DESCRIPTION OF PROPOSED USE:

Monroe Street Partners West; Metal Recycling Facility

5400 Monroe Street

COMPLIANCE WITH THE PURPOSE, GOALS, AND OBJECTIVES OF THE COMPREHENSIVE PLAN:

Monroe Street Partners West("MSPW") believes this metal recycling facility will work with Commerce City's Comprehensive Plan in multiple areas that are outlined in the plan. The City has defined specific visions and goals in its plan (Pg. 14 C3 Vision Plan and Goals) to:

1. *Become a Green city where viable*; MSPW is at its very heart a Green company committed to providing a resource for the citizens and businesses of Commerce City and the surrounding area to recycle all types of metals.

2. *Provide a reason for people to come to the City*; MSPW will provide a new, clean, state of the art and environmentally friendly facility to recycle that will attract customers into Commerce City from the surrounding area.

3. *Establish global partnerships.* MSPW in the course of doing business will be exporting metals to other counties primarily in Southeast Asia including China, South Korea, Vietnam and India. MSPW's ownership and management team have existing relationships with partners in these countries and will expand the relationships with exports from Commerce City.

The plan also explains the City's desire to be a Sustainable Community (Pg. 14) and that *"Vital economic development"* is a pillar of a sustainable community; MSPW financial investment of close to $20 million and the associated jobs should contribute vital economic development. Additionally, the plan asks on page 15 W*hy Sustainability is important to the City*? The answer includes that "it is important for Commerce City to address the contemporary challenges" that include waste reduction and recycling. A metal recycling facility will assist the City in reaching its goal of sustainability both within the Commerce City community and globally by reducing the need to mine new resources.

On page 18 of the City's Plan are the Guiding Principles for the Plan. Included in the principles are the following:

1. Land Use and Growth: "Grow Commerce City in a balanced and compact pattern of neighborhoods and commerce centers, where residents have access to employment…. Promote infill…. to avoid inefficient and costly leapfrog development"
    a. MSPW development of the vacant land at 5400 Monroe Street will be an infill development that will create access to employment and avoid costly leapfrog development.
2. Economic Development: "Maintain a strong employment base; help create a bobs/housing balance; define appropriate locations for a range of industry and businesses (including green businesses);…"
    a. MSPW development of a green industrial business in Historic City, that has been designated for general industrial use in the Plan, will create approximately 60 jobs.
3. Financial Stability: "Continue as a financially stable city by fortifying revenues…"
    a. The development and operation of the metal recycling facility by MSPW will increase real property and personal property taxes to the City. Also, sales of commodities from the business will bring both foreign money and revenues from other areas of the United States.
4. Environmental Conservation/Stewardship: "Increase recycling….while reducing energy and resource use overall"
    a. A new, modern recycling facility will increase recycling by making it easier, more convenient and more financially beneficial to those who wish to recycle. Also, metal recycling reduces the need to extract raw metals from the earth through energy intensive and potentially environmentally harmful mining operations.

On page 23 the Plan lays out a development strategy "*Future Land Use Big Ideas*", that includes "*4. Retain lands for industry so the City will continue to have jobs and a fiscally-balanced future.*". MSPW's desire is to develop an industrial business that will create jobs on a vacant industrial property appears to align well with this portion Comprehensive Plan's development strategy.

On page 47 under *Land Use and Growth*, the plan states "In the future, growth will take place in the form of infill in the Historic City and Irondale areas". Again, we believe our proposed development helps the City achieve this goal in Historic City area.

On page 50, *Land Use and Growth Goals and Policies*, the plan calls for maintaining Jobs-to-Housing ratios (LU 1.2), and promoting infill development (LU 2.1); MSPW's business development will help the City achieve both these goals and conform with this policy.

Under "*Land Use Goal 4* - *Retain existing industrial areas and land for future jobs*", on page 53, Citywide Policy LU 4.2 calls to "Promote and strengthen industry and jobs where they are currently located in Historic City… particularly in … Southern Industrial Area." This Area includes 5400 Monroe Street where MSPW wishes to invest and create jobs.

In section 5 –"*Economic Development*" on page 95, the *Guiding Principle* talks about "Beneficial and sustainable economic development can elevate the economic, political and social position of the city" and that "Commerce City aims to maintain its strong employment base while expanding and diversifying appropriate jobs…". The recycling business proposed by MSPW will be beneficial and sustainable economic development by virtue of the millions of dollars invested in real property improvements and long term use hard assets that will generate recurring tax revenue and provide the platform for new jobs that will exist in perpetuity. We also believe the political position of the City could be elevated by MSPW being a corporate citizen of Commerce City that will be generating revenue streams from foreign countries that will help offset trade imbalance the United States has struggled to balance for decades.

On page 96 the Plan calls for "Retaining/Increasing Strong Employment Base". As previously described, this recycling business will increase jobs and add to a strong employment base for Commerce City.

Fiscal Stability Goals on page 104 of the Plan include "Retaining and increasing revenue-producing land uses". MSPW desires greatly to develop the currently vacant land at 5400 Monroe into a revenue and job producing land for Commerce City. MSPW development would help the City also, on page 107, achieve the *Goal FS 2 – Retain and increase revenue producing land uses.* and the proposal is aligned with Citywide Policy FS 2.1 and FS 2.2 "to strengthen the industrial and employment land base.."

On pages 119 and 120, the Plan speaks to the desire to have more compact land use and more infill development as a key to "the City's sustainable future". As stated previously, MSPW development of 5400 Monroe Street will be an infill development of vacant land with a cost to MSPW of nearly $20 million.

The "Appearance and Design" of heavy industrial uses is addressed on page 176 and the Plan talk about the fact the history of industrial uses has somewhat tarnish its (Commerce City) image to outsiders but it is MSPW's desire and promise to the City to not only develop to required standards but also to exceed the minimum requirements (with additional screening and paving) to ensure a professional and clean appearance.

On page 198, Goal EC4.1 – Stormwater Best Management Practices; while the amount of impervious surface will increase on the property we will be constructing a stormwater management system on the property where none currently exists.

Finally, on page 198, *Goal EC5- Reduce solid waste disposal* can and will be directly addressed by this facility that will divert materials from landfill by compensating customers of the business. This business will comply with the *Citywide Policy EC 5.1 – Waste Reduction, Recycling and Re-Use* by the very nature of the business.

HARMONY WITH THE CHARACTER OF THE NEIGHBORHOOD:

The property is located in a General Industrial zoned area and boarders the City of Denver to the south which is also zoned general industrial. This metal recycling business will be compatible with the surrounding uses listed below:

The property to the East is the proposed Monroe Street Partners East recycling and waste transfer facility.

The property to West is the Union Pacific Rail Road.

The properties to the South are: (1) Old Yeller Auto at 5385 Garfield St, Denver, CO 80216. This is an auto salvage yard with the property full of old cars. (2) Denver Intermodal Express Container Yard at 3400 E 54th Ave, Denver, CO 80216. This is an outdoor storage yard for overseas containers stacked in excess of 30 feet high. (3) Fred Garcia's Granite Fabrication at 3330 E 54th Avenue, Denver, CO 80216. This is an industrial fabrication business.

