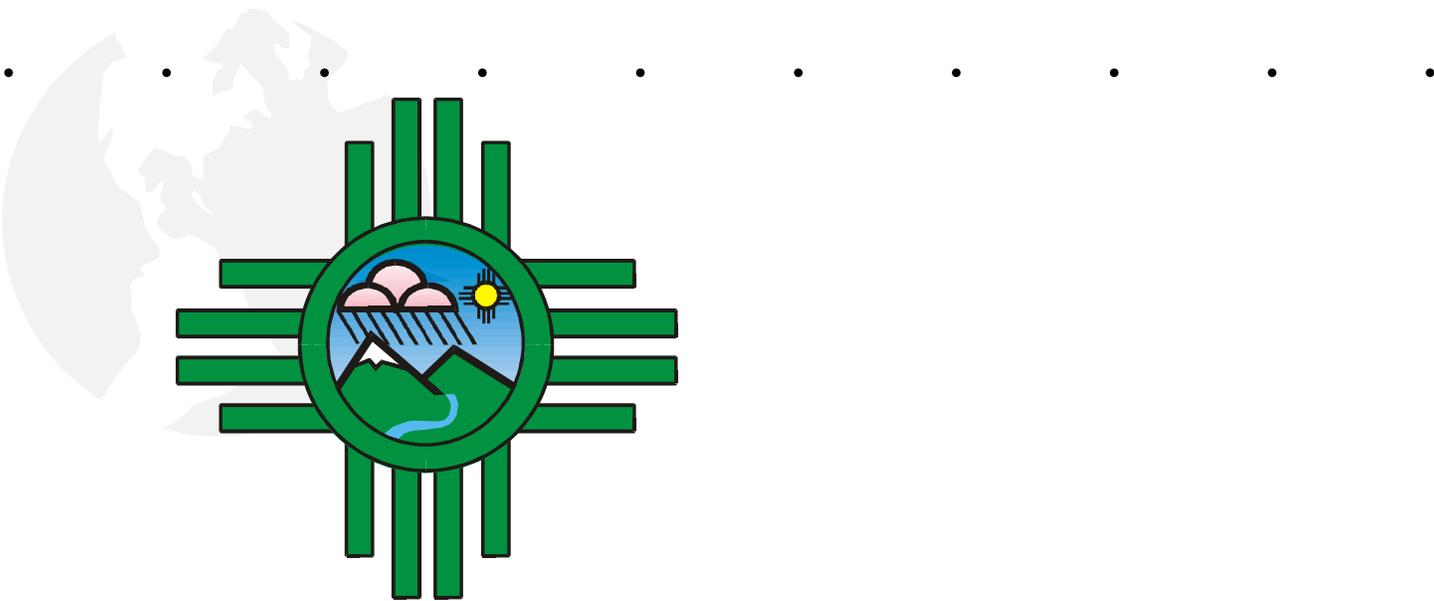




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# Green Zia Environmental Excellence Program

## Auto Repair Shops



*Guidance for improved environmental  
performance and pollution prevention in  
your auto repair business*



## ***Acknowledgements***

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# The Green Zia Environmental Excellence Program

*Guidance materials for auto repair shops*

## Introduction

This packet contains information on how to establish a pollution prevention program specifically for an auto repair shop. The packet also contains waste management and regulatory guidance materials to help you assure that you are in compliance with environmental, health and safety regulations. Used together, this program can help you establish a pollution prevention program that will help you meet compliance and reduce waste. Use of the tools from start to finish helps you qualify for the Green Zia Environmental Excellence Program!

The Green Zia Environmental Excellence Program is a voluntary program designed to help New Mexico businesses achieve environmental excellence through pollution prevention programs, based on quality management principles. This program is administered by a partnership of state, local and federal agencies, academia, private industry and environmental advocacy groups. This packet has been specifically developed for an auto repair shop and is designed to meet the needs of a small business.

The basic logic of the Green Zia Environmental Excellence Program is:

- Waste or pollution is the result of inefficiency;
- Reducing waste increases profits;
- Waste that is not created cannot pollute.

This guidance has been developed to help your company understand best management practices to help your company comply with environmental, health and safety regulations and to help your company reduce waste and associated liabilities.

It is important to remember that environmental health and safety regulations are triggered by the use of equipment and chemicals. Better use of chemicals, use of safer chemicals and efficient operation of machinery can help reduce your regulatory burden...if you aren't using hazardous materials, then you have fewer regulations to be concerned with!

This program is based on first understanding work process and materials use and then improving work practices to reduce cost, waste and regulatory concerns.

Working through the Green Zia Environmental Excellence Program will result in a system that helps address environmental issues in cost effective ways, based on sound business practices. The system provides a framework for continuous improvement over time and contributes to a thorough understanding of environmental issues in your business.

## **What is Pollution Prevention?**

Simply put, pollution prevention means not creating a waste in the first place. Pollution prevention is achieved by the efficient use of resources, including raw materials, energy, water and even time and distance. The goal is to produce a product or deliver a service as efficiently as possible, with the least amount of wasted materials and the least possible environmental impact.

*The bottom line is that pollution prevention or improved efficiency can help businesses save money and help protect the environment at the same time.*

## **What is Environmental Excellence?**

Environmental excellence means moving beyond compliance with environmental, health and safety regulations by establishing an environmental management system that incorporates pollution prevention into core business practices.

A prevention-based environmental management system will:

- Help a business identify *all* the environmental compliance and health and safety concerns as well as costs associated with a waste generating process, and
- Use prevention approaches to reduce or eliminate the waste and reduce the associated costs.

In the Green Zia Environmental Excellence Program, attention is focused on the *process* that generates the waste, not the waste. Identifying and implementing process improvements will reduce waste and costs. This is a major shift from the traditional, reactionary approach that concentrates only on managing wastes or pollutants already created to an anticipatory approach that concentrates on prevention of wastes or pollutants to improve environmental and economic performance. This prevention-first environmental management system will identify cost effective ways to achieve "beyond compliance" status, creating a win-win situation between economics and environment.

## The Green Zia Tools

The Green Zia Program provides tools to establish a basic prevention-based environmental management system. Management and employees walk through the tools as a team to gain a complete understanding of their operation. Examples have been worked out for the auto repair business. We encourage you to customize the examples to your own operations. The packet includes a series of process maps (Tool 1) for some operational areas of the auto repair business. Tools 2-6 are also explained and illustrated to help you develop your program. Use of these tools on a regular basis will help your company qualify for the Green Zia Environmental Excellence Program.

### Green Zia Tools:

*Knowledge of  
Process*

**Tool 1: Process Mapping:** Illustrates the work steps materials pass through as they are transformed into your final product. Maps allow for the identification of all inputs and outputs such as water, chemicals, electricity or other materials from a process, helping you to understand wastes and their sources. Maps also help you understand regulated activities.

*Full Cost  
Accounting*

**Tool 2: Activity-Based Costing:** Identifies the true costs of wastes or losses and helps participants identify areas to target for pollution prevention, by assigning dollar values to these wastes and losses.

*Pinpointing  
Problems*

**Tool 3: Root Cause Analysis:** Creates a cause and effect diagram to highlight why and where the losses occur in the process. Understanding why and where the loss occurs will help participants focus on specific areas for improvement.

*Creative Problem  
Solving*

**Tool 4: Brainwriting:** Addresses problems by generating as many alternatives as possible to minimize loss.

*Prioritization of  
Options*

**Tool 5: Bubble-up-bubble-down:** Ranks alternatives to determine the optimal solution. Factors such as cost, ease of implementation and effectiveness are considered in evaluating and ranking the alternatives.

*Ensuring Success*

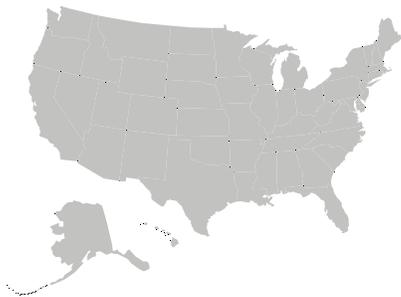
**Tool 6: Action Plan:** Details each step that needs to be taken to implement the alternative and reduce or eliminate the loss from the process.



# Tool #1: Process Mapping

*To begin incorporating pollution prevention into your business, you must first get a full understanding of where wastes are being generated. This tutorial will discuss the advantages of using process maps to logically evaluate each step of your process.*

## Warm-up Exercise



Maps have been used throughout the ages for many purposes from helping sailors navigate the seas to providing a safe route for climbers hiking to the tallest peaks. You have probably drawn maps to your home or office so that someone could visit. It is important that the information on this map is complete and accurate or, as you may have found, your guest will get lost!

*Take a minute now and think of a coffee shop or restaurant nearby that everyone in the group knows. Draw a map from the building you are currently in to this establishment - include traffic lights, landmarks, and any other important features along the way. Now compare maps with the other members of your group. Are they the same? If a person not familiar with the area were to use your map, would they have found their way?*

## **Introduction**

Are you aware of the amount of waste that your business generates? Could this waste be turned into profit? By considering methods of reducing wastes, recycling used and unused raw materials, and reusing lost material you could not only help the environment but also reduce your raw material and waste disposal costs.

This section discusses process mapping, a method of analyzing a process in order to catalogue all the materials used and lost in the process. With process mapping, you will systematically identify the series of steps materials pass through as they are transformed into the final product. Evaluating your process in this manner will allow you to recognize the opportunities to prevent losses and possibly streamline operations. Each loss identified during the process mapping is an opportunity to prevent that loss.

Create a team of employees to complete this exercise. During this exercise you will:

- Examine and revise the process maps and narratives in the packet to accurately reflect your operation.
- Fully understand the functionality of each step of a process.
- Identify the inputs and outputs/losses within the process.
- Communicate findings in a clear and concise manner to members of the team.

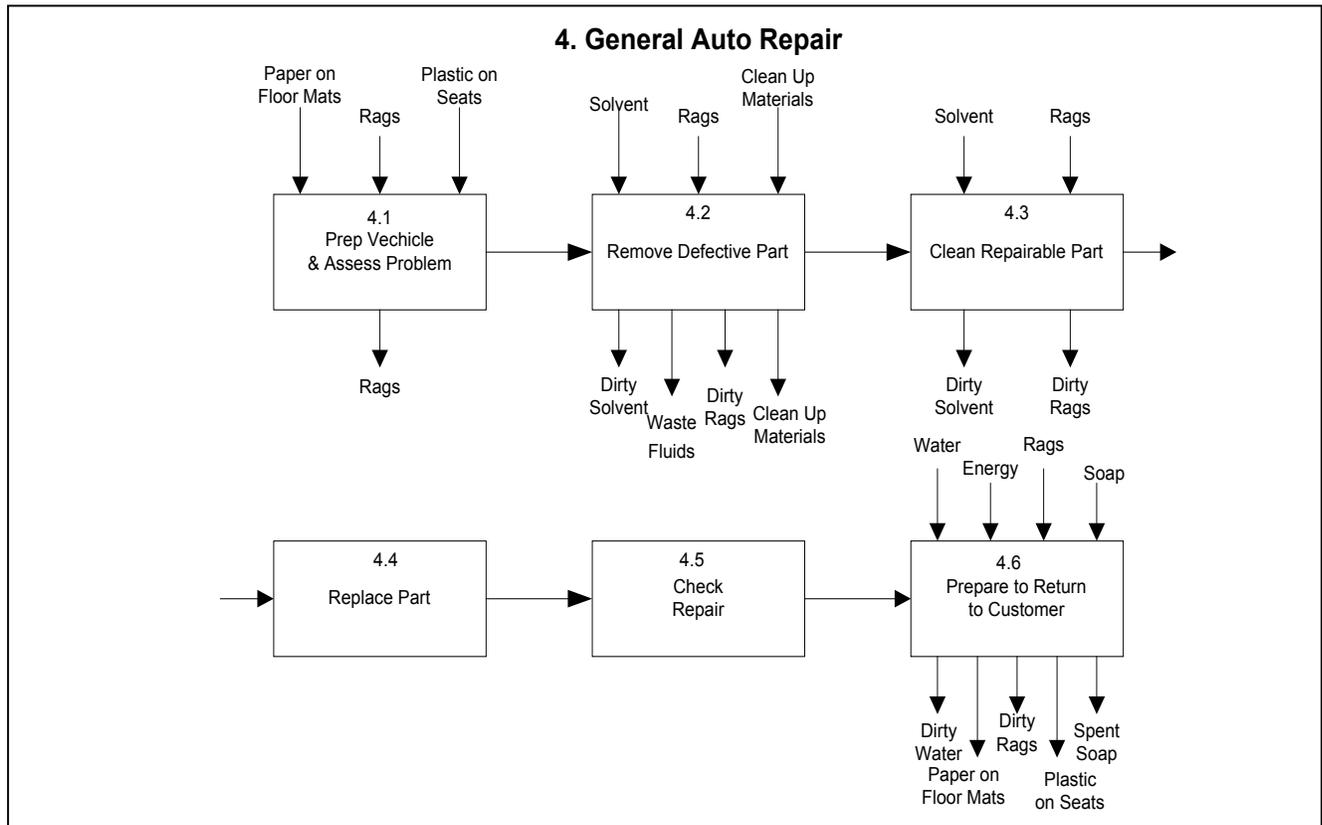
## **Process Mapping**

A series of process maps have been developed for auto repair operations and are included in this packet in Section 3. You should customize these maps for your operation, since no two businesses are exactly alike. These maps become a reference for you to use for your pollution prevention program and can be updated to reflect changes as you improve your operations. These maps are also great for training new employees and other problem solving needs.

Large businesses and manufacturers use these tools to understand and improve their manufacturing processes. Small businesses can benefit by using these tools as well!

It is helpful to also prepare a narrative to go along with your process maps to explain the process in detail. We recommend that you include regulatory activities in the narratives as part of your environmental management system. Narratives are also included in this packet; please revise to reflect your business operations.

Example of a process map for General Auto Repair:



Please review the process maps in Section 3. in the back of this booklet and make changes to reflect your operation.

***Once you have reviewed and revised the process maps to your operation, move to the next section...Activity-Based Costing!***



# Tool #2: Activity-Based Costing

*Every waste or environmental loss costs you money. By determining the activities that cause waste, you can focus your pollution prevention efforts to minimize the cost to your business and protect the environment. This tutorial will introduce you to a method of evaluating your waste.*

## Warm-up Exercise

Your daughter approaches you one evening and says that she is planning to buy a car. With the \$400 she has left over each month, after paying all of her bills, she is sure she will be able to afford the \$220 monthly car payment.



*What are the other costs of operating and maintaining a car that she is forgetting? Consider not only the annual costs, such as insurance, but also the intermittent (once in a while) costs. Can she really afford this car?*

## Introduction

Once you have determined the losses in your processes through your process maps, you can discover how these losses are affecting your "bottom line". How much does it cost you to discard 10% of your raw materials, or 2% of your finished products? Which activities have losses that most hurt the profitability of your company? This tool will help you look at the cost of the losses in your business and see how much these losses are costing you. The results may surprise you!

Which losses should you care about? The Pareto Principle suggests that 80% of the problems in a business come from 20% of machines, raw materials or operators. (The same is true for any facet of a business, for example, 80% of sales come from 20% of your customers, etc.) Once you have assigned costs to your activities, you can figure out which 20% of your activities are contributing to 80% of your costs. The Pareto Principle is very important in activity-based costing as it is used to focus on the most important areas for improvement in your pollution prevention program. Use of the Pareto Principle for the activity-based costing section will help you quickly identify areas of your business to focus your prevention efforts.

## New Terms

Activity based costing (ABC) - An accounting method used to assign the cost of your losses to the activities that generate these losses. By assigning costs to activities, you will discover the activities should be targeted for prevention.

Environmental costs -The costs associated with the losses in your process.

Intermittent operations – Operations that occur once in a while.

Pareto principle - A principle that suggests that 80% of anything can be attributed to 20% of the factors involved. For example, 80% of your environmental costs can be attributed to 20% of your activities.

## Activity-Based Costing

1. Make a list of all the activities in your operation. Be sure to include the activities from your process map as well as any intermittent operations (such as cleaning or maintaining equipment.).

Regular activities:

- Tire replacement
- Radiator flush and drain
- Air conditioning repair
- General auto repair
- Changing brakes
- Oil changes

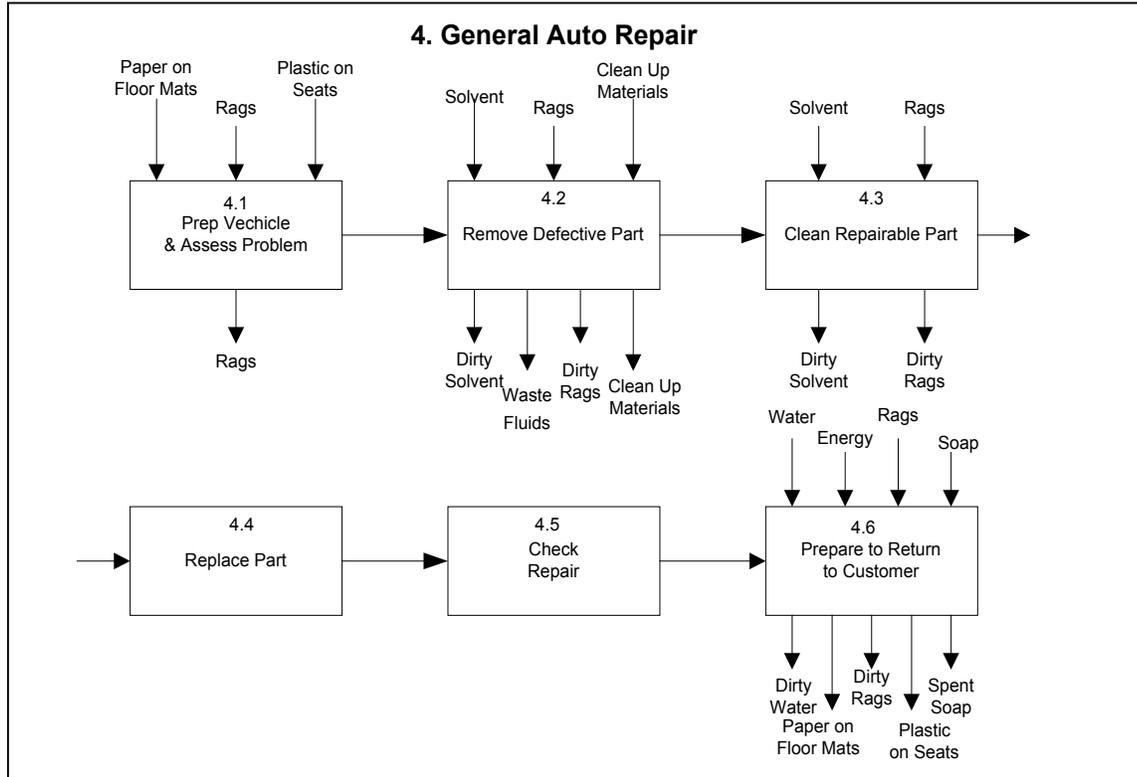
Intermittent activities:

- Recycling antifreeze
- Parts cleaning
- Recycling solvents
- Waste oil management

2. List all of the losses in your operation. Look on your process map and add any others that you think of.
3. Reviewing your process maps, identify the operations in your shop that generate most of your waste or pollution problems. For example, does solvent use cause most of your environmental problems? Does the 80/20 Rule apply? Focus your efforts for now on the areas of your operations that you do the most or that create the biggest environmental problem for you.
4. Use process maps to review material use and losses for your selected process or operation...you will use these maps as a guide to assign costs to these losses.
5. Identify which major costs or general ledger costs apply to the material use and losses on the process maps (utilities, chemical purchase costs, waste disposal costs, costs that are easy to get information on and that you typically consider when looking at your processes). Enter into Table 1. (See example provided)
6. Identify which other activities are related to the use of these materials that are not in the major costs (protective equipment such as gloves or, monitoring, record keeping, maintenance, compressors to run equipment, permits, fees to the state or city, storage space for chemicals, the cost of spill clean-up and reporting, etc). These activities are not usually considered when thinking about the cost of a process, yet the costs associated with them can be significant!

