

LESSON 4: Proper Management of Household Hazardous Waste

LESSON'S CONCEPTS

- Household hazardous waste must be carefully separated from other wastes and taken to a household hazardous waste collection facility.
- Used motor oil must be taken to a used oil collection center.

PURPOSE

Students will learn the proper way that household hazardous waste should be managed.

OVERVIEW

In this lesson students will:

- Visit the school bus yard and interview a mechanic to find out what happens to used motor oil and used motor oil filters from school buses.
- Find out where in their community used motor oil can be recycled.
- Listen to a speaker describe the proper way to manage household hazardous waste.
- Determine that by recycling used motor oil and other recyclable household hazardous wastes, natural resources are conserved and the environment is protected from pollution caused by the improper disposal of wastes.

CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS AND TO BENCHMARKS FOR SCIENCE LITERACY

- Students determine where in their community household hazardous waste, including used motor oil, must be taken. Students conclude that when household hazardous waste is properly managed, natural resources can be conserved and protected.
 - "Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept . . . students will: . . . formulate predictions and

justify predictions based on cause and effect relationships." (*Science Content Standards, Grades K–12; Grade 4; Investigation and Experimentation, Standard 6c*)

- "(People) need to exercise judgment, care, and planning in their use of natural resources . . . and in their practices of disposing of wastewater and materials." (*Science Framework, page 125*)
- "Discarded products contribute to the problem of waste disposal. Sometimes it is possible to use the materials in them to make new products" (*Benchmarks for Science Literacy, page 189*)
- Students describe in their journals why used motor oil should be taken only to a used motor oil collection center for recycling and should never be disposed of in the environment.
 - Students "select a focus, an organizational structure, and a point of view based upon purpose, audience, length, and format requirements." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 23*)
- Students write thank you letters to the speaker.
 - Students "choose the form of writing (e.g., personal letter . . .) that best suits the intended purpose." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 37*)

SCIENTIFIC THINKING PROCESSES

observing, communicating, ordering, relating

TIME

15 minutes to prepare for the lesson; 60–90 minutes to implement the lesson

VOCABULARY

household hazardous waste collection facility (Select additional words that students are curious about in this lesson.)

PREPARATION

- ___ 1. Read the “Background Information for the Teacher” on page 563.
- ___ 2. Make arrangements for your class to visit your school’s or district’s bus yard. You should first ask permission from an administrator. Ask a mechanic at the bus yard to show students the tools he or she uses to change the oil and the container in which used motor oil is placed and to show or describe to the students where the used motor oil is taken. If a field trip to the bus yard is not feasible, obtain permission from the appropriate administrator and then ask a mechanic from the bus yard to speak to the class. Make certain to provide the mechanic with a list of questions that students will be asking, including information about recycling used motor oil and filters.
- ___ 3. Identify agencies and organizations that deal with the proper disposal of household hazardous wastes, including used motor oil, used motor oil filters, paint, and used antifreeze. Call the local recycling center, County Household Hazardous Waste Coordinator, or health department to find out about disposal procedures and other related issues, including locations of local household hazardous waste collection centers or events. You can also call the California Environmental Protection Agency’s Environmental Hotline at 1-800-CLEAN-UP for locations of used oil collection centers. Make a phone list of your local resources. Ask whether agencies dealing with used motor oil and other household hazardous waste in your community can send you handouts and other information. Also ask whether a speaker can visit your class.
- ___ 4. Invite a speaker to talk about the safe

disposal and recycling of household hazardous waste.

- ___ 5. Collect a total of four empty containers. Three should be from the following household hazardous products: antifreeze, paint thinner, and pesticide (weed or insect killer). Each of these three containers should have some type of warning information. You might be able to get some of these from the school’s custodian and some from your home. Write “used antifreeze” on the antifreeze container. Also collect a plastic one-gallon jug and write “used motor oil” on it.

Safety Note: For added safety, tape the lids on all containers that previously held household hazardous products.

- ___ 6. Make a copy of “Items That Should Go to a Household Hazardous Waste Collection Center” for each pair of students (page 559).
- ___ 7. Make a transparency of “Recycling Used Motor Oil” (page 560).

