



Partnership for the Environment

Utah Department of Environmental Quality

Pollution Prevention for Vehicle Maintenance & Repair Industry

Background

Vehicle repair shops generate regulated waste, either from the services they provide, such as fluid replacement, or from operations they perform, such as parts washing. Some common waste types include:

- Degreasers
- Engine fluids (oil, antifreeze)
- Floor dust
- Floor wash water
- Lead acid batteries
- Metal parts/scrap
- Oily waste sump sludge
- Spent solvents
- Paints and thinners
- Paper products (masking paper, cardboard, office paper.)
- Rags and absorbents
- Refrigerants
- Tires

Here are some options vehicle maintenance and repair companies can use to reduce wastes.

Train Employees to use Good Housekeeping Practices

- Implement spill prevention measures to reduce products from entering the environment.
- Perform preventative maintenance on equipment and vehicles.
- Check incoming vehicles for leaking fluids. Use drip pans to prevent spillage.
- Prevent non-hazardous material from getting contaminated by segregating waste streams.
- Monitor your inventory in storage to reduce accumulation of over-age products.
- Implement a "first-in first-out" policy.

Substitute Materials

- Look for ways to replace solvents with water based cleaners.
- Substitute detergent-based solutions for caustic solutions when cleaning.
- Substitute non-asbestos brake lining for asbestos brake lining.
- Purchase materials in non-aerosol form.
- Use biodegradable floor cleaners.
- Use non-chlorinated brake cleaners.

Modify Processes

- Prerinse parts with spent cleaning solution.
- Remove parts slowly after immersion in solvent solution to prevent spillage.
- Use a still rinse solvent sink rather than a free running rinse.
- Cover or plug solvent sinks when not in use to prevent evaporation.
- Replace solvent parts washers with a hot water washer or jet spray.
- Place cleaning equipment in a convenient location near the service bays to reduce drips and spills.
- Change spray painting process to high volume, low pressure process which will minimize paint lost due to overspray.

Recycle

- Recyclable waste streams should be segregated to prevent cross-contamination.
- Oils and antifreeze should be collected and recycled.
- Lease or purchase solvent sinks and recycle solvent on or off site.
- Send tires, batteries, and metal parts to a recycler.
- Contract a linen service which will supply clean rags and collect dirty ones for washing.
- Purchase a recycling system to recover refrigerant. Reuse containers within the facility or through a drum salvage company.
- An oil/water separator should be used before water is diverted to sewer.

For More Information, Contact:

Division of Solid & Hazardous Waste - (801) 538 - 6170

Division of Drinking Water, Source Protection Program - (801) 536-4200

Division of Water Quality - (801) 538-6146

Small Business Assistance Program - (801) 536-4479

Sonja Wallace, Pollution Prevention Coordinator - (801) 536-4477

Environmental Hotline - 1-800-458-0145

CEMETERIES

POTENTIAL HAZARDS: Leachate from cemeteries may contaminate ground water if non-leak-proof or no caskets are used. Pesticides and fertilizers applied to trees, shrubs, and grass during routine landscaping and maintenance operations may leach into the ground water. Also, formaldehyde from embalmed corpses has been a source of contamination. Several site-specific factors affect Leachate production including the soil type, depth to water table and amount of precipitation. Cemeteries located in areas that have a high water table and receive high amounts of precipitation may release contaminants to the ground water system.

In areas with thin soil cover over the bedrock, ground water quality may also be degraded by cemetery Leachate. According to the EPA, few actual cases of ground water contamination due to cemeteries have been documented. In most instances, ground water contamination due to cemetery Leachate would be highly localized.

PROBABLE OVERALL THREAT TO THE PUBLIC WATER SUPPLY: Low.

CONTROLS: Any burial ordinances would be specific to the city, town, or county. Pesticides must be used according to the instructions on the labels. There are no controls concerning the use of fertilizers.

RECOMMENDED ASSESSMENT: Not adequately controlled.

RECOMMENDED LAND MANAGEMENT STRATEGY: Memorandum of agreement.

