

HAZARDOUS WASTE DISPOSAL ON THE FARM



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Are there hazardous substances on *your* farm? People have always considered big industry to be the main generator of hazardous chemicals. However, we are beginning to realize that the chemical products we use to make our lives more comfortable, and our farms more productive, are potentially hazardous.

A "potentially hazardous" substance is one that might poison animals and humans or contaminate the environment under certain conditions. Usually these conditions occur when these chemicals are used, stored, or disposed of improperly. However, even when products are handled and disposed of correctly, small amounts of chemical may escape into the surrounding environment. It is for this reason that manufacturers include very explicit label instructions for safe use and storage of their products. Their goal is to supply the consumer with a useful product that poses a minimal risk to living things and the environment.

Unfortunately, label instructions are not always as explicit about disposal of chemical products as they are for use and storage. Thus, there is an increased risk of environmental contamination due to improper disposal of chemical products. For many years, farmers have disposed of a large proportion of farm waste on their own land. With our increased knowledge of the hazards of many synthetic chemical products, we are realizing that many of the old disposal methods (burial and open field burning) are not environmentally sound practices.

As users of common chemical products such as paints, solvents, and pesticides, farmers have the responsibility to dispose of chemical wastes in such a way that they pose a *minimal* hazard to the environment, which includes themselves, their families, and farms. In order to help farmers with this responsibility, this publication supplies directions for disposal of commonly used chemical products and their wastes. The first portion of the publication presents guidelines for the safe use, storage, and disposal of chemical products in general terms. This section includes information on product labels and labeling. The remainder of the publication gives disposal recommendations for specific types of farm chemical wastes. The recommendations that appear in this document are within the legal guidelines of the State of Michigan.

GENERAL GUIDELINES

Before You Buy

- Be sure you need the product before you buy. The label can help you with this decision. Opened products usually cannot be returned to the place of purchase. Avoid storage and disposal problems of unwanted products by choosing your purchases carefully. If you have questions, consult your County Extension Agent.
- Read the product label to determine:
 - If the chemical and formulation are appropriate for your needs.
 - If any special equipment is necessary for use of the product.
 - How much of the product you need for your job.
- Buy only as much as you will use to help minimize storage and disposal problems later.

Storage

- Follow label instructions for storage. A cool, dry place, out of direct sunlight is suitable for most chemicals.
- Some products may pose a physical or chemical hazard when stored near other products. They may be explosive or give off dangerous fumes. Check the label for special instructions or hazard warnings.
- Store products *only* in their original containers. This avoids confusion of contents and prevents adverse reactions that may occur when two chemicals mix. Storing leftover pesticides in innocuous looking containers is a very dangerous practice. Children and unknowing adults can inadvertently become exposed to or poisoned by pesticides stored in this manner.
- Check containers periodically for leaks. If a container is damaged, transfer its contents to a container that held the same product. In the case of pesticides, transfer the contents to a container that held *exactly* the same pesticide.
- Store products away from animals, feed and water.
- Store products safely away from children, livestock and pets. This may require a lock on your storage shed door.
- Know the contents of your storage shed!
 - Avoid duplication of products. Use up what you have on hand before buying more.
 - Should accidental poisoning occur, know which product or products could have been the source.

Use and Handling

- Use only as the product label directs. Best results are obtained when the label instructions are followed exactly. It is a violation of fed-

eral law to use a product in a manner that is inconsistent with its labeling.

- Use common sense:
 - Wear protective equipment such as gloves, apron and mask when necessary.
 - Take special care when handling concentrated or undiluted chemicals.
 - Avoid splashing of liquid products. The most common route of exposure to toxic chemicals is absorption through the skin.
 - Avoid breathing dust or fumes. Chemicals are very rapidly absorbed through the lungs.
 - Use products in well lighted and ventilated areas.
 - If a product spills and contacts skin or eyes, wash the affected area immediately.
 - If a product spills onto clothing, change clothes immediately. Launder the clothes separately before wearing again.
- **DO NOT** overuse a product. More is *not* better. Follow label directions exactly on how much and how often to use a product.
- **DO NOT** mix chemicals together unless the label tells you to do so. Some chemicals, when mixed, produce explosive reactions or noxious fumes. Two incompatible chemicals may negate each other's effects when combined.
- Prepare only the amount you need and *use it all*.

Disposal

- If available, follow label directions for disposal.
- Dispose of solid waste in the original container. Solid waste can go to a licensed sanitary landfill. Call your County Extension Agent for the locations of licensed landfills in your area.
- Leftover products may be given to others who can use them **ONLY** if in the original, labeled containers, and **ONLY** if precautionary statements accompany them.

