



Minnesota
Pollution
Control
Agency

Managing Waste from Radiator Repair Shops

Hazardous Waste Fact Sheet #3.56, July 1999

This fact sheet discusses waste generated at a radiator repair shop

In this fact sheet:

Environmental Concerns...	1
Waste Prevention.....	1
Management and Disposal/ Recycling Options	2
Shipping	4
Required Paperwork	4
More Information	4

Environmental Concerns

Antifreeze – Antifreeze is often poisonous to pets and small animals. It may also contain contaminants, such as lead and benzene, at levels harmful to human health and the environment.

Chemicals – Chemical cleaning baths used prior to repair are usually caustic. Used solutions and rinse waters may contain contaminants, such as lead, copper and zinc at levels harmful to human health and the environment.

Paint – Paints may contain metals, such as cadmium, lead and chromium at levels harmful to human health and the environment.

Solvents – Solvents, at a minimum, are *ignitable* — have a flash point below 140° F. They may also be contaminated with paint or other materials.

Sludge and Filters – Sludge and filters from dip tanks may contain hazardous metals.

Sorbents – Used “floor dry” or sorbent material may be hazardous depending upon the material being cleaned up.

Floor sweepings – Sweepings may contain solder and metal shavings.

Waste Prevention

Managing waste correctly takes time and money. Check out these waste-reduction techniques. Which ones can you implement in your shop?

- ☐ Use clean drip pans under radiators when draining antifreeze to eliminate spills and allow for direct return to the vehicle — or at least straightforward recycling.
- ☐ Remove as much oil as possible from the oil cooler before placing the radiator in the boil-out tank. If necessary, blow out the oil cooler with compressed air.
- ☐ When removing the radiator from the boil-out tank, use compressed air to remove any residual alkaline solution — especially from the oil-cooling section. During this process, use a drain platform or position the radiator over the tank to collect and return the solution to the tank. Back-splash and side panels help keep the area clean. If possible, hang or place radiator in several positions to allow for cavities and blind holes to drain. Leave it in a position long enough for it to drip adequately.





- ☐ Carefully monitor the boil-out tank and add only the minimum required types and quantities of chemicals. Skim off any oil that has accumulated in the tank corners and place it in a container separate from other oil. Keeping the surface of the alkaline solution oil-free will help keep parts from becoming re-soiled as they are removed from the tank. Explore using a smaller, ultra-sonic cleaning unit to reduce the volume of waste.
- ☐ When cleaning the boil-out tank, use gravity settling over a long weekend and/or filtering to remove solids. Keep and reuse the liquid portion, adding chemicals as needed to return the alkaline solution to specification.
- ☐ Set up the process tanks to prevent spills when transferring from one to the other. (Either position the tanks next to each other, or place a drain board between them to catch liquid and drain it back into the process tank from which it came.)
- ☐ Explore using a high-pressure, low-flow spray system to reduce rinse water.
- ☐ Collect and reuse rinse water. Also, use rinse water to replace water evaporated from the boil-out or ultrasonic tank. If you have plenty of rinse water, consider increasing operating temperature in order to increase evaporation, but don't exceed the chemical manufacturer's recommendations and don't waste energy.
- ☐ Do not solder over the test tank. (Soldering over the tank will result in zinc and lead buildup in the solution.) Solder someplace else or in a way that will allow you to catch the solder droppings and recycle rather than let them fall into the tank. Use lead-free solder if possible.
- ☐ Make a point of replacing hoses when reassembling the cooling system. It's good customer service and could prevent additional waste.

Management and Disposal/Recycling Options

Antifreeze — Place antifreeze that will be returned to the repaired radiator in a clean, non-leaking container to prevent contamination. (This antifreeze is not considered "waste.") To prevent spills and inadvertent mixing, it's a good idea to close and mark the container.

Place unusable waste antifreeze destined for recycling in a closed leak proof container marked with the words "*Waste Antifreeze for Recycling.*" Place the container on an impermeable surface. Inspect regularly for leaking or inadequate containers. Recycle on site or ship antifreeze within 180 days of accumulating two 55-gallon containers. *Note:* If using an on-site recycling service, check before mixing antifreeze contaminated with leak-stopping additives — it may not be able to be recycled on site.

Waste antifreeze may be discharged to a wastewater treatment plant provided:

1. Your business generates less than 600 gallons waste antifreeze per year and
2. Your local wastewater treatment plant allows discharge.

Discharge of waste antifreeze to land, a septic system, storm drain or surface water is prohibited. For more information, see MPCA Hazardous Waste fact sheet #4.02, [Managing Waste Antifreeze](http://www.pca.state.mn.us/waste/pubs/4_02.pdf), http://www.pca.state.mn.us/waste/pubs/4_02.pdf.

Boil-Out Tank — The caustic solution used in the boil-out tank is hazardous because it is corrosive. It also usually displays the toxicity characteristic for lead. The most practical way to manage the tank is to clean out the sludge periodically, replenish the chemicals and continue to use the liquid portion. This could be done by emptying the boil-out tank into a settling tank and then decanting or by filtering the solution.



Should it ever require changing, you have two management options:

1. If you are connected to a sanitary sewer and your wastewater treatment plant operator allows discharge, use a chemical/physical treatment system to precipitate and remove the solids (sludge). Then, adjust the pH, if needed, and discharge the liquid according to the requirements of your local wastewater treatment plant operator. **Under no circumstances should the liquid be discharged to the ground, surface water, storm drains or septic systems.**
2. Wait until the liquid has evaporated to where you would ordinarily need to add make-up water. Remove and place the liquid in closed, leak-proof containers marked with the date and the words "Hazardous Waste — Corrosive Solution." Perform and document weekly inspections of the waste. Ship it with a hazardous waste transporter for disposal at a hazardous waste facility. For more information, see MPCA Hazardous Waste fact sheet #1.06, [Transport and Dispose of Waste Correctly](http://www.pca.state.mn.us/waste/pubs/1_06.pdf), http://www.pca.state.mn.us/waste/pubs/1_06.pdf.