BEST MANAGEMENT PRACTICES:

Fertilizer Management

The method of fertilizer application is important. Several factors should be considered before fertilizer is applied:

1. Type of turf
2. Method and timing of application
3. Weather conditions
4. Soil characteristics
5. Fertilizer application should be based on a current soil test (one taken within the last 12 months)
6. Fall application of nitrogen on sandy soil should be avoided.

Pesticide Management

1. Chemicals used must be registered at the Federal, State, and local level.
2. Chemicals must be applied strictly in accordance with authorized uses, label directions and other Federal or State policies and requirements.
3. Spray equipment should be properly calibrated and maintained.
4. Rinse water from containers and application equipment can be diluted and spread on turf.
5. Check-valves should be installed in irrigation systems that inject chemicals into irrigation water to prevent backflow of the pesticides into the system.
6. Banned or outdated pesticides should be disposed of through a licensed hazardous waste transporter.

Pesticide formulation can have a considerable impact on loss by various transport routes. The following guidelines should be followed to aid in the selection of pesticide formulation and application methods.

1. Wettable powders and microgranules are probably the most susceptible to runoff losses.
2. Dusts, wettable powders and fine liquid sprays have the greatest drift losses.
3. Aqueous solutions, liquid and liquid concentrates, especially when applied and fine sprays, have very high losses due to volatilization.
4. The use of granules, pellets and emulsions reduce losses by volatilization and drift.

The amount of pesticides applied to turf areas can be reduced by improving the application efficiency, using non-chemical control measures (integrated pest management) and substituting less toxic, less persistent and less mobile pesticides whenever possible.

Pesticide and Fertilizer Storage Areas

1. Outdoor storage facilities should have a permanent roof to prevent precipitation and sunlight from entering the storage area.
2. Outdoor storage facilities should have secondary containment, such as a berm or dike, which will hold any spill or leaks at:
 - * 10% of the total volume of the containers, or
 - * 110% of the volume of the largest container, whichever is larger.
3. Above-ground tanks and containers should be stored on an impervious surface (i.e., a coated concrete pad) that is free of cracks and gaps.
4. Indoor storage areas for tanks and drums should be clearly marked and separate from work areas. Storage areas should not be located near floor drains.
5. Mixing areas for pesticides should be located indoors, away from floor drains.
6. Any floor drains located in buildings used for storage or mixing of pesticides and fertilizers should be connected to a holding tank not an injection well, a septic system, or a sanitary sewer.
7. Wastes collected in a holding tank must be disposed of through a licensed hazardous waste transporter.

Disposal of Pesticide and Fertilizer Wastes

The use of pesticides and fertilizers generate different types of waste: leftover or unusable pesticides and fertilizers, empty containers and rinse water. The following are recommendations for use or disposal:

1. Leftover pesticides (as long as they are not banned or restricted) should be disposed of by diluting the pesticide in the application tank and spraying in on the land. Follow all label directions.
2. Pesticide containers can be disposed of in landfills if they are emptied in accordance with hazardous waste regulations. Containers can be triple-rinsed, with the rinsing residue being applied to the land as needed (according to label directions).
3. Paper bags are considered "empty" if they have been shaken to remove all wastes to the extent feasible or if the liner has been removed.
4. Rinse water from container or equipment cleaning should be diluted and spread on the land.

FEEDLOTS, STABLES, KENNELS, PIGGERIES, AND MANURE PITS

POTENTIAL HAZARDS: Typically, feedlots are areas in which a large number of cattle, poultry, sheep, or hogs are confined in concentrated spaces. Wastes generated by feedlot operations include manure, chemicals, and debris.

Precipitation falling on the feedlot infiltrates the accumulated animal wastes and produces leachate containing various concentrations of bacteria, viruses, nitrate-nitrogen, phosphate, and sodium. Leachate or runoff from the feedlot may enter the ground water system by infiltrating the soil cover. Ground water contamination may also result from leachate produced when animal wastes are collected from the feedlot and applied directly to the land or disposed of in an unlined manure pit. Although usually generated in smaller quantities than feedlot wastes, animal wastes from kennels and stables are also potential ground water contaminants.