MATERIALS

For “Part I, Learning About School Buses and the Proper Management of Used Oil”

- ___ New motor oil filter
- ___ Four empty containers, one of each: plastic 1-gallon jug (with the words “used motor oil” written on it), antifreeze (with words “used antifreeze” on it), paint thinner, and pesticides (weed or insect killer).
- ___ The transparency of “Recycling Used Motor Oil”

For “Application”

- ___ A copy of “Items That Should Go to a Household Hazardous Waste Collection Center” for each pair of students

PRE-ACTIVITY QUESTIONS

- A. Define with your students the terms *hazardous product* and *hazardous waste* and review the four major categories of hazardous substances. *A hazardous product may contain substances that may be corrosive, ignitable, reactive, or toxic. Once the product is no longer wanted by the consumer, the product becomes household hazardous waste.*
- B. Show students the three empty containers from household hazardous products; then lead a discussion:
- Each container has some type of warning information. Is this warning for the contents inside or for the container? *The contents inside.*
 - If the container is totally empty, what can be done with it? *It might be able to be recycled or can be placed in a trash can.*
 - When do people want to dispose of a household hazardous product? *When they no longer want it and it becomes household hazardous waste.*
 - Could they give a household hazardous product in its original container (for example, toilet bowl cleaner) to a neighbor to use? *Yes. Tell students that it is recommended that the entire contents in the container of a household hazardous product be used up. If a family no longer wants to use it and someone else wants to use it properly, then the family can give it to someone else.*
 - If a family cannot give away a container that still has some household hazardous product in it (and since the family no longer wants it, is it now considered household hazardous waste), then what can the family do with it? *Don't know; take it to a special place; throw it away. If a student says "to put it in the garbage can," tell students that it is against the law to put household hazardous wastes, even if they are in a container, in the garbage can. One of the reasons is that if the container breaks or bursts when it is compacted in the garbage truck, transfer station, or landfill, the product could injure the people who work at these places. Also, when the container rusts or breaks down through time in a landfill, the hazardous contents will leak from*
- the landfill into surrounding areas.
- C. Tell students that some household hazardous wastes are not just products you no longer want, but could be products that have been used and contaminated.
- Ask whether anyone has an idea of what type of products these would be. *Used motor oil, used oil filters, used antifreeze, used batteries.*
 - Show students the plastic one-gallon jug with the words "Used Motor Oil."
 - Ask students what people can do with used motor oil that will not pollute the environment. *It can be recycled. (Students might not yet know that used motor oil can be recycled and that it is the only legal way to get rid of it.)*
- D. Discuss what students think is the only option for getting rid of used motor oil. Refer to what students said in "Pre-Activity Questions" in Lesson 3. Accept all answers at this time.
- E. Tell students that used motor oil can be recycled. Does anyone know what other household hazardous wastes can be recycled? (Students might or might not know that used motor oil filters, used antifreeze, latex paints, and used batteries can be recycled.)
- F. How can used motor oil filters, used antifreeze, latex paint, and used batteries cause problems if disposed of improperly? *They can pollute the soil and water and affect living things in the soil and water.*
- G. What do you think happens to the used motor oil and filters from the school buses? *They are recycled.*

PROCEDURE

Part I, Learning About School Buses and the Proper Management of Used Motor Oil

- A. Tell students that they will be visiting their school's or district's bus yard (garage) or a mechanic from the bus yard will be visiting their class. Ask them to make a list of questions for the mechanic. Some of those questions should be on where the used motor oil and filters are taken for recycling. Other questions students can ask are:

- How often is the oil in each bus changed?
 - How many buses are there?
 - What is the total amount of used motor oil and antifreeze and the number of batteries that are recycled at the bus yard?
- B.** List questions on the chalkboard or on a piece of butcher paper. Ask one student to copy down the questions to be sent to the mechanic. Decide who will ask what questions and who will record the answers to the questions.
- C.** Show students what a new motor oil filter looks like. Ask students what a used motor oil filter might look like. *It will be dirty, oily.* Tell students that they should ask the mechanic to show them a used motor oil filter.
- D.** If students are going on the field trip, do #1 that follows. If the mechanic is coming to talk to the class, do #2. Either way, make certain to provide the mechanic with a list of questions that students will be asking, including information about recycling used motor oil and filters.
1. Lead students to your school's or district's bus yard. Ask a mechanic at the bus yard to show students the tools he or she uses to change the motor oil, the container into which used oil is placed, and a used motor oil filter. The mechanic should also tell students where the used motor oil is taken. Then have students ask the mechanic the questions they have developed. Students should

record the mechanic's answers.

