

Testing the Effect of the Nucleator in Artificial Snow

The main aim of snow making is to atomize water into droplets.

This is followed by blowing the droplets up in the air and finally allowing them to substantially freeze before they touch the ground. Methods of making artificial snow have been known for quite some time. This mainly involves the nucleation of the least portion of water spray to initiate the process of freezing. This is the process by which crystals form from liquids (Family Travel Forum Staff, 2011). A nucleator in simple terms can be defined as the process by which crystals are formed from liquids at a certain temperature and pressure depending on the physical characteristics of the liquid.

However, being a foreign material, it has its effects in water where studies have shown that, it is a pollutant. This research experiment is aimed at evaluating the effect of the nucleator to the micro-organisms like bacteria in the earth surface (www.cs-instruments.com/ , 2011).

Hypothesis Given an equal amount of water to make the artificial ice, the level of the nucleator determines how pollutant the formed ice becomes.

The pollution level of artificial ice is directly proportional to

the amount of nucleator present in given samples of ice. In this experiment, the amount of water used for the experiment is maintained, or held as a constant while the amount of the nucleator is increased in three different samples. The test sample is composed of pure natural ice. Temperature and pressure are also held constant. As time increases, changes are recorded in a table. Preferably the non-ionic surfactant is a sulfate compound containing C8-16 carbon chain alcohol is used as the nucleator.

In this case, any non-ionic surfactant may be used. However the most preferred sulfate compound is the sodium myreth sulfate. Mix the aqueous solution for three hours and store it at a temperature above 32 °C. Introduce the bacteria solution into the solution and store it for a period of ten days and record the observations (www.cs-instruments.com/, 2011).

Apparatus • Natural snow • Artificial snow • Bacteria • Silica • Non-ionic surfactant • Thermometer Procedure Ensure that the external conditions are the same; basically, an ideal temperature to ensure water remains solid is required. Introduce some bacteria in a silica solution into two samples in different jars. Introduce natural snow into one of the jar and keep it in a constant atmospheric condition for a period of ten days. In the other jar, introduce the artificial snow and keep it a constant atmospheric condition for a period of ten days too. This acts as the control experiment.

In another two separate put different amount of Non-ionic surfactant to form two samples of artificial ice with different levels of pollutants. For example, in a jar of five liters, introduce 100g of Non-ionic surfactant, and 200g into the other jar. For a period of ten days, make daily observation on the appearance, odor, and change of the conditions in separate lists. In a separate experiment, mix water in a high speed agitation vessel at room temperatures, add a non-ionic surfactant to water. In this case, the resulting aqueous solution contains 30% – 70% of the said non-ionic surfactant (e-How.com, 2011) Expected results The jar with the greater amount of pollutant produce a more strong odor and color change than the one with a little amount. In the control experiment, there will be no change in color or smell. This is as a result of decomposing bacteria.

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