7. Write the activities in the first column of Table 2. Along the top list all the costs or services required for these activities. Add or delete categories as appropriate for your business. Put an "x" for every cell that applies.
8. Count the total number of "x's" in Table 2. Then circle the x's that represent what you estimate to be about the top 20% of the most expensive activities in your operation. Again, you are using the 80/20 rule: 20 percent of your activities will probably add up to about 80% of your total costs.
9. Then only estimate the cost of each of these top activities that you circled and write them in a new table. Cost estimates are allowable as you are using this method to prioritize your most expensive activities. You can refine costs once you have chosen a project to work on. (In the example, the top 20% of the cost categories chosen have the estimate beside them.) Add these numbers into Table 1 under the appropriate waste stream in the "Hidden costs" line.
10. Add the ledger costs and the hidden costs together to discover the true costs!
11. Create a Pareto Chart. Create a chart showing all these costs graphically. On the x-axis, place costs in dollars, on the y axis (horizontal), show the true costs of the wastes. This chart will help graphically show how all the costs stack up against each other. Does the 80/20 Rule apply here? Use this chart to identify the most expensive processes. This can be used to identify the first area for improvement! Which waste stream do you think you should focus on from this Pareto chart?

# Activity-Based Costing Example



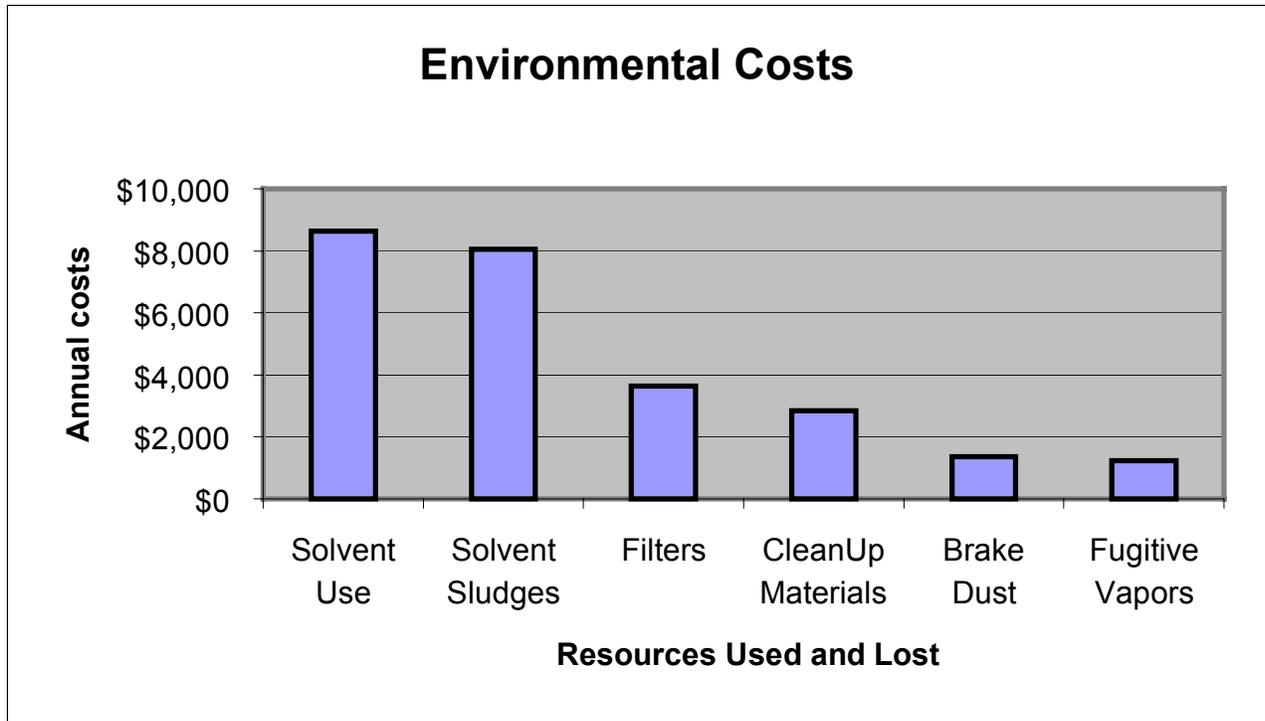
Activities	Materials and Losses
Tire Replacement Radiator Flush and Drain Air Conditioning Repair General Auto Repair Parts Cleaning Brake Change Oil Change	Wheel Covers Lug Nuts Lead Weights Valve Stems Waste Water Antifreeze Lead Solder Hoses Clamps Air Emissions *Solvent Use Rags *Clean Up Material *Brake dust Metal shavings Energy Personal Protection Gear *Solvent Sludge *Fugitive vapors *Filters Oil Filters Oil (*) Indicates most important waste streams and materials

Table 1. Activity-Based Costing Analysis (Per year)

Workstep	Fugitive Vapors	Solvent Sludge	Brake Dust	Solvent Use	Filters	Clean Up Material	Total
Costs /Losses							
Labor		\$1,000	\$700		\$800	\$600	\$3,100
Raw material				\$5,000	\$850	\$1,500	\$7,350
Disposal fees		\$2,500	\$500			\$100	\$3,100
Other ledger costs						\$150	\$150
Hidden Costs	<b>(\$1,240)</b>	<b>(\$4,550)</b>	<b>(\$150)</b>	<b>(\$3,650)</b>	<b>(\$2,000)</b>	<b>(\$500)</b>	<b>(\$12,090)</b>
<b>Total</b>	<b>\$1,240</b>	<b>\$8,050</b>	<b>\$1,350</b>	<b>\$8,650</b>	<b>\$3,650</b>	<b>\$2,850</b>	<b>\$25,790</b>
%of Total	4.8	31.2	5.2	33.5	14.2	11.1	

Table 2. Hidden Cost Analysis (per year)

<b>Fugitive Vapors</b>					
Activities/Cost Factors	Materials	Space	Utilities	Services	Labor
Monitoring	X (\$200)				X (\$1040)
Reporting	x				x
Repairs	x			x	x
<b>Total hidden costs for vapors</b>					<b>(\$1,240)</b>
<b>Solvent sludge</b>					
Muck out/disposal	x				X (\$2,050)
Spill clean-up	x	x			x
Storage	x	x			x
Record keeping	x			x	X (\$1,000)
Generator fees	x				X (\$1,500)
<b>Total hidden costs for sludge's</b>					<b>(\$4,550)</b>
<b>Brake Dust</b>					
Storage	x	X (\$150)			x
<b>Total hidden costs for brake dust</b>					<b>(\$150)</b>
<b>Solvent Use</b>					
Record keeping	x				x
Permit fees	x				
Permit				X (\$3,000)	X (\$650)
Storage	x	x	x		
Spill/clean-up	x			x	x
<b>Total hidden costs for new solvent</b>					<b>(\$3,650)</b>
<b>Filters</b>					
Disposal	x			x	X (1,500)
Repairs	x			x	X (\$500)
<b>Total hidden costs for filters</b>					<b>(\$2,000)</b>
<b>Clean Up Materials</b>					
Handle/dispose	x				X (\$500)
<b>Total hidden costs for clean up materials</b>					<b>(\$500)</b>



Pareto Chart for Auto Repair Shops. The Pareto Chart illustrates costs relative to each other and helps choose areas to target for pollution prevention activities. In this example, solvent use, the most expensive loss, will be the focus of the pollution prevention efforts in the following sections. Please note that the cost examples provided in this workbook are not from an actual case study but are used only to illustrate the use of the tools.

Now that we have completed the process mapping and activity-based costing, we have a sense of the relative environmental costs of our operations. Since solvent use is our target, we will use the following problem solving and decision-making tools to find a way to reduce solvent use, increase efficiency and save money.

***Most of your work is done. These two tools can be revised as needed. Use these maps and information annually (or more often!) to keep improving your operation on an ongoing basis. Now that you have identified your most expensive wastes, you can now move towards solving problems and eliminating waste...the next tool is Root Cause Analysis!***

Table 1. Activity-Based Costing Analysis (Per year)

Workstep							
Costs/Losses							Total
Labor							
Raw material							
Disposal fees							
Other ledger costs							
Hidden Costs							
<b>Total</b>							
%of Total							

Table 2. Hidden Cost Analysis (per year)

Activities/Cost Factors	Materials	Space	Utilities	Services	Labor
<i>Waste Stream</i>					
Monitoring					
Reporting					
Repairs					
Muck out/disposal					
Spill clean-up					
Storage					
Record keeping					
Generator fees					
<b>Total hidden costs for (waste stream)</b>					
<i>Waste Stream</i>					
Monitoring					
Reporting					
Repairs					
Muck out/disposal					
Spill clean-up					
Storage					
Record keeping					
Generator fees					
<b>Total hidden costs for (waste stream)</b>					
<i>Waste Stream</i>					
Monitoring					
Reporting					
Repairs					
Muck out/disposal					
Spill clean-up					
Storage					
Record keeping					
Generator fees					
<b>Total hidden costs for (waste stream)</b>					



# Tool #3: Root Cause Analysis

*Now that you have recognized the activities in your process that are costly or expensive to your business, you can begin to focus your efforts on pollution prevention. This tool presents a method of detecting the underlying reason for an environmental loss so that the loss can be prevented.*

## Warm-up Exercise



Think of all of the times that you have been late for work and list the different reasons for your delay. Maybe your alarm clock did not go off, or perhaps your child was sick and you needed to arrange for a sitter. Did you spend too much time reading the newspaper or did you need to run to the store to pick up milk.

*Arrange all these reasons in the categories listed below, or create an additional category. Some of the items on your list may be entered more than once.*

*Now consider the last time you were late for work. Why were you late? Circle the reason.*

### MACHINES

broken alarm clock

### PEOPLE

sick child

### METHODS

reading the newspaper

### MATERIALS

out of milk

## Introduction

In the last tool you determined the key losses responsible for the greatest amount of environmental costs. In order to try to prevent a loss, you must first understand why it is occurring. The underlying reason for a loss is also known as its "root cause". The root cause will answer the question: What *ultimately* caused the loss? Determining the root cause of an environmental loss is very similar to determining the root cause of being late for work.

A cause and effect diagram is one method of determining the root cause for a loss. This tool provides a visual description of all possible causes for a specific loss. Once all the possible causes are depicted on the diagram, the most plausible cause or causes are identified. It is imperative that all persons involved in determining the root cause are in agreement. The next step is to write a "Dear Abby" letter summarizing the cause or causes for a loss will ensure that all participants see the problem in the same way.

During this exercise you will:

- Construct a cause and effect diagram with all potential causes for a loss.
- Discuss the most probable cause or causes.
- Write a Dear Abby letter describing the reason for the loss.

## Root Cause Analysis

After participating in process mapping and activity based costing exercises, it was determined that the largest loss, solvent use, accounts for approximately 80% of all environmental costs in the auto repair business. The next step is to discover the root cause of this loss.

To determine the root cause of a loss, you must ask "Why is the loss occurring?" One way of gathering information concerning the generation of a loss is called a cause and effect diagram, or fish bone diagram, since it resembles a fish bone. Major categories of possible causes for the loss are first defined and entered on the diagram as an offshoot from a main horizontal line. Next, all possible causes of the waste are assigned to a category and entered on the diagram. Once all the causes are defined, an agreement is made as to the most plausible reason for the loss.

Divide the causes into four major categories - Methods, Machines, Materials, and People - and then write down all the possible reasons why solvents could be lost from the process and assign them to a category. Begin the diagram and then write down some of the things that immediately come to mind. An example has been provided in Figure 2.

Since solvent use is related to parts cleaning several things may come to mind. The present parts cleaning machine requires the use of a volatile solvent. The machine is expensive and requires proper operation and maintenance. Filters must be changed regularly and the distillation and recycling unit must be operating properly. By not using used solvent to pre-clean parts inefficient solvent use may result. Workplace conditions such as poor lighting may lead to excessive solvent use to clean parts. Also the availability of solvents can lead to them being used to clean shop floors as well as employees hands. Training of employees and a good work attitude are critical to efficient operations. All of these ideas should be entered under one of the four categories in the fishbone diagram: Machines, Methods, Materials and People in the example in Figure 2.

Now that all the possible causes of solvent use during auto repair operations are categorized, it is time to determine the most probable cause. Go back to the diagram and circle the most probable causes. One of these should be the root cause. Then, working with employees as a team, discuss which one of these major causes is the root cause. To come to clear understanding of the root cause, we suggest that the team write a short "Dear Abby" letter describing their interpretation of the problem to ensure that each person sees the problem the same way. Once the letter is in place, the group becomes Abby and seeks to solve the problem. (see Figure 3)

Another method for determining the root cause of a problem is the "5 whys".

By asking the question "why?" five times, you may get to the root cause of a problem. An example of how the five whys works is as follows.

#### **The Five Whys:**

1. Why has the machine stopped forcing an interruption in production?  
*A circuit breaker tripped due to an overload.*
2. Why was there an overload?  
*There was not enough lubrication for the bearings.*
3. Why was there too little lubrication for the bearings?  
*The pump was not pumping enough lubrication.*
4. Why was there not enough lubricant being pumped?  
*The pump shaft was vibrating because of abrasion*
5. Why was there abrasion?  
*There was no filter, which allowed chips of metal to get into the pump.*

**The solution is then to place a filter on the pump to capture metal chips.**

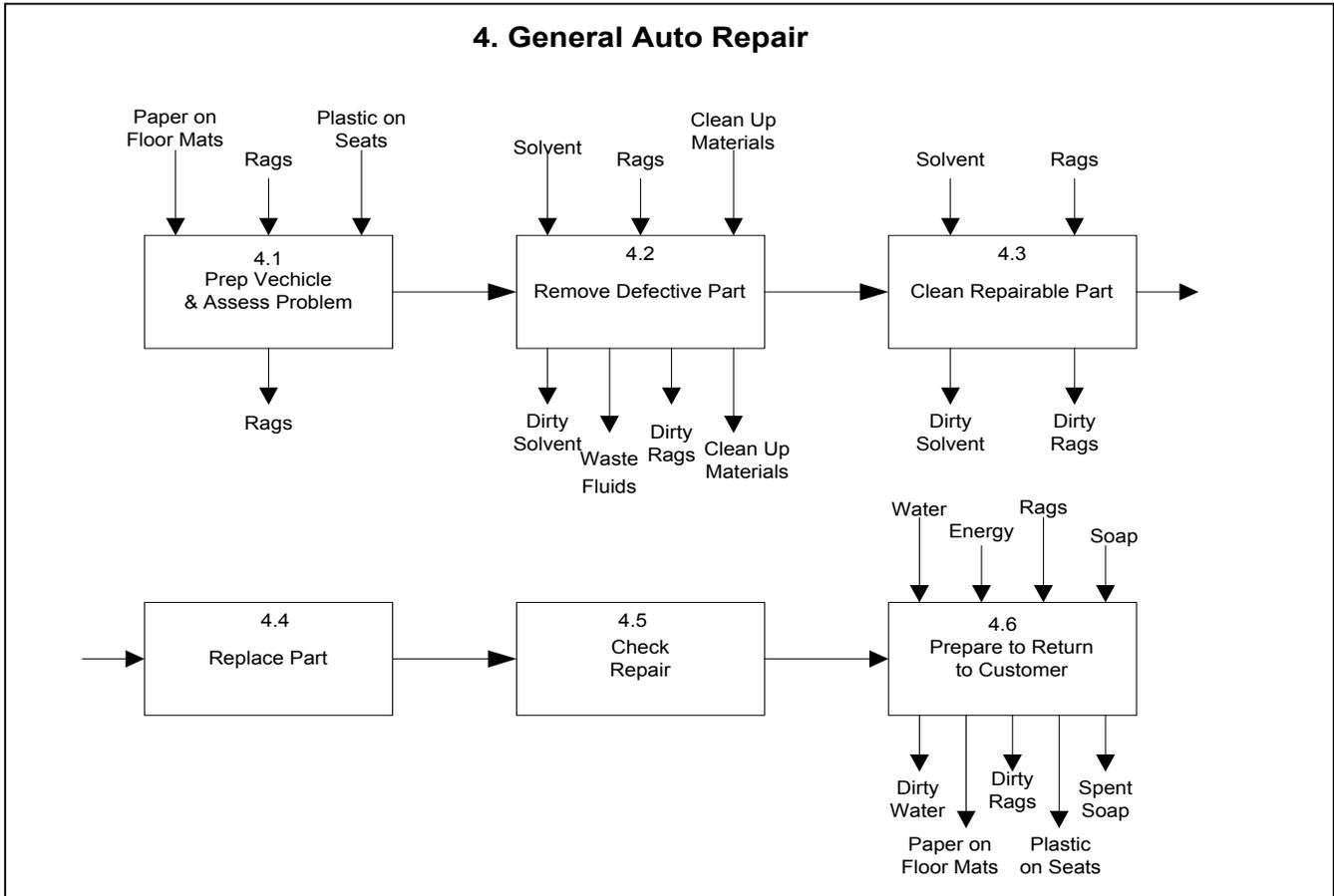
Both tools can be used to find the root cause of the problem. For most problems to be permanently solved the root cause must be addressed. The fishbone diagram is a good visual tool that helps you understand all the areas that contribute to a problem.