- Liquid waste must be solidified before going to a licensed sanitary landfill. Inert materials such as cat litter, soil, peat, sawdust, wood chips, paper towels, or old rags may be used to absorb the liquid waste in its original container. The solidified waste may then be disposed of in a licensed sanitary landfill.
- Triple rinse pesticide containers, adding the rinse water to the pesticide spray solution. Puncture the containers to prevent reuse and dispose of in a licensed sanitary landfill. Paper containers should be emptied, punctured to prevent their reuse, and then disposed of in a licensed sanitary landfill.
- All other empty containers (excluding pesticide containers) may be wrapped in several layers of newspaper (to prevent environmental contamination and reduce the possibility of human or animal exposure) and disposed of in a licensed sanitary landfill.
- Keep all wastes out of reach of children, livestock and pets.
- **DO NOT BURN** leftover chemical products or their containers. Harmful compounds may be carried in the smoke.
- **DO NOT BURY** leftover chemical products or their containers. Soil and groundwater contamination and death of surrounding vegetation may result.
- *Never reuse any chemical container.* Puncture metal containers, break glass containers, or cut off both ends of paper containers to prevent reuse. Although the original product is gone, residues can remain inside the container and contaminate anything that is subsequently placed inside.



Read Product Labeling!

Product labeling encompasses much more than just the label attached to the product. Product labeling is all of the written information

given out by the manufacturer or the place of purchase about the product. This includes the label on the product as well as brochures, pamphlets and fliers that accompany it.

A great amount of information is supplied to you in the labeling materials you receive. Product labeling can tell you such things as:

- The ingredients of the product.
- Any restrictions on use.
- Environmental and health precautions.
- How to safely use, store and dispose of the product and its container. (Unfortunately, some labels still recommend burning and burial as a means of container disposal. These practices are dangerous and are *not* recommended.)
- Safety measures and equipment necessary for use.
- Practical treatment in case of poisoning or injury from the product.

Labeling materials should be studied carefully. They should be read prior to purchase of the product, as well as before each use. Always keep labeling materials for as long as you have the product. Labeling from old or opened products may refresh your memory on proper use and storage of the product at a later date. It could also be a valuable reference in the case of an accidental poisoning or injury.

You may find that the product labeling gives you all the information you need about a product and its use. There may be instances, however, when information is lacking and you have questions. If this is the case, contact the manufacturer of the product. The company name and address appear on the label. The company that made the product is usually best qualified to help you interpret the label and use the product safely.

SPECIFIC GUIDELINES — PESTICIDE WASTES

Pesticide wastes are not limited to leftover pesticide formulations. Empty pesticide containers and rinse water from the cleaning of application equipment are also pesticide wastes.

Some widely used insect, rodent, weed and fungus killing products contain active ingredients that are classified under state and federal law as toxic and acutely hazardous. When used in this context, the term *toxic* refers to a substance's ability to *poison* a living organism. *Hazardous* substances represent a *risk* of harm to an organism *in a particular situation* such as the manufacture, transport, storage, use or disposal of the substance. When hazardous or toxic chemicals gain entry to your farm environment, the "organisms" they pose a threat to are your family, your livestock and your crops.

Under law, hazardous and toxic chemicals and their wastes have special transport and disposal requirements that must be followed when they are generated in amounts over specified monthly limits. Since the number of chemicals regulated by hazardous waste laws is changing every year, keeping track of which wastes are regulated and which are not is a difficult if not impossible task for a busy farmer. For this reason, careful management of *all* pesticide wastes is the first step toward keeping your farm environment free of hazardous wastes.

What To Do With Excess Pesticide

- Mix only as much pesticide as you need and use all that you mix during application.
- **DO NOT** empty leftover pesticide onto a ditch bank or field edge. Disposing of pesticide on a small plot of land can contaminate soil and groundwater and kill surrounding vegetation.
- Leftover products may be given to others who can use them **ONLY** if in the original, labeled containers, and **ONLY** if precautionary statements accompany them.





- Return unopened pesticide containers to your agricultural chemical dealer when possible. This will eliminate storage of the product until next season.
- If you have old pesticide products on your farm, use them up according to label directions.
- **DO NOT** use *very old* pesticide products. Chemicals can change with time, making the product unsafe for use. Very old products should be properly discarded. Call your County Extension Agent or the Michigan Department of Natural Resources for disposal recommendations.
- **DO NOT** *burn* or *bury* leftover pesticides on your own land. Although legal, these practices can be very dangerous and are *not* recommended.



