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Cold Weather Storage and Handling of Pesticides

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This MontGuide explains procedures for proper winter storage and handling of leftover liquid pesticides. Applicators should know which pesticides can be frozen and which cannot. Techniques for thawing and dissolving are also discussed.

Using Previously Frozen Pesticides

Always read the pesticide product label to determine whether a pesticide can freeze with no adverse effects. Even if the product seems usable after being frozen, separation of active ingredients and inert carriers often occurs. A previously frozen pesticide can plug spray equipment, have poor product performance and/or damage crops if the proper thawing and mixing procedures are not followed.

Before attempting to thaw a pesticide, the container should be checked to make sure it is not ruptured or cracked from the expansion of the frozen liquid. If the container is cracked, place a waterproof container or bucket under the damaged pesticide product container prior to thawing. If sound, the container should be brought to room temperature by placing the container in a heated room. The thawing process may take several days. Once the liquid has thawed, the container should be agitated by rolling or shaking to return the contents to a uniform suspension. The container should also be inverted several times to ensure the product is completely dissolved. Pesticide manufacturers caution if a pesticide cannot be totally dissolved (crystals are still present) the pesticide should not be used.

If a pesticide is deemed unusable for any reason consult the pesticide label or call the manufacturer to determine the best method of disposal. Pesticides and containers can be disposed of with the Montana Department of Agriculture Pesticide Disposal Program. Contact Carli Davis (406-465-0531, Carli.Davis@mt.gov) or visit agr.mt.gov/Pesticide-Waste-Disposal-Program for more information.

Storage Conditions

In general, pesticides should be stored in a cool, dry location away from extreme temperatures, ignition sources, animals and children. Always store pesticides in their original containers and do not reuse pesticide containers. Do not store pesticides next to feed or food and keep pesticide storage locations secured.

Applicators may view a few common examples of pesticide product storage recommendations (**Table 1**). This table describes “Minimum Storage Temperature” as a minimum temperature required to keep the pesticide in solution. Below the listed temperature, the pesticide will form crystals and freeze. The freezing point of many pesticides is lower than 32°F due to the presence of hydrocarbon solvents or other inert ingredients. Pesticides that cannot be frozen must 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, reducing 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, bags may break open. It is important they are stored in heated facilities.

Read the Pesticide Label

Before storing a pesticide for the winter, the applicator needs to read the pesticide label. Information on how to store a pesticide is located in the “Storage and Disposal” statements listed on the label. If special precautions or precise measures must be followed for a specific pesticide it will be listed in this section. **Figure 1** shows an example of a pesticide label “Storage and Disposal” statement. Notice this pesticide label states explicitly the pesticide should not be frozen under “Pesticide Storage.”

The following table lists common pesticides used in Montana including insecticides and herbicides. All information was taken directly from the most recent pesticide labels at the time of publishing. While care was taken to assure the accuracy of the information in this MontGuide at the time of publication, labels continue to be amended. Prior to use or storage of any pesticide, read the pesticide product label for the most up-to-date information.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

Pesticide Storage

DO NOT allow this product to freeze. **DO NOT** store below 32°F or above 100°F. Store in original container only, in a dry place away from heat or open flame, and separate from feed or foodstuffs.

Pesticide Disposal

To avoid pesticide waste, use all material in this container by application according to label directions. If pesticide waste cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling

Nonrefillable Container. **DO NOT** reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Figure 1. Storage and Disposal statement from pesticide label stating pesticide should not be allowed to freeze.

Table 1: List of common pesticides used in Montana including insecticides and herbicides.

INSECTICIDES					
Product	Active Ingredient	EPA Reg. #	Low Storage Temp °F	High Storage Temp °F	Specific Language
Sevin® XLR Plus	Carbaryl	61842-37	—	100	
Cobalt®	Chlorpyrifos	62719-575	20	100	If product crystallizes store at 50–70°F and agitate to redissolve crystals.
Lorsban® 4E	Chlorpyrifos	62719-220	20	100	If product crystallizes store at 50–70°F and agitate to redissolve crystals.
Dimethoate 4EC	Dimethoate	19713-231	45	—	Avoid high temperatures.
Warrior II with Zeon Technology®	lambda-Cyhalothrin	100-1295	32	—	Do not allow product to freeze.
Malathion 5EC	Malathion	19713-217	—	77	Do not heat above 131°F.
Mustang® Maxx	Zeta-Cypermethrin	279-3426	20	—	
HERBICIDES					
Product	Active Ingredient	EPA Reg. #	Low Storage Temp °F	High Storage Temp °F	Specific Language
2,4-D Amine 4	2,4-D	1381-103	32	—	If exposed to subfreezing temperatures product should be warmed to 40°F and agitated prior to use.
Graslan™ L	2,4-D	62719-655	—	—	If exposed to subfreezing temperatures product should be warmed to 40°F and agitated prior to use.
Grazon Next® HL	2,4-D	62719-628	—	—	If exposed to subfreezing temperatures product should be warmed to 40°F and agitated prior to use.
Crossbow™	2,4-D; triclopyr	62719-260-5905	10	—	Store above 10°F or agitate before use.
Magnacide H	acrolein	10707-9	-40	140	
Milestone®	aminopyralid	62719-519	—	—	If product crystallizes in sub-freezing temps warm to at least 40°F and agitate prior to use.
Curtail®	clopyralid	62719-48	40	—	If stored below 40°F, warm and agitate prior to use.
Stinger®	clopyralid	62719-73	28	—	Store above 28°F or agitate before use.
Transline®	clopyralid	62719-259	28	—	If stored below 28°F, warm and agitate prior to use.
Rodeo®	glyphosate	62719-324	10	—	If allowed to crystallize place in a warm room at 68°F for several days to redissolve.
Makaze®	glyphosate	34704-890	10	—	If allowed to crystallize place in a warm room at 68°F for several days to redissolve.
MCP Amine 4	MCPA	34704-130	25	—	If frozen, warm to 70°F and redissolve.
Gramoxone® SL 2.0	paraquat	100-1431	32	—	
Tordon® 22K	picloram	62719-6	—	—	If product crystallizes in sub-freezing temps warm to at least 40°F and agitate prior to use.
Poast®	sethoxydim	7969-58	32	100	Do not allow to freeze.
Garlon® 3A	triclopyr	62719-37	28	—	Store above 28°F or agitate before use.
Remedy® Ultra	triclopyr	62719-552	28	—	Store above 28°F or agitate before use.