Understanding all the contributing factors will help facilitate problem solving. The Five Whys will also help you move past dealing with the symptoms of the problem to solving the real problem.

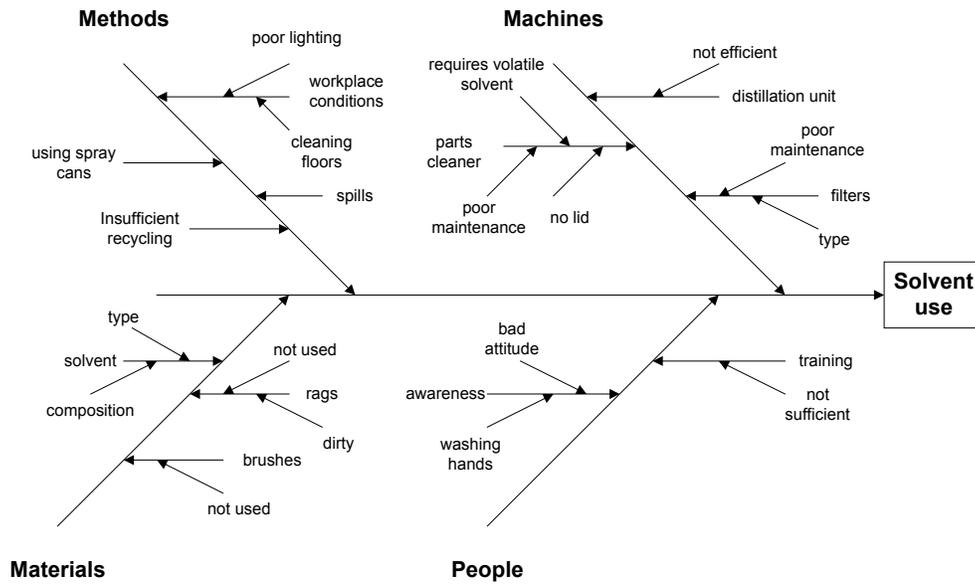
Examples of the fishbone diagram and a Dear Abby letter are included as well as a blank fishbone diagram for your use.

***The next tool will present brainwriting - a method to generate ideas.***

Figure 1: General Auto Repair Process - Process Map



**Figure 2: Cause and Effect Diagram**



### **Figure 3: Dear Abby Letter**

Dear Abby,

We run a small auto repair shop. Use of solvent is our most expensive business issue. Solvents are highly regulated and we must comply with lots of regulations from air quality to hazardous waste to health and safety. Some auto repair shops have had to pay lots of money for clean up of contaminated sites, which has put them out of business. These are issues that we wish to take seriously.

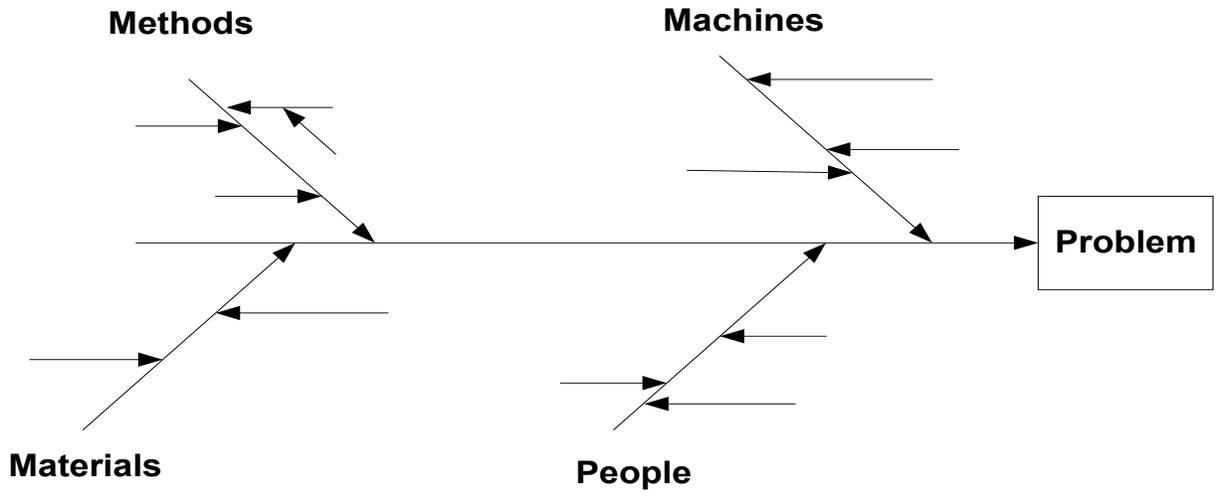
Our group did root cause analysis and we believe that our biggest problem is our parts cleaning equipment that requires the use of volatile solvents. Employees affect solvent use when cleaning parts from leaving the lid open to not pre-cleaning the parts. There is also the issue of making sure we are in compliance with regulations. However, as you know, changing equipment can be expensive and would probably require retraining of our employees.

Can you help us?

Signed,

Fixing cars in Alamogordo

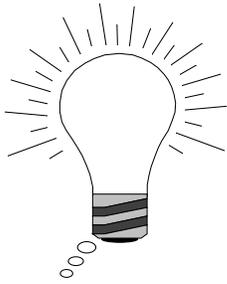
**Figure 4: Root cause analysis: Fishbone Diagram**



# Tool #4: Brainwriting

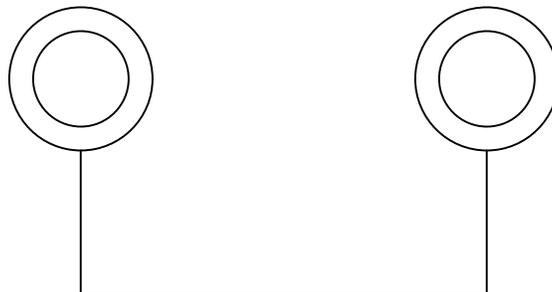
*To address an opportunity effectively, it is important to recognize all alternatives. Very rarely is there one "right" way of preventing pollution. Instead, there are many different potential solutions. This tutorial presents a technique of listing many different alternatives for an opportunity.*

## Warm-up Exercise



You know the old adage “two heads are better than one”. This is especially true when trying to come up with new ideas. When you generate ideas in a group you will notice that each member of the group brings their unique set of experiences and strengths to the table.

*Try the following exercise with your group. Look at the picture below (turn it on it's side and upside-down). What does it remind you of? Write down all the images that come to mind-even images that seem crazy should be included. Now go around the room, each person sharing one image with the group. One person should volunteer to keep a list of all the images. Repeat this step until every member of the group is out of images. How many images did the group come up with? How does this compare with the number of images you generated alone?*



## Introduction

In the last tool you evaluated all the probable causes of a loss and determined the underlying reason, or root cause. Once the root cause has been identified, you may be tempted to jump to a premature solution. When you address a loss without considering all the alternatives of prevention you may be overlooking the most appropriate option(s).

Looking for alternatives for pollution prevention by addressing its root cause is the next step towards addressing an opportunity. There are several tools available to help groups develop alternatives. You already explored one tool during the warm-up exercise. In this exercise you will explore another method-brainwriting. Brainwriting requires maximum interaction and creativity between group members. All possible alternatives, regardless of how far-fetched they appear, are considered by the group. Alternatives raised by the group may seem contradictory, or they may build on one another making them better. A comprehensive list of alternatives can then be compiled.

During this exercise you will:

- Conduct a brainwriting session.
- Develop a list of all possible alternatives for an opportunity for improvement.

## Brainwriting

First you have completed your process map to see how you can optimize your processes and reduce losses. (*see Figure 1*) In the example provided, Activity-Based Costing helped to identify that 80% of the environmental costs associated with auto repair was due to solvent use. Not only are solvents expensive, they are considered a hazardous waste and a hazardous air pollutant and they must be handled very carefully. Spills must be avoided to eliminate employee exposures and site contamination.

Root cause analysis determined that the greatest losses occurred due to employee handling practices. Employees control the auto repair processes from the beginning to the end and also must deal with environmental, health and safety compliance issues.

The next step is to develop as many alternatives to solve the problem as possible. This is done through the process of brainwriting. Through brainwriting, staff works together to generate as many alternatives as possible regardless of how crazy they seem. In fact, to make it more interesting you can give a prize to the person that comes up with the craziest idea.

Make copies of the blank brainwriting sheet included at the end of this chapter. Make enough sheets so that each person on the brainwriting team has one per person with one blank sheet in the middle of the table. Place these sheets in the center of the table. Each person should take a sheet and write two alternatives on it and then place the sheet back in the center. Then take another sheet of paper and write two more alternatives on it. Every time someone picks up a sheet of paper, encourage them to read what others have written and try to make improvements to the alternatives listed. Someone could even say they think someone's idea is completely out in left field, if they try to make it better. Keep repeating this process until everyone runs out of ideas.

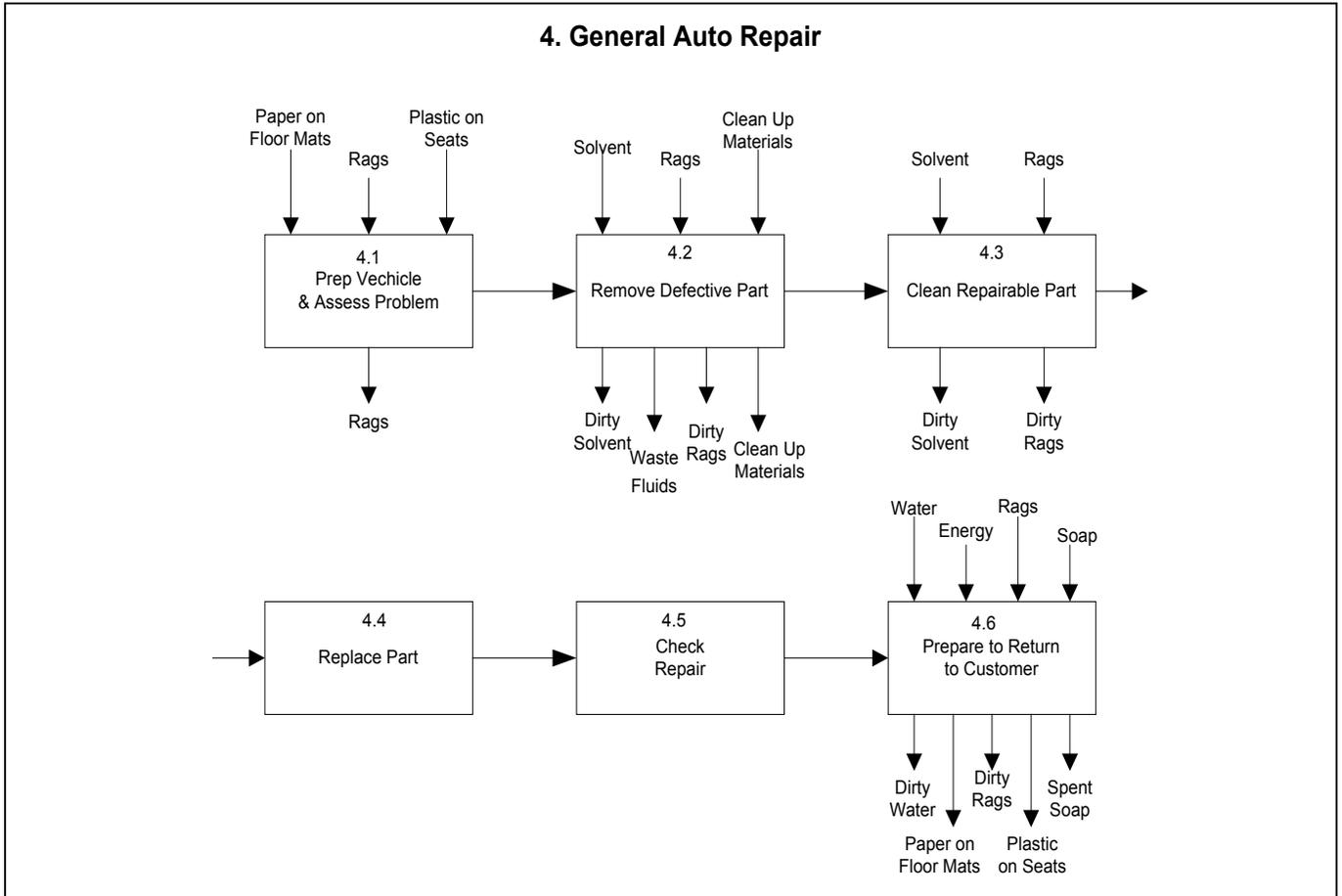
Now list all the alternatives that were discovered.

The alternatives on each sheet of paper should be read aloud and discussed. Many of the ideas may be the same and some may have small variations. The group should debate the small variations and eliminated the impossible alternatives. One comprehensive list should be developed-each idea only written once, although all variations of the same idea should be included.

Examples of brainwriting are provided below.

***The next tool will present 'bubble-up-bubble-down'...a method for selecting the best option to prevent loss.***

Figure 1: Auto Repair Process Map



**Figure 2: Sample of brainwriting**

1. Use non-toxic solvent to eliminate all environmental problems.	2. Train people to maintain filtration system and distillation systems better.
3. Pre-clean parts with rags or brushes.	4. Don't use solvent to clean shop floor.
5. Convert to steam cleaning.	6. Keep lid on parts cleaner closed when not in use.
7. Use old solvent to pre-soak dirty parts.	8. Invest in better equipment.
9. Place parts cleaner nearer to work areas.	10. Test solvent to see if we are replacing too soon.

### **Figure 3: List of alternatives**

1. Use non-toxic solvent to eliminate all environmental problems.
2. Train people to maintain filtration and distillation systems better.
3. Pre-clean parts with rags or brushes
4. Start a “clean shop” program to train employees to keep work areas clean to prevent spills and waste.
5. Use old solvent to pre-soak parts
6. Begin an employee incentive program to reward best operating practices for operating a clean work area.
7. Replace existing parts cleaner with new equipment that uses non-solvent cleaning solution.
8. Don't use solvent to clean shop floor.
9. Pay employees small bonus for keeping good environmental records including hazardous waste and air quality records.
10. Test solvent to see if we are replacing too soon.
11. Create an employee problem-solving team to deal with waste of all kinds on a regular basis.
12. Convert to steam cleaning.
13. Train workers on pollution prevention and ways to reduce and reclaim spills.
14. Provide incentives for employees who reduce losses.
15. Invest in better equipment.
16. Keep lid on parts cleaner closed when not in use.
17. Place parts cleaner nearer to work areas.
18. Drain excess solvent from parts before removing from parts cleaner.

**Figure 4: Brainwriting Sheet**

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.



# Tool #5: Bubble Up-Bubble Down

*You have now generated a list of alternatives for preventing an environmental loss in your business. But how do you choose the best alternative? This tutorial presents one method of prioritizing alternatives to ensure that the most appropriate alternative is selected.*

## Warm-up Exercise



Most of us use lists from time to time to make sure that we don't forget to do the things that we need to get done. Without a shopping list, for example, we may return from the store without milk, the reason why we went in the first place. Certain limitations, like time or money, may cause us to drop things off our list. We often need to prioritize and make sure that the most important things get done.

*Make a list of the things that you need to get done tomorrow (try to list at least ten things). List these items in the order that they come to mind. Now prioritize this list by putting the most important items on the top of the list and the least important items on the bottom. You should now have a "rank ordered" list. If you only have time to complete one of the items on your list, which would it be? You should have answered the item on the top of the list the most important item.*

## Introduction

A comprehensive list of pollution prevention alternatives was developed in the last tool using a technique called brainwriting. The alternatives generated during this tutorial can range from operational changes, such as employee training and improvements in operations, to technology changes, such as changing a solvent. The next step is to choose one alternative that is capable of being worked with successfully. Additionally, it is important to select the optimal solution for your business. To accomplish this, you must consider the *feasibility* of each alternative. Such factors as effectiveness, implementability, cost, and potential ramifications of each alternative should be discussed. Personal preferences and biased information should not enter into the decision-making process.

There are several tools available to aid a group in selecting an alternative and avoid bias. These tools allow a group to rank and prioritize alternatives using a systematic approach. When all the alternatives are listed, suggestions are made by the group to improve even the worst alternatives. At this point, many of the alternatives may be eliminated: every realistic alternative remains on the list. These remaining alternatives can then be sorted based on the factors presented above and any other factors that may affect a particular business. The method of selection presented in the exercise is the bubble-up-bubble-down. This tool uses a forced pair comparison to rank alternatives. Using this method you will be able to find the most effective solution to the selected loss.

During this exercise you will:

- Evaluate all alternatives.
- Use the bubble-up-bubble-down method to reach a decision on the best alternative.

## Bubble-Up, Bubble-Down

Take the list of alternatives and compare the first two alternatives. Decide which of the two is the best and move this alternative to the top of the list. Go to the next, or third alternative and compare it to the second. If it is better than the second, move it up and compare it to the first, if not, leave it in the third position. Continue this process until all the alternatives are rank ordered. This process should go fairly quickly. Make sure you listen to everyone's opinions and objections. Again, factors to consider are cost, effectiveness and the ability to implement the alternative.

Bubble-up, Bubble-down should generate much discussion among employees on the best solutions. These discussions will help to increase buy-in to the alternatives. As a rule, employees never resist their own ideas.

An example of how the Bubble-Up Bubble-Down method was applied to the list of alternatives generated in the last tool are listed below.

Typically, the three or four alternatives that “bubbled-up” to the top of the list are the easiest and cheapest to implement, the “low-hanging fruit”. The alternatives in the middle may require more research or study to see if they are feasible. The ideas at the bottom of the list may require major equipment changes or capital investments. It is important to keep the entire list on file as part of your continuous environmental improvement program.

***The next step is to develop an action plan. Action planning is essential to assure that ideas are implemented!***

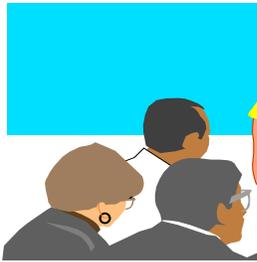
## Figure 1: List of alternatives prioritized using Bubble-Up, Bubble-Down

1. Replace existing parts cleaner with new equipment that uses non-solvent cleaning solution.
2. Use non-toxic solvent to eliminate all environmental problems.
3. Pre-clean parts with rags or brushes
4. Use old solvent to pre-soak parts
5. Test solvent to see if we are replacing too soon.
6. Drain excess solvent from parts before removing from parts cleaner.
7. Keep lid on parts cleaner closed when not in use.
8. Place parts cleaner nearer to work areas.
9. Train people to maintain filtration and distillation systems better.
10. Begin an employee incentive program to reward best operating practices for operating a clean work area.
11. Don't use solvent to clean shop floor.
12. Pay employees small bonus for keeping good environmental records including hazardous waste and air quality records.
13. Create an employee problem-solving team to deal with waste of all kinds on a regular basis.
14. Convert to steam cleaning.
15. Train workers on pollution prevention and ways to reduce and reclaim spills.
16. Provide incentives for employees who reduce losses.
17. Invest in better equipment.
18. Start a "clean shop" program to train employees to keep work areas clean to prevent spills and waste.