Due to their toxicity, the use of the following pesticides has been a controversial subject. Many of these products have had restrictions placed on their use. You are strongly urged to use less toxic alternatives when possible. Some of these products are available for specific uses or for use according to label instructions. Call the Center for Environmental Toxicology at (517) 353-6469 for information on the legal uses of these pesticides. Be particularly careful when handling these products and call the Michigan Department of Natural Resources, Office of Hazardous Waste Management at (517) 373-2730 for specific disposal recommendations.

DDT	Heptachlor
Aldrin	Lindane
Dieldrin	Kepone
2,4,5-T/Silvex	Mirex
Endrin	Safrole
Chlordane	Toxaphene
DBCP	Sodium Cyanide
Strobane	Strychnine
Thallium Sulfate	

What To Do With Pesticide Rinse Water

Dilution is *not* a solution to hazardous waste. The rinse water generated from cleaning the *inside* of spray tanks, application equipment and pesticide containers (triple rinsing) contains pesticide. The rinse water can be as dangerous as the pesticide itself, especially if it is disposed of improperly.



- Apply rinse water to crops according to application instructions. A convenient way to accomplish this is to equip your spray and nurse tanks with flush tanks filled with water. With such an arrangement you can apply pesticide, clean equipment, and apply rinse water to crops without making extra trips to the field.
- Rinse water may be used to mix new spray solutions of the same pesticide.

Be Aware of Pesticide Residues You May Be Generating

Rinse water resulting from cleaning the *outside* of spray tanks and application equipment also contains residues of pesticide. Although you may not be able to contain this waste, be aware that it exists and try to minimize its potential as an environmental hazard.

- Choose a safe location for mixing pesticide solutions and cleaning equipment. Do these tasks well away from:
 - Ponds, streams, lakes, or lagoons.
 - Drains or drainage ditches.
 - Gardens or crops.
 - People and animals.
 - Animal feed and water sources.

What To Do With Pesticide Containers

Pesticide containers pose a major disposal problem on many farms. Since pesticides are applied during busy times of the year, there may not seem to be much time to devote to the rinsing of empty containers. Trying to rinse and dispose of containers when the busy season ends is not only time consuming, but also

presents such problems as how to dispose of residue-laden rinse water.

Unrinsed pesticide containers found around your farm or barnyard are sources of pesticide residues which represent a health and environmental hazard. With the cost of agricultural chemicals on the rise, the rinsing of empty containers and addition of rinse water back to your spray tank will help you get your money's worth out of your investment. In the long run, dealing with pesticide containers immediately after emptying is a safe, economical and timesaving practice.

Liquid Formulation Containers:

- *Triple Rinse containers immediately after emptying.*



Empty pesticide into spray tank and let the container drain for 30 seconds.

Fill the container $\frac{1}{4}$ full of the proper diluent (water, oil or liquid fertilizer).

Replace the closure or plug the opening of the container.

Rotate the container so that all inner surfaces are rinsed.

Add the rinse water to your spray tank and let the container drain for 30 seconds.

Repeat this procedure two more times. Remember to add the rinse water to the spray tank each time.

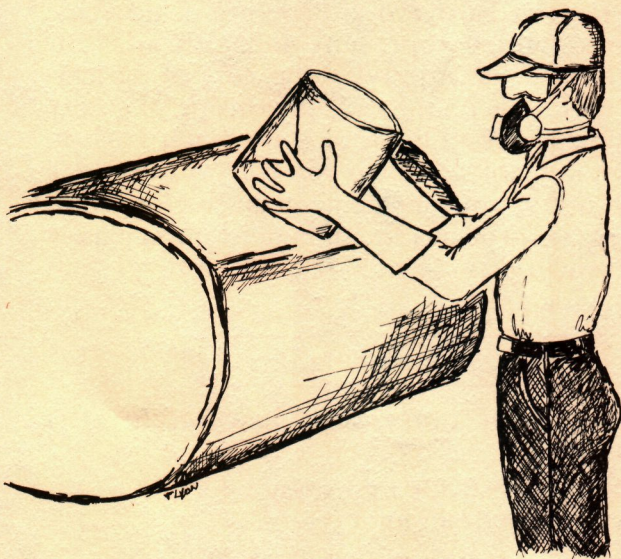
- *Crush or puncture the top and bottom of the container to prevent reuse.*
- *The triple rinsed container is considered to be non-hazardous and may be disposed of in one of the following ways:*



It may be deposited in a licensed sanitary landfill. Call your County Extension Agent for the names and locations of facilities in your area.

