



Parks and Open Space Management

*Saskatchewan Parks and
Recreation Association Inc.*

Herbicides Handbook





Produced by:

Saskatchewan Parks and Recreation Association
The Parkway Building
#210 – 3303 Hillsdale Street
Regina, Saskatchewan
Canada S4S 6W9
Telephone: 1-306-780-9231 or 1-800-563-2555
Fax 1-306-780-9257

Developed and Copyright by:

City of Regina
Parks & Open Space Management – Community Services Department
Queen Elizabeth II Court, Box 1790
Regina, Saskatchewan
S4P 3C8

AHz Learning Technologies Inc.
2152 Scarth Street
Regina, Saskatchewan
S4P 2H6

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AHz Learning Technologies Inc.





Introduction and Disclaimer of Liability for Use of the Document

This Parks and Open Space Management Handbook, provides a description of procedures associated with maintenance activities performed within park settings.

The concept of maintenance standards requires the application of best practices within the local operation system. To assist with the establishment of such standards, this resource provides guidelines to aid staff in addressing their daily management operations. There are, however, situations where the standards outlined may require revision by those staff implementing the procedure, to best meet their needs. Specific site conditions, operating budgets, available human resources, and capacity to offer training associated with the practices outlined in this document may warrant alterations to the procedures.

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For customization or development of specific modules for your organization contact:

AHZ Learning Technologies Inc.

2152 Scarth Street

Regina, Saskatchewan

S4P 2H6

Telephone: 1-306-543-7445

Email: ahz@ahzlearning.com



AHZ Learning Technologies Inc.





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Herbicides Introduction

Our spring had been funny this year. Our temperatures had been unusually hot; it was like it had gone straight from winter to summer in a matter of a couple of days. But over the last 3 weeks it had rained almost every day. This was making our job very difficult. The weeds in the parks and open spaces were flourishing from the intense heat and all the moisture that followed it. Our herbicide crews were really struggling to try to treat areas and beat the rain at the same time. Lately, it was like fighting a losing battle.

I was going through the outfield one last time. I had been on this diamond over the weekend at my son's ball game. While I was coaching first base I noticed an area between the fence line and the right field foul line that had a bad outbreak of chickweed. "Jim, I just want to treat this area and then I think we're all done," I said. "Cool," was Jim's response as he began gathering our equipment.



As I was treating the patch of chickweed I took a moment to look back at the infield of the ball diamond. We managed to treat it with Round Up a couple of times in the last few weeks and our efforts were rewarded. There was not a dandelion in sight. Too bad we couldn't spray this chickweed with Round Up. It would certainly eliminate it faster; however, it would kill everything around it too. I guess I would just have to be patient and remember to spray this patch of chickweed every opportunity I could.

When I arrived back at the truck I mentioned to Jim that we had a bad area of chickweed on the right field foul line that we would have to keep an eye on. Our eyes scanned over the ball diamond one last time as we were pulling away. A smile played on both our faces. "Chickweed or no chickweed - it sure has come a long way in the last few weeks," Jim said.





Herbicides Overview

You have always been proud of the community's parks. And now that you have your pesticide license and have completed your WHMIS training, you recognize the important role that you will play as part of the herbicide team, keeping the parks and open spaces safe and beautiful.



There are a number of different herbicides that are used to control weeds. The type of herbicide used depends on the location being sprayed, as well as the types of weeds being sprayed. Safety is of the utmost importance when you are working with these herbicides, and therefore it is crucial that the proper safety gear be worn at all times. You have learned from your training what the proper gear is for the different herbicides used.

We mentioned earlier that the herbicide used depends on what you are spraying for. The equipment you will use to spray the herbicide will depend on the location in which you are to spray.



The Backpack Sprayer is worn on your back. It can be used in locations where a targeted spray is required rather than a general spray. For instance, it would be used for spraying weeds that are growing through the cracks in concrete boulevards or where asphalt meets a concrete curb.





Herbicides Overview Continued....

The Windfoil Sprayers come in 3 different sizes.

There is a 5', 11' and 15' Windfoil Sprayer, as well as a larger Pull Behind Boom Sprayer. The 5', 11' and 15' Windfoil Sprayers are used for the bulk of the spraying. Because of the variance in size, they can be used for smaller areas, like park pathways, right up to large open areas in our parks. Also, the wings on the 11' and 15' Windfoil Sprayers can be lifted either individually or together. This is useful for maneuvering around the base of trees or for getting through a tight spot.



The Pull Behind Boom Sprayer has the largest tank and longest hose making it ideal for spraying ballparks and the fence lines that surround schools and parks.





Why We Spray Herbicides

You had never before thought about weeds as being anything more than a nuisance, but now realize that a weed is also any plant that is hazardous or could cause injury to the people who use our parks. So, in the spring and fall, targeted areas are treated with a herbicide application which will kill any weeds that are in the process of germinating.

Manual weeding is very time consuming. Herbicides (the chemicals that kill weeds) are often the most economical and effective method of keeping the weeds at bay.



Weeds not only affect the look of our parks, they also can interfere with recreational activities in the parks and playgrounds. Canadian Thistle and dandelions can cause rashes etc. Weeds also compete for the nutrients and soil in parks, so, in order for trees, shrubs and flowers to survive, you need to make sure that the weeds are under control. If there are areas or parks that have an outbreak of weeds that you are unaware of, citizens should be able to bring it to your our attention by calling in and requesting the weeds be sprayed.