# Tool #6: Action Planning

*Being able to successfully manage a project is important when trying to accomplish a task, especially when you are under a deadline. You need to set up a schedule, ensure that you have the necessary resources, and assign the right person to each part of the job. In this tutorial you will create an “action plan” for the implementation of an alternative to prevent pollution.*

## Warm-up Exercise



Your group has been assigned the task of making chocolate chip cookies. The cookies need to be ready in one hour and the cooking time is twelve minutes. Pick a person to manage this project. The manager must then assign the ten tasks listed below to individuals in the group.

*You will need to know how much time is required for each task, what tasks need to be accomplished before others, what resources (i.e. bowls, flour etc.) are required, and what the most efficient way of organizing these tasks (and remember the clock is ticking). Create a schedule.*

### Making chocolate-chip cookies:

- Mix dry ingredients
- Mix wet ingredients
- Put the batter on the pan and put pan into the oven
- Combining wet and dry ingredients
- Turn on the oven
- Taste cookies
- Wash tools and utensils
- Grease pan
- Take cookies out of the oven

## Developing an Action Plan

Before you begin to implement your alternative you should complete this questionnaire. It will ensure that you are being thorough in your planning and have considered all the important issues that may arise such as the resources that are needed and the problems that could occur. (see *Figure 2*)

Things to consider in developing an action plan are resources needed, both financial and human resources; the need for pilot testing or bench scale testing; information sources from the outside such as trade associations, vendors and suppliers and the Environment Department. Other issues such as employee support and maintaining product or service quality should be considered. A list of questions that should be considered during action planning is as follows:

### *Action Planning Questionnaire*

1. What is the overall objective and ideal situation?
2. What steps are needed to get there from here?
3. What actions need to be done?
4. Who will be responsible for each action?
5. What is the best sequence of action?
6. How long will each step take and when should it be done?
7. How can we be sure that earlier steps will be done in time for later steps that depend on them?
8. What training is required to ensure that all staff have sufficient know-how to execute each step in the plan?
9. What standards do you want to set?
10. What volume or quality is desirable?
11. What resources are needed and how will you get them?
12. How will you measure results?
13. How will you follow up each step and who will do it?
14. What checkpoints and milestones should be established?
15. What are the make/break vital steps and how can you ensure they succeed?
16. What could go wrong and how will you get around it?
17. Who will this plan affect and how will it affect them?
18. How can the plan be adjusted without jeopardizing its results for the best response and impact?
19. How will you communicate the plan to generate support?

Now put all this information in an Action Plan Form. Most of the information you need should come from your answers to the questionnaire. The specific task, or step, to be accomplished is written in the first column under "Action." In the following column list the person who is

responsible for completing this task. A performance standard should then be provided. This standard is a way of establishing how well a task needs to be performed. Under “monitoring technique” enter a measurable goal or target used to track the plan's implementation. A firm deadline should then be set, and finally, indicate the resources that are needed to perform each task. This form will help you organize your thoughts, keep track of all the actions that need to be completed, and ensure that the proper quality is being maintained.

Use the form provided to track implementation of the project and to measure its success. A sample action planning form is included at the end of this section.

<b>Overall Target: Employee Incentive Program</b>					
<b>Action</b>	<b>Responsible person</b>	<b>Performance standard</b>	<b>Monitoring technique</b>	<b>Completion deadline</b>	<b>Resources needed</b>
1. Investigate sources of equipment	Tom	List of vendors	Discuss list with Dick the owner	Jan 15	Team of Tom, Dick and Harry
2. Bring in equipment for review	Tom	Approved list of vendors by Dick	Dick allocates time for employees	Feb 1	Shop employees
3. Employees try out equipment and write up results	Harry	How good does the equipment clean parts	Time to clean parts	March 1	Shop employees
4. Have team review results and select vendor	Harry	Compare against existing equipment	Time, quality and cost	April 15	Team of Tom, Dick and Harry
5. Purchase equipment	Dick	Delivery schedule	Dick allocates funds	April 30	Capital funds
6. Train employees on how to use new equipment	Harry	Time and quality of cleaning parts	Costs of new equipment versus old	June 1	Employees time

Congratulations!!! You have completed the Pollution Prevention Training. Now it is time to put these tools to work and remember pollution prevention is an ongoing process. If you continue to implement pollution prevention in your business, you will increase the efficiency of your process while helping the environment. Simply revisiting your process maps and Pareto Chart once a year and using the tools to continue to make improvements will make a big difference in your operation. Ongoing use of these tools will help you to participate in the Green Zia Environmental Excellence Program.

*Here are a few suggestions to make pollution prevention continue to work for you:*

- *Return to the Nothing to Waste activities and concepts as you make business decisions.*
- *Schedule regular pollution prevention reviews of your business.*

*Remember: Pollution Prevention saves resources, saves money, and prevents accidents!*

Overall Target					
Action	Responsible person	Performance Standard	Monitoring Technique	Completion Deadline	Resources Needed
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					



# Process Maps for Auto Repair Shops

## General Process Map for Auto Repair

1  
Tire Replacement

2  
Radiator Flush & Drain

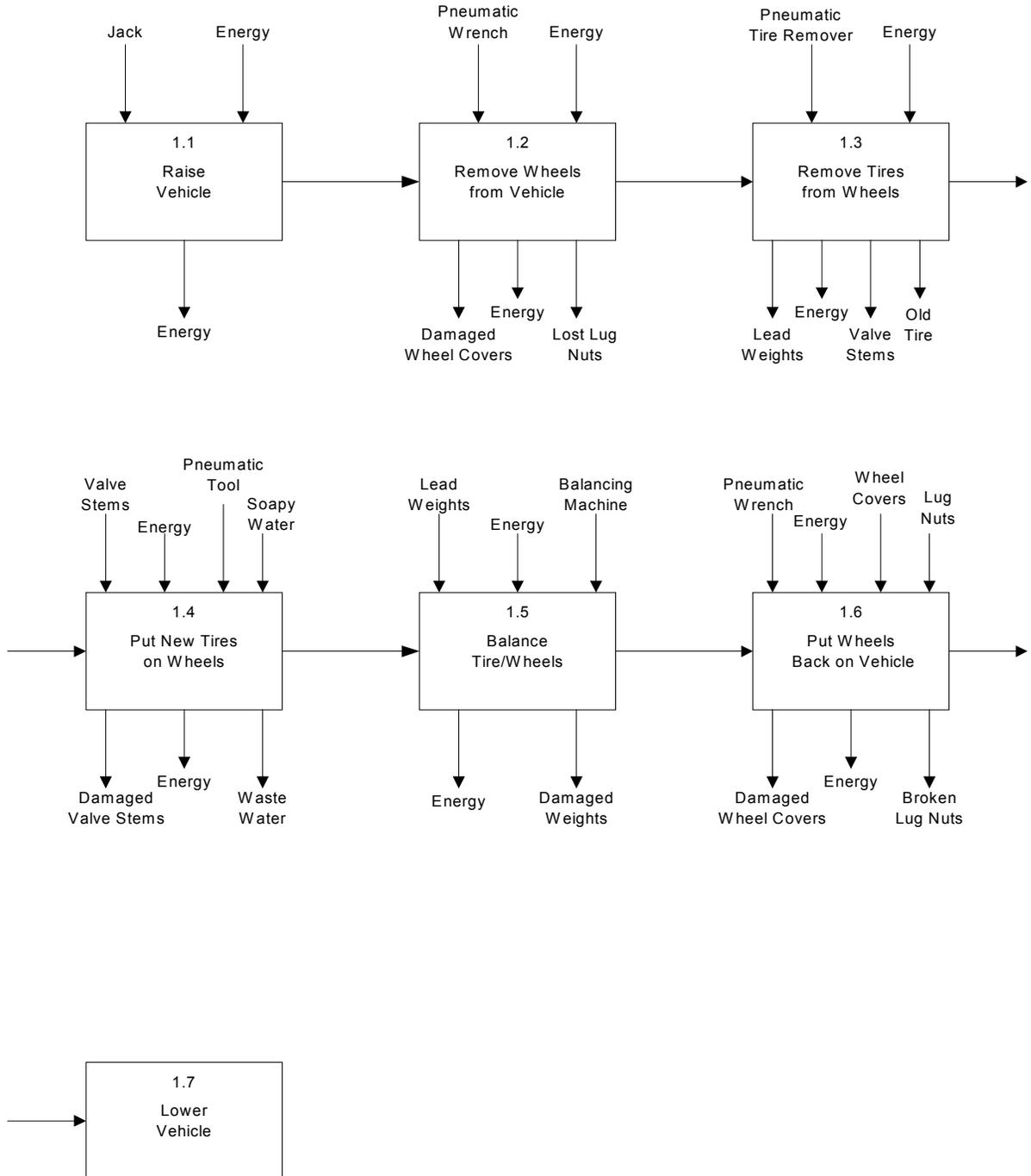
3  
Air Conditioning Repair

4  
General Auto Repair

5  
Brake Change

6  
Oil Change

# 1. Tire Replacement



## **Auto Repair Shop Process Maps**

### **Map 1.0: Tire Replacement**

#### **1.1 Raise vehicle**

The vehicle is brought into the shop and raised up with either a floor jack or a vehicle lift. This step uses energy if the jack/lift is not manually operated.

#### **1.2 Remove wheels from vehicle**

Normally a pneumatic wrench is used to remove the lug nuts while a prybar is used to remove the wheel covers. Energy is used to operate the pneumatic wrench. It is possible that the wheel cover could be damaged in removal and lug nuts could be lost.

#### **1.3 Remove tires from wheels**

Tires are generally removed from the wheel using pneumatic tire removal equipment which require energy. The old valve stem and balancing weights are removed. The old tire must be dealt with according to the New Mexico Tire Recycling Regulations.

#### **1.4 Put new tires on wheels**

New valve stems are put on the wheel before mounting the tire. Sometimes valve stems are damaged. The same piece of equipment used in the previous step is used to put the new tire on the wheel which requires the use of energy. Soapy water is generally used to act as a lubricant for the tire bead.

#### **1.5 Balance tire/wheels**

The wheel with a mounted tire are then brought over to a balancing machine which require energy. New lead weights are placed on the wheel at the appropriate locations. Sometimes the weights are damaged and have to be replaced.

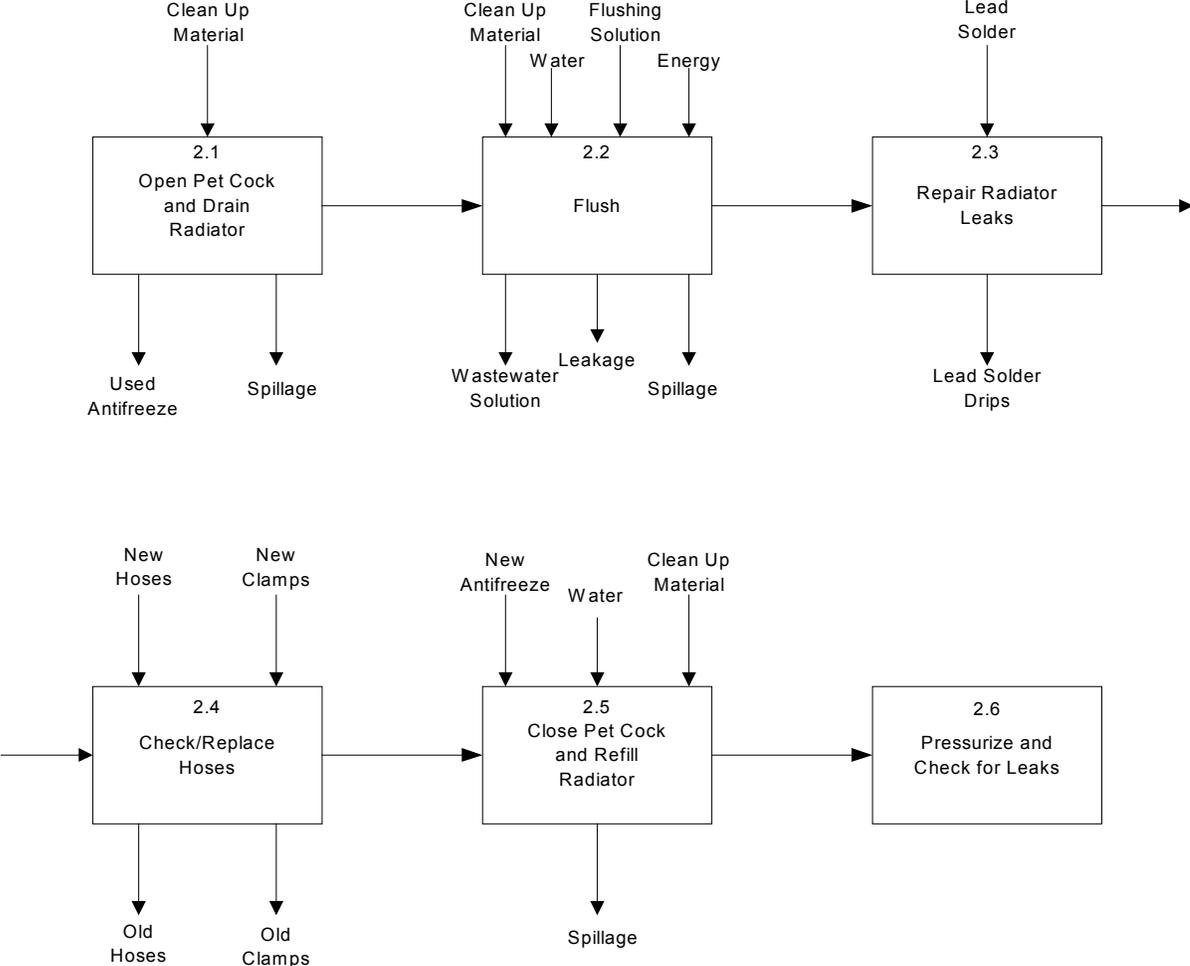
#### **1.6 Put wheels back on vehicle**

The wheel and wheel covers are put back on reversing the operation of 1.2 using energy for the pneumatic wrench. It is possible that wheel covers could be damaged in this operation and lug nuts could be broken.

#### **1.7 Lower vehicle**

Lower vehicle keeping in mind safety issues.

## 2. Radiator Flush And Drain



## **Map 2.0: Radiator Flush and Drain**

### **2.1 Open pet cock and drain radiator**

In this process the used antifreeze is collected in a container for recycling or disposal. Sometimes antifreeze is spilled on the shop floor which requires the use of clean up material to absorb the antifreeze. This material is normally disposed of as hazardous waste.

### **2.2 Flush out radiator**

Machines which use energy are generally connected to the cooling system of the vehicle to flush out any residual antifreeze and loose solid material. During this operation it is possible for the solution to leak out of the cooling system or be accidently spilled on the shop floor. As stated in 2.1 this will require the use of clean up material.

### **2.3 Repair radiator leaks**

This process may rely on the radiator being soldered with lead solder. Any lead that drips on the shop floor must be removed and dealt with as a hazardous waste.

### **2.4 Check/replace hoses**

If it was found that a hose was leaking during the flushing operation or if the hose appears to be old and ready to break, it should be replaced with a new hose and appropriate clamps. The old parts may be discarded in a dumpster.

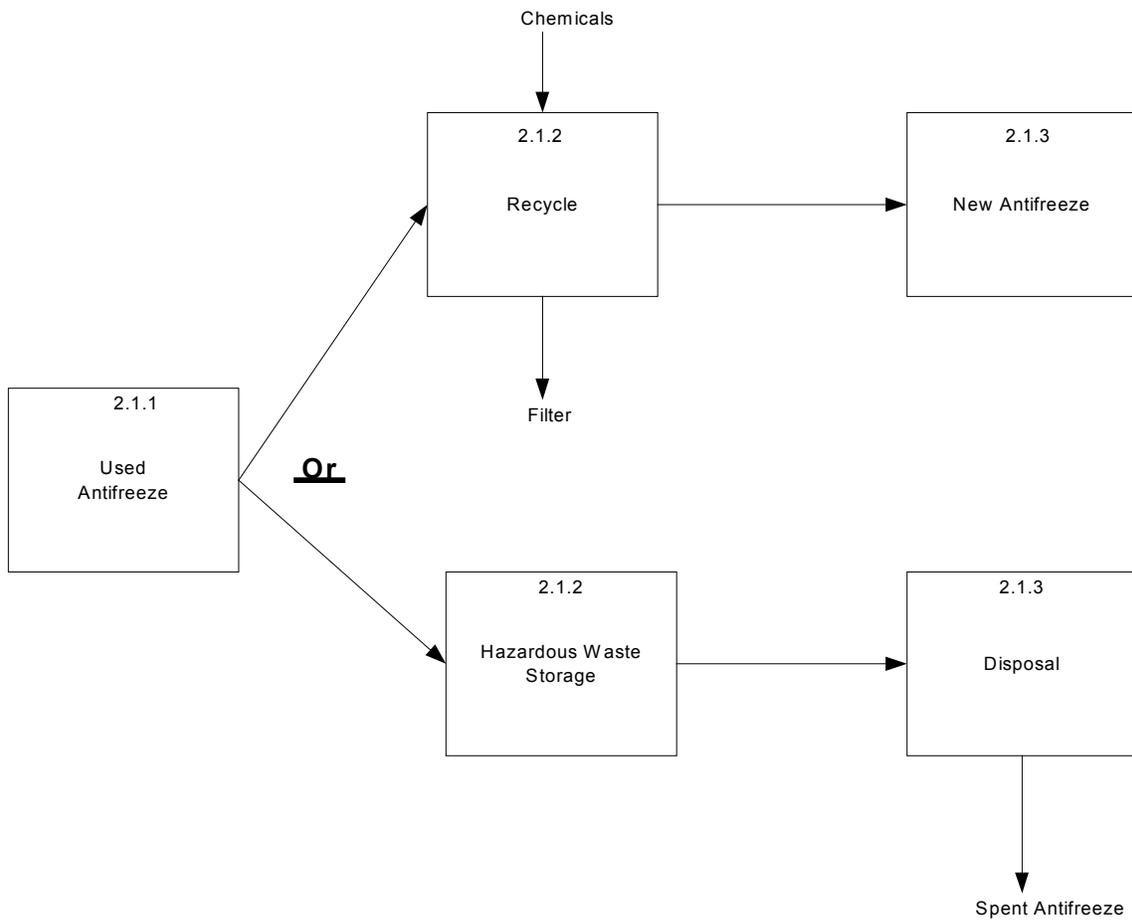
### **2.5 Close pet cock and refill radiator**

After all repairs are made and the pet cock is closed, new antifreeze and water are put into the radiator. Care should be taken so as to not spill any antifreeze on the shop floor. Any antifreeze that is spilled will have to be dealt with as stated in 2.1. To insure that the cooling system is full, the engine will have to be running long enough to open the thermostat in the water pump.