It may be sold to a scrap metal dealer for recycling.

TRIPLE RINSING



1.

Empty container into spray tank and drain 30 seconds in the vertical position. Keep container downwind and below eye level while pouring.



3.

Thoroughly rinse container three times, pour into tank, and drain for 30 seconds.



2.

Fill container $\frac{1}{4}$ full with water or other diluent.



4.

Crush or puncture container to prevent its reuse.



- **DO NOT** *bury* pesticide containers on your own land. Licensed sanitary landfills are designed to contain wastes and leachates, minimizing the possibility of environmental contamination. By burying pesticide wastes on your own land, you risk contamination of your soil and groundwater.



DRY FORMULATION CONTAINERS (BAGS AND BOXES):

- Completely empty the contents of the container into the tank.
- Open both ends of the container to help remove any remaining pesticide and to prevent reuse of the container.
- Dispose of the container in a licensed sanitary landfill.
- **DO NOT** *bury* the container.
- **DO NOT** *burn* these containers. Harmful compounds can be given off and carried long distances in the smoke.



AEROSOL FORMULATION CONTAINERS:

- Relieve pressure from the container as much as possible.
- **DO NOT PUNCTURE AEROSOL CONTAINERS.**
- Deposit containers in a licensed sanitary landfill.
- **DO NOT** *burn* or *bury* containers.



In Michigan, licensed sanitary landfills can legally accept triple-rinsed containers from liquid formulations as well as properly emptied pesticide containers of other types. Each landfill operator has the right to refuse anything that looks unsafe for any reason. Many landfill operators are very reluctant to allow pesticide wastes into their sites. They are responsible for all environmental and health hazards that may

develop from residues, even if they occur *years later*. In order for pesticide container disposal to be safe and convenient for all, a cooperative working relationship should be developed between landfill operator and farmer. Contact your local landfill operator and assure him of the safety of your triple-rinsed containers and pesticide wastes. Pesticide container disposal will become less of a chore and will no longer be a potential farm hazard.

Returnable containers may be an alternative for pesticide container disposal sometime in the future. We are all familiar with the system of returnable glass bottles in Michigan. Several chemical companies have recently begun marketing their pesticides in containers that, when empty, can be returned to the manufacturer for reuse. This alternative may add a few dollars to pesticide costs (for handling and transport of the empty containers), but it is promising in that it could eventually eliminate the pesticide container disposal problem. Ask your agricultural chemical dealer about this possibility.

SPECIFIC GUIDELINES — MACHINERY WASTES

What To Do With Waste Motor Oil

- Motor oil should be recycled. Contact your county Extension office for the location of oil collection sites in your area.
- If you can't find an oil collection site in your area, call your local highway department, environmental organizations listed in the Yellow Pages, or the Michigan Department of Natural Resources, Resource Recovery Division at (517) 373-1818.



- A convenient way to hold oil for recycling is to funnel it into an old antifreeze jug or other gallon-sized container.
- If you cannot recycle your oil, solidify it with some inert material such as soil or sawdust in a closed container (old plastic jug). The solidified waste can then be disposed of in a licensed sanitary landfill.
- **DO NOT** dump waste motor oil on the ground, into a ditch or onto a field edge.



What To Do With Waste Transmission Fluid

- Transmission fluid can be added to waste motor oil and recycled, as well.

What To Do With Waste Antifreeze

- The best means of disposal for antifreeze is to take it to a wastewater treatment and disposal plant. Bacteria in treatment systems at such plants are able to digest antifreeze.
- Small quantities of antifreeze, about one gallon, may be disposed of in your septic tank. The bacteria in septic systems can degrade small amounts of antifreeze.
- **DO NOT** *pour antifreeze on the ground or into a ditch.* Animals are attracted to the sweet taste of antifreeze and often ingest it. An amount as small as *5 tablespoons* of antifreeze is enough to kill a 25 lb. dog in as little time as 12 to 36 hours after ingestion. An average sized cat of 5 to 10 lbs. may die after ingesting an amount of *less than 1 tablespoon.* Antifreeze dumped onto the ground may also seep into and contaminate groundwater.



What To Do With Gasoline

- Gasoline is one of the most hazardous (flammable, combustible, poisonous) substances found around the home and farm. It must be handled with extreme caution.



