

Automotive Service – Maintenance



Photo Credit: Geoff Brosseau

Description

This category includes facilities that conduct general maintenance and repair on vehicles including:

- General repair shops
- Radiator repair shops
- Car dealerships
- Car washes
- Fleet maintenance operations

Information specific to: auto dismantling, body repair, and service stations is provided in other guide sheets.

Pollutant Sources

The following are sources of pollutants:

- Changing oil and other fluids
- Cleaning engines and parts
- Flushing radiators
- Washing cars and other vehicles

Pollutants can include:

- Heavy metals (copper, lead, nickel, and zinc)
- Hydrocarbons (oil and grease, PAHs)
- Toxic chemicals (solvents, chlorinated compounds, glycols)
- Acids and alkalis



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Approach

Minimize exposure of maintenance areas to rain and runoff by using cover and containment. In and around these areas, use good housekeeping to minimize the generation of pollutants. Make stormwater pollution prevention BMPs a part of standard operating procedures and the employee training program. Provide employee education materials in the first language of employees, as necessary.

Source Control BMPs

The best management practices are listed by activity or area.

Changing Oil and Other Fluids

Waste oil, antifreeze, and other vehicle fluids contain toxic chemicals and heavy metals from wear and tear of engine parts.

- Whenever possible, change vehicle fluids indoors and only on floors constructed of non-porous materials. Avoid working over asphalt and dirt floors – surfaces that absorb vehicle fluids.
- If vehicle fluids must be removed outdoors, always use a drip pan. Prevent spills from reaching the street or storm drain by working over an absorbent mat and covering nearby storm drains, or working in a bermed area. If necessary, you can use absorbent socks to create a bermed area.
- When draining fluids into a drain pan, place a larger drip pan (e.g., 3' x 4') under the primary drain pan to catch any spilled fluids.
- Transfer fluids drained from vehicles to a designated waste storage area as soon as possible. Drain pans and other open containers of fluids should not be left unattended unless they are covered and within secondary containment.
- Store waste containers of antifreeze and oil within secondary containment. Antifreeze and waste oil should be stored separately and recycled, or disposed of as hazardous waste.
- Never pour vehicle fluids or other hazardous wastes into sinks, toilets, floor drains, outside storm drains, or in the garbage. These substances should be kept in designated storage areas until recycled or safe disposal.
- Drain fluids from leaking or wrecked vehicles as soon as possible, to avoid leaks and spills.
- Consider using a quarter barrel, vacuum pump, or drain pan with built-in pump to transfer fluids.

(See fact sheet SC-22 - Vehicle and Equipment Maintenance and Repair for other information)

Cleaning Engines and Parts, and Flushing Radiators

Solvents are hazardous to employees and can ignite in sewers.

- Eliminate discharges from these operations to the sanitary sewer and storm drains. Use a licensed service to haul and recycle or dispose of wastes.
- Designate specific areas or service bays for engine, parts, or radiator cleaning. Do not wash or rinse parts outdoors.
- Use self-contained sinks and tanks when working with solvents. Keep sinks and tanks covered when not in use.

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- Inspect degreasing solvent sinks regularly for leaks, and make necessary repairs immediately.
- Avoid soldering over drip tanks. Sweep up drippings and recycle or dispose as hazardous waste.
- Rinse and drain parts over the solvent sink or tank, so that solvents will not drip or spill onto the floor. Use drip boards or pans to catch excess solutions and divert them back to a sink or tank.
- Allow parts to dry over the hot tank. If rinsing is required, rinse over the tank as well.
- Collect and reuse parts cleaning solvents and water used in flushing and testing radiators. When reuse is no longer possible, these solutions may be hazardous wastes, and must be disposed of properly.
- Never discharge cleaning solutions used for engines or parts into the sewer system without adequate treatment. Most facilities have these solutions hauled offsite as hazardous waste because of the permits necessary for onsite treatment.
- Rinsewater may only be discharged to the sanitary sewer with adequate treatment and approval of the sewage treatment plant.
- Never discharge wastewater from steam cleaning, or engine/parts cleaning to a street, gutter, or storm drain.
- Sweep or use a vacuum to clean up dust and debris from scraping or bead blasting radiators.
- Consider using static tanks for rinsing to reduce the volume of discharged rinsewater.
- Consider using counter-current rinsing to reduce water usage and rinsewater discharges.