2. If a field trip to the bus yard is not feasible, ask a mechanic from the bus yard to speak to the class. Perhaps the mechanic can bring the container in which the used oil is stored.
- E.** When the speaker is gone, review the questions and answers with the class. Have students write down where the used motor oil from school buses is taken.
- F.** Have students write thank you notes to the speaker and include some drawings.
- G.** Ask students how they can find out where the household hazardous waste collection facility is located and where else in the community used motor oil and used motor oil filters are accepted for recycling. Allow student volunteers to call the California Environmental Protection Agency's Environmental Hotline at 1-800-CLEAN-UP and local agencies and gas stations to find out this information. (This information might also be available from the handouts you have acquired from local agencies.)
- H.** Show students the gallon plastic jug labeled "used motor oil" and the transparency of "Recycling Used Motor Oil."
- Discuss the importance of recycling used oil and ask students to explain the illustrations on the transparency.
 - What is the only legal and environmentally safe way to get rid of used motor oil? *Take it to the local household hazardous waste collection facility or other center des-*

Picture intentionally deleted.

Picture intentionally deleted.

Students from Janet Cohen's sixth-grade class at Gold Trail Elementary School go on a field trip to their school district's bus yard and learn about the importance of recycling used motor oil.

ignated by their community (e.g., a specific gas station).

- How does recycling used motor oil conserve natural resources?

Note: If students have completed the Unit 1, “Managing and Conserving Natural Resources,” in the 4–6 Module, they should be able to answer the previous question. If they have not participated in lessons on natural resources, ask them to conduct research to answer the question about how recycling used motor oil conserves natural resources.

- I. Show students the empty container of antifreeze. Let a student read the caution label. Tell students that children and pets have been known to die from drinking this. What should be done with the used antifreeze?
It should be recycled at a household hazardous waste collection facility.

Safety Note: Emphasize to students that only adults should be taking the household hazardous waste to a proper household hazardous waste collection site. Students should use these products at home only if permission is given by their parents or guardians and only if they take proper precautions, such as wearing gloves, and are supervised by an adult.

Part II, Listening to a Speaker About the Proper Management of Household Hazardous Waste

Do A or B.

- A. If you have arranged to have a speaker from a household hazardous waste collection site, do the following:
 - Develop a list of questions with students on what to ask the speaker. For example:
 - What type of household hazardous waste is accepted at the household hazardous collection site?
 - What happens to the waste that is brought to a household hazardous waste collection center?
 - Have the speaker talk to students about the household hazardous waste collection site in the community. Students should learn that the first way to deal with a household hazardous product is to use it all up. Then the container can be recycled or placed in the garbage can

(depending on your community’s recycling opportunities and the directions, if any, on the container).

- After the speaker is gone, ask students to identify one thing that they learned from the speaker.
 - Have students write thank you letters to the speaker. Some students’ drawings could be included in the thank you packet sent to the speaker.
- B. If you could not arrange for a speaker, share with students the information in “Household Hazardous Waste Management Options” and make certain that they can answer the questions in the “Discussion/Questions” below.

DISCUSSION/QUESTIONS

Ask students:

- What is the first priority for managing household hazardous products to keep them from becoming household hazardous waste? *Use the product up.*
- What if you cannot or do not want to use the product up? *Give it away or take it to the household hazardous waste collection facility.*
- What should you do with the empty container? *It can be recycled or placed in the garbage can* (depending on your community’s recycling options).
- What household hazardous wastes can be recycled? (This will depend on your community’s recycling options.) *Used oil, used oil filters, used antifreeze, used batteries, paint.*
- Name three items that can be taken to a household hazardous waste collection site or event. *Batteries, cleaning products, paints, automotive products, pesticides, medicines.* (Note that this list will vary from community to community).
- What products could be used in place of the ones containing hazardous materials?