- *Uncontaminated Gasoline:* Quantities of uncontaminated gasoline should be used up in an automobile or other engine. It is not recommended that it be used as a solvent (such as for cleaning tools) because this procedure contaminates gasoline. Contaminated gasoline is difficult to dispose of whereas kerosene, diesel fuel, or other solvents for tool cleaning can be mixed with waste oil for recycling.



- *Contaminated Gasoline:* Because of the flammability, combustibility and toxicity of gasoline, disposal recommendations must be tailored for each individual situation. Contact the Michigan Department of Natural Resources, Office of Hazardous Waste Management at (517) 373-2730, for advice.



What To Do With Old Batteries

- Old auto batteries should be recycled, repaired and reused. Contact a local battery shop (in the Yellow Pages under "Batteries - Storage - Retail").



What To Do With Cleaners, Paints and Solvents

- Try to use these products up according to label instructions.
- Leftover products may be given to others who can use them **ONLY** if in the original, labeled containers, and **ONLY** if precautionary statements accompany them.
- **DO NOT** dump these products onto soil, into ditches, or into your septic system.
- Let used turpentine, brush cleaner, or other solvent sit in a closed jar (to prevent evaporation and spills) until particles settle out. Then, strain and reuse. Wrap the waste material in several layers of newspaper and dispose of in a licensed sanitary landfill.



SPECIFIC GUIDELINES — WOOD PRESERVATIVE WASTES

Wood preservatives are pesticides. They contain active ingredients that protect wood from pests and increase the life of the treated wood to as much as 15 times that of untreated wood. Many of the components of wood preservatives are toxic substances and necessitate cautious use and disposal of the product. Wood treated with preservative must also be handled carefully since volatilization of fumes and bleeding of preservative can occur under some conditions.



What To Do With Wood Preservative

- Try to use the product up according to label directions.
- Leftover products may be given to others who can use them **ONLY** if in the original, labeled containers, and **ONLY** if precautionary statements accompany them.
- If you must dispose of leftover liquid preservative, solidify it in its original container with an absorbent material such as soil or sawdust. Dispose of the sealed container in a licensed sanitary landfill.
- **DO NOT** *burn* or *bury* leftover wood preservative.



What To Do With Treated Wood or Wood Scraps

- Wrap treated wood in several layers of newspaper and dispose of it in a licensed sanitary landfill.
- **DO NOT** *burn treated wood*. Treated wood produces highly toxic compounds when burned.





- **DO NOT bury treated wood.** Certain conditions allow preservative to bleed out of treated wood. Some preservatives contain ingredients which can leach into groundwater and remain there in a toxic form. Bury treated wood only in licensed sanitary landfills to minimize the possibility of environmental contamination.

SUMMARY

Hundreds of chemical products are used in agriculture today. These chemicals not only make our lives more convenient, but more importantly, they allow farmers to be more productive in their endeavor to supply our nation with food. If mishandled or disposed of carelessly, these same chemical products may pose a threat to humans, animals and the environment. A fine balance exists between the potential good and harm these chemicals can produce. Conscientious use and disposal of farm chemicals and chemical wastes is the only way we can keep the farm environment and farm products safe and free of hazards. Cautious handling of chemical products may take extra time and require a little more effort. However, the results of this effort, a clean environment, safe drinking water and wholesome food are well worth the trouble!

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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U. S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

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WHERE TO FIND INFORMATION



General information and referrals:
Your County Cooperative Extension
Service Office
(listed under your county in the phone
book) or

Center for Environmental Toxicology
Michigan State University
East Lansing, MI 48824
(517) 353-6469

For questions about how to dispose of Hazardous Wastes:

Michigan Department of Natural Resources
Office of Hazardous Waste Management
(517) 373-2730

For questions concerning health problems related to environmental toxicants:

Michigan Department of Public Health
Center for Environmental Health Sciences
(517) 373-8050

For questions about pesticides and other agricultural chemicals:

Michigan Department of Agriculture
Office of Toxic Substances
and Emergency Services
(517) 373-0440

For advice on necropsy or specimens for testing, call your veterinarian or:

Animal Health Diagnostic Laboratory
Michigan State University
(517) 353-1683

In case of human poisoning, call your local Poison Control Center, your physician or:

1-800-632-2727 State Poison Control Center in the Lower Peninsula
1-800-562-9781 State Poison Control Center in the Upper Peninsula
494-5711 (Metro Detroit) Regional Poison Control Center, Detroit
1-800-462-6642 (from area code 313) Regional Poison Control Center, Detroit
1-800-572-1655 (from all other areas in Michigan) Regional Poison Control Center, Detroit