From spring through to fall, maintaining the parks and open spaces is a never-ending task. There are a number of different things that can be done. The results of such efforts are rewarding to everyone who takes the time to enjoy them.





Types of Herbicides Sprayed

General herbicides may be classified in several ways depending on where and how they are applied and the affect they have on the plant. Some herbicides can be applied directly to the foliage of a plant, while others are applied through the soil. There are two main types of herbicides: Selective and Non-Selective.



Selective herbicides are those that are more toxic to some plants than others and are used to kill weeds such as clover, dandelions, plantain and Canada Thistle without harming the existing turf. Two selective herbicides you could use are Killex which contains 2,4D and Tordon.



Non-selective herbicides will kill any plant they come into contact with — including turf! They are usually applied only to specific plants, individually, or to an area prior to planting to kill specific types of weeds. Round-up is an example of a non-selective herbicide. Use non-selective herbicides along fence lines and on the infield of baseball diamonds.

Regardless of whether the herbicide you are using is selective or non-selective, you must never handle any chemical until you've read through the MSDS sheet, the information on the label, or the booklet that comes with each container of herbicide. This information is very important to you because it:

- ☒ Identifies the chemical
- ☒ Gives you directions on how to safely store, use and dispose of it properly
- ☒ Tells you how hazardous the chemical is (the 'Hazard Class')
- ☒ Explains how to clean it up in case of accidental spillage and covers any first aid procedures.





Your Day Begins...





Safety When Using Herbicides

From your experience you know the importance of wearing the correct safety equipment when working with the Parks and Open Space Management crews. When you are spraying, your safety gear varies depending on the herbicide you are using when spraying and the area that you are spraying.

You have also learned that herbicides are important in the control of weeds. But herbicides can also pose risks to humans, animals and the environment. Exposure to some herbicides can cause nausea, headache, skin rashes, and other symptoms. Some people can have severe allergic reactions to herbicides.

These risks vary from chemical to chemical and from person to person. The risks can be minimized by making sure that the chemicals are applied correctly, and by using protective clothing and equipment when mixing or applying these chemicals.

Safety precautions vary from product to product. Always be sure to refer to the MSDS sheets or the label on the herbicide container before mixing or applying any of the chemicals. Also, check your Sector Book which outlines the mixing instructions for all of the herbicides you will be using, as well as information about the spraying equipment.





Circle and Maintenance Checks

Circle Checks

Before leaving the depot for your day of herbicide treatments, you perform a circle check on all your equipment. The department may use a daily log book for any vehicle that you “ride in” or “ride on”. Before leaving the depot at the beginning of your shift you are required to complete the circle check provided in the Operators Daily Log book.

Remember to check to make sure you have, safety vests, warning signs, barricades or pylons required to meet the safety standards when working on or near roadways.

Maintenance Checks

From your experience you understand the importance of maintaining the equipment used in the maintenance of parks and open spaces. You will recall from your equipment training what you will look for when performing your maintenance checks on specific pieces of equipment. If you find that a piece of equipment is damaged or in need of regular maintenance, let your supervisor know and it can be booked in for maintenance.

Remember, before performing a maintenance check, be sure that the equipment is clean of dirt and contamination.





Maintenance Checks Continued....

A green clipboard with a yellow clip at the top. On the clipboard is a red spray nozzle icon and the title "Maintenance Check List" in green. Below the title is a list of seven maintenance checks, each preceded by a red checkmark in a box.

Maintenance Check List

- ☒ Check and change the spray nozzles as required.
- ☒ Dispose of dirty nozzles in the plastic container that is kept in the Chemical Truck for this purpose.
- ☒ Although boom sprayer maintenance falls under the responsibility of mechanics, you check and change the oil as required.
- ☒ Clean the in-line filter on the tractor after every 40 hours of use.
- ☒ Thoroughly wash down the entire sprayer unit. You don't want any herbicides left from the previous day's spraying.
- ☒ Thoroughly check the windfoil on the sprayer for tears or holes. It is important to keep the windfoil in good condition; otherwise chemicals may spray where you don't want them to go (for example, in people's back yards).
- ☒ Different application types require different nozzles. Ensure that you have the appropriate nozzle for the chemical you will be using. (Chemicals that are less soluble require a larger nozzle as they could plug up a small nozzle). Always follow the chemical instruction sheet when you are not sure about which nozzle to use for a particular chemical.

Windfoils on the sprayers should be replaced yearly.





Chemical Safety Truck

A Chemical Safety Truck should be close by when any herbicide spraying is being done, to ensure that you have everything you need on site, as well as any safety gear and first aid supplies.



The truck may contain these supplies:

- ✓ The signs that you will post in the area before the spraying begins;
- ✓ The containers of chemicals you will use (you note that these are all strapped to the back of the truck so that they can't move around in transport);
- ✓ Measuring cups to ensure that the chemicals are measured accurately;
- ✓ Hoses for filling up the herbicide tanks;
- ✓ Additional safety equipment including respirators, rubber and surgical gloves, hardhats, and extra disposable and rubber pants and coveralls;
- ✓ An eye wash station with distilled water;
- ✓ A selection of nozzles for the sprayer;
- ✓ A First Aid kit; and
- ✓ A fully stocked toolbox.