Ultra-Sonic Cleaning Solution — Evaluate waste solution to determine whether or not it is hazardous.

Sludge — The sludge is usually hazardous because it is highly contaminated with lead and other materials. Put the sludge in a leak-proof container that has been placed on an impermeable surface. It is permissible to leave the container uncovered to allow water to evaporate from the sludge. While the container is open, take precautions to prevent spills. Close the container as soon as the sludge is dry. The best way to manage the sludge is to send it to a lead smelter for recycling. If doing this, it is important to identify the container contents. You can do this by marking the container with the words "Lead Sludge for Recycling." If recycling lead sludge, metropolitan county generators must get approval

from their county; Greater Minnesota generators must get approval from the MPCA.

The other option is to manage the sludge as a hazardous waste and ship it with a hazardous waste transporter. If doing this, place the sludge in a closed, leakproof container marked with the date and the words "Hazardous Waste — Lead Sludge." Perform and document weekly inspections of the waste (this is not required if the sludge is recycled).

Rinse Water — Rinse water may be contaminated with lead at levels that make it hazardous. Use as little rinse water as possible. Collect and reuse it. In order to do this, you will need to use gravity, and/or a filter system or a chemical/physical treatment system to remove solids. Oil may be filtered out or skimmed off the top. Use the rinse water as make-up water for the boil-out tank. Any sludge/solids from the tank should be collected and managed as outlined above. Treat excess rinse water as above, then discharge the liquid portion according to the requirements of your local wastewater treatment plant. **Under no circumstances should the rinse water be discharged to the ground, surface water, storm drains or septic systems.**

Test Tank — Manage as rinse water above.

Paint and Solvents — If using paint, purchase only what you need and use it up. Leftover paint will likely need to be managed as a hazardous waste. Solvents used for cleanup, such as mineral spirits or petroleum naphtha, are hazardous because of a flash point below 140° F. They may also be contaminated with other hazardous materials. Put waste in a closed, leakproof container situated on an impermeable surface and marked with the date, the words "Hazardous Waste" and a clear description of the waste.

Filters — Filters from process tanks likely contain lead and other hazardous contaminants. You may be able to recycle them in the same manner as sludge. Management must be approved by your metropolitan county hazardous waste office, or the MPCA, if you are located in Greater Minnesota.



Used Oil — Take care when skimming used oil to minimize the amount of water collected with it. Place the oil in a closed, leak proof container situated on a surface reasonably impervious to used oil. Mark the container with the words “Used Oil.” Check with an oil hauler or a local collection program to see whether they can accept it. Another option is to use a sorbent pad that will absorb only oil. Some pads are designed for wringing and/or laundering and reuse; others can be burned for energy recovery at a burning facility that is permitted to accept them. Sorbents should not be placed in your normal trash.

Shipping

If you are a Very Small Quantity Generator (VSQG), one way to manage both paint and solvents is to take them to a VSQG Collection Site if there is one near you. (VSQGs generate less than 100 kg — about half a 55-gallon drum liquid — per month.) VSQG Collection Sites may also accept other waste. For more information about this option and a list of sites, see MPCA Hazardous Waste fact sheet #2.51, [VSQG Collection Program Requirements for Generators](http://www.pca.state.mn.us/waste/pubs/2_51.pdf), http://www.pca.state.mn.us/waste/pubs/2_51.pdf.

Another option is to have waste picked up by a hazardous waste transporter for disposal at a hazardous-waste facility. For more information, see MPCA Hazardous Waste fact sheet #1.06, [Transport and Dispose of Waste Correctly](http://www.pca.state.mn.us/waste/pubs/1_06.pdf), http://www.pca.state.mn.us/waste/pubs/1_06.pdf.

Required Paperwork

Keep copies of the following for at least three years:

- shipping papers, waste-tracking invoices and manifests showing the type and amount of waste, date, where and how the waste was shipped and disposed of; and
- inspection logs showing results of weekly inspections of hazardous waste containers. MPCA hazardous waste fact sheet #2.41, [Documenting Container Inspections](http://www.pca.state.mn.us/waste/pubs/2_41.pdf), http://www.pca.state.mn.us/waste/pubs/2_41.pdf, may help you do this.

If you are recycling the sludge, there are additional paperwork requirements. For more information, see MPCA Hazardous Waste fact sheet #2.44, [Recycling Hazardous Waste — Feedstocks, By-Products and Sludge](#).

More Information

The Minnesota Technical Assistance Program offers waste-reduction information and assistance. Twin City Metro Area counties and the MPCA have staff available to answer regulatory and other questions. For more information, contact your metropolitan county's hazardous waste office or the MPCA office closest to your county.

Minnesota Technical Assistance Program

Toll free (800) 247-0015
..... (612) 627-4646

Metro County Hazardous Waste Offices

Anoka County (612) 422-7093
Carver County (612) 361-1800
Hennepin County (612) 348-8100
Ramsey County (651) 773-4466
Scott County (612) 496-8177
Washington County (651) 430-6655

Metropolitan Council Environmental Services

Wastewater treatment plant for
7-county metro area (651) 602-4703

Minnesota Pollution Control Agency

Toll free (800) 657-3864
Brainerd (218) 828-2492
Detroit Lakes (218) 847-1519
Duluth (218) 723-4660
Marshall (507) 537-7146
Rochester (507) 285-7343
St. Paul (651) 297-8362