1. Purpose

Hazardous chemical wastes generated by Kennesaw State University (KSU) will be handled according to the rules and regulations of the Environmental Protection Administration (EPA) Resource and Recovery Act (Title 40 Code of Federal Regulations (40 CFR), Parts 260-268, 273 and Part 279 and Parts 124 or 270). KSU will also comply with the Georgia Environmental Protection Division (EPD) Rules for Hazardous Waste Management.

The purpose of this Plan is to provide the procedural framework regarding the handling of wastes from "cradle to grave". This includes waste determinations, characterizations, laboratory practices and proper disposal.

2. Scope

This Plan will affect anyone who generates wastes including but not limited to the student in the laboratory, the Principal Investigator (PI), Faculty and Staff. All wastes will be disposed of by reputable chemical waste handlers.

The scope of solid waste management covered by this Plan includes a variety of materials including hazardous and nonhazardous chemical wastes. By definition, the KSU Kennesaw Campus is a small quantity generator and the KSU Marietta Campus is a conditionally exempt small quantity generator.

3. Responsibilities

The KSU Environmental Health and Safety Department (EHS) is responsible for providing guidelines and training, tracking regulatory requirements, ensuring that the following procedure accurately reflects current requirements, and auditing program implementation.

For the purpose of this procedure, the waste generator is the individual responsible for handling or use of the material being offered for disposal or removal. This applies to all waste, from simple to complex. The person making the initial decision affecting how waste is offered for removal/recycling is most knowledgeable about the nature of the material. It is the generator's responsibility to understand how to properly manage waste.

The generator (e.g., PI or supervisor) is responsible for determining if a material is spent or intended for discard, thereby defining it as a waste material. The generator along with EHS must determine if the material is a hazardous waste by characteristic or specific constituents. The hazardous waste generator is also responsible for recognizing opportunities for waste minimization. The PI or supervisor is responsible for ensuring that the proper personal protective equipment is used when handling chemical waste.

4. Definitions

Conditionally exempt small quantity generator means a facility that generates less than 100 kg (220 lbs) and less than 1 kg (2.2 lbs) of acutely hazardous waste per calendar month (P-listed waste).

Generator is any person whose act or process produces waste. At KSU, and for the purpose of this document, this would be the PI, Laboratory Supervisor, Manager or other person responsible for a local area in which chemicals are used or stored. "Generator" will also be used for matters pertaining to the University as a whole.

Hazardous waste is any solid waste that is ignitable, corrosive, reactive, or toxic, a listed hazardous material, or contains a listed hazardous material.

Non-regulated Chemical Waste is any solid waste that is technically not a "hazardous waste", but may pose a significant hazard to human health or the environment, or is unacceptable at local solid waste management facilities. Sanitary (municipal) landfills cannot accept liquids or contained gaseous wastes. Wastewater treatment plants must operate within specific limits for their sludge's and treated effluent.

Recovered materials means those materials which have known recycling potential, can be feasibly recycled, and have been diverted or removed from the solid waste stream for sale, use, or reuse by separation, collection, or processing.

Recyclable material means those materials which are capable of being recycled and which would otherwise be processed or disposed of as solid waste.

Resource recovery means the process of obtaining material or energy resources from discarded solid waste which no longer has any useful life in its present form and preparing the solid for recycling.

Small Quantity Hazardous Waste Generator means a facility that generates more than 100 kg (220 lbs) but less than 1000 kg (2200 lbs) of hazardous waste and less than 1 kg (2.2 lbs) of acutely hazardous waste per calendar month (P-listed waste).

Solid waste means any hazardous or nonhazardous garbage, refuse or sludge from a waste treatment plant, water supply treatment plant or air pollution control facility, domestic sewage and sludge's generated by the treatment thereof in sanitary sewage collection, treatment and disposal systems, and other material that is either discarded or is being accumulated, stored or treated prior to being discarded, or has served its original intended use and is generally discarded, including solid, liquid, semisolid or contained gaseous material resulting from industrial, institutional, commercial and agricultural operations, and from community activities. Solid waste does not include recovered materials; solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject

to permit under 33 U.S.C. Section 1342; or source, special nuclear, or by product material as defined by the federal Atomic Energy Act of 1954, as amended (68 Stat. 923).

5. Waste Handling Procedure

A. Minimize waste generation

Before beginning a project, it is the responsibility of the waste generator to minimize waste by determining the hazards associated with the chemical/product and choosing the chemical/product of lesser hazard. PIs and Supervisors should order and store minimum amounts of chemicals and products. Be aware that certain chemicals are difficult and costly to dispose of. Some examples follow:

1) Heavy metals such as mercury, barium, cadmium, chromium, beryllium, silver, selenium, and tellurium.

2) Chlorophenols, dioxins, and cyanides.

3) Compressed gases including lecture bottles or containers with liquids under pressure. Arrange with the supplier to return empty or unused containers.

4) Manufacturer's samples. Either arrange for the manufacturer to accept return of unused products or provide an MSDS or product data sheet with a description of the product and its characteristics.