Safety First

Any safety supplies that come into contact with a chemical instantly become a hazard. So, when you are the one responsible for driving the Safety Truck, make sure that the chemicals and safety supplies are all stored separately so that there is no chance of the safety supplies becoming contaminated.





Your Tools and Equipment

The type of herbicide you are using, and where the herbicide is being applied, determines the method and equipment you use.

Backpack Sprayer

The Backpack Sprayer is ideal for treating weeds that are growing through cracks in small, concrete areas, as well as in shrub bed areas around clubhouses on golf courses. As the name suggests, this 3-gallon backpack sprayer is worn on your back, and the spray gun is hand operated.



Windfoil Sprayers

The Windfoil Sprayers are tractor-mounted and are used for spraying parks and turf. There are four models of Windfoil Sprayers that are used by our crews. These sprayers are equipped with windfoils which act as shields around the bottom of the sprayer and prevent the herbicide from drifting onto untargeted areas including people's property. These include:

- The **5' Windfoil** which is used to cover small areas (for example, along park pathways);
- The **11' Windfoil** which is often used to spray between trees in the park and;
- The **15' Windfoil**, because of its large size, is useful for wide-open areas.



The Windfoil is attached to the Cushman or a tractor.

The Pull Behind Sprayer is useful for ballparks and fence lines, because it is equipped with a huge 100-gallon tank. It also has a 50' hose connecting to a hand wand, which is ideal for spraying lengthy fence lines.





Steamer

The last, least expensive, and least invasive of the weed control units may be used is the Steamer, which shoots hot water and steam to kill the weeds. This method kills mostly top growth but can kill some roots if the hot water penetrates deep enough. For this reason, steaming is not that effective on wild grasses or deep-rooted plants such as dandelions.

Use this unit to kill weeds on rough, hard surfaces (for example, along boulevards and sidewalks). This method of killing weeds doesn't use any chemicals, which makes it ideal for using around play structures in the playgrounds. The Steamer can be used in almost any weather as its effectiveness is not affected by either the wind or the temperature.



It does, however, have a few disadvantages. The Steamer uses a lot of diesel fuel to heat the water, and because you need to hold the steam on the base of each plant for at least 20 to 30 seconds, it takes you much longer to do your job. Also, sites that have been treated with steam will normally require follow-up visits.





Before Leaving for the Site

When you and your herbicide team report for duty, you should be issued a list indicating the areas your crew is going to cover, as well as the sites that were sprayed the previous day. You're also notified of which herbicide you'll be using during your shift.

Each herbicide is regulated under the Canadian Pest Control Products Act and is given a Pest Control Number (called a PCP #) that is listed on the label of the chemical container. Each chemical container also comes with a booklet of information about the herbicide that has important information about that chemical.

Take some time to review the label on the chemical, the herbicide booklet and the MSDS sheets for the herbicide(s) you'll be using. Review the information about the herbicide in your Sector Book. The Sector Book has all the information about the various herbicides, how to mix the various chemicals, and the amounts of each chemical you are to use. This helpful book may also contain maps of the areas that need to be treated during the season.





Transporting the Sprayers

For your own safety, as well as the public's safety, it's important to properly transport your equipment. Here are the steps for safely loading, unloading and transporting the various pieces of equipment used when spraying herbicides.

The Backpack Sprayer

The Backpack Sprayer is transported in either the Chemical Safety Truck or the box of the 1-ton truck and is safely secured using bungee cords.

The tank on the Backpack Sprayer is always empty when you are transporting it. When you arrive at the location that you are spraying there will be a larger tank that you will be able to fill the tank of the Backpack Sprayer from.

5' and 11' Windfoil

The 5' and 11' Windfoils are transported to the spraying site by trailer.

Before loading the Windfoil units, you will need to raise the wings on the 11' manually. Pull the ropes attached to the top of the wings, and hook each of the handles to the opposite side of the cab. This way, the wings can't fall and get damaged during transport.



Handles are hooked on the opposite side of the cab.





To LOAD the 5' and 11' Windfoil onto trailer:

1. The 5' Windfoil is driven onto the trailer and the 11' Windfoil is backed onto the trailer.
2. Once you have turned the Cushman off, leave it in the neutral position so that you are able to move it around a little bit when you are placing the straps and chains on it.
3. Put the emergency brake on and safely secure the Cushman to the trailer.
4. The driving ramp can be lifted into place and you will insert the pins to secure the ramp.

To UNLOAD the 5' and 11' Windfoil from trailer:

1. Be sure to park on level ground.
2. Remove the pins from the sides of the ramp at the back of the trailer.
3. The Cushman must be secured using the 4 point tie down method.

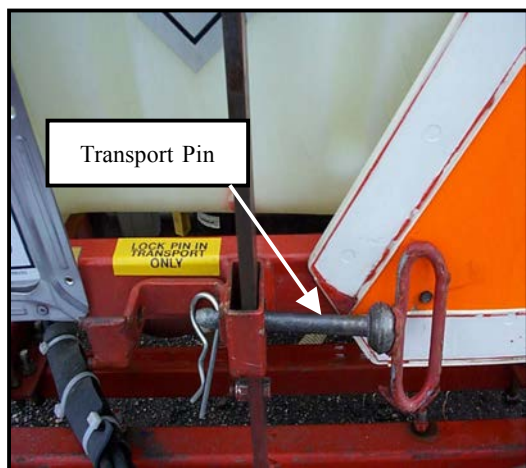


4. Remove the chain from the back of the Cushman.
5. You start the Cushman, remembering to let it run for a few moments to warm up.
6. You drive the Cushman slowly and careful down the ramps, off the trailer and onto the ground.





