

**Department of Environmental Protection
Bureau of Remediation & Waste Management
RCRA Program**

Standard Operating Procedure Change Record

Title: SAFETY PROTOCOL FOR USE OF THE INSTA-ICE BLOCK DRY ICE MACHINE

Identification #: RWM-DR 021

SOP Originator: Brian Beneski

Author	Revision	Description of Change	Date
Erika Bonenfant	RCRA 01	Substitute MEDEP/RCRA in the place of MEDEP/DR, and Division of Oil and Hazardous Waste Facilities Regulation in the place of Division of Remediation. Section 2.0: Change first sentence to "MEDEP/RCRA is responsible for the investigation and subsequent corrective actions for RCRA facilities throughout Maine."	8/1/2009

Approved by:

Scott Whittier, RCRA Program Director

Date:

**COVERSHEET
STANDARD OPERATING PROCEDURE**

Operation Title: **SAFETY PROTOCOL FOR USE OF THE INSTA-ICE BLOCK
DRY ICE MACHINE**

Originator: **Brian Beneski**
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Division of Remediation
Bureau of Remediation and Waste Management

Standard Operating Procedure: **RWM-DR-021**
Revision: **#2**
Effective Date: **April 13, 2009**
Written/Revised by: **Laura Gay**
Reviewed by: **Brian Beneski**

Five Year Review No Changes Needed:

Print Name: _____ Signature: _____ Date: _____

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1.0 PURPOSE

The purpose of this document is to describe the Maine Department of Environmental Protection, Bureau of Remediation and Waste Management, Division of Remediation's (MEDEP/DR) safety procedure for use of the Insta-Ice Dry Ice Machine.

2.0 APPLICABILITY

MEDEP/DR is responsible for the investigation and remediation of hazardous substance, petroleum, and landfill sites throughout Maine. In the course of the investigation and subsequent remediation, samples will be collected for analysis that requires freezing samples in the field for preservation. Use of dry ice will allow the freezing of samples. This SOP will outline the safe use of the Insta-Ice Dry Ice Machine.

3.0 RESPONSIBILITIES

All Uncontrolled Sites Program Staff must follow this procedure when using the Insta-Ice Dry Ice Machine. All managers and supervisors within MEDEP/DR are responsible for ensuring that their staff are familiar with and adhere to this procedure.

4.0 PLANNING

An area in the loading bay of the warehouse has been set up for storage of the gas cylinders and for using this machine. The cylinders will be anchored to the wall with cylinder brackets and safety chains. The safety chains must be connected at all times.

Carbon dioxide tanks with a built in siphon must be used with this machine. A 50 pound tank will produce 9-11 one pound blocks of dry ice.

Inspect the tank, hoses and machine prior to use. If any parts are damaged do not use the machine and contact the SASS Unit to report the damage.

5.0 EQUIPMENT

Equipment required for making dry ice with the insta-ice machine is as follows:

- Insta-ice machine and hoses;
- Carbon dioxide compressed gas cylinder;
- Insulated gloves; and
- cooler

6.0 PROCEDURE

1. Place the plastic washer inside the hexagonal nut that attaches to the cylinder. Firmly connect the dry ice machine hose to the carbon dioxide cylinder; tighten it with a wrench.
2. Attach the other end of the hose firmly to the top fitting on the dry ice machine.
3. Open the carbon dioxide cylinder valve so that it registers 1-2 units on the smaller scale of the gauge. Opening the valve further will only waste the carbon dioxide. Make sure the

vapor escaping from the vents on the machine do not carry snow solids. If it does, close down the valve slightly. After ice starts building up in the machine you may open the valve another degree or two to speed up the process. If the valve reaches 10 on the scale turn the valve off.

4. Vapor will start discharging through the vertical filter slots as the dry ice block is forming. When vapor discharges through the lid and body of the machine (and the sound changes) the dry ice block is formed. Immediately close the cylinder valve. (The first block or two will take longer to make because the box and hose are being cooled down.)
5. Open the dry ice machine by loosening the latches on the top and folding down the sides and remove the block of ice. *ALWAYS USE INSULATED GLOVES WHEN HANDLING DRY ICE AS WELL AS THE MACHINE AND HOSE WHEN IT HAS BEEN USED.*
6. During and after using the dry ice machine use care handling the hose. If it is bent, pulled or twisted while it is cold it may be damaged.
7. When you are finished using the machine, *allow the hoses and machine to warm up to above freezing*, then disconnect the hose from the cylinder. Using a wax pencil, mark a check on the tank for the number of blocks made. Upon reaching 8 blocks, inform a MEDEP/DR SASS staff member to arrange for a new tank of carbon dioxide.

7.0 HEALTH AND SAFETY

- This procedure must only be performed in a well ventilated area.
- Handling dry ice and the insta-ice equipment is a frostbite hazard. Operators must wear insulated gloves when handling dry ice, as well as the insta ice equipment when cold.