(See fact sheet SC-21 – Vehicle and Equipment Washing and Stream Cleaning and fact sheet SC-22 - Vehicle and Equipment Maintenance and Repair for other information)

Washing Cars and Other Vehicles

Even biodegradable soaps can be toxic when they reach a creek or waterbody.

Regular Activity

- If car washing is a central activity of your business, the most desirable option is to treat and recycle the wash water.
- Designate a vehicle washing area and wash cars and trucks only in that area. This “wash pad” should be bermed or protected from storm drains and should drain to an oil/water separator before discharging to the sewer.
- Cover an outside wash pad or minimize the area of an uncovered pad to reduce the amount of rainwater reaching the sewer. Consult your local sewage treatment plant for guidance.
- Minimize the use of acid-based wheel cleaners. These products may require additional treatment (beyond oil/water separation) before discharge to the sewer.

Occasional Activity

- Even biodegradable soap is toxic to fish and wildlife. Whenever possible, take vehicles to a commercial car wash.

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- If soap is used in washing, the wash water must be collected and discharged, preferably with treatment, to the sanitary sewer. This water cannot be discharged to a storm drain.
- Never rinse off spray-on acid-based wheel cleaners where rinsewater may flow to a street, gutter, or storm drain.

Washing New Vehicles

- If cleaning the exterior of new vehicles with water only, the discharged water may go to the storm drain directly.
- Always protect the storm drains from solvents, used to remove protective coatings from new cars. Discharges of these solvents to the sanitary sewer must receive adequate treatment and approval of the sewage treatment plant.

(See fact sheet SC-21 – Vehicle and Equipment Washing and Stream Cleaning for other information)

Keeping a Clean Shop

Good housekeeping practices minimize liability, reduce costs, and make it easier to detect spills and potential problems.

- Use drip pans under leaking vehicles to capture fluids.
- Sweep or vacuum the shop floor frequently. Use mopping as an alternative to hosing down work areas.
- If mopping is used to clean shop floors:
 1. Spot clean any spilled oil or fluids using absorbents or rags.
 2. Use dry cleanup methods: Sweep the floor using absorbents.
 3. After steps 1 and 2 above (if mopping is still needed), mop and discharge mop water to the sanitary sewer.
- Do not pour mop water into the parking lot, street, gutter, or storm drain.
- Remove unnecessary hoses to discourage washing down floors and outside paved areas.
- Regularly sweep parking lots and areas around your facility instead of washing them down with water.
- Collect all metal filings, dust, and paint chips from grinding, shaving, and sanding, and dispose of the waste properly. Never discharge these wastes to the storm drain or sanitary sewer.
- Collect all dust from brake pads separately and dispose of the waste properly. Never discharge these wastes to the storm drain or sanitary sewer.
- Send rags to an industrial laundry.
- Inspect and clean if necessary, storm drain inlets and catch basins within the facility boundary before October 1 each year.
- Consider using an oleophilic mop (picks up oil and not water) to reduce the volume of waste liquids you collect and reduce your cost for disposal.

(See fact sheet SC-22 - Vehicle and Equipment Maintenance and Repair for other information)

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Storage

Appropriate storage protects your shop from hazardous spills. Consult your local hazardous waste agency for details.