Transporting the Sprayers Continued....



Always make sure that the brake for the field tractor is on, and that the transport pin, located at the back of the machine, is in place when moving the sprayer from one site to another.

15' Windfoil

The 15' Windfoil is attached to a tractor that is driven to and from the site.

1. You will raise the Windfoil wings using the hydraulic lever on the left side of the tractor.
2. Once the Windfoil has been raised lock the safety latches into place.





Safety When Driving on Roadways

- ✓ Because slower moving equipment is harder to see it's important that you always use your flashing warning lights and headlights.
- ✓ Ensure slow-moving vehicle sign is clearly visible. 
- ✓ Always use your turn signals when turning a corner.
- ✓ Follow the rules of the road.
- ✓ Be courteous.
- ✓ Drive in the right hand lane whenever possible.



Pull Behind Sprayer and Steamer Trailer

The Pull Behind Sprayer and the Steamer Trailer are self contained enclosed units. With both these pieces of equipment you simply need to back the truck up and hook up the trailers. Don't forget to attach your safety chains and your tail light plug-ins.

Whenever you are operating or transporting any of the City's vehicles or equipment, take the time to review the Manufacturer's Manual for the operating instructions and safety recommendations.






Filling Up the Tanks

Next you and your crew go to a fill-up site to fill the tank with water and the herbicide you will be using.

Go to a fill-up site that's closest to the site you will be spraying. This way you avoid transporting hundreds of litres of chemical over long distances.

**Safety First!**

Once the school year has begun, avoid the fill locations that are located near schools, and use any other site.

Here are the steps that you will follow when you are filling the tank:

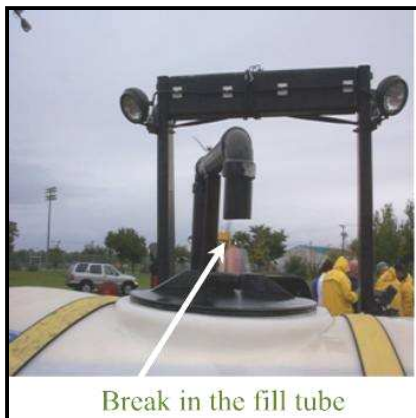
1. Go to a location that has a park standpipe for water. If you are unsure of where an outlet is located, either check the list provided to the crew or ask your supervisor.
2. Before attaching the hose to the standpipe, test the outlet first. Insert the curb key and slowly turn it to the left. Once the water begins to flow you can turn the curb key to the right to turn off the water.





Filling Up the Tanks Continued....

3. Now you can attach the hose to the quick coupler at the side of the tank to add the water. You always add the water to the tank before you add the chemical, as unmixed chemicals have a tendency to build up in the nozzle.
4. The other end of the hose can be attached to the park standpipe.



5. Notice that there is a break in the fill tube for the water. This break ensures that there is no back flow of mixed chemical into the water system. If the tube were to run directly into the tank, it could create a siphon situation in the tube that could contaminate the water source.
6. Remove the screw top lid and basket to allow the water to flow into the tank.

7. The curb key controls the water pressure. When you are turning on the water, make sure you do it slowly. If you open the flow of the water too quickly you risk popping the hose off and causing an injury.
8. Once the tank is filled to the desired level, turn the curb key to the right to shut the water off.





Filling Up the Tanks Continued....

9. Add the herbicide to the tank. When adding herbicides to a tank, you may find it convenient to use either a container that holds exactly the desired amount of herbicide, or a larger container that has a mark on it showing how full it should be for the desired amount of herbicide. You want to make sure that all chemicals are mixed accurately for the best and safest results.

10. Now that the chemical has been added to the tank, the container(s) are to be rinsed. To do this, fill the container(s) with water from the park standpipe, swish the water around in the container and empty it into the tank. This is to be done 3 times to each container, emptying it into the sprayer tank each time. (This is referred to the “triple rinse process”.)



Each container is to be sliced open before being stored for disposal so that they cannot be reused for anything.

11. Finish filling the tank with water to mix the chemical and replace the basket and twist on top of the tank.

12. Now is a good time to spray off the equipment. Make sure you are not on turf when washing off the equipment. As well, wash off your rubber gloves, boots and even your coveralls, if necessary.

13. Now you can disconnect the hose from the tank.

14. Disconnect the hose from the park standpipe. Drain the water from the hose and put it back into the storage compartment on the truck.





Filling Up the Tanks Continued....

15. A skilled labourer will record the chemical being used, the amount of chemical and the area being sprayed.
16. Finally, before leaving for your spray site, make sure that the sign on the back of the tank clearly displays the PCP number and name of the chemical you are using.



Safety First!

Even though you wear protective clothing when mixing and applying herbicides, always take these extra precautions:

You need to be extra cautious by pouring chemicals slowly as the respirator won't provide enough protection around high concentrations of toxic gases

Chemicals can still splash under eyeglasses or safety glasses so make sure you pour these chemicals slowly and carefully

Don't wear soft contact lenses inside goggles as they will absorb fumes that enter the goggles

Safety gear and clothing that has been previously contaminated with chemicals need to be washed or rinsed before being worn again. If the clothing is not cleanable, it must be disposed of.