APPLICATION

- A. Ask students to brainstorm ways that they can prevent household hazardous substances from harming the environment. Ask them to suggest solutions that they themselves might do, such as:
 - Buy fewer products that contain hazardous materials.

- Use up what you have or find someone who can use them properly.
 - Take the waste to a hazardous household waste collection site or a recycling center that handles hazardous substances.
- B.** Ask students to write in their journals how recycling recyclable household hazardous wastes, such as used motor oil and used motor oil filters, reduces the need to extract more oil from the Earth (therefore conserving natural resources) and protects the environment from pollution.
- C.** Distribute a copy of “Items That Should Go to a Household Hazardous Waste Collection Facility” to each pair of students. Ask them to complete the chart. Make a master class list and post it in the classroom. Keep this to use in Lesson 5.

Note: In Lesson 5 students will determine how they can share, with their families and other people, the information about household hazardous wastes and which wastes are accepted at their communities’ household hazardous waste collection centers.

Note: Complete the blanks in “Household Hazardous Waste Management Options” for students to use in Lesson 5.

EXTENSION

Play the game described in the *Closing the Loop*, Household Hazardous Waste Unit, K–3 Module, Lesson 3. In this game students participate in a relay race to separate various pictures of wastes according to their appropriate disposal options. You will need to adjust this game for the grade level of your students.

RESOURCES

Videos

Hazardous Waste, Whose Problem Is It Anyway? 1989 (10 minutes). Available from the Environmental Health Coalition, San Diego.

A class goes to different rooms in a house and looks at the problems of household hazardous products and wastes. Discusses the importance of reading labels, storing household hazardous products safely, and disposing household hazardous waste properly.

Outta Sight, Outta Mind. 1978 (11 minutes). Available from the Environmental Health Coalition, San Diego.

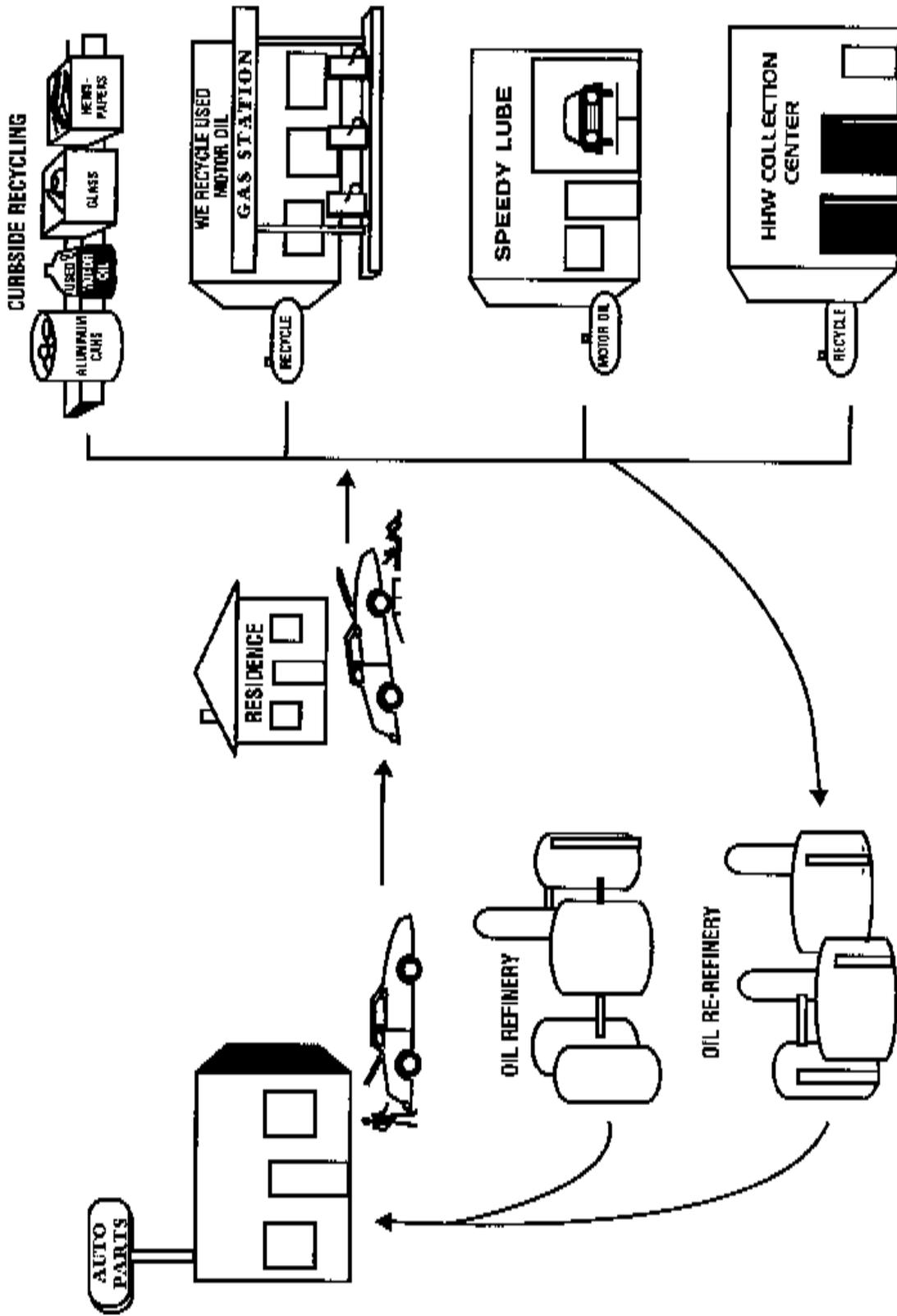
A grandfather and his grandson are out in a boat and discuss the problems created by household hazardous products and wastes and the solutions to those problems. Stresses the importance of reading labels, using these products safely, understanding how chemicals can affect us, and disposing properly of household hazardous waste.

