or out of date fire extinguishers must be reported immediately to **EH&S**.
11. All chemical spills must be cleaned up properly and safely. Large spills or any spill directly to the ground, water, or sanitary sewer must be immediately reported to **EH&S**. See *Appendix G*.

To request a chemical, biohazardous, or radioactive waste pickup call **EH&S** at 7-3129 or fill out the online form at www.fau.edu/ehs under “Forms.”

Special Waste

Special waste refers to commonly used items that need special procedures for disposal. Examples of these include aerosol cans, fluorescent light bulbs, batteries and used oil, etc.

Aerosol Cans

According to hazardous waste regulations pressurized aerosol cans must be disposed of as hazardous waste. Aerosol cans also pose a potential risk of explosion if handled improperly. All departments that generate aerosol cans must follow these procedures:

1. Collect and store all aerosol cans in the collection tote at the Satellite Accumulation Area within the work area. Areas that generate large quantities of aerosol cans should have a separate 510 gallon trash container with a lid stationed at the Satellite Accumulation Area.
2. The container will be labeled as follows: “Hazardous Waste Aerosol Cans Only.”
3. To request a pick-up call **EH&S** at 7-3129 or fill out the online form at www.fau.edu/ehs under “Forms.”

Fluorescent Lamps/Ballast

Fluorescent lamps: contain enough elemental mercury to be categorized as a hazardous waste. The FAU Maintenance Departments are generally responsible for the collection and recycling of used fluorescent lamps. However, if lab personnel change or replace fluorescent lamps, contact **EH&S** for a pickup. Also **EH&S** will manage and clean up any broken lamps.

Ballasts: The FAU Maintenance Departments are generally responsible for the collection of ballasts, while EH&S is in charge of recycling them. Direct any questions concerning light ballasts found in the work area to **EH&S**.

Used Batteries

Many batteries contain one or more hazardous chemical components, which are considered to be hazardous wastes. Hazardous batteries may be placed in the hazardous waste collection tote. To request a pick-up call **EH&S** at 7-3129 or fill out the online form at www.fau.edu/ehs under forms. The following battery types are considered hazardous batteries and must be recycled by **EH&S**

1. Lead Acid (car batteries can also be recycled by the transportation department)
2. Mercury
3. Silver
4. Lithium
5. Nickel Cadmium (Ni-Cad), Nickel Metal-hydride

Common non-rechargeable alkaline batteries (Duracell or Energizer batteries) are not considered “hazardous batteries,” and may be disposed of in the regular trash. Direct any questions concerning the type or nature of batteries found in the work area to **EH&S**.

Used Oil

Used compressor, pump, hydraulic, or motor oils must be recycled. Collect used oil in proper containers (5-gal or less), which are labeled, “Used Oil”. If the oil is contaminated with other material i.e. solvents or heavy metals please list all the constituents and use a “hazardous waste” label. Place in the hazardous waste collection tote. To request a pick-up call **EH&S** at 7-3129 or fill out the online form at www.fau.edu/ehs under “Forms.”

Paint

Unusable oil based or latex paint must be treated as hazardous chemical waste. Hazardous paint may be placed in the hazardous waste collection tote. To request a pick-up call **EH&S** at 7-3129 or fill out the online form at www.fau.edu/ehs under “Forms.” Useable paint (oil or latex) is not considered hazardous waste and can be recycled. Contact EH&S for pickup of this type of paint.

Electronic Devices

Electronic devices may contain hazardous materials and must be recycled. This type of equipment may also contain a FAU property barcode; therefore contact Surplus/Property Records Department at 7-3767 for pickup and recycling.