### **2.6 Pressurize and check for leaks**

While the engine is running the cooling system should be checked for leaks. If found the return to step 2.3 and repeat the remaining steps.

## 2.1 Antifreeze Recycling or Disposal



## **Map 3.0: Air Conditioning Repair**

### **3.1 Pressurize system chrcck for leaks**

During this process, the AC system is generally connected to a machine that uses energy and can inject a dye into the system so that leaks can be visable. If leaks are found they must be repaired before the system can be checked out for its ability to cool. Any refrigerant that leaks out will be disipated in the air.

### **3.2 Check system for cooling**

Assuming no leaks were found in the last step, a vent outlet in the vehicle has a thermometer placed in it to measure the temperature of the air coming out.

### **3.3 Assess needed repairs**

Based on what was found in the previous two steps an assessment of what needs to be repaired or replaced is determined.

### **3.4 Fix leaks/defective parts or replace with new parts**

Any parts that are replaced can either be recycled or disposed of.

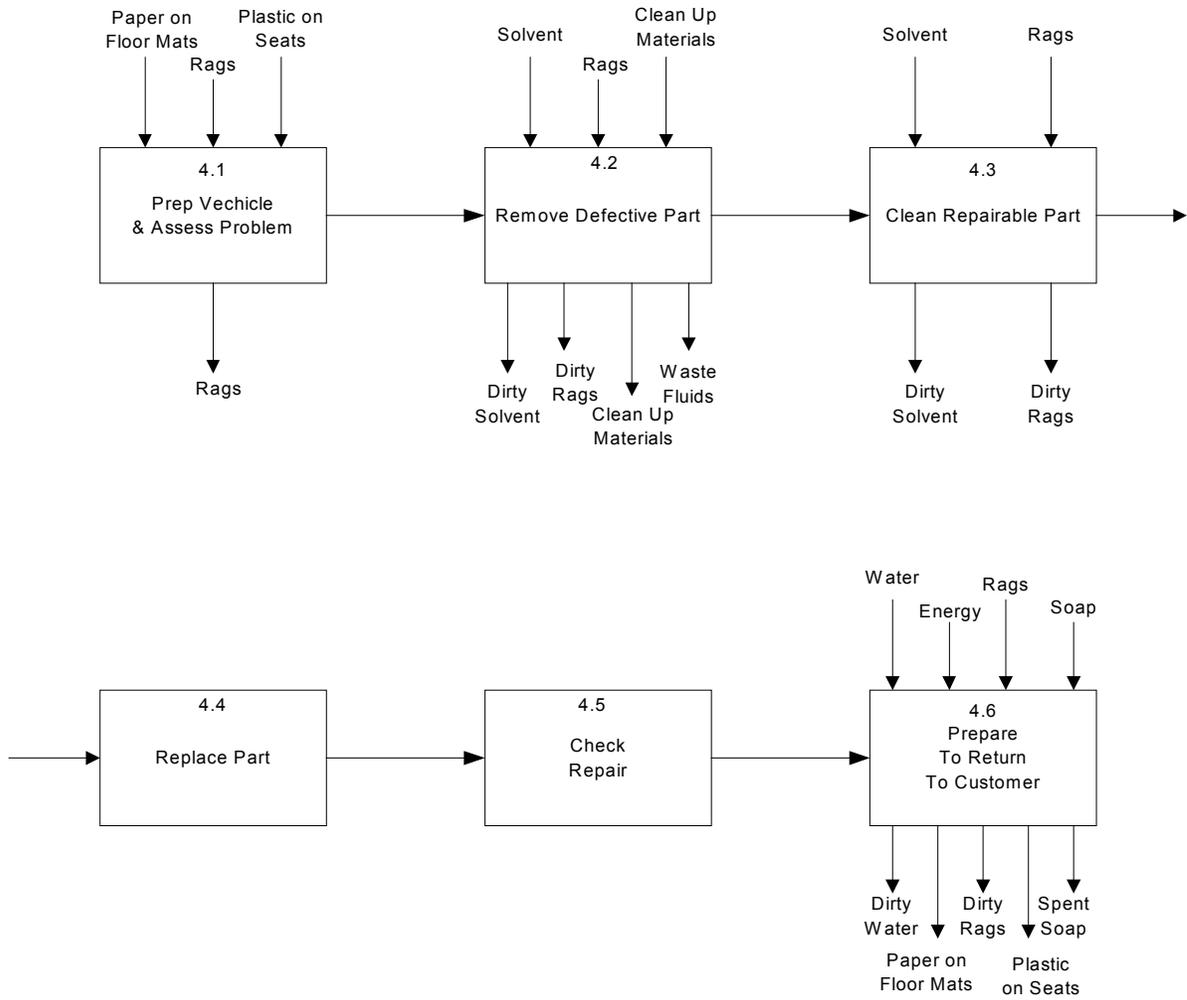
### **3.5 Refill system with refrigerant**

After all repairs are made the system is then attached to a machine that will refill the system with the proper refrigerant.

### **3.6 Recheck system for cooling and leaks**

If any leaks are found or if the system is not cooling properly then go back to step 3.3 and repeat the rest of the steps.

## 4. General Auto Repair



## **Map 4.0: General Auto Repair**

### **4.1 Prep vehicle and assess problem**

During this process paper coverings are generally placed on the floor of the vehicle and plastic is placed over the seats. Rags may be used in wiping off areas that appear to require maintenance. These dirty rags may be required to be handled as hazardous waste depending on what was wiped off.

### **4.2 Remove defective part**

Assuming a defective part is to be removed from the vehicle, it is not uncommon for a rag with a solvent on it to be used to clean off an area to make removal easier. This rag is now considered hazardous waste and must be dealt with accordingly. It is also possible for some sort of fluid to be spilled at the point of removal. If it is allowed to fall on the shop floor then some sort of clean up material will be required to absorb the waste.

### **4.3 Clean repairable part**

Generally a part that is to be repaired is taken to some sort of parts cleaner before it is repaired. Rags may also be used to wipe off the part. Depending on what kind of parts cleaner is used the dirty solvent and rags may be required to be dealt with as hazardous waste.

### **4.4 Replace part**

Replace the part in the reverse order it was removed.

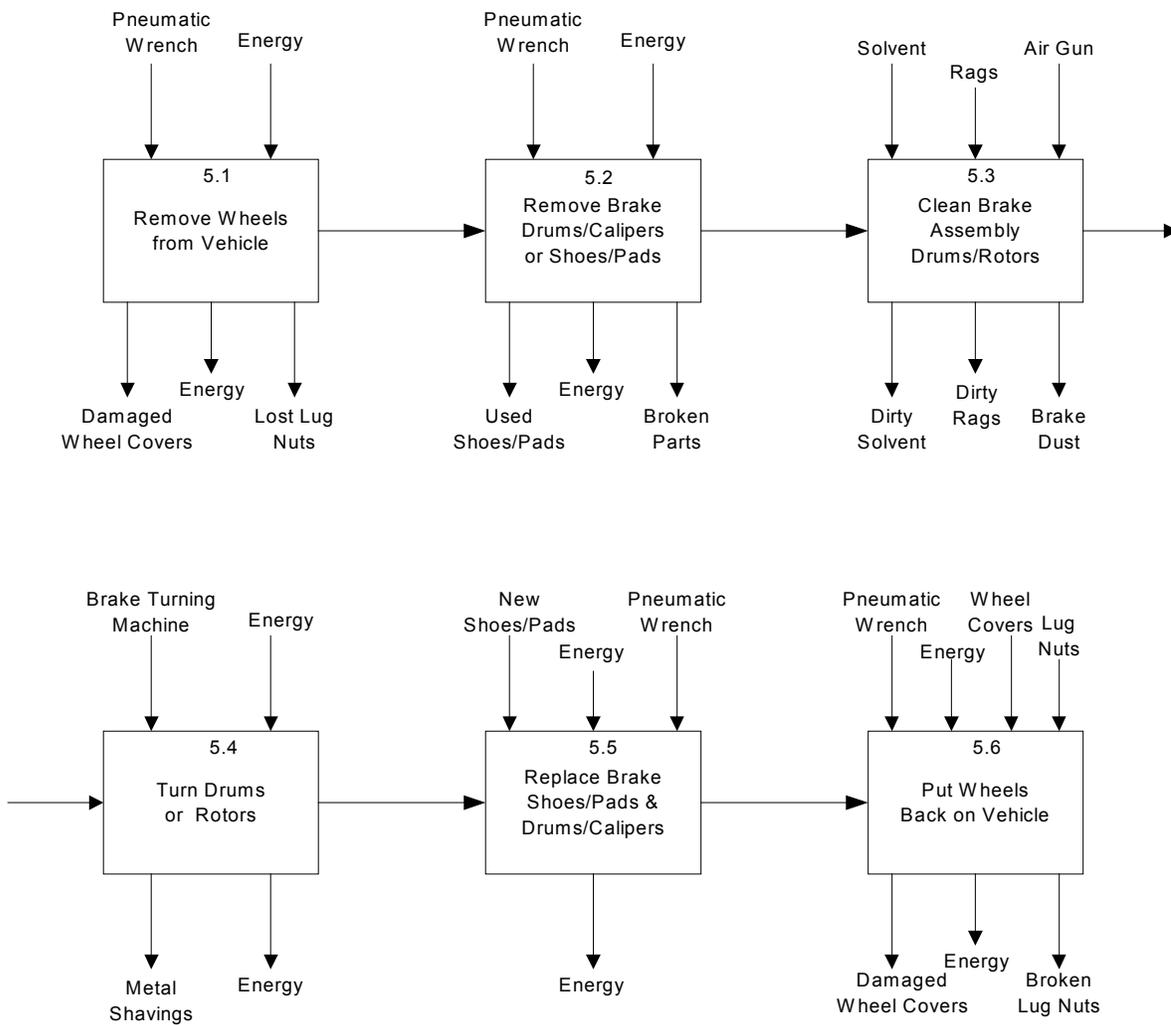
### **4.5 Check repair**

The vehicle is now checked out to see if the new or repaired part solved the original problem.

### **4.6 Prepare to return to customer**

The paper floor coverings and plastic seat covers are removed and reused or disposed of. Some shops may wash the vehicle before it is returned to the customer. If this is done it needs to be accomplished in a method that collects the wastewater before it can enter the sewer system.

## 5. Brake Change



## **Map 5.0 : Brake Change**

### **5.1 Remove wheels from vehicle**

Normally a pneumatic wrench is used to remove the lug nuts while a prybar is used to remove the wheel covers. Energy is used to operate the pneumatic wrench. It is possible that the wheel cover could be damaged in removal and lug nuts could be lost.

### **5.2 Remove brake drums/calipers or shoes/pads**

This is normally done with a pneumatic wrench which uses energy. The old parts will then be recycled or disposed of.

### **5.3 Clean brake assembly drums/rotors**

Rear brake assemblies generally have drums that can accumulate brake dust that must be removed in a safe manner according to OSHA Rules to protect the workers. A liquid brake cleaner may be used to clean off the assembly. This will generate dirty rags that may be considered hazardous waste.

### **5.4 Turn drums or rotors**

Depending on how out of round the brake drums and/or rotors are they may be required to be turned. This is done on a machine that uses energy and generates metal shavings. These shavings may be collected and recycled.

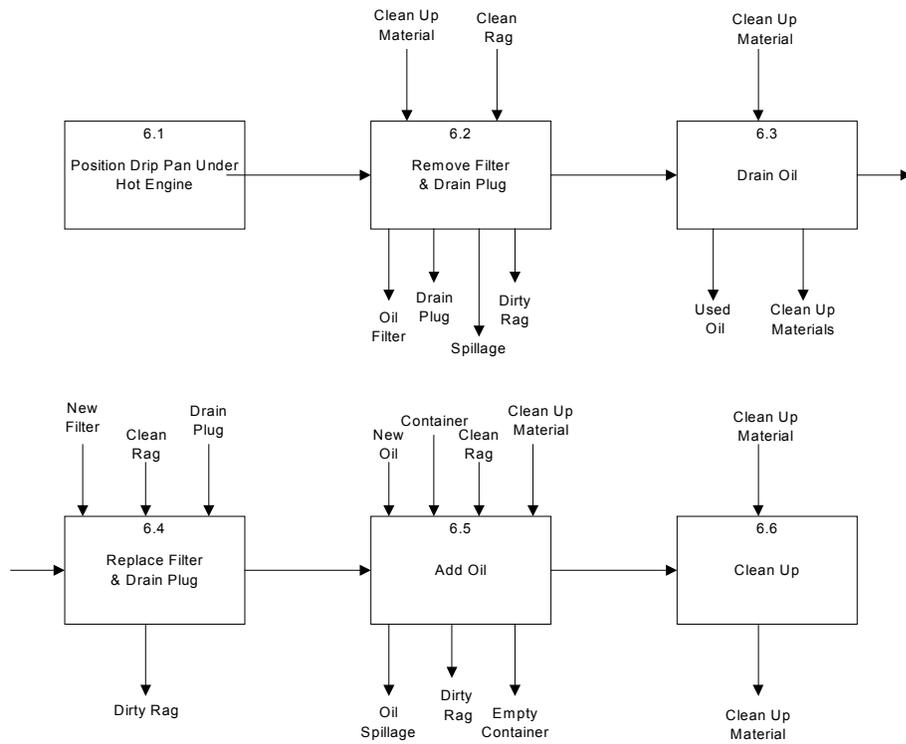
### **5.5 Replace brake shoes/pads and drums/calipers**

This is done in the reverse order of operation 5.2 and uses energy

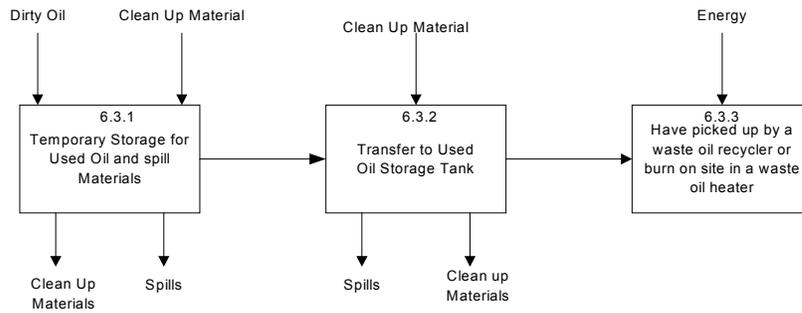
### **5.6 Put wheels back on vehicle**

The wheel and wheel covers are put back on reversing the operation of 5.1 using energy for the pneumatic wrench. It is possible that wheel covers could be damaged in this operation and lug nuts could be broken.

## 6. Oil Change



## 6.3 Waste Oil Management



## **Map 6.0: Oil Change**

### **6.1 Position drip pan under hot engine**

This is done to prevent waste oil from getting on the shop floor.

### **6.2 Remove filter and drain plug**

This operation can cause waste oil being spilled onto the shop floor which would then require the use of clean up material to absorb the oil. The dirty material will need to be handled as hazardous waste. Also dirty rags are generally generated. The oil filter should then be properly drained of all oil and put into a filter crusher for recycling.

### **6.3 Drain oil**

The oil draining out of the engine should be going to a proper container that will prevent used oil from getting on the shop floor. If any oil gets on the floor it must be properly cleaned up. The clean up material may be required to be dealt with as hazardous waste.

### **6.4 Replace filter and drain plug**

During this operation a rag is generally used to wipe off any excess oil that may be on the oil pan or engine block. This rag may be considered hazardous waste.

### **6.5 Add oil**

Care needs to be taken to prevent oil from being spilled. Any that is spilled needs to be cleaned up with the appropriate material and disposed of properly. The oil container needs to be drained of any free liquid and may be recycled.

### **6.6 Clean up**

Any surface that has oil on it should be wiped off with a clean rag. This rag may be considered hazardous waste.

Auto Repair Shops  
Regulatory and Pollution  
Prevention Guidance and  
Other Resources

## **FACT SHEET FOR RADIATOR REPAIR SHOP**

This fact sheet is provided by the New Mexico Environment Department's Hazardous and Radioactive Materials Bureau (HRMB) to provide regulatory guidance for the radiator repair and reconditioning industry.

Radiator shops are known to generate a variety of hazardous waste streams, primarily as a result of lead contamination. These wastes may include, but are not limited to, sump sledge, spent bead blast, spent lead solder, lead contaminated dust and floor sweepings, filter press cake, and process wastewater.

The radiator shop must first make hazardous waste determinations to determine which of its waste streams are in fact hazardous. This determination can be done by (1) collecting a representative sample and having it analyzed, or (2) using knowledge of process. For example, if you do not solder over the radiator test tank then there are probably no lead solder drippings inside that tank and no reason for the water or sludge to be hazardous for lead. Please be aware that if the facility chooses to use option #2, it has the burden of proving that the knowledge is adequate, and the HRMB may collect a sample of the waste to verify the facility's determination.

To determine if the waste is hazardous, the waste should be tested for the **Total Metal** concentration of lead, using EPA method 6010. Total Metals testing is the least expensive method and should cost less than \$100.00. The analytical results from this method approximates the metal concentration by using the "20 Times Rule". This rule of thumb basically states that **if the results of a "Totals" analysis is 20 times the regulatory limit, most likely the waste is hazardous**. As an example, if a "Totals" analysis for lead has a result greater than 100 mg/l, this value is 20 times greater than the 5 mg/l regulatory limit and is most likely hazardous. If the shop wants to confirm that the lead value is greater than the regulatory limit, a more concise test - the Toxicity Characteristic Leaching Procedure (TCLP) must be done. These procedures are outlined in EPA Publication SW-846. HRMB recommends that over a period of one year two separate samples should be taken of the waste and tested. This will provide the proof that your shop's routine repair processes do not create a hazardous waste.

