

INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

SAFETY BULLETIN #47

ARTIFICIAL SNOW

Introduction

A wide variety of materials are utilized as artificial snow in motion picture productions. Artificial snow can be used as a special effect, such as falling snow, or as set dressing, such as snow placed on trees, buildings or streets. This document addresses both uses and covers general guidelines for safely using, applying and cleaning/disposing of artificial snow in motion picture productions.

Types of Artificial Snow

Materials that have historically been utilized to create artificial snow include shredded paper or cellulose, foaming/flocking agents, starch, plastic pellets/flakes, chipped ice, and snow blankets. It is important to know the composition of the material(s) that will be used as artificial snow. This will determine the work practices and the cleanup plans to minimize the impact on the immediate environment before, during, and after filming.

Applicable Rules & Safety Data Sheets

The production should assess the various artificial snow product(s) and their intended use, including combined uses, to evaluate potential exposure or other safety concerns. A safety evaluation may be required. As part of the safety evaluation, air sampling may be necessary to determine potential employee exposure.

The production should obtain from the manufacturer the current Safety Data Sheet (SDS), as applicable, for the specific artificial snow material(s) being used. Evaluate the SDS for the potential hazards, exposure limits and applicable laws/regulations associated with the use of that product. The SDS should be made available, upon request, to all cast and crew.

The production should follow the manufacturer's instructions and any additional guidance provided by the vendor of the artificial snow. Productions should also review applicable safety, environmental, legal, and regulatory requirements of the relevant Authority Having Jurisdiction (AHJ).

Determine the Permissible Exposure Limit (PEL) or other applicable regulatory exposure limit(s) for the artificial snow planned for use. Refer to regulations established by OSHA and/or other AHJs for further information and/or regulatory requirements.

Consult an industrial hygienist or other qualified professional, as appropriate, to determine whether air monitoring is needed. Compare employee exposure results to applicable OSHA PELs or other regulatory exposure limits. If the product generates combustible dust, evaluate fire or explosion hazards separately using appropriate data, such as Minimum Explosive Concentration (MEC), as applicable.

Environmental Concerns

The physical environment and conditions where artificial snow will be used should also be carefully considered. Determine and evaluate which artificial snow would be appropriate, how it

will be used/applied, and how it will be removed. Predicted weather conditions (e.g., wind, rain) and their potential impact on artificial snow should always be considered.

AHJ regulations may not allow for artificial snow to enter a drainage system, and/or natural or manmade bodies of water. Drains in the area may need to be covered to prevent artificial snow from entering the storm water system. This may include procedures such as containment, completely blocking the drains, or installing filters that will allow liquids to pass through but will capture the artificial snow.

If applicable, a ground cover should be used in areas where artificial snow will fall or is placed as set dressing. A ground cover for collecting artificial snow can mitigate the spread into the surrounding environment.

Potential Hazards & Safety Precautions

Applying Artificial Snow

Personnel applying artificial snow should be aware of the potential hazards presented by specific products that include, but are not limited to, the following:

- Slips, Trips, and Falls:
 - Snow blankets may pose a trip hazard.
 - Artificial snow products may be slippery.
- Respiratory / Inhalation - Artificial snow products may pose an inhalation risk.
- Visibility - The application of artificial snow may prevent production workers from seeing potential hazards.
- Electrical shock hazards - Wet artificial snow products may increase the risk of electrical shock when used in the vicinity of electrical equipment.

Based on the safety evaluations and instructions in the SDS, follow these guidelines when applying artificial snow:

- Use appropriate Personal Protective Equipment (PPE) for the products being used, such as eye protection (e.g., safety glasses, goggles), gloves, and respiratory protection.
 - If the production provides disposable filtering facepiece respirators (e.g., N95 face mask) to employees to use for protection on a voluntary basis, those employees must be made aware of the limitations and proper use of such respirators, as required by OSHA or other AHJ regulations.
- Ensure production workers who are applying artificial snow have been trained and understand hazard communication regulations.
- Use Engineering Controls:
 - Be aware of the potential impact that artificial snow may have on Heating, Ventilation, and Air Conditioning (HVAC) systems. The production should consult with building or facility management to determine appropriate protective measures for HVAC systems.

