

HAZARDOUS MATERIALS MANUAL

B-1 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 to comply with applicable regulations. Additional information is available in the references listed in [Appendix F](#). Contact Environmental Health and Safety for help in accessing the references.

B-2 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.

B-3 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

Generally, any liquid that produces enough vapor at a temperature less than or equal to 140 °F (60.0 °C) to ignite when exposed to an ignition source. In the United States, the legal definition of a flammable liquid has different meanings from agency-to-agency as follows:

- DOT defines a flammable liquid as any liquid having a flash point of not more than 141 °F (60.6 °C), or any material in a liquid phase with a flash point at or above 100 °F (37.8 °C) that is intentionally heated and offered for transportation.
- OSHA defines a flammable liquid as any liquid having a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.
- EPA uses the term “ignitable” rather than flammable, and defines it as a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has flash point less than 140 °F (60 °C),

Note that a chemical might not be labeled as flammable under the auspices of OSHA; however, it may still meet the definition of flammable or ignitable as defined by DOT and EPA, respectively.

Combustible Liquid

Any liquid which has a flash point between 141 °F (60.5 °C) and 200°F (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 can displace air and may become asphyxiation hazards if spilled in non-ventilated areas.

Radioactive

Any material that contains atoms which are unstable and attempt to become more stable by ejecting alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Examples of radioactive waste materials include:

(1) solid waste; such as, contaminated PPE and glassware, scintillation vials, plastic ware, paper, gels, animal carcasses, and plant tissue –and-

(2) liquid waste; such as, scintillation cocktails, electrophoresis gels, and discarded stock radioisotopes.

See the FAU Radiation Safety Manual for specific information on the generation and proper disposal of radioactive material.

Biomedical/Biohazards

Tissues, organs, and blood from humans and primates. Syringes, needles, sharps, and other objects containing materials above.

B-4 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 and Bloodborne Pathogens. These are offered by **EH&S**. Radiation Safety training is available from the Radiation Safety Officer. See the section [Employee Information and Training](#) for more information.

B-5 Storage and Handling of Hazardous Materials

Hazardous materials must be stored based on their compatibility, not 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.

B-6 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](#).

B-7 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. Call **EH&S** for pickups and include the following information: the name of the products to be picked up, the location, the person in charge of the area, a phone number, and the quantity to be picked up. Lab workers can also fill out the [Waste Pickup Request Form](#) (which duplicates this information) and send the completed form to **EH&S**.

B-8 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 container as a hazardous waste when empty. Call **EH&S** for pickup of the container and do not put this type of container in the normal waste stream.
- 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 [Special Waste](#) section.
- 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.

B-9 Disposal of Ink and Toner Cartridges

If an ink or toner cartridge has been used under normal circumstances until it is empty, it is not considered hazardous waste and can be managed by one of the following means:

1. Email Lillian Silva at SILVA@fau.edu . You will receive a container to store all your empty cartridges. When they are full, all you have to do is send another email and they will recycle them for you.
2. Ship the container back to the supplier for reclamation or reuse. Many companies now provide free containers and shipping (Xerox, HP).

Whenever possible, unused or defective cartridges should be returned to the supplier for replacement or credit. This practice minimizes the amount of unused cartridges needing disposal. Any cartridges that cannot be returned and still contain residual ink or toner that is determined to be hazardous waste must be picked up by **EH&S** for proper disposal. Contact **EH&S** for assistance if you are uncertain of how to properly dispose of any unused or defective ink or toner cartridges.

B-10 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 the Florida Administrative Code, F.A.C. [64-E16](#). The regulation requires, among other things, waste containment, marking and labeling, and disposal of potentially contaminated material. For specific disposal information refer to the [Biological Waste Program Manual](#) or call **EH&S**.

B-11 Disposal of Radiological Waste

Only “Authorized Use” Supervisors may purchase and use radioactive material in a designated laboratory. Disposal of radioactive waste must be in compliance with F.A.C. [64E-5](#) and with the rules contained in the FAU [Radiation Safety Manual](#). For more information, call **EH&S** or the Radiation Safety Officer.