The property to the North is the Denver Rock Island Railroad.

GENERAL COMPATIBILITY WITH SURROUNDING AREA:

The surrounding area is zoned general and/or heavy industrial with railroad operations, petroleum refineries, auto salvage yards, truck tire sales and commercial trucking operations. MSPW believes the proposed metal recycling facility is very compatible with the surrounding area and existing uses.

COMMUNITY NEED FOR THE PROPOSED USE:

While there are facilities in the area that process metals for recycling, there exist a need for this particular facility due to limited options for the general public and small businesses to recycle due to closures of scrap facilities or the existing facilities do not carter their services to the general public and small businesses as Monroe Street Partners East proposes. The following facilities have either closed or have limitations described below:

Iron and Metals, Inc. 5555 Franklin St, Denver, CO, 80216: This company primarily caters to recycling of large structural steel and metals. There is a limited area for the general public and small businesses to weigh into the facility.

Rocky Mountain Recycling: 6510 Brighton Blvd, Commerce City, CO 80022: This company provides a good facility and services for customers but without the ability to shred ferrous metals, thus metals must be reloaded for transport to shredding facilities.

All Recycling North, LLC: 5350 Washington Street, Denver, CO 80261: This facility is also a solid waste transfer station. Due to the overwhelming amount of waste transfer activity the business stopped buying non-ferrous metals in 2019 and has a limited area to accept ferrous metals from the general public. The facility can be intimidating and potentially unsafe to the public due to the high volume of commercial waste trucks.

Evraz: 5601 York St, Denver, CO 80216: This facility caterers almost exclusively to large commercial recyclers. The site is very small and very congested with semi-truck traffic.

Denver Scrap Metals: 4920 Washington St, Denver, CO 80216: This is a smaller, privately owned facility that is attempting to relocate due to its property lease ending. Continued operations are in doubt.

Atlas Metals: 1100 Umatilla St, Denver, CO 80204: Not very convenient for residents and small businesses north of Denver.

Denver Metal Recycling: 4770 Ivy St, Denver, CO 80216: This is a small, privately owned facility with an unpaved drop off property two blocks from the payout offices. The operation of the business can be confusing and time consuming for customers.

J&B Auto Wreckers: 4980 Brighton Blvd. Denver CO 80216: This facility closed in 2017. This facility accepted old automobiles for reuse of parts and recycling of the autos.

EFFECTS OF ADJACENT PROPERTY AND HOW THEY WILL BE MITIGATED:

MSPW does not anticipate any direct effect on the adjacent properties.

EFFECTS ON PUBLIC INFRASTRUCTURE AND SERVICES AND HOW THEY WILL BE MITIGATED:

MSPW do not anticipate any adverse impact to the public infrastructure and services. This proposed use and property development will be beneficial to the public infrastructure due to the transfer of property along the northern portion of the property to expand 54th Avenue and extend 54th Avenue from Monroe Street to Cook Street.

SITE CHARACTERISTICS:

The site is an essentially flat property bordered by 54th Avenue along the South and the railroad in the North. The rail to the north sits approximately 20 feet below the property. The site is undeveloped vacant land at this time.

LANDSCAPING AND SCREENING STRATEGIES TO MITIGATE IMPACTS:

MSPW proposes a 8 foot tall solid metal fence surrounding the entire property to screen outdoor storage and activities within the property. The Gates to the property will remain open during all business hours so there will not be a need to stage any customers on 54th Avenue. Or Monroe Street. We also propose to install the required landscaping along 54th Avenue to soften the visual impact of the solid fence and enhance the appearance of 54th Avenue.

NOISE, DUST, ODOR AND OTHER NUISANSES THAT MAY IMPACT THE SURROUNTING AREA:

The metal recycling operating on the property has the potential to create noise and dust nuisances that could impact the surrounding area if not mitigated properly.

Dust could be generated and sent into the air in the property and potentially blown off the site if not managed. Paving the entire property is the primary dust mitigation solution. In addition to having a paved property, dust mitigation will be achieved by preforming constant housekeeping within the property with street sweeping daily by employees with a company owned sweeping machine. Also, the metal shredding operation could emit dust, so the shredding equipment will be outfitted with a water misting system to significantly reduce or eliminate any fugitive dust. MSPW is proposing to install a 1 ½" water line to the shredder to provide adequate water to the misting system.

Noise generated by the operation would come from three sources: truck traffic on site, equipment operation on site and from the shredding system. The primary mitigation solution for noise is the location of the property and the associated operations within the property. To the greatest extent possible MSPW has designed the site to have noise generating activities to the south and west side of the property and furthest away from any streets or neighbors that could be impacted by noise. Additional mitigation is achieved by the solid fencing of the property and noise from the shredding operation will be reduced through the installation of rubber curtains surrounding the shredding mill.

ANY OTHER RELEVENT INFORMATION:

Description of internal site layout and circulation

The site will have two structures, an office & maintenance building and a non-ferrous metals building. There will be two 70 foot truck scales and a mobile or permanent scale house. There are two different customer types: ferrous and non-ferrous.

Ferrous Customers: Customers will enter at the east of the property and proceed over one of the scales. The customers will be weighed in for the ferrous metals delivered. Customers will then proceed to the center of the yard and unload their ferrous metals. They will proceed to go back over another truck scale to record the empty weight and determine the amount for metal delivered. The customer will then stop in the office to receive payment, then exit the property. Trained spotters will inspect the loads for any non-allowed material and have customers remove any non-allowed materials.

Wheel loaders will push the metals to a shredder for processing. The resulting commodities are steel, non-ferrous metals and auto shredder residue. Commodities and waste will be shipped off site via truck and railroad cars.

Non-ferrous Customers: Customers will enter at the east of the property and proceed directly east to the Non-ferrous Building. Customers will unload the metals into the building to be weighed then proceed to the office for payment, then exit the property.

Non-ferrous commodities will be stored within the building before being loaded into containers to be shipped off via semi-truck.

Compliance with regulatory agencies:

1. Environmental Protection Agency: Please see attached (Attachment A) guidance from the EPA that our operation will follow.
2. CDPHE: Addressed directly based upon comments for the application
3. Tri-County Health Department: Addressed directly based upon comments for the application
4. US Department of Transportation: We will be a registered commercial trucking company subject to all USDOT regulations and subject to inspections and audits to ensure our compliance.

ATTACHMENT A

Contents

Introduction

Every year, vehicles that reach the end of their useful life end up as discarded vehicles. Often these vehicles are abandoned or stockpiled at poorly managed scrap yards. While it is unclear how many vehicles reach the end of their useful life annually, there are periodic regional or country-specific reports that provide estimates of discarded or stockpiled vehicles. These stockpiled vehicles have reached the end of their useful lives, but have not been properly processed for recovery of the reusable or recyclable materials or disposal of waste components. Without proper processing, scrapping and recycling, the number of vehicles will only increase year after year. Once vehicles reach the end of their useful life, they can be a liability and owners might abandon them on open land. Local governments are often left to deal with these vehicles and the public health, environmental and financial burdens associated with them.