NOTE: ONLY MATERIAL GENERATED ON CAMPUS WILL BE MANAGED BY EH&S. DO NOT BRING PERSONAL MATERIAL FROM HOME

EPA List of Hazardous Waste

CHARACTERISTIC WASTES (D001-D043)

D001	Ignitable Characteristic Ignitable Compressed Gases Ignitable Liquids Ignitable Reactives Oxidizers	D003	Alkalines Other Corrosives Reactive Characteristic Cyanides Explosives
D002	Corrosive Characteristic Acids		Reactive Sulfides Water Reactives

Toxicity Characteristic Wastes

Waste Code	Contaminant	Reg. Level (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5 TP (Silvex)	1.0
D018	Benzene	0.5
D019	Carbon tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D023	o-Cresol	200.0

Waste Code	Contaminant	Reg. Level (mg/L)
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D031	Heptachlor (and its epoxide)	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D039	Tetrachloroethylene	0.7
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D043	Vinyl chloride	0.2

LISTED WASTE

HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES (F001-F039)

F001 Halogenated solvents used for degreasing 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2,-trifluoroethane Carbon tetrachloride Tetrachloroethylene Trichloromonofluoromethane	F002 Halogenated solvents 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2,-trifluoroethane 1,1,2-Trichloroethane Chlorobenzene o-Dichlorobenzene
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Trichloromonofluoromethane

F003 Non-Halogenated solvents
 Acetone

F003 Cyclohexanone
 Ethyl Acetate
 Ethyl Benzene
 Ethyl Ether
 Methanol
 Methyl Isobutyl Ketone
 n-Butyl Alcohol
 Xylene

F004 Non-Halogenated solvents
 Cresol

Cresylic acid
 Nitrobenzene

F005 Non-Halogenated solvents
 2-Ethoxyethanol
 2-Nitropropane
 Benzene
 Carbon Disulfide
 Isobutanol
 Methyl Ethyl Ketone
 Pyridine
 Toluene

F006-F039 (See regulations for details **40 CFR§261**)

ACUTE HAZARDOUS WASTE (P001-P123)

P001 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-Warfarin

P002 1-Acetyl-2-thiourea
 N-(aminothioxomethyl)-Acetamide

P003 Acrolein

P004 Aldrin

P005 Allyl Alcohol

P006 Aluminum Phosphide

P007 5-(Aminomethyl)-3-isoxazolol

P008 4-Aminopyridine
 4-Pyridinamine

P009 Ammonium Picrate

P010 Arsenic Acid

P011 Arsenic Oxide As₂O₅
 Arsenic Pentoxide

P012 Arsenic Oxide As₂O₃
 Arsenic Trioxide

P013 Barium Cyanide

P014 Benzenethiol
 Thiophenol

P015 Beryllium

P016 Dichloromethyl Ether
 Oxybischloromethane

P017 Bromoacetone

P018 Brucine

P020 Dinoseb

P021 Calcium Cyanide

P022 Carbon Disulfide

P023 Chloroacetaldehyde

P024 4-chloro-benzenamine
 p-Chloroaniline

P026 1-(o-Chlorophenyl)thiourea

P027 3-Chloropropionitrile

P028 Benzyl Chloride
 Chloromethylbenzene

P029 Copper Cyanide

P030 Cyanides

P031 Cyanogen
 Ethanedinitrile

P033 Cyanogen Chloride

P034 2-Cyclohexyl-4,6-dinitrophenol

P036 Dichlorophenylarsine
 Phenyl Arsonous Dichloride

P037 Dieldrin

P038 Diethyl Arsine
 Diethylarsine

P039 Disulfoton

P040 O,O-Diethyl O-pyrazinyl

P041 Diethyl-p-nitrophenyl Phosphate

P042 4-[1-hydroxy-2-(methylamino)ethyl]-1,2-Epinephrine

P043 Diisopropylfluorophosphate

P044 Dimethoate

P045 2-Butanone, 3,3-dimethyl-1-(methylthio)-,
 O-[(methylamino)carbonyl] oxime
 Thiofanox