For a radioactive waste pickup, fax a completed [Radiation Waste Disposal form](#) to EH&S or the Radiation Safety Officer.

B-12 Laboratory Animal Waste Disposal Procedures

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

B-12.1 Fixed Animal Tissues

Preserved specimen 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 Manual](#). For more information call **EH&S (7-3129)**.

B-12.2 Research Animal Carcasses, Feces and Bedding

The guidelines for animal carcass waste disposal can be found in the FAU [Biological Waste Program Manual](#). These guidelines will vary depending upon how the animal tissue was used. For more information on specific laboratory disposal requirements call **EH&S**.

B-13 Mixed Waste

The creation of mixed waste (radioactive and chemical) is not allowed because of regulatory constraints and expense. Please consult with **EH&S** and the Radiation Safety Officer before generating mixed waste.

B-14 Waste Minimization

The University is required by regulations to reduce the amount of hazardous chemical waste generated. Departments should take the following waste minimization measures:

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 chemicals periodically. Surplus chemicals are available free of charge and on a first come, first served basis.

B-15 FAU Hazardous 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 retraining. Initial training is conducted in a classroom setting; annual retraining may be completed online.
2. Each lab will appoint a lab manager/alternate and designate a waste collection area.
3. All chemical containers must be properly labeled. An unlabeled chemical becomes an unknown and disposal is expensive. Hazardous waste containers must be marked with the words, "hazardous waste" and chemical and/or chemicals in question (i.e. 100 ml acetone, 500 ml hexane, 500 ml ethyl acetate). Labels can be obtained from **EH&S**.
4. All compatible wastes shall be collected in approved sealed containers. Foil or film closures are not acceptable. **EH&S** provides containers of various sizes 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.
5. Laboratories are not allowed to accumulate more than 40 L of waste or 500 ml or 500 grams of acutely hazardous "P" waste at any one time.
6. Keep the waste containers near the process generating the waste. Keep open flame and ignition sources away from all chemicals. Do not overfill waste containers.
7. Peroxide-forming chemicals should be either (1) consigned to waste before the expiration date on the label, or (2) tested for the presence of peroxides and re-dated, to safeguard against the formation of shock-sensitive peroxides. See [Appendix D: Table VII](#) for additional information.
8. Only **EH&S** is permitted to dispose of hazardous waste. **Do not dispose of waste down the drain.**
9. Major laboratory chemical clean-outs must be planned in advance.
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 on the ground, into 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** or fill out a [waste pickup form](#) on the EH&S website.

B-16 Special Waste

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

B-16.1 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 at Designated Accumulation Point(s) within the work area. Areas that generate large quantities of aerosol cans should have a 5 gallon trash container with a lid at the designated accumulation point.
2. The container will be labeled as follows: Hazardous Waste Aerosol Cans Only.
3. Request a pick-up from EH&S when the container is full.

B-16.2 Fluorescent Light Bulbs

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

Many retailers are now offering “green” fluorescent bulbs that they claim will not be hazardous waste when disposed. These bulbs have different names, but are often referred to as “green” bulbs because they have green markings, such as a green printed monogram, green end-caps or other green indicators. Many varieties of “green” bulbs still contain low levels of mercury that, even at very low levels, can become air-borne and be deposited into the environment. For this reason, “green” fluorescent bulbs are collected and recycled the same as standard fluorescent light bulbs.

B-16.3 Ballasts

Ballasts control the starting and operating voltages, and regulate the current passing through fluorescent lights. Some ballasts contain polychlorinated biphenyls (PCBs) that must be removed and disposed of as hazardous waste. Other non-PCB ballasts may contain DEHP (di (2-ethylhexyl) phthalate) which is classified by EPA as a hazardous substance. Ballasts must not be disposed in the trash. The FAU maintenance department is generally responsible for the collection and recycling of all ballasts. **EH&S** can also be contacted for ballast pickups.