Peter Paint and Pals in the Hunt for HHW. Rancho Cucamonga, Calif.: Creative Edge Communications, 1997 (8 minutes). Produced for the City of Chino.

Cartoon-type characters representing various household hazardous products explain why some household hazardous waste disposal methods are not acceptable and discuss how to properly dispose of household hazardous waste. Although this video was designed for primary grade students, the information provided is also valuable to older students.

Transparency

RECYCLING USED MOTOR OIL



HOUSEHOLD HAZARDOUS WASTE MANAGEMENT OPTIONS

Recommendations for Household Hazardous Products and Household Hazardous Wastes (HHW)

- Keep all household hazardous products and wastes out of the reach of children and pets.
- Read the label before handling any household chemicals.
- Avoid mixing household wastes together for disposal.
- Avoid putting a hazardous product in anything but its original container or a container specifically designed for household hazardous waste, such as used motor oil.
- Use the product up. (Follow directions on the container's label on how to properly dispose of the empty container and check to see whether your community recycles these containers.)
- HHW collection events are conducted _____

For more information about disposal and/or recycling/reuse options of HHW, please call _____

- HHW collections centers are _____

Actions to Take Concerning HHW (In the order recommended by the California Integrated Waste Management Board)

A. Reduce

Identify household hazardous products that you can reduce the use of. Consider whether you really need them. Purchase only the amount you really need.

B. Reuse (In the case of HHW, reuse means to make certain the product is completely used).

Whenever possible, use up the product or give it to someone who will use all of it. For example, reuse paint solvents by letting the paint sludge settle and then reuse the solvent. Some charities accept excess paints that they will use.

C. Recycle

In our community the following household hazardous wastes can be recycled: used oil, used oil filters, and antifreeze, batteries, and paints.

- Used automobile oil and used oil filters can be recycled at _____

Note: Recycling used oil is the **only** legal and environmentally safe way of handling this product.

Recycle antifreeze at _____

For additional information, call the California Environmental Protection Agency's hotline at 1-800-CLEAN-UP.

- The household hazardous waste collection site or event for our community is at _____

and accepts the following HHW:

- None of the above products should ever be placed in the trash can, poured down the drain in the street, on the ground, or in the storm drain.
- The HHW collection facilities or HHW collection events in our community do not accept _____

Safe Storage at Home

When the consumer is finished using a product, any remaining product should be stored safely in the home in its original container. Read the original product label for safe storage requirements; if the label falls off, clearly relabel the storage container; secure in an area that is inaccessible to children and animals; and check regularly for any leaks. Also keep the products away from moisture, water, and food; and never mix one product with another.