One of the most important housekeeping practices that a shop can do to reduce lead contamination and generation of hazardous waste is to designate one area as the soldering area and to keep the lead solder drips only in that spot. Lead solder drips should not be swept or hosed into the drains or sumps. Lead solder drips should be collected from the soldering area and put into a bucket for recycling. Lead solder recyclers do exist and will pick up the lead you have collected.

Once the facility determines which waste streams are hazardous, it is very important to calculate the total quantity of hazardous waste generated in order to determine the facility's regulatory category. The three different types of generators and their regulatory requirements are:

1. **Conditionally Exempt Small Quantity Generator (CESQG):** is a generator of less than 220 lbs (100 kgs) of hazardous waste in a month. A **CESQG** must make a hazardous waste determination for each waste generated and dispose of its hazardous waste at an authorized facility, which can be a hazardous waste facility or a landfill that is permitted to accept those wastes or other facilities approved by the state for industrial or municipal wastes. A **CESQG** should not accumulate more than 2,200 lbs (1000 kgs) of hazardous waste on-site at any one time. If the facility exceeds this amount then it becomes subject to the requirements for a small quantity generator.
2. **Small Quantity Generator (SQG):** is a facility that generates between 220 and 2,200 lbs (100 to 1000 kgs) of hazardous waste in a month. A **SQG** must comply with all applicable regulations found in 20 NMAC 4.1.301 and 801, which incorporate the federal regulations 40 CFR Parts 262 and 268. A **SQG** must ship its hazardous waste only to a facility with an EPA Identification Number. A **SQG** should not accumulate more than 13,228 lbs (6000 kgs) of hazardous waste on-site at any one time or store its hazardous waste on-site for longer than 270 days. If it does, then it becomes subject to the requirements for a large quantity generator.
3. **Large Quantity Generator (LQG):** is a generator of greater than 2,200 lbs (1000 kgs) of hazardous waste in a month. A **LQG** must comply with all applicable regulations found in 20 NMAC 4.1.301 and 801, which incorporate federal regulations 40 CFR Parts 262 and 268. The requirements for a **LQG** are much more comprehensive and stringent than are those for either a **CESQG** or a **SQG**.

Above all else, avoid disposing of any hazardous waste on-site, which is illegal and may subject the facility to significant fines, unless the facility has a permit to operate a disposal facility. Please note that the regulatory requirements for a **CESQG** are the least burdensome. Whenever possible, most radiator shops will choose to operate as a **CESQG**.

The New Mexico Environment Department wishes to assist the regulated community in complying with all applicable regulations. Please contact the Technical Assistance Section of the Hazardous and Radioactive Materials Bureau for further information and assistance (505-428-2528). This assistance will provide information to the business owner free of fear of fines or penalties. Six-month amnesty from the enforcement section is provided to those who take advantage of the program.

## **FACT SHEET FOR VEHICLE PAINT AND BODY SHOP**

This fact sheet is provided by the New Mexico Environment Department's Hazardous and Radioactive Materials Bureau (HRMB) in order to provide regulatory guidance for the vehicle paint and body repair industry.

Auto paint and body shops are known to generate a variety of hazardous waste streams, primarily as a result of repairing and painting activities. These wastes may include but are not limited to paint wastes and thinners, rust removers, solvents, degreasers, sanding dusts, paint covered booth filters, paint cone filters, and cleaning fluids. A shop must first make a hazardous waste determination of which waste streams are in fact hazardous. This determination can be done by (1) collecting a representative sample of each waste stream and having it analyzed for lead, cadmium, arsenic and barium by a laboratory capable of conducting hazardous waste analyses, or (2) using knowledge of process. Please be aware that if the facility chooses to use option #2, it has the burden of proving that the knowledge is adequate, and the HRMB may collect a sample of the waste to verify the facility's determination.

To determine if the waste is hazardous, the waste should be tested for the **Total Metal** concentration using EPA method 6010. Total Metals testing is the least expensive method and should cost less than \$200.00. The analytical results from this method approximates the metal concentration by using the "20 Times Rule". This rule of thumb basically states that **if the results of a "Totals" analysis is 20 times the regulatory limit, most likely the waste is hazardous**. As an example, if a "Totals" analysis for lead has a result greater than 100 mg/l, this value is 20 times greater than the 5 mg/l regulatory limit and is most likely hazardous. If the shop wants to confirm that the lead value is greater than the regulatory limit, a more concise test - the Toxicity Characteristic Leaching Procedure (TCLP) must be done. These procedures are outlined in EPA Publication SW-846. HRMB recommends that over a period of one year, two separate samples should be taken of the waste and tested. This will provide the proof that your shop's routine repair processes do not create a hazardous waste.

Lacquer thinners and paints are almost always hazardous waste and should be handled as such, being kept in a closed container labeled hazardous waste. This waste must be picked up and disposed of by a hazardous waste management company or lacquer thinners and solvents can be recycled by using a solvent still. Solvent stills come in different sizes and will pay for the still purchase price typically in one to two years. The still will produce clean thinner or solvent that can be reused and a cake of paint waste. The paint waste sludge will be the only item that has to be disposed of as a hazardous waste, which will significantly reduce the volume of waste thereby reducing the disposal costs as well as the thinner or solvent purchase cost.

Paint booth filters and sump sludge may also be hazardous waste. These materials should be tested prior to disposal to determine if the shop processes create a hazardous waste. Once the materials have been tested then the shop will know how to handle those materials in the future. The test results should be kept on file to prove to any regulatory agency that the disposal method being used is the correct one.

Once the facility determines which waste streams are hazardous, it is very important to calculate the total quantity of hazardous waste generated in order to determine the facility's regulatory category. The three different types of generators and their regulatory requirements are:

1. **Conditionally Exempt Small Quantity Generator (CESQG):** is a generator of less than 220 lbs (100 kgs) of hazardous waste in a month. A **CESQG** must make a hazardous waste determination for each waste generated and dispose of its hazardous waste at an authorized facility, which can be a hazardous waste facility or a landfill that is permitted to accept those wastes or other facilities approved by the state for industrial or municipal wastes. A **CESQG** cannot accumulate more than 2,200 lbs (1000 kgs) of hazardous waste on-site at any one time. If the facility exceeds this amount then it becomes subject to the requirements for a small quantity generator.
2. **Small Quantity Generator (SQG):** is a facility that generates between 220 and 2,200 lbs (100 to 1000 kgs) of hazardous waste in a month. A **SQG** must comply with all applicable regulations found in 20 NMAC 4.1.301 and 801, which incorporate the federal regulations 40 CFR Parts 262 and 268. A **SQG** must ship its hazardous waste only to a facility with an EPA Identification Number. A **SQG** cannot accumulate more than 13,228 lbs (6000 kgs) of hazardous waste on-site at any one time or store its hazardous waste on-site for longer than 270 days. If it does, then it becomes subject to the requirements for a large quantity generator.
3. **Large Quantity Generator (LQG):** is a generator of greater than 2,200 lbs (1000 kgs) of hazardous waste in a month. A **LQG** must comply with all applicable regulations found in 20 NMAC 4.1.301 and 801, which incorporate federal regulations 40 CFR Parts 262 and 268. The requirements for a **LQG** are much more comprehensive and stringent than are those for either a **CESQG** or a **SQG**.

Do not dispose of any hazardous waste on-site, this is illegal and may subject the facility to significant fines, unless the facility has a permit to operate a disposal facility. Please note that the regulatory requirements for a **CESQG** are the least burdensome. When possible, most vehicle paint and body shops will choose to operate as a **CESQG**.

The New Mexico Environment Department wishes to assist the regulated community in complying with all applicable regulations. Should you wish assistance, contact the Technical Assistance Section at 505-827-1294 (Air Quality) or 505-428-2528 (Hazardous Waste). By participating in an assistance site visit your facility will receive six months amnesty from the enforcement section of HRMB and learn what is required to operate in compliance with the regulations.

For further information concerning this fact sheet, please contact the Hazardous and Radioactive Materials Bureau Technical Assistance Section at 505-428-2528.

## **FACT SHEET ON CONTAMINATED RAGS AND WIPERS**

This fact sheet is provided by the New Mexico Environment Department's Hazardous and Radioactive Materials Bureau (HRMB) to give regulatory guidance to those businesses that generate rags and wipers that may be contaminated with solvent, oil and other materials.

In order to make an official regulatory decision concerning the status of rags and wipers contaminated with possible hazardous constituents, HRMB sent a letter to the U.S. Environmental Protection Agency, Region 6, outlining HRMB's position and concerns. Upon receipt of this letter, and after subsequent conversations between HRMB and EPA staffs, EPA responded with a letter dated August 30, 1993. In this letter, EPA concurs with HRMB's position on how contaminated rags should be regulated.

Specifically, HRMB will regulate contaminated wipers as per the New Mexico Hazardous Waste Management Regulations (20 NMAC 4.1), which adopt by reference, with a few exceptions, 40 CFR Parts 260-270, in the following manner:

1. If a spent rag or wiper contains a listed hazardous waste or exhibits a hazardous waste characteristic (ignitable, corrosive, reactive, or toxic), then the wiper will be regulated as a hazardous waste. HRMB has not made in the past, and does not make at the present time, a distinction as to when a wiper becomes hazardous waste. Once the wiper is no longer being used, it must be handled as a hazardous waste if it meets the definition of hazardous waste. Therefore, unless the generator is a **Conditionally Exempt Small Quantity Generator (CESQG)**(generating less than 220 lbs of hazardous waste per month), wipers meeting the definition of hazardous waste would have to be manifested to a facility having an EPA identification number.

**CESQG** facilities are only required to dispose of the hazardous waste correctly. This means that wipers and rags that do not have free flowing liquids can go to the local landfill if the landfill will accept them. Contact the Solid Waste Bureau at 505-827-2938 or the local landfill for this determination.

2. Laundering of wipers is considered a form of reclamation since the spent material, i.e. the wiper containing the contaminants, has been used and as a result of contamination can no longer serve as a cleaning agent without first being laundered to remove the contaminants. Therefore, wipers that are stored on-site prior to shipment off-site or reclaiming on-site must be stored in compliance with 20 NMAC 4.1. This regulation requires that the wipers be stored in a closed container. The Occupational Safety and Health regulations require this container to be metal due to the possibility that spontaneous combustion might occur.

If the facility is a **Small Quantity Generator (SQG)**(generating between 220 lbs and 2,200 lbs of hazardous waste per month) or a **Large Quantity Generator (LQG)** (generating over 2,200 lbs of hazardous waste per month) the requirements regarding storage are much more complex with such conditions as an emergency communication device, container labeling, weekly inspection of storage area, portable fire extinguishers, and training for personnel, as well as much more.

3. In the case of contaminated wipers being shipped to a laundry for cleaning and reuse, other regulations such as the Clean Water Act, may apply to the wash water. Many municipalities have their own regulations regarding what can go down the drain, contact the local wastewater treatment officials. The hazardous waste regulations apply to the wipers only until they are actually placed into the laundry process. An off-site laundry accepting regulated wipers would have to obtain a hazardous waste storage permit unless it washes the wipers within 24 hours.

In a letter dated January 23, 1991 to Lance R. Miller, Division of Hazardous Waste Management, New Jersey Department of Environmental Protection, from Sylvia K. Lowrance, Director, Office of Solid Waste, EPA stated that "... the Regions and authorized States remain in the best position to determine the hazardous waste regulations' applicability in specific cases." HRMB will enforce the hazardous waste regulations as it deems necessary to protect human health and the environment in New Mexico.

The Hazardous Waste Technical Assistance Section is available to assist all businesses in complying with the regulations. Should you ask the Technical Assistance section to help evaluate your compliance, your business would receive six months amnesty from the Enforcement Section of the Hazardous and Radioactive Materials Bureau. Contact Technical Assistance at 505-428-2528.

### **Pollution Prevention Tips:**

- ☺ Use as little solvent as necessary to get the job done.
- ☺ Reuse the wipers as much as possible to reduce the number of wipers that are contaminated.
- ☺ Change to a non-hazardous or less hazardous solvent to reduce the number of requirements.
- ☺ Wring or drain rags and wipers into waste solvent or waste oil tank to reduce contaminants.
- ☺ Use drip pans to catch spills and eliminate the need to use rags or wipers.
- ☺ do not air dry contaminated rags or wipers.
- ☺ Do not launder or pre-wash the rags or wipers at your facility, residence or local laundromat.

## **SPECIFIC REGULATORY GUIDANCE FOR AUTO REPAIR SHOPS**

This briefing paper is intended to be attached to the “General Regulatory Guidance for New Mexico Small Businesses” to provide additional regulatory information specifically to “Auto Repair Shops”. It is not intended to be a substitute for actual regulations. If you have questions concerning your regulatory responsibilities, you are encouraged to contact the appropriate bureau.

### **AIR EMISSION REGULATIONS:**

Attached to this document is a brochure entitled “Automotive Paint and Body Shops” that gives some basic ideas on what is required with respect to air quality permits. Since the paint manufacturers have been putting less and less VOCs in their paints, the main concerns at a repair shop will be the solvents being used. As the brochure stated, if in doubt about determining your classification (major vs minor) contact the NMED Air Quality Small Business Assistance Program at 1-505-827-1294 or the City of Albuquerque Air Quality Assistance Program at 505-768-1964 if your business is located in Bernalillo County.

### **HAZARDOUS WASTE REGULATIONS:**

Attached to this briefing paper is a document entitled “Fact Sheet for Vehicle Repair Shops” that can assist you in being compliant with Hazardous Waste Regulations. It lists many of the hazardous materials that are generated. One in particular that should not be disposed of is antifreeze, since it is a very easy to recycle.

### **WASTEWATER REGULATIONS:**

This can be of a major concern since liquids of all kinds have a tendency of leaking all over the floor of repair shops. Sealing the floor and drains is a very good and inexpensive way of avoiding contamination of soils and possibly ground water under your building. You should also restrict what is poured into the sewer system.

### **OSHA REGULATIONS:**

Attached to this document is a checklist entitled “Auto Repair Shop Safety Checklist” that can assist you in being compliant with OSHA.

### **UNDERGROUND STORAGE TANK REGULATIONS:**

Unless your business stores regulated material such as gasoline in a UST, there is nothing unique that wasn't already covered in the General Guidelines. If in doubt about UST regulations, please contact the UST Bureau at 505-827-0188.

### **SOLID WASTE REGULATIONS:**

The solid waste regulations prohibit lead acid batteries in landfills as well as bulk liquids such as used oil and used brake fluid. These products are easy to recycle. Another waste unique to auto repair shops is a scrap tire. You are allowed no more than 500 scrap tires on your premises at any one time. They must be stored in such a way as to not be a fire hazard or have a vector (rats, snakes, etc.) problem.

## **GENERAL REGULATORY GUIDANCE FOR NEW MEXICO SMALL BUSINESSES**

The purpose of this briefing paper is to assist small businesses in New Mexico in trying to understand the environmental regulatory requirements associated with doing business by giving a general overview. It is not intended to be a substitute for actual regulations. Businesses are responsible for operating their business in full compliance of the law (regulations). Each bureau in the New Mexico Environment Department (NMED) have staff available that can help you directly in understanding what is expected of your business from a regulatory point of view. It is in your best interest to contact the appropriate bureau if you have questions.

Periodically the Pollution Prevention (P2) Program in NMED will issue specific guidance briefing papers as an attachment to this document for certain businesses. These will be designed to provide additional information to a specific business. For information call the NMED Pollution Prevention Program staff at 505-827-0677 or the Technical Resource Center in Albuquerque at 505-843-4251.

### **AIR EMISSION REGULATIONS:**

The EPA, in an attempt to control air pollution through regulations, has created a set of rules with many acronyms. Since businesses can come across these acronyms in many publications, they are listed below:

NESHAP: National Emission Standards for Hazardous Air Pollutants  
NAAQS: National Ambient Air Quality Standards  
HAP: Hazardous Air Pollutants  
TAP: Toxic Air Pollutants  
OEL: Occupational Exposure Limits  
VOC: Volatile Organic Compounds  
MSDS: Material Safety Data Sheet  
CTG: Control Techniques Guidelines  
MACT: Maximum Achievable Control Technology  
BACT: Best Available Control Technology  
GACT: Generally Available Control Technology  
RACT: Reasonably Available Control Technology

Much of the national strategy for controlling air pollution centers around the NAAQS. These standards set limits for the concentration in the ambient

(outdoor) air of the six most common air pollutants: Ozone, Carbon Monoxide, Particulate Matter, Sulfur Dioxide, Nitrogen Dioxide, and Lead.

The EPA has established industry based regulatory requirements for the most serious air pollutants, such as HAPs. In many cases the EPA has also established Control Techniques Guidelines that require industries to use certain technologies, such as MACTs.

Any business that has the potential of releasing pollutants to the ambient (outdoor) air, such as VOCs, HAPs, or Criteria Pollutants may be subject to the Air Quality Regulations depending on the amount of pollutants being released. These pollutants are used to determine if a facility is a major or minor source of air pollution and whether or not a business will need an Air Quality Permit. A major source is determined as a function of the amount of HAPs or Criteria Pollutants a business has the potential to emit. For HAPs it is 10 tons per year of any single HAP or 25 tons per year of the total HAPs. For the Criteria Pollutant it is 100 tons per year of any criteria pollutant. In addition the State of New Mexico has added TAPs as a category to be regulated.

Some businesses that would normally be considered a major source can be classified as a minor source by changing the way they conduct their business. Businesses classified as a major source have significant regulatory requirements such as annual fees, maintaining progress reports, records, and a compliance schedule, monitoring emission limits, as well as the possible requirement to have specific control technology installed (MACT, GACT, or RACT). All major sources are required to obtain a Title V Permit. It is generally desirable for a business not to be classified as a major source. An EPA document "Potential to Emit, A Guide for Small Businesses" (EPA-456/B-98-003) is available from the EPA and it may help you to understand Air Quality Regulations.

The State of New Mexico, in addition to HAPs and Criteria Pollutants, has also generated regulations on Toxic Air Pollutants (TAPs) with OELs. These basically limit businesses from allowing TAPs to be emitted to the outside air around their building. OSHA regulates the same kinds of exposure limits inside of a building.

Due to the complexities of Air Quality Regulations, the harm air emissions cause to the environment, and in many cases the high costs associated with "end of the pipe" control technology, it is in the best interest of any business to evaluate their operations with the ultimate goal of eliminating all air pollutants as much as possible.