- If necessary, consider the use of exhaust, ventilation measures, or air filters, such as High-Efficiency Particulate Air (HEPA) filters. These should be installed and utilized according to the manufacturer's instructions and standards (e.g., appropriate flow rates, seals, filter-replacement schedules).
- Maintain equipment regularly - Application guns, hoses, nozzles, and compressors must be regularly inspected and cleaned to avoid clogging, material defects, equipment malfunction, or unexpected overspray or leaks.
- Avoid applying artificial snow near open flame or spark-generating equipment.
- Have an emergency action plan for accidental spills or discharges, ignition, contact with eyes or ingestion of artificial snow materials.

Using Artificial Snow While Filming

Depending on the type, quantity, and location of artificial snow used, the hazards noted above during the application process may also apply while filming. The guidelines listed above, and the control measures listed below may need to be implemented.

Control Measures

When productions use artificial snow as an airborne product (i.e., falling snow), the production should implement one or more of the following:

- Use the minimum amount of artificial snow necessary to achieve the desired effect.
- Limit cast and crew exposure, in both amount and duration, to the falling artificial snow.
 - Keep the area clear of non-essential personnel.
 - Minimize foot traffic to reduce disturbance where artificial snow has been applied.
- Use additional control measures at worksites where workers are exposed to extended durations of artificial snow:
 - Ventilate or exhaust interior sets or stages at appropriate intervals.
 - Provide breaks for all personnel and animals at appropriate intervals.
- Protect workers from the cold when using chipped ice.
- Utilize qualified technicians when creating an artificial snow effect.

Fire Hazards

Some artificial snow materials are potentially flammable or combustible. Even if the artificial snow material is fire-resistant, there may still be a hazard if the material is fine dust or powder. It is generally good practice to keep artificial snow away from heat and ignition sources, including ordinary electrical wiring, lighting fixtures, devices and equipment capable of producing sparks or generating excessive heat.

If necessary, testing and monitoring for MEC should be conducted by or under the direction of an individual who is knowledgeable about the process.

Artificial snow may require specific firefighting measures according to the SDS. The production should have the appropriate fire extinguishing means available, as determined by the SDS.

Productions should also refer to Industry Wide Labor-Management Safety Committee Safety Bulletin #46 "Photographic Dust Effects" whenever artificial snow becomes, or creates an airborne fine dust or powder.

Safety Meetings

When artificial snow is scheduled to be used, the production should notify all personnel in advance. Regular communications with cast and crew, including background, should also occur to discuss operations and precautions associated with the use of artificial snow.

A safety meeting should be held by the First Assistant Director, and may include the Special Effects Coordinator or qualified technician(s) familiar with the product/process, and should address, but not be limited to, the following topics:

- When and where artificial snow will be used.
- Ways to limit exposure to artificial snow, and options to obtain adequate fresh air.
- Availability and use of respiratory protection if airborne levels are expected to exceed PELs.
- How to seek medical care.
- Where to find the SDS.

Health Effects / Individuals with Sensitivities

Individual response to airborne artificial snow may be different and temporary reactions to artificial snow may range from having no effects to:

- Irritation to the eyes.
- Dry throat.
- Minor respiratory irritation.
- The elderly, children, and people with respiratory conditions or other ailments may have a higher sensitivity to airborne artificial snow. Adults with higher sensitivity to dust effects should inform the production of their condition.

When there is an infant present at a production using airborne, artificial snow, steps should be taken to prevent the infant from being exposed. Please consult Safety Bulletin #33, "Special Safety Considerations When Employing Infant Actors (Fifteen Days to Six Months Old)" for further guidance.

Cleanup and Disposal Considerations

Productions should properly collect and dispose of any used artificial snow. Dispose of artificial snow according to the manufacturer's instructions and SDS, AHJ, location, vendor and/or Studio requirements.

If artificial snow becomes contaminated with oil, dust containing heavy metals, chemicals, or other material, the artificial snow may need specific disposal methods.

Further Assistance

If you have further questions, please contact your supervisor, Production Management, or the Studio Safety Representative.