Pesticides, acids, corrosives and their empty containers, flammables, paints, paint removers, wood preservers, used motor oil, used motor oil filters, and used antifreeze should be stored until taken to a collection center or until there is a scheduled household hazardous waste collection day in your area.

BACKGROUND INFORMATION FOR THE TEACHER

The best way to manage most household hazardous waste is to reduce consumption and use up the entire product that was purchased. Any leftover hazardous substances or used products (e.g., used motor oil) should be taken to a household hazardous waste collection facility for proper handling and treatment or given to a friend who needs to use it. These are the only safe and legal options for managing household hazardous wastes.

The improper disposal of used motor oil and used oil filters, used antifreeze, paint, and used car batteries is against the law. All of these items can be recycled. Used motor oil can be re-refined and used again indefinitely as a lubricant. Used oil filters can be taken apart, the oil drained and recycled, and the parts used to make other steel products.

Recycling used motor oil and other recyclable household hazardous waste protects the environment from pollution caused by the disposal of these wastes. Through recycling, natural resources are conserved.

The following information explains the management of household hazardous waste that citizens should implement.

Recommendations for Household Hazardous Wastes (HHW)

- Keep all household hazardous products and wastes out of the reach of children and pets.
- Read the label before handling any household chemicals.
- Avoid mixing household hazardous wastes together.
- Avoid putting a hazardous product in a different container.
- Use the product up before recycling the empty container or disposing of the container in the garbage to go to the landfill. (Follow directions on the container's label on how to dispose properly of the empty container and check to see whether your community recycles these containers.)
- Call the local County Recycling, Health Department, or Household Hazardous Waste Coordinator to learn proper recycling/reuse options in your community.

- Take all household hazardous waste to a household hazardous waste collection facility or event in your community, where they will reuse, recycle, or safely store these wastes.

Actions to Take Concerning the Management of Household Hazardous Wastes (in the order recommended by the California Integrated Waste Management Board)

A. Reduce

Identify household hazardous products that you can reduce the use of. Consider whether you really need them. Buy only what you need.

B. Reuse

Whenever possible, use up the product or give it to someone who will use all of it. For example, reuse paint solvents by letting the paint sludge settle and then reuse the solvent. Some charities or drama clubs accept excess paints that they will use. Household hazardous waste collections programs offer reuse opportunities.

C. Recycle

Recycle those household hazardous wastes that can be recycled in your community. For consumers this means taking all their household hazardous wastes to collection centers, facilities, and/or events. Used oil, used oil filters, used antifreeze, used batteries, and leftover paints are the principal household hazardous wastes that can be recycled. Household hazardous wastes should never be poured into storm drains or sewers, because these may be directly connected to streams or other bodies of water and will pollute the water. They should never be placed in a garbage can to be taken to a landfill.

To find out how and where to recycle paints, used automobile oil, used oil filters, and antifreeze, call the local county's Recycling or Household Hazardous Waste Coordinator or the California Environmental Protection Agency's Environmental Hotline at 1-800-CLEAN-UP. Taking household hazardous wastes to a collection facility is the only legal and safe way to manage any household hazardous waste.

- Many cities and counties have a permanent household hazardous waste collection facility.

For more information see “Appendix B–VI, Household Hazardous Wastes.”

Note: The California Integrated Waste Management Board (CIWMB) provides grants to local governments for local used motor oil programs, which can include efforts to maintain existing and establish new curbside collection efforts, conduct public education programs, and support certified used oil collection centers. (Other related efforts are also allowable.) There are over

2,300 certified centers in California. This makes it convenient for those who change their own motor oil and filters to dispose of it in an environmentally responsible way.

Pesticides, acids, corrosives and their empty containers, flammables, paints, paint removers, used oil, used oil filters, and wood preservers should be stored safely until you can take them to a household hazardous waste collection facility or to the location of a scheduled household hazardous waste collection in your area.



A household hazardous waste collection vehicle from the cities and county of Stanislaus.