PROBABLE OVERALL THREAT TO THE PUBLIC WATER SUPPLY: Medium-high

CONTROLS: A Utah Pollution Discharge Elimination System (UPDES) permit is required if polluted runoff leaves the owners property.

RECOMMENDED ASSESSMENT: Not adequately controlled

RECOMMENDED LAND MANAGEMENT STRATEGY: Memorandum of agreement

BEST MANAGEMENT PRACTICES:

We recommend that the Soil Conservation Service and/or the USU Extension Service (Appendix A) be contacted to recommend site-specific best management practices. Below are listed some generic best management practices and general considerations for feedlots, manure pits, and stables/kennels:

Feedlots:

- ▶ Divert runoff from feedlot area
 - ▶ install upslope berms and/or diversion ditches
 - ▶ collect rainfall from roofs
- ▶ grade or reshape the area to minimize runoff
- ▶ Collect runoff from feedlot with ditches or a tile drainage network
- ▶ Treat runoff
 - ▶ land application
 - ▶ holding ponds
- ▶ Scrape paved feedlots periodically
- ▶ Establish a vegetative buffer zone downslope to detain and absorb wastes

Manure Pits

- ▶ Manure pits should be lined with clay or other impermeable material
- ▶ Liquid effluent should be collected and treated

Stables/Kennels

- ▶ Divert/minimize runoff from stable/kennel area



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Septic Tank/Drainfield System Fact Sheet

What Are The Potential Hazards?

Septic systems can contaminate ground water if they are misused, improperly maintained, or improperly constructed. The major contaminant discharged from septic systems is disease-causing germs. These germs (bacteria and viruses) - can cause many human diseases. Another contaminant discharged from septic systems is nitrogen in the form of nitrate. If the nitrate level of drinking water is too high, infants, up to the age of six months old, can develop a fatal disease called blue baby syndrome (methemoglobinemia). Additionally, if toxic chemicals are disposed in a septic system, they can percolate through the drainfield and into the ground water.

How Does A Septic Tank/Drainfield System Work?

The basic septic system is composed of a septic tank followed by a drainfield. Wastewater flows out of the house and into the septic tank through the building sewer pipe. Once in the septic tank, most solids in the wastewater settle to the bottom of the tank to form a sludge layer. Other solids float and form a scum layer on top of the wastewater. Some decomposition of solid material takes place here, but the primary function of a septic tank is to trap solids and prevent them from entering the drainfield.

Wastewater treatment is restricted to a rather thin zone of unsaturated soil underlying the drainfield. Many of the harmful bacteria and microbes are filtered out as the wastewater passes through this soil. Some of the smaller microbes (viruses) and nutrients such as phosphorus and some forms of nitrogen are trapped and held (adsorbed) by soil particles. Once the effluent reaches the groundwater table, little treatment occurs. Soils can differ markedly in their pollutant removal efficiency. The ability to which soil can remove pollutants in the wastewater determines how many impurities will eventually reach the groundwater beneath the drainfield.

Site Evaluation And Construction

Current rules require a comprehensive evaluation of the soil and ground water before a septic system can be permitted for construction in a given location. This evaluation must be reviewed and approved by the local health department. The rules require that the bottom of the drainfield trenches be placed at least 12 inches (preferably 24 inches) above the water table. Additionally, there must be adequate amounts of unsaturated soil beneath the trenches to allow sufficient treatment of the wastewater.

Site Considerations

- Trees and deep-rooted shrubs should be as far away from the system as possible.
- Keep the water that runs off of foundation drains, gutters, driveways, and other paved areas away from the drainfield of your septic system.

- Keep the soil over the drainfield covered with grass to prevent soil erosion.
- Don't drive vehicles over the system.
- Don't cover the tank or drainfield with concrete or asphalt and don't build over these areas.

Proper Disposal Practices

- Use only a moderate amount of cleaning products and do not pour solvents or other household hazardous waste down the drains.
- Garbage disposals should not be used because they tend to overload the system with solids. If you have one, you should severely limit its use.
- Do not pour grease or cooking oil down the sink.
- Do not put items down the drain that may clog the septic tank or other parts of the system. These items include cigarette butts, sanitary napkins, tampons, condoms, disposable diapers, paper towels, egg shells, and coffee grounds.