B. Satellite accumulation areas

Satellite accumulation areas may be established at or near the point of generation of the waste where up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste can be stored. If the stored wastes exceed these limits, the waste must be moved to a 180-day storage area within 3 days. This area must be one in which spills can be contained. Secondary containment shall be employed that will ensure that incompatible wastes are not to mix in the event of a leak or spill. A sink or an open area outside is not acceptable as an accumulation area. Refer to the EPA Hazardous Waste Compatibility Chart for storage requirements.

C. Labeling containers

Waste containers must be labeled with the words "hazardous waste" or "non-hazardous waste" and the contents of the waste container. A log sheet beside the container is the recommended way of tracking what is placed in the waste container. EHS along with the chemical waste contractor will characterize the waste based on the contents. If containers are too small to hold a label, they should be placed in secondary containment and that should be labeled.

D. Waste containers

Waste containers must be compatible with the waste contained in them. Only compatible wastes shall be placed in the same containers. The waste containers must be closed unless waste is being placed in the container. Funnels with positive latch lids are available for purchase and should be used when necessary. Waste that is found in damaged containers must be transferred to intact containers immediately upon discovery.

E. Waste pick-up procedure

Once the container is full, a waste card shall be created in Chematix and the waste submitted for pick-up by EHS. The start accumulation date is the date when the container is full, not the date when the first waste is placed in the container. Chematix will be used for disposing of mixtures of waste materials from lab experiments as well as disposing of pure chemicals that are expired or no longer needed. Specific training for using the Chematix software is conducted on a routine basis. Procedures for creating specific types of waste cards can be found on the EHS website.

F. Elementary neutralization

This is the only time a chemical waste is allowed to be placed in the sanitary sewer. If a liquid waste that is generated in a laboratory carries a corrosive waste code and is hazardous only because of its' pH, the generator may adjust the pH of the waste to a pH between 6 to 9 and drain dispose of the waste. The generator is not required to perform this procedure and EHS will dispose of the waste in that case.

G. Aerosol cans

Aerosol containers will be managed according to the KSU Aerosol Disposal Guidelines. No aerosol container shall be disposed of in the trash. Even containers that are empty must be punctured by EHS before placing them in the trash. Any liquid that is released in the process will be treated as hazardous waste.

H. Spill procedure

All areas that generate waste shall have access to spill clean-up materials as described in the KSU Chemical Spill Procedures. Personnel who have been trained to clean-up a spill and have the proper personal protective equipment to do so may clean proceed with a clean-up procedure. Chemicals or wastes that are unknown or too large to be handled by lab personnel shall be managed by EHS either directly or by a contractor.

I. Empty containers

Containers of hazardous waste will be considered empty according to 40 CFR 261.7. If the container is less than or equal to 119 gallons, then it will be empty when no more than 2.5 cm (1 inch) of residue remains on the bottle or inner liner or no more than 3% by weight of the total capacity of the container remains in the container or inner liner. If the container is more than 119 gallons in size, then no more than 0.3% by weight of the total capacity of the container is left in the container. The exceptions to this rule are waste gases and containers that contained acute hazardous waste (P-listed waste). A waste gas will be considered empty when the container approaches atmospheric pressure. A P-listed waste container is considered empty when the container or liner has been triple rinsed with a solvent capable of dissolving the waste or some other method of cleaning that has been scientifically proven to remove the waste. The rinsate in

this case is P-listed waste. Containers that are empty according to these instructions can be placed in the garbage after the label has been removed or defaced.

J. Chemical inventory

PIs and Supervisors will review their chemical inventories twice a year and dispose of out-dated and unnecessary chemicals. Special attention should be given to peroxide formers and other potentially explosive chemicals, e.g., ether, tetrahydrofuran, dioxanes, picric acid, etc. These chemicals should not be kept past the manufacturers' expiration date without checking for the formation of dangerous chemical reactions.

K. Controlled waste storage units

EHS will maintain controlled waste accumulation storage units as necessary. The Kennesaw Campus unit will be a 180-day storage unit. It will be managed according to 40 CRF 261.34(d). The waste will be held for no more than 180 days and no more than 6000 kg (unless the waste treatment facility is greater than 200 miles in which case there is a 270 day storage limit). The Marietta Campus unit will be managed so that the total accumulation is less than 1000 kg of waste.

L. Training

KSU requires employees who generate chemical waste to be trained annually in basic hazardous waste management. The Department of Transportation requires that all persons involved in the transport of DOT-regulated materials must be trained in hazardous materials regulations according to 49 CFR 172 Subpart H. Initial training must be conducted within 90 days of employment or change of job responsibilities that cause affect to hazardous material transportation and at least every 3 years thereafter. EHS will provide this training either in a classroom setting or online.

6. Plan Review

This Plan will be reviewed and updated as necessary but at least annually. The Notification of Regulated Waste Activity (EPA Form 8700-12) must be reviewed annually and dues paid as required by the State of Georgia. This Plan and three years of documentation will be available in the EHS Office for review by any authorized Agency.