P046 alpha,alpha-dimethylbenzeneethanamine
 alpha,alpha-Dimethylphenethylamine

P047 4,6-Dinitro-o-cresol

P048 2,4-Dinitrophenol

P049 Dithiobiuret
 Thiomidodicarbonic diamide

P050 Endosulfan

P051 Endrin

P054	Aziridine		Phenylmercury Acetate
	Ethyleneimine	P093	Phenylthiourea
P056	Fluorine	P094	Phorate
P057	2-Fluoro-Acetamide		
	Fluoroacetamide	P095	Carbonic Dichloride
P058	Fluoroacetic acid sodium salt		Phosgene
P059	Heptachlor	P096	Hydrogen Phosphide
P060	Isodrin		Phosphine
P062	Hexaethyl Tetraphosphate	P097	Famphur
P063	Hydrocyanic Acid	P098	Potassium Cyanide
	Hydrogen Cyanide	P099	Argenate (1-), bis(cyano-C)-, potassium
P064	Isocyanatomethane		Potassium Silver Cyanide
	Methyl Isocyanate	P101	Ethyl Cyanide
P065	Fulminic Acid, mercury salt		Propanenitrile
	Mercury Fulminate	P102	Propargyl alcohol
P066	Methomyl	P103	Selenourea
P067	1,2-Propylenimine	P104	Silver Cyanide
	2-methyl-Aziridine	P105	Sodium Azide
P068	Methyl Hydrazine	P106	Sodium Cyanide
P069	2-Methylactonitrile	P108	Strychnidin-10-one
P070	Aldicarb		Strychnine
P071	Methyl Parathion	P109	Tetraethyldithiopyrophosphate
P072	alpha-Naphthylthiourea	P110	Tetraethyl Lead
P073	Nickel Carbonyl		Tetraethyl Plumbane
P074	Nickel Cyanide	P111	Tetraethyl Ester Diphosphoric Acid
P075	Nicotine		Tetraethyl Pyrophosphate
P076	Nitric Oxide	P112	Tetranitromethane
	Nitrogen Oxide NO	P113	Thallic Oxide
P077	4-nitro-benzenamine		Thallium Oxide
	p-Nitroaniline	P114	Selenious Acid, dithallium salt
P078	Nitrogen Dioxide		Thallium Selenite
	Nitrogen Oxide NO ₂	P115	Sulfuric Acid, dithallium salt
P081	Nitroglycerine		Thallium Sulfate
	N-methyl-N-nitroso-methanamine	P116	Hydrazinecarbothioamide
P082	N-Nitrosodimethylamine		Thiosemicarbazide
P084	N-Nitrosomethylvinylamine	P118	Trichloromethanethiol
	Vinylamine, N-methyl-N-nitroso	P119	Ammonium Vanadate
P085	Octamethyl Diphosphoramidate		Vanadic Acid, ammonium salt
	Octamethylpyrophosphoramidate	P120	Vanadium oxide
P087	Osmium Tetroxide		Vanadium Pentoxide
P088	Endothall	P121	Zinc Cyanide
P089	Parathion	P122	Zinc Phosphide
		P123	Toxaphene
P092	(Acetato-O)phenyl-mercury		

OFF-SPECIFICATION HAZARDOUS WASTE (U001-U249)

U001	Acetaldehyde	U004	Acetophenone
U002	Acetone	U005	2-Acetylaminofluorene
U003	Acetonitrile	U006	Acetyl Chloride