Water Conservation

There are limits to the amount of wastewater a septic system can treat. If you overload the system, wastewater may backup into your home or surface over your drainfield. Problems caused by using too much water can occur periodically throughout the year or be seasonal. For example, the soil beneath your drainfield is wetter in the spring than it is in the summer and its capacity to percolate wastewater is somewhat diminished. If you wash all your laundry in one day, you may have a temporary problem caused by overloading the soil's capacity to percolate wastewater for that day. To reduce the risk of using too much water, try the following:

- Use 1.6 gallons (or less) per flush toilets.
- Fix leaking toilets and faucets immediately.
- Use faucet aerators at sinks and flow reducing nozzles at showers.
- Limit the length of your shower to 10 minutes or less.
- Do not fill the bathtub with more than 6 inches of water.
- Do not wash more than one or two loads of laundry per day.
- Do not use the dishwasher until it is full.

Septic Tank Cleaning

It is recommended that the solids that collect in your septic tank be pumped out and disposed at an approved location every three to five years. If not removed, these solids will eventually be discharged from the septic tank into the drainfield and will clog the soil in the absorption trenches. If the absorption trenches are clogged, sewage will either back up into the house or surface over the drainfield. If this happens, pump the tank will not solve the problem and a new drainfield will probably need to be constructed on a different part of the lot.

For More Information, Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200
 Division of Water Quality - (801) 538-6146
 Sonja Wallace, Pollution Prevention Coordinator - (801) 536-4477
 Environmental Hotline - 1-800-458-0145



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Pesticides Fact Sheet

What Are The Potential Hazards?

Pesticides applied to plants during crop, lawn, and garden maintenance may leach into the ground water and cause contamination. Proper storage, mixing, application, spill cleanup, watering, and disposal procedures should be included in pesticide best management practices.

Storing Pesticides

The fewer pesticides you buy, the fewer you will have to store. Therefore, only purchase the amount and kind of pesticide that is needed. Pesticides should always be stored in sound, properly labeled, original containers. *Sound containers are the first defense against spills and leaks.*

- Ensure that there are no holes, tears, or weak seams in the containers and that the label is readable.
- Pesticides should be stored in locked, dry cabinets.
- Be sure to store dry products above liquids to prevent wetting from spills.
- Storage and mixing areas should not be located near floor drains of any kind.
- Storage facilities should have secondary containment, such as a berm or dike, which will hold spills or leaks at:
 1. 10% of the total volume of the containers, or
 2. 110% of the volume of the largest container, whichever is larger.

Mixing Pesticides

- Mix pesticides on an impermeable surface, such as concrete, so any spills will be contained.
- Mix only the amount that you will use:
 1. Measure the total square feet you intend to treat.
 2. Read the label on the pesticide container and follow the instructions. (These are often given in terms of amount of pesticide to use per thousand square feet.)
 3. By properly measuring and calculating, there should be little or no pesticide left in the spray tank when the job is finished and it will be applied at the recommended rate.

Applying Pesticides

Pesticides are used to kill or control weeds (herbicides), insects (insecticides) and fungi (fungicides) that attack plants. Some of these pesticides can move through the soil and into the ground water. Guidelines for the safe use of pesticides are listed below:

- Be willing to accept a low level of weed, insect, and plant disease infestation.

- Use pesticides only when absolutely necessary.
- Identify pests correctly. Use the proper pesticides.
- Read and follow the directions printed on the container labels. Remember, *the label is the law*.
- Calibrate your spreader and sprayer to keep from applying too much pesticide.
- Do not spray or apply pesticides near irrigation wells. Wells are conduits to the ground water.
- Do not spray or apply pesticides near your walks and driveway. This prevents them from washing off into the storm drain system.

Cleaning Up Spills

- Dry formulated pesticide spills should be swept up and applied to crops, lawns, and gardens at the rate specified on the label.
- Liquid pesticide spills should be soaked up using absorbent material (such as, soil, sawdust, and cat litter). The contaminated absorbent material should then be put in a sealed container and taken to a household hazardous waste collection site.

