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### Standard Operating Procedure

**Procedure:** Excella E-24 Incubator Shaker

**Department:** Bioeconomy Institute

**Building/ Room Number:** Biorenewables Research Laboratory (BRL) 1114

**Supervisor:** Jacquelyn Baughman

**Procedure Overview:** A Incubator Shaker is a piece of laboratory equipment designed to mix components by horizontal plane rotary motion at different set temperatures. It is able to run environmental samples, chemicals, human samples, and other non-human samples. The incubator shaker in lab 1114 is an Excella E-24.

**Health and safety information for materials used:** This machine operates under high speed. The lid should remain closed while in operation. If the lid unexpectedly opens, wait for the rotation of the machine to stop. Always disconnect power during maintenance. Be sure the instrument is plugged into grounded outlets.

Spills are possible if the machine is not loaded in a symmetric pattern. Reference the instruction manual for proper loading techniques. Samples that contain bio-oil must be handled properly. Bio-oil is acidic and contains hazardous chemicals (i.e. aromatics, methanol) some which may be carcinogenic. Ensure that room ventilation is adequate before handling bio-oil. Chemical resistant gloves should be worn while handling bio-oil and/or other chemicals. Safety glasses and closed toe shoes are required. Spills should be cleaned immediately. Bio-oil is to be stored in the refrigerator.

#### **Hazard Control Measures:**

- Safety glasses
- Lab coat
- Nitrile gloves
- Closed toe shoes
- Hot gloves

**Waste Disposal Procedures:** Bio-oil should be disposed in a EH&S designated waste satellite container. Make sure to put the waste in its own container within the EH&S secondary container.

**Decontamination Procedures:** Any foreign objects can be removed from inside the incubator while wear gloves. The rotating platform and other inside parts can be wiped with a cloth and a non-abrasive conventional household cleaner. Never use caustic cleaning agents such as soap suds, phosphoric acid, bleaching solutions or scrubbing power.

**Spill Containment and cleanup procedures:** Bio oil spills can be cleaned up with paper towels and general cleaning solution. In the case of a large spill, a spill kit should be used. Other chemicals may require different forms of removal.

**Using substances requiring special procedures:** No

**Written By:** Matt Schul and Gabriel Domingues

**Date:** 5/27/2014

**Approved By:** Jacquelyn Baughman

**Date:** 6/25/2014

Detailed procedures, operating instructions, maintenance, and emergency contact information list is attached.

### **Equipment Description**

The Excella E-24 is capable of running from 50 to 400 rpm. There are temperature settings that range from 4° to 60°C. The clear lid on the machine manually opens by lifting on the black handle. Inside is the main platform with 16 spring housings. This incubator is able to hold Erlenmeyer flasks, 2.8-liter Fernbach flasks, and a variety of tubes and plates can be accommodated using the New Brunswick Scientific shaker accessories. The power switch is located on the right side of the machine, near the front. The operation is run entirely from the control panel on the front of the machine. Buttons are used to control start/stop, speed and temperature.

### **Pre-Analysis Checklist**

1. Make sure you have your required safety equipment of glasses, closed toe shoes, gloves, and laboratory coat.
2. Check the machine for any previous samples left inside.
3. Remove any dust or other foreign objects from the incubator platform with a soft towel or cloth.
4. Make sure the machine is plugged in.

## Equipment Operation

### Loading the Shaker

1. Put your sample material in an acceptable container with a lid
2. Gently press the container in one of the spring housings until it is securely in place.

### Shaker operation

1. Close the lid of the incubator and turn on the machine using the power switch to the right hand side. The LED display will momentarily show the model number. (NOTE: the shaker will not operate if the lid is open)
2. Once the machine is powered on, the incubator may start running. Pressing the start/stop button will cause the shaking to stop.
3. Press the select button until the RPM indicator is illuminated on the left hand side of the control panel.
4. Use the arrow keys to set the RPM of the shaker. A value from 50 to 400 RPM is available. The number will set when no buttons are pressed.
5. Press the select key until the °C INDICATOR illuminates.
6. Set the temperature using the arrow keys. Temperature range is from 4° to 60°C
7. Press the select key until the HRS INDICATOR is illuminated.
8. Use the arrow keys to set the TIME of the shaker. This can be a value from .1 to 99.9. The number will set when no buttons are pressed. If a continuous run time is desired, simply press the start stop button.
9. Press the **START/STOP** key. The shaker will start in untimed mode.
10. Press the **START/STOP** key again. The shaker will stop and the display will read OFF.
11. Press the **START/STOP** key a third time; the time indicator will light and the shaker will now start the timed run.
12. The machine will come to a stop once the timed run has ended. If running in untimed mode, the **START/STOP** key can be pressed at any desired time.

### Machine Shutdown

1. Make sure the machine has come to a complete stop and open the lid.
2. Remove any samples you need. Use a hot glove if high temperatures were set.
3. Turn off the power by flipping the switch on the right side of the machine.

## **Emergency Contacts**

In case of emergency the following people should be contacted:

### **Jacquelyn Baughman**

Lab Supervisor

Cell: (515) 505-9509

### **Patrick Hall**

Research Associate II

Office: 515-294-4984

### **Marjorie Rover**

Lab Manager

Office: (515) 294-2984 Cell: (319) 230-1163

### **Ryan Smith**

BEI Program Coordinator

Office: (515) 294-6244 Cell: (515) 203-1640 Home: (719) 660-2262

### **Patrick Johnston**

Assistant Scientist III

Office: (515) 509-0027 Cell: (515) 509-0027 Home: (319) 231-9140

### **Dr. Robert Brown**

BEI/CSET Director

Office: (515) 294-7934 Cell: (515) 520-1337 Home (515) 460-3434

If the emergency is minor, please contact responsible graduate student or lab supervisor. If there is a serious emergency or life threatening emergency please contact 911 followed immediately by contacting Jacquelyn Baughman and/or Robert Brown. If there is a chemical spill too large to be cleaned using a typical spill kit contact Environmental Health and Safety.

### **Approved Trainers:**

Patrick Hall , Matt Schul, Gabriel Domingues

**Training Sign-Off:**

Trainee   Date   Trainer