

SAFETY AND FARM MACHINERY

Safety and Tillage Equipment

A Guide for Leaders and Youth Leaders

Ontario 4-H Council

*Ontario Ministry of Agriculture,
Food and Rural Affairs*

4-H 600 98 LE

The Ontario 4-H Program provides opportunities
for the personal development of youth.

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

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KIDS HELP PHONE
JEUNESSE, J'ECOUTE
1-800-668-6868

<http://kidshelp.sympatico.ca>

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WELCOME TO 4-H

It has often been said that, "Volunteer 4-H leaders are a blend of friend, teacher and parent." What a big order to fill! But you will discover that you have many talents as a 4-H leader. Having an interest in young people and their development and being willing to take up the challenge of 4-H leadership is the first step to success.

This project focuses on the safe handling of farm equipment. However, the development of members as individuals is your real goal. You will get to know the club members and where their interests lie very well. Use this knowledge, your own expertise and imagination to plan a fun, interesting and challenging club program for your members. And enjoy being a 4-H leader!

RESPONSIBILITIES

Before your project begins:

1. Familiarize yourself with current provincial and local 4-H policies;
2. Attend a leader training session (if scheduled);
3. Advertise the project and organize a club with a minimum of six eligible members and one volunteer leader per club except in cases deemed to be unique and approved by the local 4-H Association; and
4. Review available resources and begin planning the club program.

During the project:

1. Attend each meeting and the Achievement Program;
2. Assist members in planning and presenting the club program;
3. Provide a FUN, learning atmosphere;
4. Ensure the club membership list is completed and registration fees are collected. Forward to the designated person in your area before the second meeting;
5. Order awards and project and name plates once membership list is completed.
6. Help each member set and achieve goals for personal development;
7. Encourage members to work together as a group;
8. Provide guidance in choosing and completing an Achievement Program; and
9. Evaluate the club program. Share the evaluation with the 4-H Association and the Ontario 4-H Council.

4-H CLUB PROGRAM PLANNING

A successful 4-H club doesn't just happen! Careful planning is necessary and very important. As a 4-H leader, you have a responsibility to do the best job you can in providing a fun, learning experience for the 4-H members. Planning will make this a reality.

The 4-H Volunteers' Handbook has lots of valuable information to help you and your members plan a successful club program. Refer to "The 4-H Meeting" section of your handbook for tips on planning successful meetings, effective communication, games, judging and special events. The chart on page 3, of this Guide, can be used to record your plans.

WHAT IS AN ACHIEVEMENT PROGRAM?

- An opportunity for members to share with others the knowledge and skills they have gained during this 4-H project.
- An activity that involves each member in some way.
- A chance to inform the public about the purpose and goals of the 4-H program.

Achievement Program ideas specific to this project are suggested below. Your club may wish to choose one idea or combine a few. Involve club members in selecting a suitable idea and making the necessary preparations.

Contact the local newspaper or radio to tell them about your activity, the date, the time and where it will be held.

Send out a personal invitation to the group you plan to invite to the Program, or send a personal request from your club to visit an organization and present your Achievement Program. Don't forget to include parents/guardians and/or family members.

Invite parents, the public, media and other youth groups to your Achievement Program.

Here are some suggestions. You may wish to choose one idea or a combination of a couple. The type of program should be selected by the second meeting. You may require some preparation time at your meetings prior to the Achievement Program.

1. At a fair, or other public event or place, (i.e. plowing match, Agri-Food Week event, library), assemble and set up a display on one of the following:
 - Protective Equipment and Clothing,
 - Safety Tips for the Farm and Home, or
 - Tillage Equipment and/or Soil Conservation.

Have members on hand to answer questions.

4-H CLUB PROGRAM PLANNING CHART

MEETING OR EVENT	DATE	TOPIC ACTIVITY OR TASK	PEOPLE WHO COULD HELP	PRESENTATION IDEAS TO CONSIDER

2. Host a club "open house" and invite family and friends for an afternoon or evening event. Some possible ideas for activities, displays, etc. at the event are:
 - skits on farm safety and health hazards,
 - demonstration of tillage equipment, its maintenance and use, and
 - demonstration of the use of safety equipment.
3. Participate in an approved first aid training course - such as a half-day basic St. John Ambulance or Red Cross first aid course.
4. Contact your local fire department to find out if there are any "mock disaster" drills planned for your area in the near future. In many communities, mock disasters are held annually or semi-annually to prepare health care and emergency service workers for the possibility of a real disaster. Your club may be able to participate as disaster victims for the day (disaster victims are usually volunteers from local schools and the general public).

RESOURCES

1. The benefit of a guest speaker(s) or the use of films/videos to present material in an interesting and lasting way cannot be emphasized enough. Remember, the effective use of speakers, resource ideas and activities depends on some **PLANNING AHEAD**.
2. Several teaching ideas have been suggested in the Leaders' Guide. Some of them may be used as small posters or reproduced on a blackboard, flip chart or overhead transparency for greater impact.
3. OMAFRA publications are available through your local OMAFRA office. OMAFRA videos and films are available through the A.V. Library, OMAFRA, 1 Stone Road West, Guelph, Ontario, N1G 4Y2 1-888-466-2372, extension 6-3682 FAX (519) 826-3358 and arrange for these well in advance.

Films and videos may be available from:

- your local public library,
- A.V. Library, OMAFRA, 1 Stone Road West, Guelph, Ontario, N1G 4Y2 1-888-466-2372, extension 6-3682
- Farm Safety Association, Unit 22, 340 Woodlawn Ave. West, Guelph, Ont. 1-800-361-8855, Fax (519) 823-8880, and
- farm equipment dealers who may have videos on equipment models, their use, maintenance and safety tips.