Not only are these vehicles a liability and an eyesore in local communities, but they often contain hazardous materials, like antifreeze and oil, that can be harmful to workers, residents and the environment. Fortunately, with the proper tools, facilities and knowledge to process discarded vehicles, hazards can be properly managed and the vehicle components and parts can be recovered for their scrap metal value. Properly managing discarded vehicles reduces risks to workers, public health and the environment; lowers disposal costs; saves landfill capacity and creates opportunities to recover valuable resources and earn revenues from dismantling and scrapping operations.

As part of the U.S.-Mexico Border 2020 Program's goal to reduce waste, by safely and responsibly recovering materials and managing waste, the U.S. Environmental Protection Agency (EPA) and the Mexican environmental agency, Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT), collaborated on this guide to help operators of vehicle dismantling facilities understand and practice environmentally sound management. Border 2020 emphasizes a regional bottom-up approach as the basis for decision-making, priority-setting and project implementation to address the environmental and public health problems in the border region.

Abandoned vehicles that require processing and prepping before materials recovery and disposal

Purpose of This Guide

This guide provides vehicle dismantling and scrapping facilities and their operators with information on proper removal, storage and handling of potentially hazardous materials from discarded vehicles. Removing hazardous materials will help ensure that vehicles can be safely stored and processed, maximizing the recovery of valuable resources and mitigating worker safety, public health and environmental risks. By training staff to properly handle and prepare vehicles for scrapping and recycling, facilities can remove more of these vehicles from border communities and provide environmental, economic and aesthetic benefits. This guide provides general guidance and best practices for your assistance - it does not replace local laws and regulations.

Overview of an End-of-Life Vehicle

Regardless of its age and its weight, a vehicle is made out of about 75 percent metal, both ferrous and non-ferrous. The remaining 25 percent of the vehicle weight results from tires, fluids and other materials. When vehicles reach the end of their useful life or are discarded, they contain different wastes that include glass, metal, plastic, fabric and rubber components. They also include fluids such as used oil, antifreeze, lubricants and gasoline or diesel, and increasingly contain electronic components with heavy and precious metals. Understanding the parts and components of a discarded vehicle is integral to its safe and efficient recovery. Properly processing vehicles will prevent cross-contamination and maximize recovery value.

Vehicle Ready for Dismantling

Scrap Vehicle and Metal Recovery Operations

Processing and preparing discarded vehicles for disposal requires ample space for six different activities:

1. Accepting and storing discarded vehicles.
2. Removing hazardous materials.
3. Dismantling vehicles for usable or recyclable parts.
4. Storing vehicle hulks.
5. Storing and disposing of hazardous fluids and materials removed from discarded vehicles.
6. Crushing or shredding vehicle hulks (deliver to metal crushing facility if not equipped to complete this activity).

1. Accepting and Storing Discarded Vehicles

When accepting discarded vehicles and preparing them for salvage, you should visually inspect the vehicle for any leaks. Dedicate a space for inspecting vehicles when they arrive on-site. This space should include measures to prevent soil and water contamination if fluids are leaking from the vehicle. Begin dismantling and processing the discarded vehicles as soon as possible to reduce storage time and minimize the potential for environmental contamination from leaking fluids. Runoff from the storage area caused by precipitation (rain, snow, etc.) should not be contaminated. Methods to collect and treat runoff can be used if the site is known to have contaminated surfaces. However, doing so may require obtaining a water discharge permit for the facility from the local authorities. When accepting or storing discarded vehicles:

- Check discarded vehicles for leaks.
- Clean up any spills.
- Dispose of any contaminated soils and cleaning materials as hazardous waste, unless materials are determined not to be hazardous waste.
- Minimize the time from when a vehicle is received to when it is disassembled and processed.

2. Removing Hazardous Materials

The first step in processing a discarded vehicle is to drain it of all hazardous fluids, such as those from fuel tanks, transmissions, radiators and power steering units, as well as any parts that are leaking fluids.

You should remove the battery and fluids in the following order to ensure the safe removal of all hazardous items:

1. Battery.
2. Refrigerants.
3. Gasoline or diesel fuel.

Next, the following fluids should also be removed in any order:

- Antifreeze.
- Brake fluid.
- Engine oil.
- Transmission fluid.
- Power steering fluid.
- Differential fluid (if present).
- Windshield washer fluid.

The following hazardous materials should also be removed before the vehicle hulk is crushed or shredded:

- Mercury switches [found in anti-lock brakes (ABS) brakes and convenience lighting].
- Lead (battery connectors and wheel weights).

Mercury Switch from Vehicle Convenience Light

Detailed information on the collection, stockpiling, and disposal for each of these waste streams is provided in quick-reference sheets in Appendix A.

The amount of fluids to be removed is estimated at around 19 liters per vehicle. The table below shows the estimated volume of fluids in discarded vehicles by fluid type. The space used for draining fluids and dismantling vehicles should have a sturdy, non-permeable base, such as concrete or durable liner, to provide an easy cleaning surface and to prevent spilled fluids from contaminating the environment. The space should be covered to protect it from the weather and to prevent spilled materials from being washed into the environment. If the space includes an exposed concrete pad, it should be high enough off the ground to prevent flooding during rainstorms.

Estimated Volume of Fluids in Discarded Vehicles

Fluid Type	Liters/Vehicle	U.S. Gallons/ Vehicle
Fuel	10.2	2.7
Engine oil	3.6	1.0
Coolant	2.8	0.7
Transmission oil	1.3	0.3
Steering gear oil	0.8	0.2
Total	18.7	4.9

Waste Fluids Drained from a Vehicle

An alternative option for smaller or temporary locations is to undertake work outdoors in dry, warm weather only upon an impermeable working surface. The constructed temporary vehicle fluid recovery area should consist of, for example, poly liner or plywood working surface. Absorbent materials should be on hand at all times to clean up any spills. All spills must be cleaned up and any contaminated soils and cleaning materials must be disposed of as hazardous waste unless materials are tested and shown not to be hazardous or otherwise determined not to be hazardous waste.

3. Dismantling Vehicles for Usable or Recyclable Parts

Once all of the hazardous components are removed, you should identify and remove all usable or recyclable components. Reusable or recyclable parts of a discarded vehicle often hold value even after the end of the car's useful life. If in good condition, many engine components and body parts can be salvaged, reconditioned and sold to automotive repair shops or to individuals performing auto restoration projects. Some metal recycling companies also require that most, if not all, plastic and upholstered components be removed before shredding or crushing the vehicle hulk.

4. Storing Vehicle Hulks

Once all of the hazardous materials and usable or recyclable parts have been completely removed from a discarded vehicle, it is commonly referred to as a "hulk." Hulks are defined as the shells of large usable items, usually vehicles or vessels. Vehicle hulks can be hard to move and take up a large amount of dedicated space. When storing vehicle hulks, remember:

- Vehicle hulks should only be stored once all hazardous materials have been removed.
- Clean up any lingering spills or leaks seen around hulks immediately.
- Salvage hulks for usable or recyclable parts.
- Send hulk to a metal crusher or crush and ship hulks with no more "salvage" value to a scrapper for scrap metal recycling.