What all this means is, with few exceptions, the Air Quality Regulations that apply to your business will mostly be determined by what your business does. The best way to find out what air quality regulations apply to your business is to contact the New Mexico Environment Department (NMED) Air Quality Small Business Assistance Program (SBAP) at 1-505-827-1294. Businesses that are located in Bernalillo County are locally regulated with respect to air emissions. For assistance you need to call the City of Albuquerque/Bernalillo Air Quality Assistance Program (AQAP) at 505-768-1964.

## **HAZARDOUS WASTE REGULATIONS:**

Any business that generates waste that is classified as “listed” or “characteristic” in RCRA must deal with this waste as outlined in the New Mexico Hazardous Waste Regulations. The EPA has generated a list of chemicals that are considered hazardous. They have also stated that certain materials that exhibit a hazardous characteristic (ignitibility, corrosivity, reactivity, or toxicity) should be considered hazardous. To determine which products used in your business contain hazardous material, contact either the EPA or the New Mexico Hazardous Waste Bureau. In some cases this information will be contained on the Material Safety Data Sheet (MSDS) that came with the product.

It is important to understand that any product that contains “listed” or “characteristic” material is only regulated by the hazardous waste regulations when it becomes a waste. Examples are when the product is no longer to be used for its intended purpose and is to be gotten rid of, the shelf life of the product has expired, the product leaks from a piece of equipment, or the product is accidentally spilled. It is also important to note that any product to be discarded that contains one or more hazardous materials is also hazardous waste. Examples are hazardous waste mixed with solid waste, rags to clean up spilled hazardous materials, or wastewater from a process that used a hazardous material.

All businesses that generate hazardous waste are classified based on the quantities of hazardous waste they generate monthly. The three classifications are:

1. Conditionally Exempt Small Quantity Generator (CESQG): generates less than 220 pounds or 100 kilograms of hazardous waste per month. A CESQG cannot accumulate more than 2,200 pounds or 1,000 kilograms of their combined hazardous waste at any one time. Usually this amounts to about one-half of a 55-gallon drum. CESQG's may dispose of their hazardous waste by mixing it with a solid waste, assuming there are no free liquids in the waste, and taking it to a permitted municipal solid waste (MSW) landfill. You need to verify that the MSW landfill will accept the mixed waste.
2. Small Quantity Generator (SQG): generates between 220 pounds and 2,200 pounds or 100 kilograms and 1,000 kilograms of hazardous waste per month. No more than 13,200 pounds or 6,000 kilograms may be stored on site any longer than 180 days and must be disposed of at a facility permitted to recycle, treat, store, or dispose of hazardous waste.
3. Large Quantity Generator (LQG): generates more than 2,200 pounds or 1,000 kilograms of hazardous waste per month. Hazardous waste with no weight limit may be accumulated for no more than 90 days unless permitted by the State.

Each classification has different record keeping, manifesting, and reporting requirements. Since a businesses' classification is based on a monthly generation, it is possible to move from one classification to another on a regular

basis. All generators of hazardous waste are required to register with the Hazardous Waste Bureau and pay a generator fee based on their classification.

The Hazardous Waste Bureau has an established outreach program that can assist any business in determining their classification and the regulatory requirements that go with it. You may contact the Bureau at 505-428-2528.

It is important for any business generating hazardous waste to understand that RCRA has established a “cradle to grave” responsibility for the generator of said waste. In effect this means that if the hazardous waste the business generates contaminates soil, surface water, or ground water in any manner until it is properly disposed of, the business will be held responsible for the clean up of the contamination. The cost of clean up could be substantial. It is therefore imperative for any business to make sure trained employees handle their hazardous material properly to avoid accidental spills, to only use permitted haulers, to make sure their waste goes to a RCRA permitted facility, to properly store their hazardous waste, and never dispose of their hazardous waste at their facility. It is also advisable to seal the floor of the facility if you use a hazardous material in a liquid form in your operation.

The best way for any business to avoid the costs of contamination clean up is to eliminate the use of hazardous materials in their operation. A complete understanding of how a business conducts its processes is required to determine the best way to eliminate or at least reduce the amount of hazardous waste being generated. A Pollution Prevention Program has been established at the New Mexico Environment Department to assist businesses in evaluating their processes. The number to call at NMED is 505-827-0677 or you can call the Technical Resource Center in Albuquerque at 505-843-4251.

The New Mexico Environment Department has a 24-hour emergency reporting number that can be called in case of an incident dealing with hazardous material. The number is 505-827-9329.

### **WASTEWATER REGULATIONS:**

Any business that generates wastewater that contaminates surface water or ground water can be held responsible for the cost of cleanup. If the contaminant is a RCRA “listed” or “characteristic” waste above the concentration value allowed, then the wastewater is by definition a hazardous waste and must be dealt with under New Mexico Hazardous Waste Regulations. Placing hazardous wastewater directly onto or into the ground is strictly prohibited. Since the cost of cleaning up either surface water or ground water can be substantial, it is in the best interest of any business to eliminate, minimize, and/or control its wastewater.

If non-hazardous wastewater is being discharged so that it can move directly or indirectly into ground water (e.g. septic system, dry sump, etc.) a business is required to file a “Notice of Intent to Discharge” with the New Mexico Ground Water Bureau in accordance with the NM Water Quality Act. The Bureau will then determine if the business requires a Discharge Permit. In some cases the

business may be required to request a NPDES Permit from the EPA if the discharge is to surface water.

If non-hazardous wastewater is being placed into a sewerage system a business is required to notify the local Publicly Owned Treatment Works (POTW) the nature and concentrations of the contaminants in the wastewater. Attached is a listing of the New Mexico Publicly Owned Treatment Works. Wastewater that has been determined to be hazardous is prohibited from being placed in any sewerage system.

Businesses need to be aware that even though their wastewater going into the sewerage systems is allowed by the POTW, this does not necessarily relieve them of potential contamination liability. A good example is the case in which a sewer pipe leaks and the wastewater contains hazardous constituents, below RCRA levels, that were generated by your business. Over time the wastewater seeps into the ground water and the concentrations exceed State or Federal water quality standards. If the contamination source can be traced back to your business, you could be liable for the cost of cleanup. Most businesses will find that the costs associated with proper handling of their wastewater are far cheaper than the cost of cleaning up ground water. Prevention is an inexpensive insurance policy.

Another potential source of contamination is through the foundation of your building. An example would be where a business handles hazardous material as a regular part of doing business and a spill occurs that seeps through cracks in the floor. Eventually it reaches ground water and is detected through monitoring of the ground water. Assuming it can be traced back to your business, you could then be held responsible for the cost of clean up.

Any business that generates wastewater from sources other than lavatories, cafeterias, etc., should evaluate ways in which the wastewater can be eliminated, reduced, recycled, reused or handled in such a fashion that the risk of liability for contaminating surface water or ground water is virtually zero. This should include dealing with hazardous waste and all wastewater in a proper fashion, sealing cracks in floors, training of employees, and possible treatment of their wastewater before it leaves their premises.

If you have any questions you can contact the Ground Water Bureau at 505-827-2918 and the Surface Water Bureau at 505-827-0187.

### **OSHA REGULATIONS:**

Every business is required to provide a safe and healthy working environment for its employees. The Occupational Health and Safety Bureau (OHSB) is responsible for making sure businesses are in compliance with OSHA regulations. OSHA regulates permissible exposure limits (PEL's) for employees exposed to certain air contaminants in the workplace. The Bureau conducts regular inspections of facilities and evaluates the establishment for safety and health compliance. The OSHB has a consulting program to assist facilities to be in compliance with OSHA regulations. The service is free of charge to New Mexico small businesses. Attached is a copy of "Frequently Asked Questions"

about the program, a copy of "General Health & Safety Issues", as well as a poster you are encouraged to display at your facility. They can be contacted at 505-827-4230.

#### **UNDERGROUND STORAGE TANK REGULATIONS:**

Any business that stores a regulated substance in an underground storage tank that is not directly connected to some sort of processing operation may or may not be regulated by the Underground Storage Tank Bureau (USTB). If the substance is a hazardous waste, it is regulated under RCRA and you would need to contact the Hazardous Waste Bureau. Since there are a variety of circumstances whereby UST regulations have jurisdiction, it is best to contact the USTB directly for guidance. They can be contacted at 505-827-0188.

#### **SOLID WASTE REGULATIONS:**

The Solid Waste Bureau (SWB) deals primarily with regulating solid waste facilities (non-hazardous waste landfills, transfer stations, and recycling facilities) and illegal dumping. The only responsibility for a small business is to see that their non-hazardous waste is either sent to a recycler or to a permitted landfill by a registered solid waste hauler. For information the SWB can be contacted at 505-827-0197.

## OSHA Auto Repair Shop Safety Checklist

Yes    No

### Walking Working Surfaces

- Are all aisles and walkways 22" or wider?
- Are permanent aisles marked and maintained free of obstructions?
- Are spills and slick areas cleaned up?

### Hand Tools

- Are tools clean and in good condition?
- Are chisels and punches without mushroomed heads?
- Are wood hammer handles without cracks or splits?

### Power Tools

- Are right angle grinders equipped with half moon guards?
- Is hearing protection worn when using impact tools?
- Are electric tools double insulated or grounded?
- Are bench grinder tools rests (1/4") and top tongue guards (1/8") adjusted?

### Machinery

- Are all guards in place?
- Is machinery used according to manufacturers instructions?
- Does air compressor have Lock -out/Tag-out procedure? Locks and Tags?
- Are car hoists and lifts inspected annually by experts?
- Are overhead hoists and engine hoists inspected (internally) annually?
- Are air nozzles restricted to 30 psi or less?

### Flammables

- Are flammables (<25 gallons) stored in approved cabinets?
- Are fire extinguishers available for types of flammables?
- Are spray paint operations performed inside spray booth or area?
- Are torches more than 20 feet from other flammables?
- Are torches more than 20 feet from other spare bottles, including empties?

Yes   No

Personal Protective Equipment

- Is hearing protection provided and are employees trained on use and limitations?
- Is a Chemical Hazard Communication Program in place?
- Is personal protective equipment used?
- Is a written Personal Protective Equipment program in place?

Electrical

- Are all cords in good condition?
- Is strain relief provided for cord connections to tools or junction boxes?
- Is conduit used for permanent wiring?
- Are all outlets grounded?
- Are all areas within 6 feet of wet or potentially wet surfaces protected by GFCI?

**Safety and Health Program (recommended)**

- Is a Job Hazard Analysis written for hazardous jobs?
- Is training provided for Job Hazard Analysis tasks?
- Are safe behaviors observations conducted?
- Is there management commitment to the safety program?
- Are employees involved in a safety program?
- Is the safety program evaluated periodically?

*Note: If any of the above questions that are answered with "Yes", then the condition is probably adequate. If any of the above questions are answered "NO", then re-evaluate the situation, as a violation of the standards may exist. For assistance contact:*

**NEW MEXICO OCCUPATIONAL HEALTH & SAFETY BUREAU  
CONSULTATION PROGRAM  
505-827-4230**

*The Consultation Program provides safety and industrial hygiene surveys of workplaces, along with evaluation of, and assistance with the establishment of safety and health programs. The program is administered by the State but is operated separately from the Enforcement Program. The services are primarily targeted to smaller businesses, both public and private. The goal is to reduce workplace injuries and illnesses by helping businesses identify workplace hazards and find effective, economical solutions for eliminating or controlling them. The service is free and there are no penalties or fines, even if problems are found. Participation in this voluntary program has helped many New Mexico Businesses lower their costs associated with worker's compensation claims and increase their efficiency and productivity.*

## OSHA General Health and Safety Issues

YES   NO

Do the employees wear respirators?

**If so,**

Does the company have a written respiratory protection program?

Are employees trained to properly wear, clean/maintain, and know in what situations the respirators are needed?

**If not,**

Is the indoor air quality such that they are not needed?

Is there a written Hazard Communication Program?

Are MSD sheets available for all the hazardous chemicals in the workplace and are they updated regularly?

Have employees received Hazard Communication training?

Are there elevated storage/equipment lofts or platforms present?

**If so,**

Are signs showing the weight capacity present?

If the floors are more than 4 feet above a lower floor, are guardrails present?

Are all exits marked with signs?

Are exit doors free to access and are routes to these exits kept free of obstructions?

Is there a procedure in place for obtaining medical treatment for injured employees?

Are there first aid supplies readily available?

Are there fire extinguishers on site?

Are they charged and ready for use?

Are employees required to use these extinguishers?

**If yes,**

Is the path unobstructed?

YES   NO

Are they subjected to an annual inspection?

- Are employees trained to use them?

**If not,**

- Is there a written policy that requires employee evacuation?
- Does the company have an emergency action plan and fire prevention plan?
- Has the electrical system throughout the facility been assessed for situations where  
an employee may come into contact with an electrical current, or the electrical  
system is such that a fire hazard exists (i.e. bare conductors, faulty equipment,  
exposed electrical equipment where a flammable/explosive environment may exist)?
- Does the employer (if 10+ employees are employed) record occupational injuries  
and illnesses on the OSHA-200 log?

***Note: If any of the above questions that are answered with "Yes", then the condition is probably adequate. If any of the above questions are answered "NO", then re-evaluate the situation, as a violation of the standards may exist. For assistance contact:***

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## **OSHA CONSULTATION/TECHNICAL SERVICES**

### ***FREQUENTLY ASKED QUESTIONS***

#### **What is the Consultation Service all about?**

The Consultation program provides safety and industrial hygiene surveys of workplaces, along with evaluation of, and assistance with establishment of safety and health programs. Although the service was established by the same Act that created the Occupational Safety and Health Administration, and the associated enforcement/compliance agencies on the federal and state level, the Consultation Service does not issue fines or penalties. Since the same regulations are covered, the service allows the employer to benefit from the professional assistance, without fines being imposed.

#### **What does your service cost and who is eligible?**

The Occupational Health & Safety Bureau (OHSB) offers consultation services free of charge to New Mexico employers with 250 or less employees on location or 500 statewide. Limited services are available to larger companies. Consultation is offered only at the request of an employer.

#### **What types of places do you visit?**

The extent of the OSHA Act is to protect employees in all places of work. These include machine shops, hospitals, offices, chemical manufacturing plants etc. The consultation program is designed to assist employers (especially small employers) in complying with the requirements of OSHA regulations. We therefore, visit any place of employment that has employees.

#### **Where does the Consultation Service get its funding?**

The program receives funding from both the federal and the state government.

#### **How long does the consultation process take?**

Depending on the size of the company and the scope of the visit, a consultation may take anywhere from one or two hours to a full day. If exposure monitoring is requested or recommended, another day is often scheduled.

#### **What kinds of things do you look at?**

In order to evaluate the systems in place, sufficient information from the employer may be needed. This would include assessing existing safety and health programs, the OSHA 200 logs, accident investigation reports, and a walk-through of the facility to identify potential injury and illness hazards in the workplace.

#### **Do we have to let you in all areas?**

You, the employer makes that determination. If you requested a comprehensive survey, the consultant will look at all areas.

**Can it be arranged for both the safety and the industrial hygiene visits to be conducted on the same day?**

Visits are scheduled based on the caseload of the consultants. Where the caseloads permit such an arrangement can be made.

**Do I (the employer) have to fix everything you find?**

The employer is obligated to correct all serious hazards found by the consultant, within a reasonable time frame. Time extensions are granted for abatement of hazards when needed, if the employer is providing interim protection for employees.

**How are hazards classified as “serious” & “other than serious”?**

A serious violation results where there is substantial probability that death or serious physical harm could result. An other than serious violation is a hazard that has a direct relationship to job safety and health, but probably would not cause death or serious physical harm.

**How much will it cost to correct/fix the hazards identified?**

Usually, it is not prohibitively costly to correct hazards identified by our consultants. However, where cost becomes an overriding consideration or where the employer can show that engineering controls are not feasible the employer may seek a variance from OHSB. In this case the employer must show that a combination of work practices, administrative controls, and personal protective equipment will provide equal or better protection for the employees.

**Do you come back to verify hazard correction?**

For regular consultation visits, a statement of assurance of correction for each hazard is usually acceptable. For special program consultations (SHARP) a follow-up visit is usually conducted to verify correction of hazards.

**How do we request an extension of time on corrections?**

All extensions have to be requested in writing. The letter should include the reason for the extension, what has been done to date to correct hazards; and if corrections have not been made, the employer must state what interim measures have been taken to protect the employees.

**What is the SHARP Program all about?**

SHARP or Safety and Health Achievement Recognition Program is one of our special programs for companies wishing to go the extra mile to establish a fully functional overall safety and health program, in addition to the correction of hazards. SHARP is primarily a recognition program for exemplary companies, but an added incentive for SHARP participants is a one-year exemption from OHSB’s general schedule inspections.

**Does Sharp keep OHSB enforcement out in all cases?**

No, At SHARP sites, OHSB will continue to make inspections in the following situations:

- imminent danger;
- fatality/catastrophe;

- formal complaints;
- referral from other government agencies; or
- follow-up on previously cited violations.

**Where can I get information on establishing written programs (i.e. blood borne pathogen, hazard communication, confined space, etc)?**

Many of the safety and health programs are available through the New Mexico Occupational Health & Safety Consultation Program. They are available upon request.

**How do we know which elements of the safety and health program requirements need to be fixed, if it doesn't show up on your report to us?**

It is addressed in the safety & health program management section of the report the employer receives. These issues are also discussed by the consultant with the employer.

**Is it necessary to have a written certification of hazard assessment at work sites that do not require (PPE) Personal Protective Equipment for any task?**

Yes, according to 1910.132(d)(2), the employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated.

**Can you come to our company and conduct a class or safety meeting?**

Onsite training and education by consultants will be based on available resources and the employers request. The training and education will be tailored to the nature of the hazards or potential hazards in each specific workplace. Training in specific areas is also available through private consultants and the New Mexico Workers Compensation Administration or your insurer.

**Can the consultant come back for specific things such as checking new equipment or processes that we bring on line?**

Yes, Visits for specific purposes can be requested, in addition to regular consultation visits.

**May I call your office anytime to ask questions?**

Consultants are available to answer questions between 7-5pm Monday-Friday

**Can anyone gain access to my report?**

No, our files are confidential and are destroyed after 3 years.

**Will a consultation visit lead to an inspection by OSHA compliance? Will your findings be passed on them?**

All information is kept confidential. OHSB compliance inspectors cannot discover where we have been and then inspect those companies. The only time enforcement is contacted, is if a company neglects to correct serious hazards beyond time extensions. Then we are obligated to refer those items to enforcement, but only after we have made every attempt to work with the company.