B-16.4 Hazardous Batteries

Many batteries contain one or more hazardous chemical components, which are considered to be hazardous wastes. 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 (NiCad)
6. Nickel Metal Hydride (NiMH)

Common alkaline batteries (Duracell or Energizer batteries) are exempt 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**.

B-16.5 Pharmaceuticals

Pharmaceutical waste includes expired, recalled, damaged, overstocked, unwanted, or contaminated drugs, vaccines, supplements, vitamins, and sera. Effective March 26, 2009, pharmaceuticals containing hazardous ingredients may be managed as special waste in the State of Florida, per F.A.C. [62-730.186](#).

The university pharmacy and student health services clinic manage their own pharmaceutical waste. All expired, recalled, damaged or overstocked pharmaceutical products from the clinic are bulked with those from the pharmacy and picked up quarterly by a reverse distribution service. The reverse distribution service returns pharmaceuticals that have residual value directly to the manufacturer for credit. All other waste pharmaceuticals are incinerated at a co-generation facility that converts the waste to useable energy.

Principle investigators who are licensed to use controlled substances for teaching and research purposes are responsible for the proper disposition of their controlled pharmaceutical waste streams under the auspices of their license. **EH&S** may be contacted as needed for assistance with the proper disposition of these substances.

EH&S can also provide assistance on a case-by-case basis with the disposal of research and teaching-related prescription and over-the-counter medications.

All pharmaceutical waste should be kept in a secured location until removed for disposal. Under no circumstances should pharmaceutical waste be disposed in the regular trash or down the sink.

B-16.6 Used Oil

Used oil is regulated as a special waste in Florida, per the requirements specified in F.A.C. [62-710](#). Used oil is defined as any oil which has been refined from crude oil or synthetic oil and, as a result of use, storage, or handling, has become contaminated and unsuitable for its original purpose due to the presence of physical or chemical impurities or loss of original properties.

All used oil storage tanks and containers must be labeled with the words "Used Oil" in order to minimize the risk of cross contamination with other chemicals. All used oil containing tanks and containers must also have secondary containment (unless they are double-walled) that has the capacity to hold 110% of the volume of the largest tank or container within the containment area.

Since the risk posed to the environmental from a small, indoor spill is minimal, portable collection containers, satellite accumulation containers, and other small containers (those with a total capacity of equal to or less than 55 gallons) which are stored on an oil-impermeable surface inside a structure satisfy the requirements for secondary containment, as do portable collection containers on wheels that are emptied within 24 hours.

Used oil must not be discharged into soils, sewers, drainage systems, septic tanks, surface or ground waters, watercourses, or marine waters. 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" and contact **EH&S** for pickup.

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

Table IV: RCRA Hazardous Waste

CHARACTERISTIC WASTES (D001-D003)

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

TOXICITY CHARACTERISTIC

D004	Arsenic	D024	m-Cresol
D005	Barium	D025	p-Cresol
D006	Cadmium	D026	mixed Cresols
D007	Chromium	D027	p-Dichlorobenzene
D008	Lead	D028	1,2-Dichloroethane
D009	Mercury	D029	1,1-Dichloroethylene
D010	Selenium	D030	2,4-Dinitrotoluene
D011	Silver	D031	Heptachlor (and its epoxide)
D012	Endrin	D032	Hexachlorobenzene
D013	Lindane	D033	Hexachlorobutadiene
D014	Methoxychlor	D034	Hexachloroethane
D015	Toxaphene	D035	Methyl Ethyl Ketone
D016	2,4-D	D036	Nitrobenzene
D017	2,4,5-TP (Silvex)	D037	Pentachlorophenol
D018	Benzene	D038	Pyridine
D019	Carbon Tetrachloride	D039	Tetrachloroethylene
D020	Chlordane	D040	Trichloroethylene
D021	Chlorobenzene	D041	2,4,5-Trichlorophenol
D022	Chloroform	D042	2,4,6-Trichlorophenol
D023	o-Cresol	D043	Vinyl Chloride