Recommended Equipment for a Vehicle Dismantling Facility

- Secured building with garage-bay-style door, concrete floor, adequate roof and no drains leading to a sewer, sewage tank or stormwater collection system.
- Forklift or other heavy machinery to move vehicles from receiving area to dismantling area and then from dismantling area to vehicle hulk storage area.
- Gasoline evacuation pump with filter.
- Small wheel hoists to lift car high enough to drain fluids.
- Small hand pumps for removal of engine oil, transmission fluid, gear oil, coolants and brake fluid.
- Containers for storage of oils, antifreeze, windshield washer fluid, etc.
- Portable refrigerant removal device with separate storage tanks for each type of refrigerant.
- Dedicated drip pans to catch fluids.
- Spill kit to clean up spills.

5. Storing and Disposing of Hazardous Fluids and Materials

Hazardous fluids and other hazardous materials should be stored in sealable containers and separated appropriately. These containers should be kept in the vehicle dismantling area, stored on the concrete pad. This will provide easy access to the containers when draining fluids from vehicles. Once these containers are full, the hazardous materials must be sent to an appropriate hazardous waste disposal facility. Hazardous materials and fluids of the type found in discarded vehicles should never be released into the environment or sent to a municipal waste landfill.

Other best practices for storage include:

- The storage area should be covered to provide protection from the weather.
- Containers of hazardous materials should be on a non-permeable surface.
- Fuels should be stored in a well-ventilated area of a building or outdoors protected from the weather.
- Refer to the quick-reference sheets in Appendix A for proper handling and storage techniques for each hazardous material.

Example of Fuel Collection and Storage Container

6. Crushing Vehicle Hulks

Once all of the salvageable parts and hazardous materials are removed, the vehicle hulk can be crushed to reduce its volume for shipping. However, removing the nonhazardous, non-metallic components reduces the volume of material to be crushed and could increase the scrap value of the vehicle hulk. Crushing consists of flattening a hulk or logging it—that is, compressing it into a rectangular cube.

When you have stored enough hulks, you may hire a third-party to bring a mobile crusher and operate it at your site. The crushing area must be large enough to accommodate the crusher and also have a space designated for the storage of crushed vehicles. The following steps should be completed in conjunction with crushing operations:

- All hazardous fluids and materials should be removed from the vehicles prior to crushing.

Vehicle Crusher in Operation

Example of "Logged" Metal

- Any spills should be cleaned up immediately and all contaminated soil and cleaning materials should be disposed of as hazardous waste (unless tested or shown otherwise).
- Any fluids resulting from the crushing operations should be collected and disposed of as hazardous waste (unless tested or shown otherwise).
- Once the crusher has been removed from site, the site should be cleaned and debris removed to a permitted landfill.

The proper handling of these waste streams is discussed in Appendix A's quick-reference sheets on collection, stockpiling and disposal.

Responsible Disposal

The types of hazardous fluids and materials found in discarded vehicles must never be sent to a typical municipal landfill. Hazardous materials require special handing, transportation, recordkeeping and disposal facilities in accordance with the local, state and federal laws and regulations. Some hazardous materials, such as lead components and waste batteries, can be recycled rather than discarded. Contact the appropriate facility, such as a secondary lead smelter or a waste battery recycler to arrange the delivery of hazardous materials that retain value. Other hazardous waste streams, such as mercury switches, require a specific facility that can accept mercury wastes. Remember to:

- Contact a recycling/hazardous waste facility permitted by SEMARNAT to accept the specific waste stream to arrange the delivery of hazardous materials.
- Contact the appropriate transport authority (marine, rail or road) before the shipping and transportation instructions of waste to ensure proper handling.
- Keep manifests and transportation records on -site.

Cost Recovery

The long-distance transportation of vehicle hulks and the proper disposal of hazardous materials to a permitted recycling and disposal facilities can be costly. However, in advance of crushing, many items can be salvaged from vehicles that can be sold to recyclers to help cover some of the related disposal costs. Recovery costs of these items will depend on the market value of the materials at the time of sale. These items may include:

- Usable or recyclable parts.
- Catalytic converters (high-value items that contain several precious metals).
- Batteries.
- Aluminum wheels.
- Fuel (gasoline/diesel).
- Antifreeze.
- Used oil.

The most valuable item recovered from a discarded vehicle is the crushed or logged vehicle hulk, sold as scrap metal. Removing the hazardous liquids and materials from the discarded vehicle allows a facility to sell the vehicle hulk for profit. As noted above, removing the nonhazardous, non-metallic components reduces the volume of material to be crushed and could increase the scrap value of the vehicle hulk.

Health, Safety and Security

Worker and Public Safety

Dismantling operations can involve a number of hazardous substances posing worker and public safety concerns. Consequently, employers should ensure that their workers are trained in safe work practices for the facility. Among these are special handling and storage requirements for hazardous materials, first aid and emergency procedures. Employers should also provide workers with the necessary personal protective equipment (PPE) to complete their jobs in a safe manner. PPE and safety items that should be kept on-site include:

- Approved safety boots (steel toe).
- Eye goggles.
- Gloves.
- Eye wash station.
- First aid kit.
- Fire extinguisher.
- Work coveralls.

Workers should remove items from vehicles in the following order to prevent injury and environmental damage:

1. Remove the battery to de-energize the vehicle.
2. Remove refrigerants to prevent accidental release into the environment.
3. Remove gasoline in a well-ventilated area to prevent the buildup of fumes and decrease the risk of fire or explosion.
4. Remove other hazardous materials.

Public safety must also be taken into consideration during dismantling operations. Common hazards include:

- Exposure to hazardous waste.
- Trips, slips and falls.
- Fires and explosives.

Keep the dismantling operation's location secure from public access during normal working hours. At the end of each day, secure the site to prevent public access.

Ensuring a Safe Dismantling Area

The dismantling area must have an adequate roof and concrete floor pad for easy cleanup of spills and to prevent soil contamination.

Smaller or temporary locations can dismantle vehicles outdoors in dry, warm weather, but only on an impermeable working surface, such as plywood over a protective sand layer or liner.

Environmental Health and Safety

Collecting and storing hazardous materials on-site creates the potential for environmental contamination. The following best practices should be used in order to prevent potential spills and contamination:[1]

- Store all hazardous materials in approved containers with securely fitting lids.
- Place all containers holding hazardous materials in an area with no drains and include measures to prevent soil and water contamination if fluids are leaking from the containers.
- Properly label all containers with their contents to prevent cross-contamination of recovered fluids.
- Remove gasoline outside the dismantling area in a well-ventilated area.
- Remove refrigerants after the battery has been removed, but before any other fluids or parts, to prevent accidental leakage to the environment.
- Use drip pans at all times to catch fluids dripping from vehicles.
- Ensure that areas where hazardous wastes are stored are not susceptible to water runoff or flooding.
- Make sure spill kits are available on-site.

1. National Code of Practice, 2008, and British Columbia Ministry of Environment, 2008

- Keep lime or bicarbonate of soda on hand to neutralize spilled battery acid.
- Dispose of all used spill cleanup material as hazardous waste.