- Store hazardous materials and wastes where they are protected from rain and in a way that prevents spills from reaching the sanitary sewer or storm drain.
- Keep lids on waste barrels and containers, and store them indoors or under cover to reduce exposure to rain.
- All hazardous wastes must be labeled according to hazardous waste regulations. Consult the Fire Department or your local hazardous waste agency for details.
- Keep wastes separate to increase your waste recycling/disposal options and to reduce your costs.
- Never mix waste oil with fuel, antifreeze, or chlorinated solvents. Consult your hazardous waste hauler for details.
- Double-contain all bulk fluids to prevent accidental discharges to the sewer and storm drain. Consult the Fire Department for details.
- Carefully transfer fluids from drip pans or collection devices to designated waste storage areas, as soon as possible.
- When receiving vehicles to be parted or scavenged, park them on a paved surface and immediately drain and collect gasoline and other fluids properly.
- Drain all fluids from components, such as engine blocks, which you may store for reuse or reclamation. Keep these components under cover and on a drip pan or sealed floor.
- Store new batteries securely to avoid breakage and acid spills during earthquakes. Shelving should be secured to the wall. Store used batteries indoors and in plastic trays to contain potential leaks. Recycle old batteries.

(See Material and Waste Management fact sheets – SC-30 series for other information)

Spill Control

Spills cause safety hazards for employees and can spread if not cleaned up immediately.

- The best spill control is prevention.
- Maintain and keep current, as required by other regulations, a spill response plan and ensure that employees are trained on the elements of the plan.
- Minimize the distance between waste collection points and storage areas.
- Contain and cover all solid and liquid wastes – especially during transfer.
- Purchase and maintain the proper absorbent materials for containment and cleanup of different spills, and make sure they are easily accessible anywhere in the shop. Saturated absorbents generally must be disposed of as hazardous waste.
- “Spot clean” leaks and drips routinely. Leaks are not cleaned up until the absorbent is picked up and disposed of properly.
- Seal or remove floor drains to prevent accidental discharge to the sewer system.

(See fact sheet SC-11 - Spill Prevention, Control and Cleanup for other information)

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Outdoor Waste Receptacle Area

Existing Facilities

Spot clean leaks and drips routinely to prevent runoff of spillage.

Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:

- Use only watertight waste receptacle(s) and keep the lid(s) closed, or
- Grade and pave the waste receptacle area to prevent run-on of stormwater, or
- Install a roof over the waste receptacle area, or
- Install a low containment berm around the waste receptacle area, or
- Use and maintain drip pans under waste receptacles.

New or Substantially Remodeled Facilities

- The element listed below should be included in the design and construction of new or substantially remodeled facilities.
- Grade and pave the outdoor waste receptacle area to prevent run-on of stormwater to the extent practicable.
- Note: Substantially Remodeled Facilities - The facility is considered substantially remodeled if the area around the waste receptacle area is being regraded or repaved.

(See fact sheet SC-20 - Vehicle and Equipment Fueling for other information)

Air/Water Supply Area

Existing Facilities

- Minimize the possibility of stormwater pollution from air/water supply areas by doing at least one of the following:
- Spot clean leaks and drips routinely to prevent runoff of spillage, or
- Grade and pave the air/water supply area to prevent run-on of stormwater, or
- Install a roof over the air/water supply area, or
- Install a low containment berm around the air/water supply area.

New or Substantially Remodeled Facilities

- The element listed below should be included in the design and construction of new or substantially remodeled facilities.
- Grade and pave the air/water supply area to prevent run-on of stormwater to the extent practicable.

Note: Substantially Remodeled Facilities - The facility is considered substantially remodeled if the area around the air/water supply area is being regraded or repaved.

(See fact sheet SC-20 - Vehicle and Equipment Fueling for other information)

Recycling / Wastewater Treatment

Recycling and properly treating wastes protects the environment and saves you money.

- Recycle solvents, paints, oil filters, antifreeze, motor oil, batteries, and lubricants.

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- Set up a system (separate, well-labeled containers in a convenient location) to make it easy for employees to separate wastes and to recycle.
- Choose wastewater treatment systems that are easy to maintain and repair.
- Properly maintain and service all pretreatment equipment, including sumps, separators, and grease traps to ensure proper functioning. Follow manufacturer's maintenance instructions and consider using a licensed service to conduct maintenance on a regular basis.
- Frequently inspect equipment for malfunctioning parts, leaks, and the accumulation of pollutants such as oil and grease. Since pretreatment equipment is supposed to remove pollutants, a lack of accumulation may be a sign of a malfunction.
- Retain only a licensed service to haul away and dispose of wastes.
- Consider installing self-contained, zero-discharge treatment systems that recycle wastewater.

(See fact sheet SC-22 Vehicle and Equipment Maintenance and Repair and fact sheet SC-34 – Waste Handling and Disposal for other information)

Purchasing

Purchasing decisions have a direct and long-term impact on the products used and disposed of by your shop. Make pollution prevention easier and reduce costs and liability by controlling the types and amounts of products purchased.

- Ask your supplier for information on less toxic chemical cleaners and other products. There are alternatives to chlorinated solvents; chlorofluorocarbons; and 1,1,1, trichloroethane (TCA).
- Ask your supplier for information on the composition of brake pads. Recent studies have shown that brake dust washed off streets by rain may be the single biggest contributor of copper, a major pollutant, to waterways. Your awareness and understanding of this problem and the available alternatives will help us come up with solutions in the future.
- Minimize inventory by purchasing only as much product as you will need in the foreseeable future. This will reduce your storage space needs, inventory tracking costs, and liability for storing hazardous materials and waste.

Education and Training

Your success in following these guidelines depends on an effective training program.

- Train all employees upon hiring – and annually thereafter – on personal safety, chemical management, and proper methods for handling and disposing of waste. Make sure that all employees understand stormwater discharge prohibitions, wastewater discharge requirements, and these best management practices. Use a training log or similar method to document training.
- Post instructional/informational signs around your shop for customers and employees. Put signs above all sinks prohibiting discharges of vehicle fluids and wastes. Put signs on faucets (hose bibbs) reminding employees and customers to conserve water and not to use water to clean up spills.
- Label drains within the facility boundary, by paint/stencil (or equivalent), to indicate whether they flow to an oil/water separator, directly to the sewer, or to a storm drain. Labels are not necessary for plumbing fixtures directly connected to the sanitary sewer.

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Treatment Control BMPs

For information on inspecting and maintaining treatment controls, see Section 4 of this handbook.

For information on designing treatment controls, see Section 5 of the New Development and Redevelopment Planning Handbook.

More Information

Booklets, Checklists, Fact Sheets, and Pamphlets

Bay Area Pollution Prevention Group, 1999. Switching to Water-based Solutions for Parts Cleaning.

USEPA, 1999. The Pollution Prevention Tool Kit, Best Environmental Practices for Auto Repair (<http://www.epa.gov/region09/p2/autofleet/>).

USEPA, 1999. The Pollution Prevention Toolkit, Best Environmental Practices for Fleet Maintenance (<http://www.epa.gov/region09/p2/autofleet/>).

Posters

Fresno Metropolitan Flood Control District, no date. Partners for Clean Stormwater.

Los Angeles County, 1995. Good Operating Practices – Auto Repair Industry.

Videos

Department of Toxic Substances Control, no date. Best Environmental Practices for Auto Repair.

Mission College Television, no date. Hazardous Waste Management.

USEPA, 1999. Profit Through Prevention, Best Environmental Practices for Fleet Maintenance (<http://www.epa.gov/region09/p2/autofleet/>).

References

Bay Area Dischargers Association and Bay Area Storm Water Management Agencies Association, 1995. Your Shop Can Make A Difference!, What vehicle service shops can do to protect water quality in the Bay and Delta.

Bay Area Pollution Prevention Group, 1999. Switching to Water-based Solutions for Parts Cleaning.

City of Santa Cruz, 1999. Vehicle Service Facilities: Best Management Practices – Section 1 of Best Management Practices Manual for the Storm Water Program.

Regional Water Quality Control Plant—Palo Alto, 1995. A Brief Look at Wastewater Treatment Equipment: Vehicle Service Facilities, Machine Shops, Other Small Shops.

USEPA, 1999. The Pollution Prevention Tool Kit, Best Environmental Practices for Auto Repair (<http://www.epa.gov/region09/p2/autofleet/>).

USEPA, 1999. The Pollution Prevention Toolkit, Best Environmental Practices for Fleet Maintenance (<http://www.epa.gov/region09/p2/autofleet/>).