**What determines when a compliance inspection is going to occur? How do they decide whom they are going to visit?**

Factors that may trigger a compliance inspections include:

- formal complaints by employees or their authorized agents;
- fatalities;
- catastrophe or major incidents;
- history of the company (previous OSHA activity);
- referral by other governmental agencies;
- general schedule inspections; or
- special emphasis programs

**Have you been or will you go to my competitor?**

Our service extends to all eligible companies who request it. All information is kept confidential; therefore, no hazards, or processes that may be a trade secret, seen in your facility will be discussed in another place of business.

**Where can I get a copy of the regulations?**

The Government Printing Office (GPO) processes all sales and distribution of the CFR. For payment by credit card, call (202) 512-1800, M-F, 8am to 4 pm or fax your order to (202) 512-2250, 24 hours a day. For payment by check, write to the Superintendent of Documents, Attn: New Orders, PO Box 371954, Pittsburgh, PA 15250-7954. Regulations and other material are available on the Internet at [www.osha.gov](http://www.osha.gov).

## Pollution Prevention and Regulatory Compliance Contacts for New Mexico

### STATE AGENCIES:

#### Green Zia Environmental Excellence Program

Dave Wunker  
NM Environment Department  
Office of the Secretary  
PO Box 26110  
Santa Fe, NM 87502  
505-827-0677  
FAX: 505-827-2836  
E-mail: [dave\\_wunker@nmenv.state.nm.us](mailto:dave_wunker@nmenv.state.nm.us)

#### Air Quality Bureau

Steve Dubyk  
NM Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502  
505-827-1294  
FAX: 505-827-0045  
E-mail: [steve\\_dubyk@nmenv.state.nm.us](mailto:steve_dubyk@nmenv.state.nm.us)

#### Hazardous Waste Bureau

Debby Brinkerhoff  
NM Environment Department  
2044 Galisteo  
P.O. Box 26110  
Santa Fe, NM 87502  
505-428-2528  
FAX: 505-827-1833  
E-mail: [debby\\_brinkerhoff@nmenv.state.nm.us](mailto:debby_brinkerhoff@nmenv.state.nm.us)

#### Occupational Health & Safety Bureau

Kevin Koch  
525 Camino de los Marquez, Suite 3  
P.O. Box 26110  
Santa Fe, NM 87502  
505-827-4230  
FAX: 505-827-4422  
E-mail: [kevin\\_koch@nmenv.state.nm.us](mailto:kevin_koch@nmenv.state.nm.us)

#### Ground Water Quality Bureau

Maura Hanning  
NM Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502  
505-827-2945  
FAX: 505-827-2965

#### Solid Waste Bureau

E. Gifford Stack  
NM Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502  
505-827-2853  
FAX: 505-827-2902  
E-mail: [Gifford\\_stack@nmenv.state.nm.us](mailto:Gifford_stack@nmenv.state.nm.us)

#### Underground Storage Tank Bureau

Joyce Shearer, Ph.D.  
NM Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502  
505-476-3779  
FAX: 505-827-0310  
E-mail: [joyce\\_shearer@nmenv.state.nm.us](mailto:joyce_shearer@nmenv.state.nm.us)

**Please note that a list of all Public Owned Treatment Plants (sewage treatments plants) are listed for all of New Mexico on the following page. Waste Treatment Plant operators are important regulatory contacts for small businesses. Please refer to the list and contact your local plant operator for information specific to your community and business.**

City of Albuquerque

Public Works Department

Bob Hogrefe  
Southside Water Reclamation Plant  
4210 Second Street, SW  
Albuquerque, NM 87185  
Ph: 873-7030  
Fx: 873-7087  
[Rhogrefe@cabq.gov](mailto:Rhogrefe@cabq.gov)

Environmental Health Department

John Liberatore  
EHD/APCD  
P.O. Box 1293  
Albuquerque, NM 87103  
505-768-1964  
FAX: 505-768-2617  
E-mail: [jliberatore@CABQ.gov](mailto:jliberatore@CABQ.gov)

New Mexico State University

Chris Campbell  
WERC P2 Center  
1155 University Blvd., SE  
Albuquerque, NM 87106  
505-843-4251  
E-mail: [chrisc@werc.net](mailto:chrisc@werc.net)



## State of New Mexico Wastewater Treatment Facility Contacts

POTW FACILITY	PHONE NO.	CONTACT PERSON
ALAMOGORDO, CITY OF	(505)439-5643 (505) 437-4530	Jose Miramontes
ALBUQUERQUE, CITY OF	(505)873-7040	Charles Bowman, WW Utilities Div. Director
ANTHONY W & SD	(505)882-3922	Pat Banegas
ARTESIA, CITY OF	(505)746-2122	Ernest Thompson, Mayor
AZTEC, CITY OF	(505)334-8664	Gary Spickelmier
BELEN, CITY OF	(505)864-6081	Robert Rimorin
BERNALILLO, TOWN OF	(505)867-2307	Nick Tobey
BLOOMFIELD, CITY OF	(505)632-8474	Casimiro Ruybalid
CANNON AIR FORCE BASE		Lynn Steinle
CAPITAN, VILLAGE OF	(505)354-2247	Terry Cox
CARLSBAD, CITY OF	(505)887-5412	Gilbert Ybarbo
CARRIZOZO, TOWN OF	(505)354-2247	Steve Sale
CHAMA, VILLAGE OF	(505)756-2184	Tony Gonzales, Mayor
CIMARRON, VILLAGE OF	(505)376-2232	Lino Paiz
CLAYTON, TOWN OF		
CLOUDCROFT, VILLAGE OF	(505)682-2411	David Venable, Mayor
CLOVIS, CITY OF	(505)769-7865	Robert Challender
CONCHAS STATE PARK	(505)868-2900	Leo Wilson
CUBA, VILLAGE OF	(505)289-3864	Faustino Gallegos
DEMING, CITY OF	(505)546-8848	Louis Jenkins, Public Works Director
DEPARTMENT OF ENERGY, LANL AND U OF CA	(505)665-7855	Charles Barnett
DES MOINES, VILLAGE OF		
DEXTER, TOWN OF	(505)734-5482	Joe Alvarez
EAGLE NEST, VILLAGE OF		
ECO Resources #3	(505)891-1223	Donald Thymes
ECO Resources # 2	(505)891-1223	Donald Thymes
ESPANOLA, CITY OF	(505)753-4740	Frank Naranjo
ESTANCIA, TOWN OF	(505)384-2302	
EUNICE, CITY OF	(505)394-2576	Willie Luster
FARMINGTON, CITY OF	(505)599-1315	Tom Wethington, WW Director
FORT SUMNER, VILLAGE OF	(505)355-2401	John McMillan, Mayor
GALLUP, CITY OF	(505)863-1210	Ray Espinoza
GRANTS, CITY OF	(505)287-7927	Willie Alire, City Manger
HAGERMAN, TOWN OF	(505)752-3201	Robert Romero
HATCH, VILLAGE OF	(505)267-3021	Clifford Browning
HOBBS, CITY OF	(505)397-9315	James Tulk

HOLLOMAN AIR FORCE BASE	(505)479-7080	Meryle F. Stueve, TSgt, USAF
JAL, CITY OF	(505)395-2222	Fred Seifts
JEMEZ SPRINGS, CITY OF	(505)829-3540	David Sanchez, Mayor
KIRTLAND AIR FORCE BASE HQ AFSWC/CC		
LAGUNA, PUEBLO OF		Frank Analla
LAS CRUCES, CITY OF	(505)528-3599	Gilbert Morales
LAS VEGAS, CITY OF	(505)454-1401	Andrew R. Jaramillo
LOGAN, VILLAGE OF	(505)487-2239	Julian Cordova
LORDSBURG, CITY OF	(505)524-8273	Alex De La Garza
LOS ALAMOS, BAYO PLANT	(505)662-8147	Paul Pizzoli, Utilities Director
LOS LUNAS, VILLAGE OF	(505)865-9689	Louis Huning, Mayor
LOVING, VILLAGE OF		
LOVINGTON, CITY OF	(505)396-2884	Bob Carter
MAGDALENA, VILLAGE OF	(505)854-2261	Vida M. Trujillo
MAXWELL, VILLAGE OF	(505)375-2752	Leroy Quintana, Mayor
MELROSE, VILLAGE OF	(505)253-4274	Bobby Bennett, Mayor
MORA MUTUAL DOMESTIC WATER & SEWER. WKS.	(505)387-5401	Manuel B. Alcon President
MORIARTY, CITY OF	(505)832-6257	Rosendo Saiz
MOUNTAINAIR, TOWN OF	(505)847-2321	Debra Kelly
ORGAN WATER AND SEWER ASSOCIATION	(503)825-5423	Charles Jefferson
PECOS, VILLAGE OF	(505)757-6591	Joseph Cyde Baca, Mayor
PORTALES, CITY OF	(505)359-3152	Thomas Howell
QUESTA, VILLAGE OF	(505)586-0694	Mike Cordova
RAMAH DOMESTIC UTILITIES	(505)722-4366	Ron Morsbach
RATON, CITY OF	(505)445-2292	Mike Baca
RED RIVER, TOWN OF	(505)754-2277	Jake Pierce, City Administrator
RESERVE, VILLAGE OF	(505)533-6581	Lonnie Graham
ROSWELL, CITY OF	(505)624-6700	Roger Cooper, PE, Dir of Public Works
ROY, VILLAGE OF	(505)485-2204	Alex Deschamps
RUIDOSO-RUIDOSO DOWNS REGIONAL WWTP	(505)258-4014	Gary Jackson, Village Manager
SAN JON, VILLAGE OF	(505)576-2922	Chris Molyneaux
SANTA FE, CITY OF	(505)984-6509	Qustandi Kassisieh
SANTA ROSA, CITY OF	(505)472-3331	Gerald Anaya, Water & Sewer Superintendent
SANTA TERESA SERVICES COMPANY	(505)589-0906	Charles Crowder
SILVER CITY, TOWN OF	(505)388-4981	Stan Snider
SOCORRO, CITY OF	(505)835-0240	Pat Salome, City Clerk
SPRINGER, TOWN OF		
SUNLAND PARK, CITY OF	(505)589-1979	Mark Boling
TAOS, TOWN OF	(505)758-8401	Mark Swan, Supervisor

TATUM, TOWN OF	(505)392-7412	F. L. (Roy) Miller
TEXICO, TOWN OF	(505)482-3314	Mathew Meeks
THOREAU WATER AND SANITATION	(505)862-7136	Vidal Brown
TRUTH OR CONSEQUENCES, CITY OF	(505)894-7331	Quentin Drunzer, City Manager
TUCUMCARI, CITY OF	(505)461-3451	Bernadette Moya, City Manager
TULAROSA, VILLAGE OF	(505)585-2771	Margaret Gonzales, Village Clerk
TWINING, W & SD	(505)776-8845	Joe Harvey
VAUGHN, TOWN OF	(505)392-1266	F.L. Miller - Con. Engineer
WAGON MOUND, VILLAGE OF	(505)666-2408	Alfred Romero Mayor

**Online Resources:**

**City of Albuquerque P2 Program:**[www.cabq.gov](http://www.cabq.gov)

**EPA Compliance Assistance Center:**[www.ccar.com](http://www.ccar.com)

**US EPA:** [www.epa.gov](http://www.epa.gov)

**Additional Sources of Information:**

The New Mexico Environment Department's Hazardous and Radioactive Materials Bureau offers free on-site technical assistance for small businesses to help address small business hazardous waste issues. Please contact the Bureau at 505-827-1558 and ask for the Hazardous Waste On-Site Assistance Program for a consultation.

The City of Albuquerque Public Works Department has a guidebook on pollution prevention for the automotive industry. Please contact Bob Hogrefe at 505- 873-7030 for a copy.

# Pollution Prevention and You: Automotive Industry Fact Sheet



Eliminate - reduce - reuse - recycle - exchange

The improper handling of many of the chemicals used in the automotive industry is causing environmental and health concerns. If these chemicals are handled correctly, they can become a source of revenue; for example, used motor oil, with the proper equipment, can be burned for heat. The best way to eliminate much of this pollution is to find methods that will not create it in the first place. Even small businesses can save money by participating in a program to cut back waste. **Remember, 80% of your environmental costs can be attributed to 20% of your actions.**

This fact sheet will point out several of the problems that exist in the automotive industry and offer solutions that will save money, help the environment, and increase productivity. The **Green Zia program of New Mexico** encourages all businesses to take part in an effort to reduce pollution.

## Problem: Used Motor Oil

Used motor oil causes **40%** of the pollution in U.S. waterways. Annual illegal disposal of motor oil equals nearly 20 Exxon-Valdez spills. One gallon of motor oil spoils 250,000 gallons of fresh water for over 100 years.

## Solutions:

- Cut oil disposal fees by converting motor oil waste into electricity or heat.
- Collect all used oil. Use a system that can remove 99.5% of used oil and turn oil filters into recyclable scrap metal. Try the worksheet provided by the Clean Burn Company at <http://www.cleanburn.com/UsedOil.cfm>
- Learn which motor oil vendors will pick up used motor oil with a new purchase order.

- Use products that are environmentally safe to clean motor oil spills. Most microbial products are biodegradable, non-leaching, and water repellent.
- Refer to [http://biocleanplanet.com/oil\\_sponge.htm](http://biocleanplanet.com/oil_sponge.htm) for a cost comparison among traditional absorbents and microbial-based products.
- Compare traditional absorbents with a floor sweep product containing cellulose wood fibers at <http://www.mcphee-env.com/sos.htm>
- Fully separate and label individual solvent wastes. Used motor oil should never be mixed with antifreeze. This causes harm to recycling equipment. However, some waste oil heaters can be set up to burn antifreeze with the waste oil.

## Problem: Antifreeze

Because antifreeze is very poisonous, it can cause respiratory and cardiac failure as well as **severe brain damage** and **death**. Its sweet taste makes it a hazard to both children and pets. Improper disposal and/or spills can cause ground and water contamination.

## Solutions:

- Collect and store used antifreeze separately from all other wastes.
- Immediately clean up all spills and never pour antifreeze down the drain.
- Use onsite recycling, which eliminates disposal costs and provides a reusable antifreeze source. Examine costs at <http://www.antifreeze-recycler.com/>
- Use an alternate antifreeze that contains propylene glycol, a less toxic chemical than found in traditional antifreeze. This chemical has an unpleasant taste, which discourages children and pets from sampling it. Refer to <http://autos.yahoo.com/repair/results/ques012.html> for more information.
- Do not mix alternate antifreeze with traditional. Recycle and store it separately.

## Problem: Batteries

Automobile batteries contain 18 pounds of lead and a gallon of sulfuric acid. Lead is a highly toxic heavy metal that is a **significant health hazard** when leached into ground and water sources. Sulfuric acid is corrosive enough to dissolve most materials, including living tissue.

## Solutions:

- Make sure there is no leakage when storing or transporting batteries.

- Batteries are 100% recyclable. A complete recycle network is in place locally and nationally to deal with recycling batteries.
- Examine [http://www.recycle.net/recycle/battery/class\\_b1/xv020100.html](http://www.recycle.net/recycle/battery/class_b1/xv020100.html) for information and phone numbers for battery recycling and trading.

## Problem: Brake and Transmission Fluids

Brake fluid, which is **corrosive and combustible**, and transmission fluid, which contains petroleum distillates and is **ignitable**, pose serious threats to the environment.

### Solutions:

- Do not mix brake or transmission fluid with motor oil. This causes both to be non-recyclable.
- Keep both fluids away from heat and fire, and clean up spills immediately.
- Use a tank with a 200-gallon minimum capacity for storage.
- Your local used oil recycling services provider may provide brake and transmission fluid services.

For more information on recycling and storing dangerous automotive fluids, refer to the following web-sites:

<http://www.coloplains.com/recycling/auto.html>

<http://www.csma.org/>

<http://www.orcbs.msu.edu/AWARE/pamphlets/auto/>

<http://www.ecoregs.com/currdevl.htm>

<http://www.p2pays.org/ref/01/00124.htm>

[www.ccar.com](http://www.ccar.com)

The following local contacts are also available to answer questions about Pollution Prevention:

Patricia Gallagher, New Mexico Environment Department: (505) 827-0677

## ***City of Albuquerque P2 Program:***

Before discharging any type of wastewater to the sanitary sewer system call your local treatment plant, or the Industrial Pretreatment Program to find out if there are any restrictions.

1. Wastes that effect the treatment system include heavy metal wastes along with chemicals that are listed as toxic or hazardous.
2. All facilities that have materials that are or could be considered hazardous should have a written spill prevention plan.
3. Training programs regarding proper handling of wastes and chemicals for operators and maintenance personnel is essential.
4. Records of how wastes are handled is another factor in making sure that you are meeting wastewater ordinance requirements.
5. Inspection and spill control plans are also required.
6. Proper maintenance and operation of your wastewater treatment system(s) are fundamental in insuring that your facility is meeting the local wastewater ordinance.
7. Insuring that chemicals and wastes are not stored next to a floor drain, are elevated and contained properly will guarantee that you are not in violation with your local wastewater ordinance

### **Why Recycle Antifreeze?**

Did you know that spent antifreeze often contains heavy metals? Heavy metals from a car's engine accumulate in antifreeze. The **American Society of Testing and Materials (ASTM)** conducted a study of spent antifreeze. The study determined that roughly **40 percent of waste antifreeze is hazardous waste due to elevated levels of lead.** Even though newer models of cars have radiators made of composite plastic they still have coils inside, usually copper, brass or aluminum. The solder used for radiators most often contains lead. Metals most likely to be found in antifreeze are copper, lead and zinc. Also, spent antifreeze may contain phenols. Phenols are a carcinogen that are classified as extremely hazardous by the EPA. Absorption of phenolic solutions through the skin can cause damage to kidneys, liver, pancreas, spleen, and edema of the lungs. Handle waste antifreeze properly by:

1. Analyzing the antifreeze using the Toxicity Characteristic Leaching Process in order to determine if there are hazardous metals present.
2. As long as your shop recycles spent antifreeze on site or off site within New Mexico the spent antifreeze does not need to be manifested or tested.
3. The management of used antifreeze is regulated by RCRA and by individual state requirements. It is the **generator's responsibility to determine whether a waste is hazardous.**

### Why Do I Need A Spill Prevention Plan?

It is required that any business handling materials that are or may be considered hazardous to have a Hazardous Material Emergency Response Plan (**HMERP**) in case of spills.. The HMERP should be filed with your local fire department you will be fulfilling part of the requirements under RCRA, as well as the requirements of your local treatment plant.

Some General Spill Control Procedures Include:

1. Isolating the spill area
2. Tending to any injured or contaminated personnel.
3. Notifying the proper authorities.
4. If the spill is treated on site, dispose of the spill in accordance with federal state, and local regulations.