In order to follow the above best practices, the following safety equipment should be kept on hand:[2]

- Fire extinguishers in all facility buildings.
- Safety equipment, such as rubber or latex gloves and safety goggles.
- Absorbent materials, such as rags, towels and sawdust.
- Containers to hold spilled waste and used absorbent materials.
- Shovels and/or scoops.
- Industrial spill cleanup products tailored for the cleanup of oils and solvents, depending on the facility operations.

Site Security

Site security is very important. Facilities that process discarded vehicles can become targets for vandalism and theft, and the materials and equipment kept on site can present hazards to intruders. Therefore, it is extremely important to keep all equipment locked and inaccessible to the public. Store all hazardous materials and vehicle dismantling equipment in a secured location. Lock any machinery, such as the crushing equipment, in a secured location at the end of each day to prevent injury.

Industry Standards and Additional Guidance

This guide provides basic guidance and general best practices for your assistance. If you would like to strive for a higher standard of recovery, you can consult additional industry guidance and standards, such as those established by the Institute of Scrap Recycling Industries and their associated standards, including the Recycling Industry Operating Standard™. There may also be standards for specific vehicle components—for example, the Responsible Recycling standard and the e-Stewards certification for the recovery of used electronic devices, as well as the Rubber Manufacturing Association's guidance on the recovery of scrap tires.

For More Information

This guide was produced by the U.S. EPA and SEMARNAT under the U.S.–Mexico Border 2020 Program. The mission of the Border 2020 Program is to protect the environment and public health in the U.S.–Mexico border region, consistent with the principles of sustainable development. For assistance with use of this guide, or for more information about ongoing efforts of the Border 2020 program, please visit www.epa.gov/border2020.

2. Minnesota Pollution Control Agency, 2002

Appendix A. Collection, Stockpiling and Disposal Quick-Reference Sheets

The quick-reference sheets in this appendix summarize the proper collection, stockpiling and disposal of waste streams associated with discarded vehicles. Keep these sheets in a place where they can be easily reviewed by dismantlers when dealing with these types of wastes.

Quick-reference sheets are provided for the following waste streams:

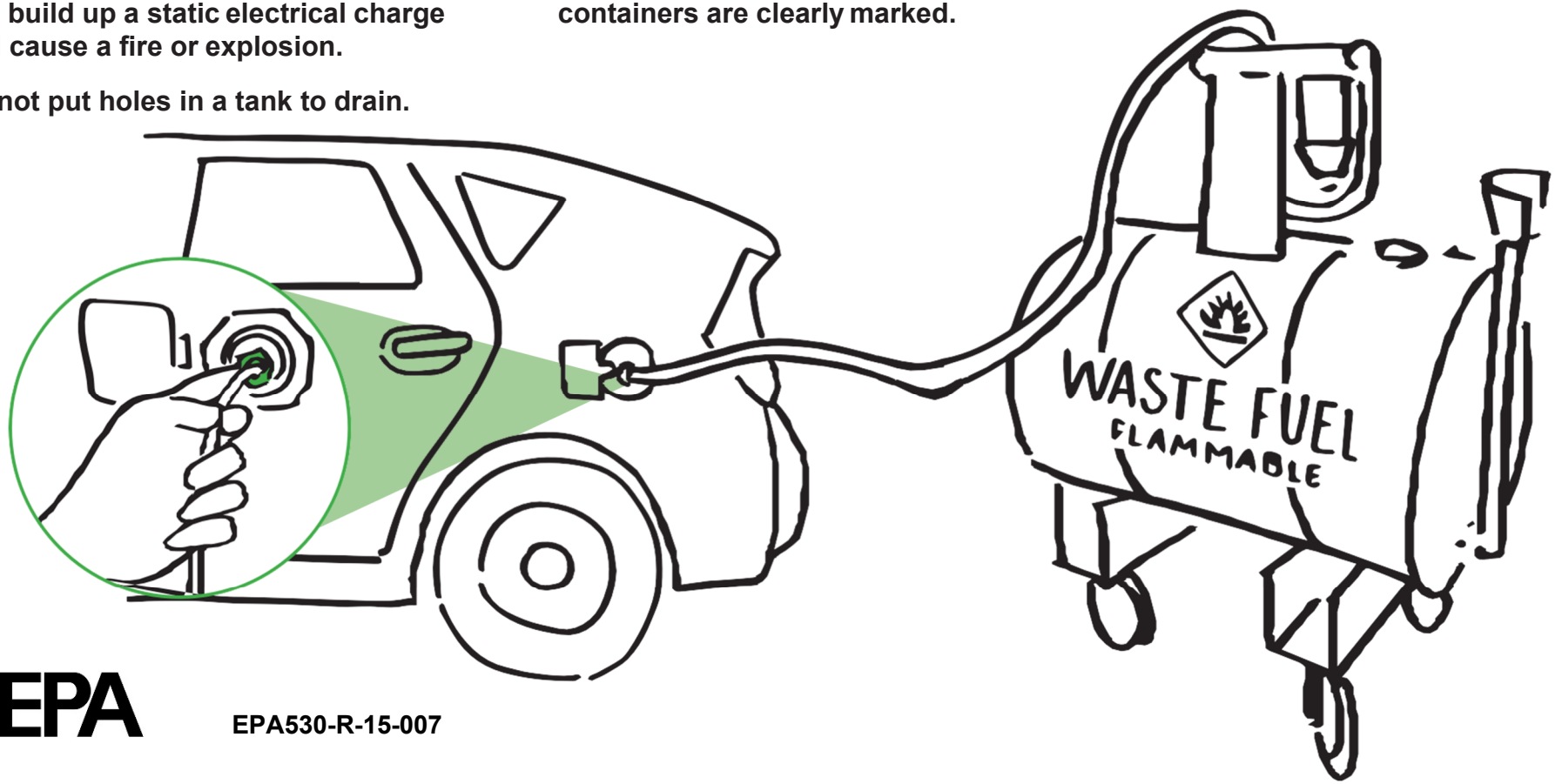
- Waste fuel.
- Refrigerants.
- Waste batteries.
- Lead.
- Mercury switches.
- Waste fluids.

Waste Fuel

Worker Hazard: Waste fuels are flammable and may catch on fire or explode from a spark or ignition source.

Environmental Hazard: Waste Fuel is toxic to fish and wildlife.

- Remove fuel in a well-ventilated area using a suction system specifically designed for this purpose.
- Do not use plastic hand pumps as they can build up a static electrical charge and cause a fire or explosion.
- Do not put holes in a tank to drain.
- Store waste fuel separately in containers designed only for this purpose.
- Make sure waste fuel storage containers are clearly marked.