Watering

Over-watering your plants can cause excess water to move through the soil. This water can carry pesticides that can contaminate the ground water. The best way to avoid over-watering is simply to measure how much you are adding. Contact your county Extension Service to determine the best way to calculate how much water your plants need and how to measure the amount you are applying.

Disposing of Pesticides

If the pesticide was properly measured and mixed, there should be little or no spray left in the tank. The little that may be left can be safely sprayed over the area that was treated until it is gone. Disposal of “empty” pesticide containers and unused pesticides should be handled as follows:

- If you are using liquid pesticides, rinse the container three times. Be sure to pour the rinsing into your sprayer and not down a drain or onto the ground. Containers which have been emptied and rinsed can be discarded in the trash.
- Unused pesticides in their original containers can be recycled at household hazardous waste collection sites.

For More Information, Contact:

Division of Drinking Water, Source Protection Program - (801) 536-4200
Department of Agriculture - (801) 538-7100
Environmental Hotline - 1-800-458-0145
Sonja Wallace, Pollution Prevention Coordinator - (801) 536-4477



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Household Hazardous Waste Fact Sheet

What is Household Hazardous Waste?

Many hazardous products and chemicals such as cleaners, oils and pesticides are used in the home every day. When discarded, these products are called household hazardous waste (HHW). HHWs are discarded materials and products that are ignitable, corrosive, reactive, toxic or otherwise listed as hazardous by the EPA. Products used and disposed of by a typical residence may contain more than 100 hazardous substances including:

- Batteries
- Cleaners
- Cosmetics
- Fluorescent light bulbs
- Glues
- Heating oil
- Insecticides and pesticides
- Ink
- Medicines
- Motor oil and automotive supplies
- Paints, thinners, stains and varnishes
- Polishes
- Swimming pool chemicals
- Smoke detectors
- Thermometers

HHW is a Serious Threat

The U.S. Environmental Protection Agency estimates the average American household generates 20 pounds of HHW each year. As much as 100 pounds of HHW can accumulate in the home and remain there until the resident moves or undertakes a thorough "spring cleaning."

Since the chemicals found in HHW can cause soil and groundwater contamination, generate hazardous emissions at landfills and disrupt water treatment plants, it is important to dispose of HHW properly. Many solid waste treatment facilities are currently required to screen for HHW to avoid operating under restrictive hazardous waste laws. Furthermore, many communities may be required to establish a HHW collection program in order to qualify for permits to manage storm water.

Safe Handling Tips

The best way to handle household hazardous materials is to completely use the product before disposing of the container. If this is not possible, then the next alternative is to return unused portions to your community household hazardous waste clean-up day. Keep products in their original package with all labels intact. If the container is leaking, place it in a thick plastic bag. Pack the products in a plastic-lined cardboard box to prevent leaks and breakage.

Household hazardous waste clean-up days are for household wastes only. No industrial or commercial wastes and no containers larger than five gallons are accepted. Explosives, radioactive

material and medical wastes are also unacceptable.

HHW can be dangerous to people and pets who come in contact with them. HHW can endanger water supplies, damage sewage treatment systems, and cause other environmental damage. Only use the products as directed. **DO NOT:**

- Flush HHWs down the toilet
- Pour HHWs down the sink
- Pour HHWs down a storm drain
- Pour HHWs on the ground

Contact your local health department or the Division of Solid and Hazardous Waste to determine whether your community has a household hazardous waste collection program.

Identify HHW

Reduce the amount of potentially hazardous products in your home and eliminate what you throw away by following these easy steps:

1. Before you buy:

- Read the labels and be aware of what they mean.
- Look for these words on labels; they tell you what products may need special handling or disposal.

Caution
Combustible
Corrosive
Danger
Explosive

Flammable
Poison
Toxic
Volatile
Warning

- Select a product best suited for the job.
- Buy only what you can use entirely.

2. After you buy:

- Read label precautions and follow directions for safe use.
- Recycle/dispose of empty containers properly.
- Share what you can't use with friends or neighbors.
- Store properly.
- Use recommended amounts; more is not necessarily better.
- Use the child-resistant closures and keep them on tightly.