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	1,1,2-Trichloro-1,2,2,-trifluoroethane 1,1,2-Trichloroethane Chlorobenzene o-Dichlorobenzene Trichloromonofluoromethane
F002	Halogenated solvents 1,1,1-Trichloroethane	F003 Non-Halogenated solvents Acetone

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	P092	(Acetato-O)phenyl-mercury Phenylmercury Acetate
P050	Endosulfan	P093	Phenylthiourea
P051	Endrin	P094	Phorate
P054	Aziridine Ethyleneimine	P095	Carbonic Dichloride Phosgene
P056	Fluorine	P096	Hydrogen Phosphide Phosphine
P057	2-Fluoro-Acetamide Fluoroacetamide	P097	Famphur
P058	Fluoroacetic acid sodium salt	P098	Potassium Cyanide
P059	Heptachlor	P099	Argenate (1-), bis(cyano-C)-, potassium Potassium Silver Cyanide
P060	Isodrin	P101	Ethyl Cyanide Propanenitrile
P062	Hexaethyl Tetraphosphate	P102	Propargyl alcohol
P063	Hydrocyanic Acid Hydrogen Cyanide	P103	Selenourea
P064	Isocyanatomethane Methyl Isocyanate	P104	Silver Cyanide
P065	Fulminic Acid, mercury salt Mercury Fulminate	P105	Sodium Azide
P066	Methomyl	P106	Sodium Cyanide
P067	1,2-Propylenimine 2-methyl-Aziridine	P108	Strychnidin-10-one Strychnine
P068	Methyl Hydrazine	P109	Tetraethyldithiopyrophosphate
P069	2-Methylactonitrile	P110	Tetraethyl Lead Tetraethyl Plumbane
P070	Aldicarb	P111	Tetraethyl Ester Diphosphoric Acid Tetraethyl Pyrophosphate
P071	Methyl Parathion	P112	Tetranitromethane
P072	alpha-Naphthylthiourea	P113	Thallic Oxide Thallium Oxide
P073	Nickel Carbonyl	P114	Selenious Acid, dithallium salt Thallium Selenite
P074	Nickel Cyanide	P115	Sulfuric Acid, dithallium salt Thallium Sulfate
P075	Nicotine	P116	Hydrazinecarbothioamide Thiosemicarbazide
P076	Nitric Oxide Nitrogen Oxide NO	P118	Trichloromethanethiol
P077	4-nitro-benzenamine p-Nitroaniline	P119	Ammonium Vanadate Vanadic Acid, ammonium salt
P078	Nitrogen Dioxide Nitrogen Oxide NO ₂	P120	Vanadium oxide Vanadium Pentoxide
P081	Nitroglycerine N-methyl-N-nitroso-methanamine	P121	Zinc Cyanide
P082	N-Nitrosodimethylamine	P122	Zinc Phosphide
P084	N-Nitrosomethylvinylamine Vinylamine, N-methyl-N-nitroso	P123	Toxaphene
P085	Octamethyl Diphosphoramide Octamethylpyrophosphoramide		
P087	Osmium Tetroxide		
P088	Endothall		
P089	Parathion		

OFF-SPECIFICATION HAZARDOUS WASTE (U001-U249)