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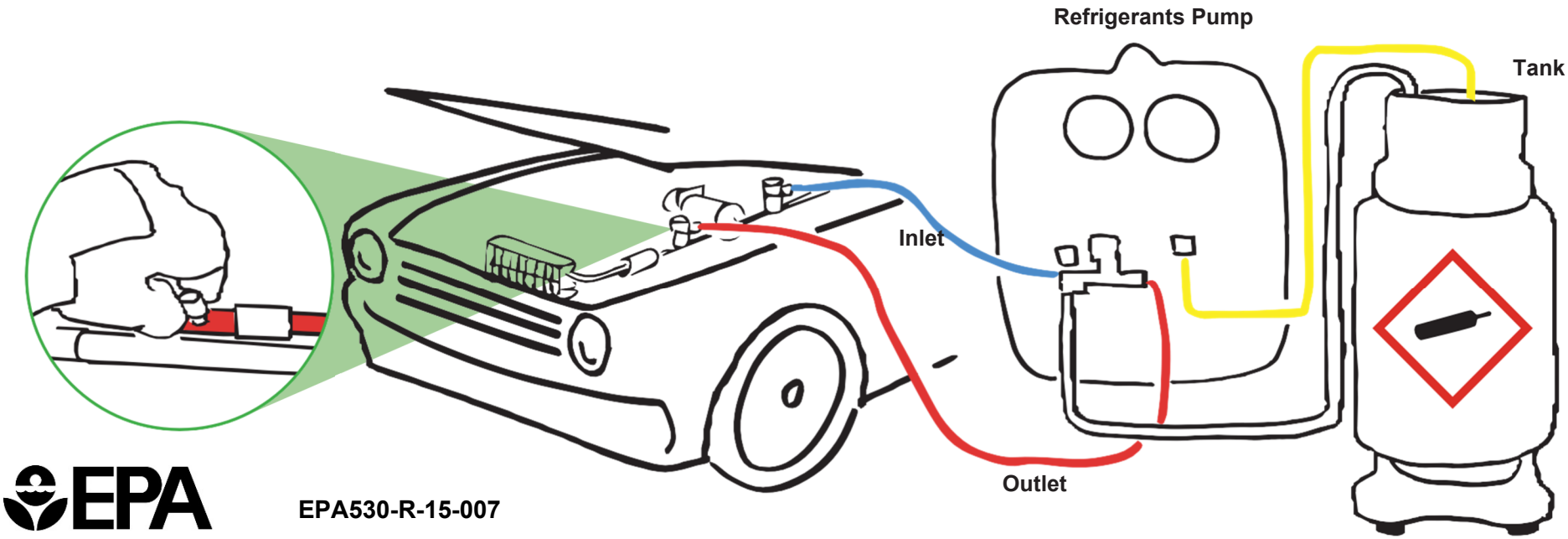
Refrigerants

Worker Hazard: Refrigerants are gasses under pressure and may be flammable.

Environmental Hazard: Refrigerants may contain ozone-depleting substances and should not be vented into the air.

- Remove refrigerants **after** the battery has been removed but **before** removing any other fluids or items from the vehicle.
- Only trained technicians should remove refrigerants.
- Record the amount of refrigerant removed per vehicle.
- Store refrigerants in labeled, refillable storage containers.
- Test the containers for leaks every five years and replace if damaged.
- Refrigerants are recovered using a portable pump and tank. Pumps come in all shapes and sizes, but the hoses connecting the vehicle are usually color-coded, according to the following legend.

Hose connecting refrigerants pump to tank
Outlet hose connected to refrigerants pump
Inlet hose connected to refrigerants pump



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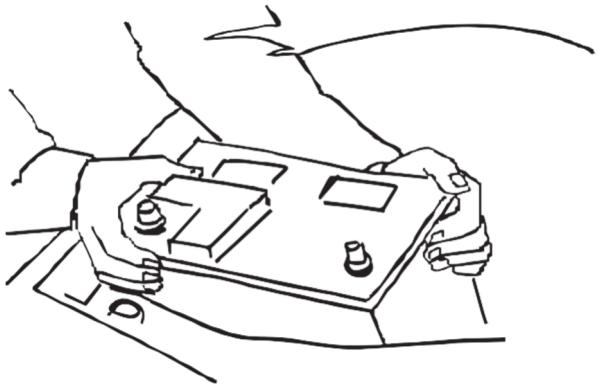
Waste Batteries

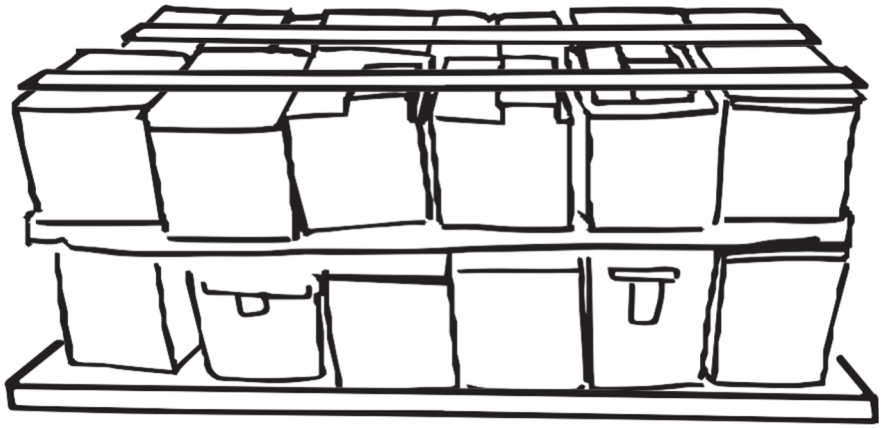
Environmental Hazard: Waste batteries contain corrosive fluid that can cause burns to the skin and eyes.

Environmental Hazard: Waste batteries contain heavy metals that can contaminate the environment.

- Removing batteries first makes vehicles safe for handling other materials.



- Keep waste batteries protected from moisture.
- Stack no more than two batteries high.
- Place cardboard or plywood between stacks to keep batteries from shorting and causing an electrical fire.
- Secure batteries by wrapping in a leak-proof polyethylene liner and secure to pallet using nylon straps.



TIP:
Be careful not to crack the battery casing! Many recyclers will not accept leaking batteries!

Waste batteries have value!
You can sell them to a battery recycler.

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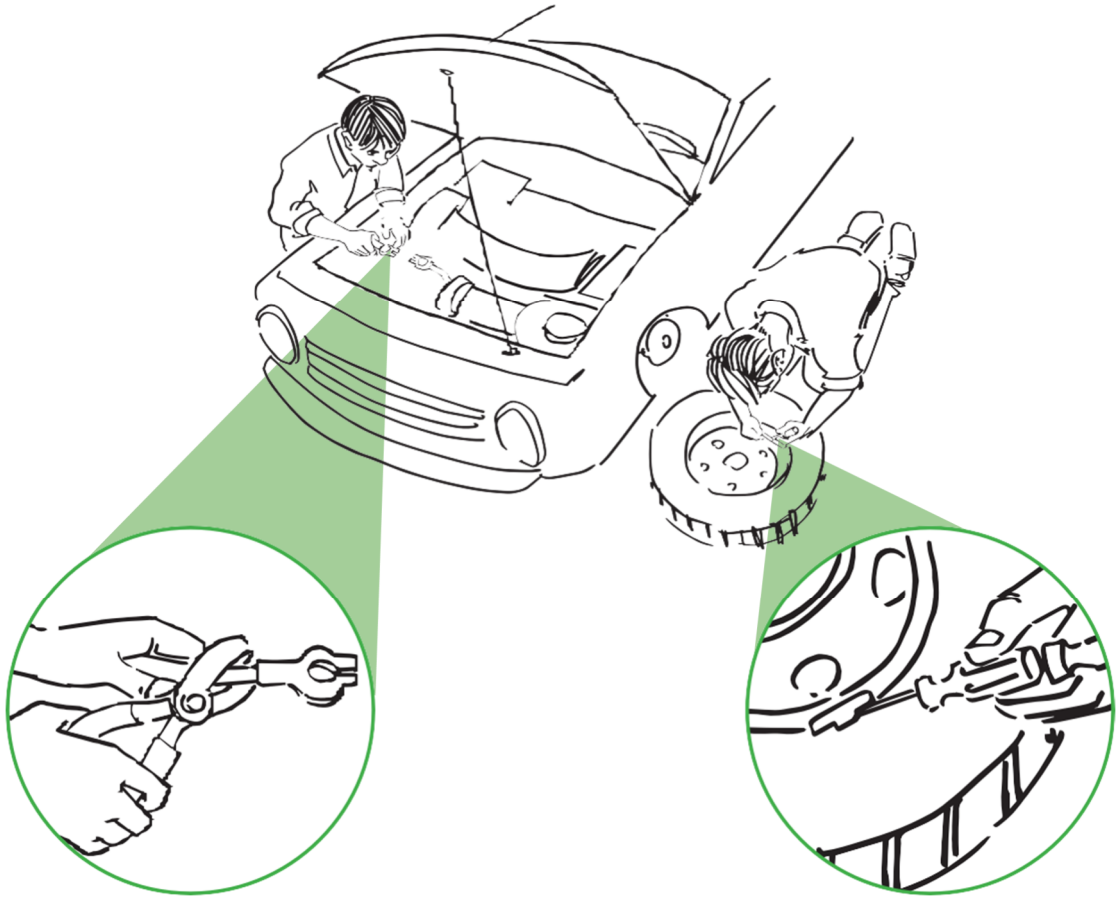
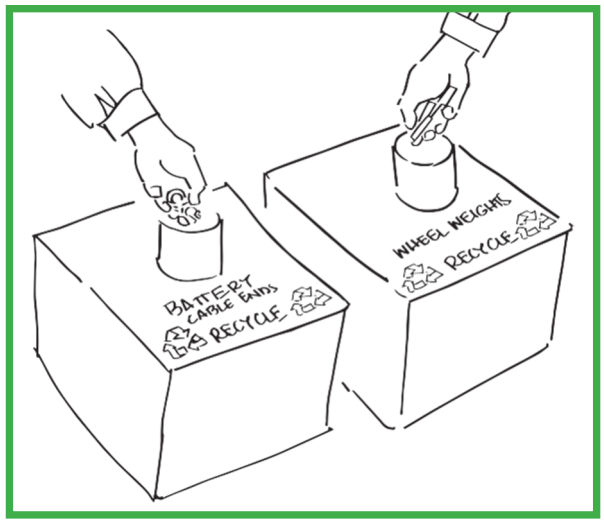
Lead

Worker Hazard: Lead is toxic to people and can lead to serious and long-term health problems.

Environmental Hazard: Lead is toxic to fish and wildlife.

- Remove lead wheel weights and battery cable ends before crushing the vehicle.
- Store lead wheel weights and battery cable ends in separate, heavy-duty containers.





Lead parts have value! You can sell lead parts to a smelter who recycles the material.

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Mercury Switches

Worker Hazard: Mercury is toxic to people and can lead to serious and long-term health problems.

Environmental Hazard: Mercury is toxic to fish and wildlife.

- Locate all mercury switches found in vehicle. *Appendix B—Vehicles Containing Mercury Switches* can help you locate them for various vehicle models.

Convenience Lights

- Find the lighting assembly under the vehicle trunk and/or hood and remove from vehicle.
- Open the lighting assembly to expose the mercury switch (a sealed metal pellet).
- Remove the switch and place it in the collection container.

Anti-Lock Braking Systems

- Find the ABS G-Force sensor. It can be located in the drive tunnel, below the rear seat on the floor pan, on the right front wheel apron, or on the left frame rail below the driver.
- Remove the s ABS G-Force sensor and place it entirely in the collection container. Do not remove the switches.

- Store mercury switches in a plastic container with a securely fitting lid.
- When the container is full, send the switches to a mercury management facility for safe disposal.

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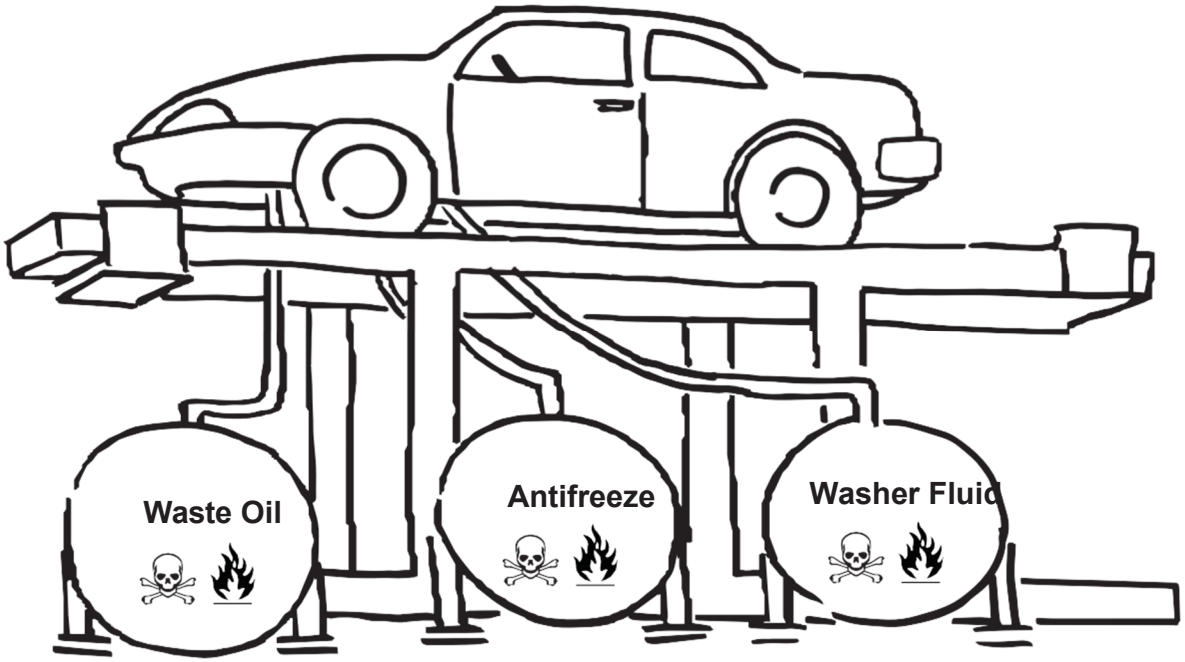
Waste Fluids

Environmental Hazard: Waste fluids may be toxic to fish and wildlife.