U007	Acrylamide	U053	Crotonaldehyde
U008	Acrylic Acid	U055	Cumene
U009	Acrylonitrile	U056	Cyclohexane
U010	Mitomycin C	U057	Cyclohexanone
U011	Amitrole	U058	Cyclophosphamide
U012	Aniline	U059	Daunomycin
U014	Auramine	U060	DDD
U015	Azaserine	U061	DDT
U016	Benz(c)acridine	U062	Diallate
U017	Benzal Chloride	U063	Dibenz(a,h)anthracene
U018	Benz(a)anthracene	U064	1,2,7,8-Dibenzopyrene
U019	Benzene	U066	1,2-Dibromo-3-chloropropane
U020	Benzenesulfonyl Chloride	U067	Ethylene Dibromide
	Fluoranthene	U068	Dibromomethane
U021	Benzidine	U069	Di-n-butyl Phthalate
U022	Benzo(a)pyrene	U070	o-Dichlorobenzene
U023	Benzotrichloride	U071	m-Dichlorobenzene
U024	bis(2-Chloroethoxy)methane	U072	p-Dichlorobenzene
U025	bis(2-chloroethyl)ether	U073	3,3'-Dichlorobenzidine
U026	Chlornaphazin	U074	1,4--Dichloro-2-butylene
U027	bis(2-chloroisopropyl)ether	U075	Dichlorodifluoromethane
U028	bis(2-ethylhexyl)phthalate	U076	1,1-Dichloroethane
U029	Methyl Bromide	U077	1,2-Dichloroethane
U030	4-Bromophenyl Phenyl Ether	U078	1,1-Dichloroethylene
U031	n-Butyl Alcohol	U079	1,2-Dichloroethylene
U032	Calcium Chromate	U080	Methylene Chloride
U033	Carbon Oxyfluoride	U081	2,4-Dichlorophenol
	Carbonyl Fluoride	U082	2,6-Dichlorophenol
U034	Trichloroacetaldehyde	U083	1,2-Dichloropropane
U035	Chlorambucil	U084	1,3-Dichloropropylene
U036	Chlordane	U085	1,2,3,4-Diepoxybutane
U037	Chlorobenzene	U086	N,N-Diethylhydrazine
U038	Chlorobenzilate	U087	0,0-Diethyl S-methyldithiophosphate
U039	p-Chloro-m-cresol	U088	Diethyl Phthalate
U041	1-Chloro-2,3-epoxypropane	U089	Diethyl Stilbestrol
U042	2-Chloroethyl Vinyl Ether	U090	Dihydrosafrole
U043	Vinyl Chloride	U091	3,3'-Dimethoxybenzidine
U044	Chloroform	U092	Dimethylamine
U045	Chloromethane	U093	p-Dimethylaminoazo-benzene
U046	Chloromethyl Methyl Ether	U094	7,12-Dimethylbenz(a)anthracene
U047	2-Chloronaphthalene	U095	3,3'-Dimethylbenzidine
U048	2-Chlorophenol	U096	a,a-Dimethyl Benzyl Hydroperoxide
U049	4-Chloro-o-toluidine Hydrochloride	U097	Dimethylcarbonyl Chloride
U050	Chrysene	U098	1,1-Dimethylhydrazine
U051	Creosote--Lead	U099	1,2-Dimethylhydrazine
	Creosote--Naphthalene	U101	2,4-Dimethylphenol
	Creosote--Pentachlorophenol	U102	Dimethyl Phthalate
	Creosote--Phenanthrene	U103	Dimethyl Sulfate
	Creosote--Pyrene	U105	2,4-Dinitrotoluene
	Creosote--Toluene	U106	2,6-Dintrotoluene
	Creosote--Xylene	U107	Di-n-octyl Phthalate
U052	Cresols	U108	1,4-Dioxane