For More Information, Contact:

Division of Solid & Hazardous Waste - (801) 538 - 6170

Division of Drinking Water, Source Protection Program - (801) 536-4200

Environmental Hotline - 1-800-458-0145

Sonja Wallace, Pollution Prevention Coordinator - (801) 536-4477



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Fertilizer Fact Sheet

What Are The Potential Hazards?

Fertilizer applied to plants during crop, lawn, and garden maintenance may leach into the ground water and cause contamination. The main constituent in fertilizer is usually nitrogen. If the nitrate level of drinking water is too high, infants, up to the age of six months, can develop a fatal disease called blue baby syndrome (methemoglobinemia). Drinking water that contains 10 milligrams of nitrate-nitrogen per liter of water exceeds the drinking water standard and should not be used, especially for infant formula. Proper storage, application, and watering procedures should be included in fertilizer best management practices to prevent contamination of ground water.

Storing Fertilizers

The less fertilizer you buy, the less you will have to store. Therefore, only purchase the amount and kind of fertilizer that you need.

- Fertilizer should be stored in locked, dry cabinets.
- Keep fertilizer and pesticides on separate shelves.
- Don't store fertilizer with combustibles, such as gasoline or kerosine, because of explosion hazards.

Application Precautions

The chemical in fertilizer that can most easily pollute ground water is a form of nitrogen called nitrate. Nitrate moves readily in soil to the ground water strata. The best way to prevent the movement of nitrate into the ground water is to apply no more nitrogen than the crops, grass, garden plants, shrubs, or trees can use during the time that the plants are growing.

- Calibrate your spreader and sprayer to keep from applying too much fertilizer.
- Load fertilizer spreaders on the driveway or other hard surfaces so any spills can easily be swept up. Fertilizer that spills should be swept up and applied to the lawn or garden at the right time and amount. This allows the fertilizer to grow plants instead of washing off into the storm drain system and ultimately contaminating nearby streams and lakes.
- If you are using liquid fertilizer on your turf, add fertilizer to the spray tank while on the lawn. This way, if you spill the fertilizer, it will be used by the plants and not run off into the storm drain system.
- Do not spray or apply fertilizer near irrigation wells. Wells are conduits to the ground water.

Application Rates For Lawns

Utah State University's Extension Service recommends the following for Utah lawns: "It is important to fertilize on a regular basis every four to six weeks to maintain an attractive lawn. Begin

when lawns start to green in the spring, mid to late April. Earlier applications may cause a lawn to become greener faster, but may also increase spring disease problems. Summer applications of nitrogen fertilizer will not burn lawns, if you apply them to dry grass and water immediately. Fall applications are important for good winter cold tolerance, extended fall color, and fast spring green-up. A complete fertilizer containing nitrogen, phosphorus and potassium should be applied in the fall every three to four years. This will prepare the lawn for winter conditions and allow the phosphorus to penetrate into the root zone by the next growing season.

For a well-kept lawn in Utah, apply 1 pound of available nitrogen per 1,000 square feet each four to six weeks throughout the growing season. The following chart indicates how much of various fertilizer will supply one pound of nitrogen."

%N on Label	Pounds of Fertilizer Per 1000 Square Feet
12-15	7-8
18-21	5-5 ½
24-28	3 ½-4
30-34	3-3½
45-46	2-2 ¼

Types of Plants

One of the best ways to protect your ground water is to use plants that are drought-tolerant and that are adapted to your area. Drought-tolerant or low-water-use plants can continue to survive once they are established, even during times of little rainfall. Because you do not have to water these plants, there is less chance that nitrate and pesticides will be carried with the water through the soil and into the ground water.

If low-water-use plants are not practical, then try to use medium water use plants. Water these plants only when they begin to show drought stress. Some plants will wilt when they are drought-stressed, while other plants will show marginal leaf burn.

Watering

Over-watering plants can cause excess water to move through the soil. This water can flush fertilizer away from the root zone of your plants and into the ground water. The best way to avoid over-watering is simply to measure how much you are adding. Contact your county Extension Service to determine the best way to calculate how much water your plants need and how to measure the amount you are applying.

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