When Arriving at the Site



The first thing you do when you get to the site you're going to spray is prepare warning signs that you will post around the area. On the sign, record the date, the name and PCP # of the chemical you'll be using. Then make sure that these signs are posted at every entrance to the area to be sprayed, including all fence entrances and back yard gates, as well as around play structures.

Leave these signs posted for 24 hours after you have sprayed and make sure that they are picked up the following day.

Now you're ready to begin spraying...



Safety First!

If you find people in the area that is scheduled to be sprayed, let them know that you will be spraying chemicals, and, for their safety, kindly ask them to leave the area while you are spraying.





Spraying with the Backpack Sprayer



Shoulder Straps

If you're going to spray small areas such as around shrub beds, or around the clubhouse at a golf course, you will most likely be using the Backpack Sprayer.

1. After making sure you have all your safety gear on, put on the Backpack Sprayer by slipping your arms through the straps, positioning the tank comfortably on your back.

Remember to record the name and PCP # of the chemical on the tank.

2. Before the Backpack Sprayer will spray, you need to pressurize it by pumping the hand pump several times.
3. Then test the sprayer to ensure that you will have even coverage, and that the nozzle isn't plugged. Do this by spraying a small spot on the concrete.
4. If the nozzle is plugged, you either tap it lightly on the pail with the water solution to remove built-up chemical, or rinse the nozzle in a container of water. Make sure to mark the container after washing the nozzle to indicate that the water has been contaminated with chemical.





Spraying with the 5', 11' and 15' Windfoil

They are ideal for spraying parks and open spaces. It really doesn't matter which piece of equipment you are getting ready to spray with, the steps you will follow are the same.

1. Once you have arrived at your location, park on pavement or gravel. This is so you can spray a test pattern on the ground to check that all the nozzles are lined up properly.
2. Lower the wing(s) using the levers.
3. Turn the PTO on until the gauges read 30 lbs. pressure.
4. Now begin moving slowly while you activate your sprayers.



The spray nozzles are interchangeable. Different herbicides require different spray nozzles. Some herbicides are less soluble and they need a heavier nozzle so that the chemical does not plug up the nozzle. If you are not sure which nozzles to use, refer to the product data sheet.



Safety First!

If you are changing your spray nozzle, be sure to properly rinse it so that you do not risk contaminating anything it may come in contact with.





The Pull-Behind Sprayer

The Pull Behind Sprayer is useful for ballparks and fence lines because it's equipped with a huge 100-gallon tank. It also has a 50-foot hose connecting to the hand wand, which is ideal for spraying long fence lines.

The steps for getting the sprayer ready to go are the same as the steps you use with the 5', 11' and 15' Windfoil. The only difference is that you are pulling it behind the truck.

1. If using the booms on the Pull Behind Sprayer, open the booms by hand.
2. Start the gas motor and select the setting which indicates whether you are using the booms or hand sprayer.
3. Park on pavement or gravel and spray a test pattern on the ground. Check the pattern to see that all the nozzles are lined up properly.
4. Turn the PTO on until the gauge reads 30 pounds.
5. One crew member will slowly drive the truck while the other begins to spray using the wand. Crew members should switch after 20 – 30 minute intervals. Depending on the location, you could be using the boom instead of the hand sprayer.

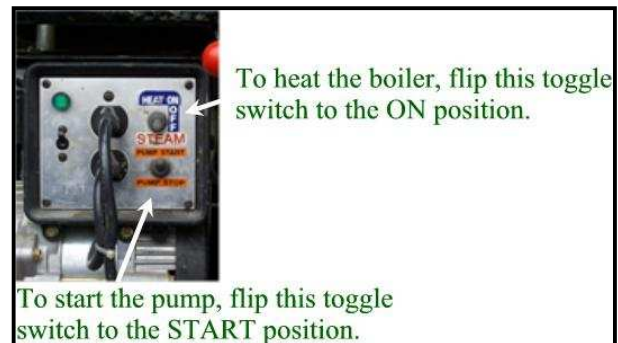
When you are spraying be sure that the gauges are checked regularly and that your pressure remains at 30 lbs.



Using the Steamer

You have arrived at your site and you and your crew member are ready to start the steamer. Below are the steps that you will follow.

1. Make sure that there is water in the steamer tank.
2. Turn the boiler on by flipping the switch to the ON position.
3. The boiler needs to have a warm up period of approximately 15 minutes. You need to let the water heat up to 210 – 230 degrees Celsius. If you use the steamer before the temperature reaches this range the water will not be hot enough to penetrate the plants root system. If the temperature is too hot you will give off too much steam and not enough water.
4. Once the water has reached the proper temperature, you can start your pump. You do this by opening the valve.
5. To ensure both personal and public safety, all your warning and arrow boards must be functioning in accordance with traffic regulations. To turn on the arrow bar, depress the power switch and turn the indicator knob to the desired direction of the arrow, or to the flashing on/off signal.





Using the Steamer Continued....

Now you are ready to begin. One crew member will drive the vehicle slowly while the other crew member steams the weeds.