U001	Acetaldehyde	U046	Chloromethyl Methyl Ether
U002	Acetone	U047	2-Chloronaphthalene
U003	Acetonitrile	U048	2-Chlorophenol
U004	Acetophenone	U049	4-Chloro-o-toluidine Hydrochloride
U005	2-Acetylaminofluorene	U050	Chrysene
U006	Acetyl Chloride	U051	Creosote--Lead
U007	Acrylamide		Creosote--Naphthalene
U008	Acrylic Acid		Creosote--Pentachlorophenol
U009	Acrylonitrile		Creosote--Phenanthrene
U010	Mitomycin C		Creosote--Pyrene
U011	Amitrole		Creosote--Toluene
U012	Aniline		Creosote--Xylene
U014	Auramine	U052	Cresols
U015	Azaserine	U053	Crotonaldehyde
U016	Benz(c)acridine	U055	Cumene
U017	Benzal Chloride	U056	Cyclohexane
U018	Benz(a)anthracene	U057	Cyclohexanone
U019	Benzene	U058	Cyclophosphamide
U020	Benzenesulfonyl Chloride	U059	Daunomycin
	Fluoranthene	U060	DDD
U021	Benzidine	U061	DDT
U022	Benzo(a)pyrene	U062	Diallate
U023	Benzotrichloride	U063	Dibenz(a,h)anthracene
U024	bis(2-Chloroethoxy)methane	U064	1,2,7,8-Dibenzopyrene
U025	bis(2-chloroethyl)ether	U066	1,2-Dibromo-3-chloropropane
U026	Chlornaphazin	U067	Ethylene Dibromide
U027	bis(2-chloroisopropyl)ether	U068	Dibromomethane
U028	bis(2-ethylhexyl)phthalate	U069	Di-n-butyl Phthalate
U029	Methyl Bromide	U070	o-Dichlorobenzene
U030	4-Bromophenyl Phenyl Ether	U071	m-Dichlorobenzene
U031	n-Butyl Alcohol	U072	p-Dichlorobenzene
U032	Calcium Chromate	U073	3,3'-Dichlorobenzidine
U033	Carbon Oxyfluoride	U074	1,4--Dichloro-2-butylene
	Carbonyl Fluoride	U075	Dichlorodifluoromethane
U034	Trichloroacetaldehyde	U076	1,1-Dichloroethane
U035	Chlorambucil	U077	1,2-Dichloroethane
U036	Chlordane	U078	1,1-Dichloroethylene
U037	Chlorobenzene	U079	1,2-Dichloroethylene
U038	Chlorobenzilate	U080	Methylene Chloride
U039	p-Chloro-m-cresol	U081	2,4-Dichlorophenol
U041	1-Chloro-2,3-epoxypropane	U082	2,6-Dichlorophenol
U042	2-Chloroethyl Vinyl Ether	U083	1,2-Dichloropropane
U043	Vinyl Chloride	U084	1,3-Dichloropropylene
U044	Chloroform	U085	1,2,3,4-Diepoxybutane
U045	Chloromethane	U086	N,N-Diethylhydrazine

U087	0,0-Diethyl S-methyldithiophosphate	U135	Hydrogen Sulfide
U088	Diethyl Phthalate	U136	Arsinic Acid, dimethyl
U089	Diethyl Stilbestrol	U137	Indeno (1,2,3-cd)pyrene
U090	Dihydrosafrole	U138	Iodomethane
U091	3,3'-Dimethoxybenzidine	U140	Isobutyl Alcohol
U092	Dimethylamine	U141	Isosafrole
U093	p-Dimethylaminoazo-benzene	U142	Kepone
U094	7,12-Dimethylbenz(a)anthracene	U143	Lasiocarpine
U095	3,3'-Dimethylbenzidine	U144	Lead Acetate
U096	a,a-Dimethyl Benzyl Hydroperoxide	U145	Lead Phosphate
U097	Dimethylcarbonyl Chloride	U146	Lead subacetate
U098	1,1-Dimethylhydrazine		Lead, bis(acetato-O)tetrahydroxytri-
U099	1,2-Dimethylhydrazine	U147	Maleic Anhydride
U101	2,4-Dimethylphenol	U148	Maleic Hydrazine
U102	Dimethyl Phthalate	U149	Malononitrile
U103	Dimethyl Sulfate	U150	Melphalan
U105	2,4-Dinitrotoluene	U151	Mercury
U106	2,6-Dintrotoluene	U152	Methacrylonitrile
U107	Di-n-octyl Phthalate	U153	Methanethiol
U108	1,4-Dioxane	U154	Methanol
U109	1,2-Diphenylhydrazine	U155	Methapyrilene
U110	Dipropylamine	U156	Methyl Chlorocarbonate
U111	Di-n-propylnitrosamine	U157	3-Methylcholanthrene
U112	Ethyl Acetate	U158	4,4'-Methylene bis(2-chloroaniline)
U113	Ethyl Acrylate	U159	Methyl Ethyl Ketone
U114	Ethylene bis-dithiocarbamic acid	U160	Methyl Ethyl Ketone Peroxide
U115	Ethylene Oxide	U161	Methyl Isobutyl Ketone
U116	Ethylene Thiourea	U162	Methyl Methacrylate
U117	Ethyl Ether	U163	N-Methyl N'-nitro N-Nirosoguanidine
U118	Ethyl Methacrylate	U164	Methylthiouracil
U119	Ethyl Methane Sulfonate	U165	Naphthalene
U121	Trichloromonofluoromethane	U166	1,4-Naphthoquinone
U122	Formaldehyde	U167	1-Naphthylamine
U123	Formic Acid	U168	2-Naphthylamine
U124	Furan	U169	Nitrobenzene
U125	Furfural	U170	p-Nitrophenol
U126	Glycidaldehyde	U171	2-Nitropropane
U127	Hexachlorobenzene	U172	N-Nitroso-di-n-butylamine
U128	Hexachlorobutadiene	U173	N-Nitroso-di-n--ethanolamine
U129	alpha-BHC	U174	N-Nitrosodiethylamine
	beta-BHC	U176	N-Nitroso-N-ethylurea
	delta-BHC	U177	N-Nitroso-N-methylurea
	gamma-BHC (Lindane)	U178	N-Nitroso-N-methylurethane
U130	Hexachlorocyclopentadiene	U179	N-Nitrosopiperidine
U131	Hexachloroethane	U180	N-Nitrosopyrrolidine
U132	Hexachlorophene	U181	5-Nitro-o-toluidine
U133	Hydrazine	U182	Paraldehyde
U134	Hydrogen Fluoride	U183	Pentachlorobenzene