U109	1,2-Diphenylhydrazine	U159	Methyl Ethyl Ketone
U110	Dipropylamine	U160	Methyl Ethyl Ketone Peroxide
U111	Di-n-propylnitrosamine	U161	Methyl Isobutyl Ketone
U112	Ethyl Acetate	U162	Methyl Methacrylate
U113	Ethyl Acrylate	U163	N-Methyl N'-nitro N-Nirosoguanidine
U114	Ethylene bis-dithiocarbamic acid	U164	Methylthiouracil
U115	Ethylene Oxide	U165	Naphthalene
U116	Ethylene Thiourea	U166	1,4-Naphthoquinone
U117	Ethyl Ether	U167	1-Naphthylamine
U118	Ethyl Methacrylate	U168	2-Naphthylamine
U119	Ethyl Methane Sulfonate	U169	Nitrobenzene
U121	Trichloromonofluoromethane	U170	p-Nitrophenol
U122	Formaldehyde	U171	2-Nitropropane
U123	Formic Acid	U172	N-Nitroso-di-n-butylamine
U124	Furan	U173	N-Nitroso-di-n--ethanolamine
U125	Furfural	U174	N-Nitrosodiethylamine
U126	Glycidaldehyde	U176	N-Nitroso-N-ethylurea
U127	Hexachlorobenzene	U177	N-Nitroso-N-methylurea
U128	Hexachlorobutadiene	U178	N-Nitroso-N-methylurethane
U129	alpha-BHC	U179	N-Nitrosopiperidine
	beta-BHC	U180	N-Nitrosopyrrolidine
	delta-BHC	U181	5-Nitro-o-toluidine
	gamma-BHC (Lindane)	U182	Paraldehyde
U130	Hexachlorocyclopentadiene	U183	Pentachlorobenzene
U131	Hexachloroethane	U184	Pentachloroethane
U132	Hexachlorophene	U185	Pentachloronitrobenzene
U133	Hydrazine	U186	1,3-Pentadiene
U134	Hydrogen Fluoride	U187	Phenacetin
U135	Hydrogen Sulfide	U188	Phenol
U136	Arsinic Acid, dimethyl	U189	Phosphorous Sulfide
U137	Indeno (1,2,3-cd)pyrene	U190	Phthalic Anhydride
U138	Iodomethane	U191	2-Picoline
U140	Isobutyl Alcohol	U192	Pronamide
U141	Isosafrole	U193	1,3-Propane Sultone
U142	Kepone	U194	n-Propylamine
U143	Lasiocarpine	U196	Pyridine
U144	Lead Acetate	U197	p-Benzoquinone
U145	Lead Phosphate	U200	Respirine
U146	Lead subacetate	U201	Resorcinol
	Lead, bis(acetato-O)tetrahydroxytri-	U202	Saccharin and salts
U147	Maleic Anhydride	U203	Safrole
U148	Maleic Hydrazine	U204	Selenium Dioxide
U149	Malononitrile	U205	Selenium Sulfide
U150	Melphalan	U206	Streptozoticin
U151	Mercury	U207	1,2,4,5-Tetrachlorobenzene
U152	Methacrylonitrile	U208	1,1,1,2-Tetrachloroethane
U153	Methanethiol	U209	1,1,2,2-Tetrachloroethane
U154	Methanol	U210	Tetrachloroethylene
U155	Methapyrilene	U211	Carbon Tetrachloride
U156	Methyl Chlorocarbonate	U213	Tetrahydrofuran
U157	3-Methylcholanthrene	U214	Thallium Acetate
U158	4,4'-Methylene bis(2-chloroaniline)	U215	Thallium Carbonate

U216 Thallium Chloride
U217 Thallium Nitrate
U218 Thioacetamide
U219 Thiourea
U220 Toluene
U221 Toluenediamine
U222 o-Toluidine
U223 Toluene Diisocyanate
U225 Bromoform
U226 1,1,1-Trichloroethane
U227 1,1,2-Trichloroethane
U228 Trichloroethylene
U233 Silvex
U234 sym-Trinitrobenzene
U235 tris-(2,3-Dibromopropyl)-phosphate
U236 Trypan Blue
U237 Uracil Mustard
U238 Ethyl Carbamate
U239 Xylenes
U240 2,4-D (2,4-Dichlorophenoxyacetic Acid)
U243 Hexachloropropylene
U244 Thiram
U246 Cyanogen Bromide
U247 Methoxychlor
U248 Warfarin
U249 Zinc Phosphide

City of Boca Raton Sewer Use Policy Limits Regulated Pollutants

The following information is taken from policies and procedures instituted by the City of Boca Raton:

General Prohibitions

No user shall introduce or cause to be introduced into the wastewater facility any pollutant or wastewater that causes pass through or interference.

Specific Prohibitions

No user shall introduce or cause to be introduced into the wastewater facility the following pollutants, substances, or wastewater.

<u>Material or characteristic</u>	<u>Maximum allowable value over any 24-hr period</u>
Arsenic	0.10 mg/l
Cadmium	0.30 mg/l
Chromium, total	4.70 mg/l
Chromium, hexavalent	2.90 mg/l
Copper	2.00 mg/l
Cyanides/ates	0.010 mg/l
Iron	21.00 mg/l
Lead	0.37 mg/l
Mercury	0.0005 mg/l
Nickel	0.10 mg/l
Phenols	0.20 mg/l
Silver	0.60 mg/l
Zinc	3.72 mg/l
CBOD ₅	400.00 mg/l
Suspended solids	400.00 mg/l
COD	800.00 mg/l
Radium 226 and 228 (mcl)	5.00 pCi/l
Radium 226 (mcl)	3.0 pCi/l
Gross Alpha and radium 226 (excluding radon and uranium) (mcl)	15.0 pCi/l
Chlorides	600.00 mg/l
Hydrogen Sulfide	5.00 mg/l
Oil and grease	100.00 mg/l
pH	6.0-8.5
Total Dissolved Solids	2000 mg/l
Temperature	150 ⁰ F

Also Prohibited:

- a) Any gasoline, benzene, naphtha, fuels oil or other flammable explosive liquid, solid, or gas.
- b) Waste from restaurants or places where a large amount of cooking is done or where the waste carries large amounts of grease.

- c) Any noxious or malodorous gas or substance which, either singly or by interaction with other wastes, may create a public nuisance or increase the hazard of entry into sewers from maintenance and repair. Domestic sewage is exempt from here.
- d) Any solid or viscous substance which may cause obstruction to the flow in sewers or interference with the proper operations of the city wastewater facilities.
- e) Any waters or wastes containing toxic, poisonous or radioactive substances in concentrations which may constitute or create a public nuisance or hazard to humans or animals, or may interfere with any wastewater treatment process or the city wastewater facilities.
- f) Any waters or wastes which, after treatment by the city, exceeds federal, state, or local quality requirements, unless a current and lawful permit allows such discharge.
- g) Any wastewater which causes a hazard to human life or creates a public nuisance.
- h) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, discharged at any flow rate or concentration, which will cause interference or pass through.
- i) Pollutants that create a fire or explosion hazard in the wastewater facility.
- j) Pollutants which will cause corrosive structural damage to the wastewater facility, but in no case discharges with pH lower than 6.0, unless the wastewater facility is specifically designed to accommodate such discharges.
- k) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the wastewater facility resulting in interference.
- l) Any pollutant, including oxygen-demanding pollutants, released in a discharge at a flow rate or pollutant concentration that will cause interference with the wastewater facility.
- m) Pollutants which result in the presence of toxic gases, vapors or fumes within the wastewater facility in a quantity that will cause acute worker health and safety problems.
- n) Waste water containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations.

HAZARDOUS MATERIALS MANUAL REFERENCES

1. Hazard Communication Standard (OSHA) **29 CFR 1910.1200, Chapter 442,F.S., Rule 38I-20.003 F.A.C.**
2. Hazardous Waste Management (EPA) **40 CFR§260-299, Rule 62-730, F.A.C.**
3. Occupational Exposure to Hazardous Chemicals in Laboratories (OSHA) **29 CFR§1910.1450, Rule 38I-20.003 F.A.C.**
4. "Safety in Academic Chemistry Laboratories"; American Chemical Society, Washington D.C., 1994.
5. Prudent Practices in Laboratories, Handling and Disposal of Chemicals; National Academy of Sciences, Washington D.C., 1995.
6. "Flammable and Combustible Liquids Code"; **NFPA Standard 30**, National Fire Protection Association, Quincy, MA, 1993.
7. The Boca Raton Wastewater Pretreatment Ordinance (**Code 1996, & 24-50**)