Remember that when you are shutting down the steamer it needs to go through a “cooling down” period. This cooling down process consists of shutting off the lead pump to alleviate the pressure for 15 minutes, and then you can shut down the rest of the machine.



Safety First!

Make sure that you are wearing your thermal insulated gloves. The hose for the steamer gets extremely hot and needs to be checked regularly for cracks and imperfections.





Things to Consider Before Spraying

- ☑ Spraying cannot be done when the temperature is above 28 degrees Celsius, as the herbicides won't work properly in high temperatures. Also, your respirator won't seal properly if you are perspiring. You can imagine how hot it gets in the rubber suits when you're out there in the high temperatures!
- ☑ If it starts to rain, or if the area you're to spray is wet from previous rainfall, the herbicide will be diluted and won't work properly. Wait for drier conditions. Spraying in the rain would only be a waste of time and chemical.
- ☑ Spraying can only be done when the wind is less than 25 km/hour. You may have access to a pocket-sized hand-held instrument called the Kestral 3000. This instrument measures the wind speed for you. It can also measure the wind chill, relative humidity, heat index and the dew point temperature. Always make sure to check the wind speed before you head out to spray.



If you don't have the Kestral 3000 available, you can also check the wind speed by calling Environment Canada at **1-800-668-6767**.

- ☑ To protect the safety of children, school yards are never done less than 72 hours before the start of the school year.
- ☑ Unless you're told to do so by your supervisor, you make sure you don't spray within 75 feet of water (such as lakes, creeks, ponds or marshes) as the chemical you are using may contaminate the water. If you are required to spray closer than 75' a special permit is required.





Things to Consider Before Spraying Continued....

- ☑ The turf should always be cut prior to spraying an area so that you can easily see any rocks, concrete, tree stumps or anything else that could possibly tear or damage the windfoil on the sprayer. Long grass can also prevent the herbicide from being evenly applied.
- ☑ Always carry your supervisor's business card with you when you are spraying, that way you can give it to any member of the public that has concerns or questions about what you are doing, or about the herbicide you are using.





At the End of the Day

When you've completed the last site for the day, your eyes pan across the park, admiring the lush, healthy-looking grass. You then stop for a moment to look at your herbicide team, feeling a sudden surge of pride to be a part of such a hard working, safety-minded crew.

Neither you nor any of your fellow crew members has ever been involved in a serious accident on the job because all of you know the importance of safety. That's why you always work closely together. Over time, you and your fellow crew members have developed the most important foundation that any team can have – trust.





Herbicides – Job Aid

Safety When Using Herbicides

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From your experience you know the importance of wearing the correct safety equipment when working with the Parks and Open Space Management department. When you are spraying, your safety gear varies depending on the herbicide you are using when spraying and the area that you are spraying.

You have also learned that herbicides are important in the control of weeds. But herbicides can also pose risks to humans, animals and the environment. Exposure to some herbicides can cause nausea, headache, skin rashes, and other symptoms. Some people can have severe allergic reactions to herbicides.

These risks vary from chemical to chemical and from person to person. The risks can be minimized by making sure that the chemicals are applied correctly, and by using protective clothing and equipment when mixing or applying these chemicals.

Safety precautions vary from product to product. Always be sure to refer to the MSDS sheets or the label on the herbicide container before mixing or applying any of the chemicals. Also, check your Sector Book which outlines the mixing instructions for all of the herbicides you will be using, as well as information about the spraying equipment.



You should not only be concerned with the safety of other employees — but also make sure that all members of the public, and their pets, are safe at all times when herbicides are being applied.





Herbicides – Job Aid Chemical Safety Truck

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A Chemical Safety Truck should always be close by when any herbicide spraying is being done, to ensure that you have everything you need on site, as well as any safety gear and first aid supplies.

The truck should contain these supplies:

- ✓ The signs that you will post in the area before the spraying begins;
- ✓ The containers of chemicals you will use (you note that these are all strapped to the back of the truck so that they can't move around in transport);
- ✓ Measuring cups to ensure that the chemicals are measured accurately;
- ✓ Hoses for filling up the herbicide tanks;
- ✓ Additional safety equipment including respirators, rubber and surgical gloves, hardhats, and extra disposable and rubber pants and coveralls;
- ✓ An eye wash station with distilled water;
- ✓ A selection of nozzles for the sprayer;
- ✓ A First Aid kit; and
- ✓ A fully stocked toolbox.



Any safety supplies that come into contact with a chemical instantly become a hazard. So, when you are the one responsible for driving the Safety Truck, make sure that the chemicals and safety supplies are all stored separately so that there is no chance of the safety supplies becoming contaminated.



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Herbicides – Job Aid

Circle and Maintenance Checks

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Circle Checks

Before leaving the depot for your day of herbicide treatments, you perform a circle check on all your equipment. Your department may use a daily log book for any vehicle that you “ride in” or “ride on”. Before leaving the depot at the beginning of your shift you are required to complete the circle check provided in the Operators Daily Log book.

Remember to check to make sure you have, safety vests, warning signs, barricades or pylons required to meet the safety standards when working on or near roadways.

Maintenance Checks

From your experience you understand the importance of maintaining the equipment used in maintaining parks and open spaces. You will recall from your equipment training what you will look for when performing your maintenance checks on specific pieces of equipment. If you find that a piece of equipment is damaged or in need of regular maintenance, let your supervisor know and it can be booked in for maintenance.