U184	Pentachloroethane	U243	Hexachloropropylene
U185	Pentachloronitrobenzene	U244	Thiram
U186	1,3-Pentadiene	U246	Cyanogen Bromide
U187	Phenacetin	U247	Methoxychlor
U188	Phenol	U248	Warfarin
U189	Phosphorous Sulfide	U249	Zinc Phosphide
U190	Phthalic Anhydride		
U191	2-Picoline		
U192	Pronamide		
U193	1,3-Propane Sultone		
U194	n-Propylamine		
U196	Pyridine		
U197	p-Benzoquinone		
U200	Respirine		
U201	Resorcinol		
U202	Saccharin and salts		
U203	Safrole		
U204	Selenium Dioxide		
U205	Selenium Sulfide		
U206	Streptozotcin		
U207	1,2,4,5-Tetrachlorobenzene		
U208	1,1,1,2-Tetrachloroethane		
U209	1,1,2,2-Tetrachloroethane		
U210	Tetrachloroethylene		
U211	Carbon Tetrachloride		
U213	Tetrahydrofuran		
U214	Thallium Acetate		
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)		

B-17 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:

B-17.1 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.

B-17.2 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 °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 excluded.
- 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 stormwater or drainage from a yard, roof, basement, air conditioning unit, cooling tower, or street catch basin. Existing air conditioning units and cooling towers discharging into wastewater facilities prior to the adoption of Article IV of the Boca Raton Municipal Code are exempt.
- h) Any wastewater which causes a hazard to human life or creates a public nuisance.
- i) Any wastes from septic tanks or other facilities, or wastes emanating from locations outside the city sewer service area without previous written approval of the director; such discharges shall only be made at a site approved by the director.
- j) 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.
- k) Pollutants that create a fire or explosion hazard in the wastewater facility.
- l) 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.

- m) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the wastewater facility resulting in interference.
- n) 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.
- o) Heat in amounts which will inhibit biological activity in the wastewater facility resulting in interference, but in no case heat in such quantities that result in the discharge from the treatment plant having a temperature that exceeds 40°C (104°F) unless the appropriate agency approves alternate temperature limits in accordance with Rule 62-302.520, F.A.C.
- p) 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.
- q) Any trucked or hauled pollutants, except at discharge points designated by the control authority.
- r) Waste water containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations.