



Cold Weather Storage and Handling of Liquid Pesticides¹

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This MontGuide explains procedures for proper winter storage and handling of leftover liquid pesticides. Freezing of liquid pesticides can result in separation of the active ingredient from the solvents or emulsifiers, or inactivation of emulsifiers, which may lead to crystallization or coagulation of the pesticide. Applicators should know which pesticides can be frozen and which cannot. Techniques for thawing and redissolving are also important since a pesticide, once frozen, can plug spray equipment, result in poor product performance and/or damage crops if the proper thawing and mixing procedures are not followed.

INFORMATION SOURCES

The cold weather storage information in this MontGuide was compiled from information obtained from manufacturers of the pesticides listed. Each manufacturer was sent a list of questions regarding correct storage methods for their pesticide(s) during sub-zero weather. The questions asked were:

- Does the product have a minimum storage temperature?
 - Should freezing of the product be avoided?
 - If frozen, will the active ingredient separate from the inert carriers?
 - Once thawed, will the active and inert ingredients go back into suspension?
 - Is agitation recommended before the product will go back into suspension?
- Is the effectiveness of the pesticide reduced if frozen?
 - Are heated or well-insulated storage facilities recommended?
 - Should the pesticide applicator contact the manufacturer if the pesticide freezes?

Based on manufacturers' responses, many pesticides can freeze with no adverse effects to the pesticide, although separation of the active ingredient and solvent will occur. Certain steps must be followed before using a pesticide that has been frozen. First, the product must be thawed. Before attempting to thaw a frozen pesticide, however, the container should be checked to make sure that it is not ruptured or cracked from the expansion of the frozen liquid. If sound, the container should be brought to room temperature (placed in a heated room or the south side of a sunny building away from children, livestock and pets) for the thawing process, which may take several days. Once the liquid has thawed, the container can be rolled, shaken or otherwise agitated to get the contents into a uniform suspension. The container should also be inverted several times to ensure the product is completely dissolved. Pesticide manufacturers caution that if a pesticide cannot be totally redissolved (crystals are still present), the pesticide should not be used.

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STORAGE CONDITIONS

In the following table, minimum storage temperature refers to the temperature required to keep the pesticide in solution. Below that temperature, the pesticide will form crystals and freeze. The freezing point of many pesticides is lower than 32°F due to the hydrocarbon solvents or inert ingredients. Pesticides that cannot be frozen should be placed in a heated or adequately insulated area to avoid sub-zero temperatures.

Wettable powders and granules, as a rule, are not affected by low temperatures. These formulations should be stored in a dry place as moisture may promote caking or lead to certain chemical changes that reduce their effectiveness. Products formulated in water-soluble bags require special winter storage. These bags have a high affinity for moisture and become brittle when frozen. If handled when brittle, they will break open. It is important that they be stored in heated facilities.

Before storing pesticides for the winter, the applicator needs to read the pesticide label. While extreme care was taken to assure the accuracy of the information in this MontGuide, labels continue to be amended. Therefore, they should always be consulted.