- Use hand pump or drain from components before crushing vehicle.
- Waste Oils (including engine, transmission, power steering, differential, and brake fluid) can be combined and stored together in a labeled metal or plastic container with a secure lid.
- Antifreeze and windshield washer fluid must be stored separately in a clearly labeled metal or plastic container with a secure lid.
- Store container in a secondary containment area with no drains to prevent fluids from leaking.



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Appendix B. Vehicles Containing Mercury Switches

Table 1. Vehicles Containing Mercury Convenience Switches

MAKE / MODEL	MODEL YEAR	SWITCH LOCATION		
		Hood	Trunk	Vanity Mirror
AUDI				
Audi 100	1977-1988	✓		
Audi 200	1980-1988	✓		
CHRYSLER GROUP	Dodge, Chrysler, Jeep, Plymouth, Eagle			
All	1998 and prior	✓	✓	
FORD	Ford, Lincoln, Mercury, Mazda, Merkur, Volvo			
Ford Mustang	2000 and prior	✓	✓	
Ford Crown Victoria	2000 and prior	✓	✓	
Mercury Grand Marquis	2000 and prior	✓	✓	
Lincoln Town Car	2000 and prior	✓	✓	
Ford, Lincoln, Mercury, and Merkur Cars	1996 and prior	✓	✓	
Ford, Lincoln, and Mercury Trucks, SUV's, and Vans	2001 and prior	✓		
* Excludes: 1999 and newer model year Ford Econoline, Ford Windstar, Ford Ranger, and Mercury Villager				
Mazda Navajo	1993 -1997	✓		
Mazda B-Series Pick-Up	1995 -1999	✓		
* Ranger/B-Series phased out of mercury switches with 1999 model year.				
Volvo (hood & trunk switches)	1991 and prior	✓	✓	
Volvo (vanity mirror switch) -- Excludes Volvo 240	1986 -1991			✓
* Volvo convenience switches may contain glass mercury capsules. Use care when removing convenience switches from these vehicles.				
GENERAL MOTORS	Chevrolet, GMC, Cadillac, Buick, Oldsmobile, Pontiac, Saturn, Saab			
All Vehicles	1999 and prior	✓	✓	
* Excludes: 1999 model year Chevrolet Astro, Chevrolet Silverado, GMC Safari, GMC Sierra				

Vehicles Containing Mercury Convenience Switches (cont'd)

MAKE / MODEL	MODEL YEAR	SWITCH LOCATION		
		Hood	Trunk	Vanity Mirror
Cadillac Escalade	2000	✓		
Chevrolet Blazer	2000, 2001, 2002	✓		
Chevrolet Cavalier	2000, 2001		✓	
Chevrolet Corvette	2000	✓		
Chevrolet Express	2000, 2001, 2002	✓		
Chevrolet S-10 Crew cab	2002	✓		
GMC Denali	2000	✓		
GMC Envoy	2000, 2001	✓		
GMC Jimmy	2000, 2001	✓		
GMC Savana	2000, 2001, 2002	✓		
GMC Sonoma Crew cab	2002	✓		
Luxury G-Van	2001, 2002	✓		
Oldsmobile Bravada	2000, 2001, 2002	✓		
Pontiac Sunfire	2000, 2001		✓	
PORSCHE				
924	1976 - 1985	✓		
924 S	1986 - 1988	✓		
944	1982 - 1988	✓		
944 S	1987 - 1988	✓		
944 S2	1989 - 1991	✓		
944 Turbo	1986 - 1991	✓		
928	1978 - 1983	✓		
928 S	1980 - 1983	✓		
928 S / S4	1984 - 1990	✓		

ELV Solutions. Mercury Convenience Light Switches.

- See the following page for Mercury ABS G-force switch locations. BMW, MITSUBISHI, NISSAN, SUBARU, VOLKSWAGEN, and TOYOTA vehicles DO NOT contain mercury convenience switches.
- Vehicles manufactured 2003 Model Year and beyond DO NOT contain mercury convenience switches.
- Vehicles without trunks including SUVs, station wagons, and hatchbacks DO NOT contain a mercury convenience switch in the "Trunk" or rear of the vehicle.

Table 2. Vehicles Containing Mercury ABS G-Force Switches

MAKE / MODEL	MODEL YEAR	SWITCH LOCATION			
		Rear Seat	Rear Center	Driver Seat	Right Front
AUDI	Audi				
Audi 80 / 90	1987 - 1993	✓			
Audi 100 / Avant	1987 - 1993	✓			
Audi V8	1989 - 1995	✓			
Audi 200	1987 - 1991	✓			
Audi Coupe quattro	1987 - 1992	✓			
CHRYSLER LLC	Dodge, Jeep				
4WD Dodge Stealth	1992 - 1996		✓		
Jeep Cherokee	1992 - 2001	✓			
Jeep Grand Cherokee	1993 - 2001	✓			
Jeep Wrangler	1992 - 2003			✓	
FORD MOTOR COMPANY	Ford, Mazda, Mercury				
Ford Bronco	1993 - 1997			✓	
Ford Explorer	1993 - 2002			✓	
Mazda Navajo	1993 - 2002			✓	
4x4 Ford Ranger	1995 - 2001			✓	
Mazda B-Series Pick-up	1995 - 2001			✓	
AWD Mercury Mountaineer	1997 - 2002			✓	
MITSUBISHI					
3000 GT 4WD	1991 - 1994		✓		
Galant 4WD	1990 - 1992		✓		
Expo 4WD	1991 - 1993		✓		
Expo LVR 4WD	1991 - 1993		✓		
Eclipse 4WD	1991 - 1993		✓		
NISSAN					
Pathfinder 4x4	1996		✓		
SUBARU					
Subaru Legacy w/ 5MT AWD	1990 - 1995				✓
Subaru Impreza w/ 5MT AWD	1993 - 1996				✓

ELV Solutions. Vehicles containing Mercury ABS G-Force Sensors.

Table 3. Vehicles Containing Air Bag Crash Sensor Modules with Mercury Switches

MAKE / MODEL	MODEL YEAR	SWITCH LOCATION	
		Console	Driver's Seat
TOYOTA			
Celica	1990 - 1993	✓	
MR2	1991 - 1993	✓	
Supra	1990 - 1993	✓	
LEXUS			
ES 250	1990 - 1991	✓	
LS 400	1990 - 1992	✓	
VOLVO			
All Models Except 240	1987	✓	✓
All Models	1988 - 1992	✓	✓
240	1993	✓	✓
AUDI			
Audi 80/90	1989 - 1993	✓	
Coupe	1990 - 1991	✓	
Audi 100/200	1989 - 1993	✓	
S4	1992	✓	
Audi V8	1990 - 1991	✓	
MERCEDES-BENZ			
Model 190	1986 - 1990	✓	
E-Class	1986 - 1990	✓	
S-Class	1984 - 1990	✓	

ELV Solutions. Air Bag Crash Sensor Module Information.

NOTE: In the above applications only the air bag crash sensor modules contain mercury switches. Air bag inflation units (steering wheel, instrument or dash panel, seat, side curtain, etc.) do not contain mercury switches and should not be removed.