

 STANDARD OPERATING PROCEDURES SAFETY, HEALTH & SUSTAINABILITY		
Emerald Energy Program		
Section:	Implementation Date: 1/1/2015	Revision Date: 08/2019
		Revised By: CS

AUTHORITY:

The CSUSM Chemical Hygiene Committee supported by the California Code of Regulations, Title 8, Section 5191 provides the oversight of the Emerald Energy Program.

SCOPE:

All laboratory personnel generating BSL-1 waste in CSUSM laboratories shall follow these procedural steps when processing Emerald Energy Waste from point of generation to storage in freezers.

DEFINITIONS:

Biosafety Level 1 (BSL-1): Suitable for work involving well-characterized agents not known to cause disease in healthy adult humans, and of minimal potential hazard to laboratory personnel and the environment.

Common Items: Plastics (Eppendorf tubes, pipette tips, petri dishes, etc.), gloves (latex, vinyl, and nitrile), paper material.

PROGRAM OVERVIEW:

What is the Emerald Energy Waste Program:

Emerald Energy waste program is a separate waste stream comprised only of BioSafety Level (BSL) 1 waste. It does not include BSL2 -4 waste. Once the waste is collected, it is taken to an incineration facility that converts the heat into electrical energy. Prior approval from SH&S is required for a laboratory to adopt the Emerald Energy Program.

Why does CSUSM utilize the Emerald Energy Program:

The Emerald Energy Program is an innovated alternative method for the treatment and disposal of bio-hazardous waste. Compared to the traditional method of autoclaving and landfilling the waste, the Emerald Energy Program is a more sustainable practice for this laboratory waste stream. This program diverts waste from the autoclave and landfill to an incineration facility in California. At the treatment facility, the waste is incinerated to produce steam. The process of incineration leads to thermal energy, which is transferred to power local power grids. CSUSM does not send any medical waste to the landfill for disposal.

PROCEDURE:

ONLY BSL-1 laboratories can implement the Emerald Energy Program.

1. Generated waste that can be placed in the Emerald Energy bins are plastics, paper, latex, and nitrile based materials. For example, media plates, plastic test tubes, pipette tips, gloves, pads, and paper towels.
 - a. No glass, liquids, sharps, or chemically contaminated waste are allowed in for this waste stream. Please dispose of those separately.
2. The laboratory must obtain the following:
 - a. A hands free white or red trash bin may be used.
 - i. Must be self-closing
 - b. On the top of the lid, signage must be in place to indicate the container is for Emerald Energy Waste/BSL-1 waste.
 - c. The trash bags shall be a clear 1.5ml bag. All trash bins must be double bagged.
3. Once the container becomes $\frac{3}{4}$ full, the waste must be removed from the bin and the bag shall be secured by tying or taping closed. After removing the waste, make sure that the bin is replaced with two new 1.5ml clear bags.
4. Biohazard waste bags shall never be placed inside an Emerald Energy Bin.
5. The secured Emerald Energy waste is then placed into the Biohazard Freezer. The current locations of the Biohazard Freezers are:
 - a. Science Hall 1, room 102.
 - b. Science Hall 2, room 157A.
 - c. ELB, room 105

If freezer is full of BSL-2 waste, contact SHS @ 4502. Emerald Energy waste can be stored outside in cubic yard boxes for up to one year.

All storage rooms must be locked at all times. You must receive prior approval from SH&S for a copy of the key or have an authorized laboratory worker (i.e. Instructional Support Technician) unlock the freezer. After the bag has been placed in the freezer, secure the door by locking it.

Recommended Materials:

- 1.5 Mil, 30"W x 36"H, Clear Bags, Cat#: W25LDC
<http://www.plasticplace.com/20-30-gallon-1-5-mil-30x36-clear-trash-bags>
- 13 Gal. White Step-On Waste Container
<https://www.homedepot.com/p/Rubbermaid-13-Gal-White-Step-On-Waste-Basket-2007868/300121411>