Remember, before performing a maintenance check, be sure that the equipment is clean of dirt and contamination.



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Herbicides – Job Aid

Circle and Maintenance Checks

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 **Maintenance Check List**

- ☒ Check and change the spray nozzles as required.
- ☒ Dispose of dirty nozzles in the plastic container that is kept in the Chemical Truck for this purpose.
- ☒ Although boom sprayer maintenance falls under the responsibility of mechanics, you check and change the oil as required.
- ☒ Clean the in-line filter on the tractor after every 40 hours of use.
- ☒ Thoroughly wash down the entire sprayer unit. You don't want any herbicides left from the previous day's spraying.
- ☒ Thoroughly check the windfoil on the sprayer for tears or holes. It is important to keep the windfoil in good condition; otherwise chemicals may spray where you don't want them to go (for example, in people's back yards).
- ☒ Different application types require different nozzles. Ensure that you have the appropriate nozzle for the chemical you will be using. (Chemicals that are less soluble require a larger nozzle as they could plug up a small nozzle). Always follow the chemical instruction sheet when you are not sure about which nozzle to use for a particular chemical.





Herbicides – Job Aid Transporting the Sprayers

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It's important to properly transport your equipment - for your own safety, as well as the public's safety.

The Backpack Sprayer

The Backpack Sprayer is transported in either the Chemical Safety Truck or the box of the 1-ton truck and is safely secured using bungee cords.

The tank on the Backpack Sprayer is always empty when you are transporting it. (When you arrive at the location that you are spraying there may be a larger tank that you will be able to fill the tank of the Backpack Sprayer from.)



Handles are hooked on the opposite side of the cab.

5' and 11' Windfoil

The 5' and 11' Windfoils are transported to the spraying site by trailer.

Before loading the Windfoil units, you will need to raise the wings on the 11' manually. Pull the ropes attached to the top of the wings, and hook each of the handles to the opposite side of the cab. This way, the wings can't fall and get damaged during transport.

To load the 5' and 11' Windfoil onto trailer:

1. The 5' Windfoil is driven onto the trailer and the 11' Windfoil is backed onto the trailer.
2. Once you have turned the Cushman off, leave it in the neutral position so that you are able to move it around a little bit when you are placing the straps and chains on it.
3. Put the emergency brake on and safely secure the Cushman to the trailer using the 4 point tie down method.
4. The driving ramp can be lifted into place and you will insert the pins to secure the ramp.



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Herbicides – Job Aid

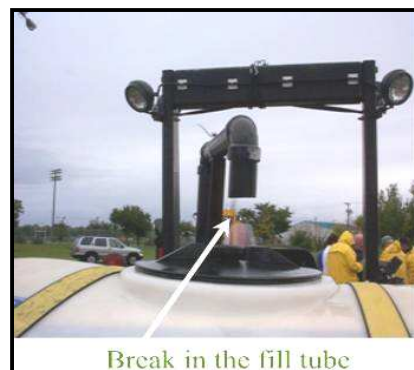
Filling the Tanks

You and your crew should go to a fill-up site to fill the tank with water and the herbicide you will be using. Go to the fill-up site that's closest to the site you will be spraying. This way you avoid transporting hundreds of litres of chemical over long distances.

Once the school year has begun, avoid the fill locations that are located near schools, and use any other site.

Here are the steps that you will follow when you are filling the tank.

1. Go to a location that has a park standpipe for water. If you are unsure of where an outlet is located, either check the list provided to the crew or ask your supervisor.
2. Before attaching the hose to the standpipe, test the outlet first. Insert the curb key and slowly turn it to the left. Once the water begins to flow you can turn the curb key to the right to turn off the water.
3. Now you can attach the hose to the quick coupler at the side of the tank to add the water. You always add the water to the tank before you add the chemical, as unmixed chemicals have a tendency to build up in the nozzle.
4. The other end of the hose can be attached to the park standpipe.
5. Notice that there is a break in the fill tube for the water. This break ensures that there is no back flow of mixed chemical into the water system. If the tube were to run directly into the tank, it could create a siphon situation in the tube that could contaminate the water source.
6. Remove the screw top lid and basket to allow the water to flow into the tank.
7. The curb key controls the water pressure. When you are turning the water on make sure you do it slowly. If you open the flow of the water to quickly you risk popping the hose off causing an injury.





Herbicides – Job Aid Filling the Tanks

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8. Now that the chemical has been added to the tank, the container(s) are to be rinsed. To do this, fill the container(s) with water from the park standpipe, swish the water around in the container and empty it into the tank. This is to be done 3 times to each container – emptying it into the sprayer tank each time. (This is referred to the “triple rinse process”.) Each container is to be sliced open before being stored for disposal so that they cannot be reused for anything.
9. Finish filling the tank with water to mix the chemical and replace the basket and twist on top of the tank.
10. Now is a good time to spray off the equipment. Make sure you are not on turf when washing off the equipment. As well, wash off the rubber gloves and boots, even your coveralls if necessary.
11. Now you can disconnect the hose from the tank.
12. Disconnect the hose from the park standpipe. Drain the water from the hose and put it back into the storage compartment on the truck.



13. The skilled labourer will record the chemical being used, the amount of chemical and the area being sprayed.
14. Finally, before leaving for your spray site, make sure that the sign on the back of the tank clearly displays the PCP number and name of the chemical you are using.

Safety First!



You need to be extra cautious by pouring chemicals slowly as the respirator won't provide enough protection around high concentrations of toxic gases; Chemicals can still splash under eyeglasses or safety glasses so make sure you pour these chemicals slowly and carefully;
Don't wear soft contact lenses inside goggles as they will absorb fumes that enter the goggles;
Safety gear and clothing that has been previously contaminated with chemicals need to be washed, rinsed or disposed of before being worn again.



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Herbicides – Job Aid

Spraying with the Backpack Sprayer

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If you're going to spray small areas such as around shrub beds, or around the clubhouse at one of our golf courses, you will most likely be using the Backpack Sprayer.

1. After making sure you have all your safety gear on, put on the Backpack Sprayer by slipping your arms through the straps, positioning the tank comfortably on your back.
2. Before the Backpack Sprayer will spray, you need to pressurize it by pumping the hand pump several times.



Shoulder
Straps

Remember to record the name and
PCP # of the chemical on the tank.



3. Then test the sprayer to ensure that you will have even coverage, and that the nozzle isn't plugged. Do this by spraying a small spot on the concrete.
4. If the nozzle is plugged, you either tap it lightly on the pail with the water solution to remove built-up chemical, or rinse the nozzle in a container of water. Make sure to mark the container after washing the nozzle to indicate that the water has been contaminated with chemical.



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Herbicides – Job Aid

Spraying with the 5', 11' & 15' Windfoil

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The Windfoils are ideal for spraying our parks and open spaces. It really doesn't matter which piece of equipment you are getting ready to spray with, the steps you will follow are the same.

1. Once you have arrived at your location, park on pavement or gravel. This is so you can spray a test pattern on the ground to check that all the nozzles are lined up properly.
2. Lower the wing(s) using the levers.
3. Turn the PTO on until the gauges read 30 lbs. pressure.
4. Now begin moving slowly while you activate your sprayers.



The spray nozzles are interchangeable. Different herbicides require different spray nozzles. Some herbicides are less soluble and they need a heavier nozzle so that the chemical does not plug up the nozzle. If you are not sure which nozzles to use, refer to the product data sheet.



Safety First!

If you are changing your spray nozzle, be sure to properly rinse it so that you do not risk contaminating anything it may come in contact with.



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Herbicides – Job Aid

Spraying with the Pull Behind Sprayer

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The Pull Behind Sprayer is useful for ballparks and fence lines because it's equipped with a huge 100-gallon tank. It also has a 50-foot hose connecting to the hand wand, which is ideal for spraying long fence lines.

The steps for getting the sprayer ready to go are the same as the steps you use with the 5', 11' and 15' Windfoil. The only difference is that you are pulling it behind the truck.

1. If using the booms on the Pull Behind Sprayer, open them by hand.
2. Start the gas motor and select the setting which indicates whether you are using the booms or hand sprayer.
3. Park on pavement or gravel and spray a test pattern on the ground. Check the pattern to see that all the nozzles are lined up properly.
4. Turn the PTO on until the gauge reads 30 pounds.
5. One crew member will slowly drive the truck while the other begins to spray using the wand. Crew members should switch after 20 – 30 minute intervals. Depending on the location, you could be using the boom instead of the hand sprayer.

When you are spraying be sure that the gauges are checked regularly and that your pressure remains at 30 lbs.

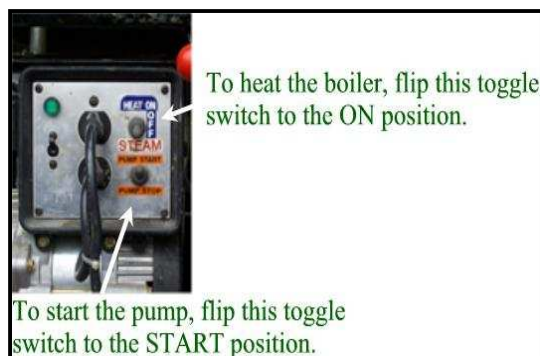




Herbicides – Job Aid Using the Steamer

Below are the steps that you will follow to start the steamer.

1. Make sure that there is water in the steamer tank.
2. Turn the boiler on by flipping the switch to the ON position.
3. The boiler needs to have a warm up period of approximately 15 minutes. You need to let the water heat up to 210 – 230 degrees Celsius. If you use the steamer before the temperature reaches this range the water will not be hot enough to penetrate the plants root system. If the temperature is too hot you will give off too much steam and not enough water. Once the water has reached the proper temperature, you can start your pump. You do this by opening the valve.



4. To ensure both personal and public safety, all your warning and arrow boards must be functioning in accordance with the City of Regina traffic regulations. To turn on the arrow bar, depress the power switch and turn the indicator knob to the desired direction of the arrow, or to the flashing on/off signal.
5. One crew member will drive the vehicle slowly while the other crew member steams the weeds.

Make sure that you are wearing your thermal insulated gloves. The hose for the steamer gets extremely hot and needs to be checked regularly for cracks and imperfections.

Remember that when you are shutting down the steamer it needs to go through a “cooling down” period. This cooling down process consists of shutting off the lead pump to alleviate the pressure for 15 minutes, and then you can shut down the rest of the machine.