Be sure to order all videos and films early as they may be in great demand by other groups as well. You should arrange to preview materials before the meeting to be sure that they will be interesting and suited to the purpose of the meeting.

Possible guest speakers are:

- Safety representatives from the local fire department, Farm Safety Association, Ontario Provincial Police, St. John Ambulance, Red Cross, local hospital or community health center.
- Tillage local plowmans' association, soil and crop improvement association, farm equipment dealership representatives, conservation authorities.

Check your telephone directory for information on most of the above. Your local OMAFRA office may be able to supply contact names for agricultural organizations such as soil conservation groups, or plowmans' association.

SPECIAL ACTIVITY

Individual clubs will decide if junior and/or senior members will be required to complete a Special Activity. Here are some suggestions for Special Activities. Encourage the members to display, present or share in some way the results of their activity. This could be done at a club meeting, the Achievement Program or another 4-H event.

FEEDBACK

The 4-H Resource Development Subcommittee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address:

4-H Resource Development Subcommittee
Ontario 4-H Council
R.R. #1 Thornloe, Ontario P0J 1S0
1-800-937-5161.
E-mail: lduke@ntl.sympatico.ca
<http://www.4-Hontario.ca>

At the bottom of the table of contents page in the Members' Manual you will see the Kids Help Phone logo and number. Kids Help Phone is available to over 7 million children and teenagers throughout Canada.

It is a national, bilingual, confidential, toll free helpline staffed by paid, trained professionals. In response to the problems and concerns of our youth, Kids Help Phone provides a listening ear, emotional support, counselling, information and referrals. Children and teens from anywhere in Canada can call anonymously 24 hours a day, 365 days a year.

Children and teens can call about anything that is bothering them including - abuse; drugs; alcohol; conflicts with parents, friends or teachers; pregnancy; sexuality; suicide; or parental separation and divorce.

Please mention this number to your members and explain what it is for. Make sure they know that it is free and they don't have to give a name or address.

<http://kidshelp.sympatico.ca>

The Kids Help Phone answers 1500 calls a day... 2500 more get a busy signal. If you or your club or someone you know would like to make a donation to the Kids Help Phone, call 1-800-268-3062.

SPECIAL NOTES FOR THIS PROJECT

1. The Members' Manual has been designed as a reference source. Encourage members to leave their manuals closed for most of the meeting, allowing them to observe, learn and take part in the discussion and other activities. It is **not necessary to read** all the information given in the Members' Manual during the meeting. The page numbers in this Guide refer to the Members' Manual unless otherwise indicated.
2. You are free to change the order of meetings and information if you like. **Also, remember if you do rearrange the order of meetings, you might need to reorder the Before the Next Meeting Activities so that they fit with the Roll Calls.** The schedule of meeting dates can be recorded on page 3.
3. **Remember to Refer to Your 4-H Volunteers' Handbook** - You will find many useful tips and ideas covering topics such as program planning, successful meetings, parliamentary procedure, effective communicating and presentation methods. Refer to your Volunteers' Handbook as you plan meetings. If you do not have a handbook, please contact your 4-H association.

Getting Started (15 minutes)

1. Begin with the 4-H pledge.
2. Welcome the members. Introduce leaders. Have members introduce themselves (if not already done). Introduce the youth leader (if this has been decided). Ensure that everyone has a name tag (optional).
3. Complete membership list.
4. Outline the opportunities members have such as taking part in the local fairs, 4-H Go For The Gold, 4-H Members' Conference etc...
5. Distribute "4-H Project" signs if available.
6. Distribute the Members' Manuals.
7. Give a brief summary of what club is about and topics covered.
8. Discuss the members' requirements for the project (page 1). Outline any expectations you have of the members.
9. Briefly discuss the Achievement Program possibilities.

It is important for everyone to become familiar with the basics of running a good meeting. Review with members the purpose of an agenda as well as the executive's responsibilities. Have the club members elect an executive. The 4-H Volunteers' Handbook and the OMAFRA Factsheet, "Procedures for Meetings," (89-095) may be helpful.

4. **Judging** - Judging tips is an optional activity in meetings one through four in this project. These tips have not been included in the normal one hour meeting time. Each member should have access to a 4-H Judging Handbook (4-H-1550-91) and be encouraged to use it. These can be obtained through your 4-H association.
5. **Optional Activities** - There are meeting activities, meeting mixers and extra topics for discussion that have been listed in **THIS GUIDE ONLY**. They provide greater detail and information and should be used as a resource for meeting presentation.

OBJECTIVES

1. To elect a club executive and discuss parliamentary procedure.
2. To have members understand what is expected of them for completion of the project.
3. To introduce the idea of being prepared for an emergency.

PREPARATION AND EQUIPMENT

1. Before every meeting, read through the Members' Manual so that you are familiar with the material being covered. Complete the activities yourself and make note of any sections which gave you difficulty. Such sections might deserve further explanation to the members.
2. Prepare name tags if you plan to use them.
3. Bring a complete first aid kit to the meeting to discuss contents and use.
4. A first aid manual.
5. If possible - a baby diaper in a plastic bag.
6. 1 or 2 telephones (unplugged).
7. Telephone book
8. You may wish to do some investigation into first aid training programs in your area.

TIME GUIDELINES

A time guideline has been provided for each section of the meeting. Please remember that this is only a guideline. The number of members, their maturity, specific interests and the way the meeting is structured will all influence the duration of specific activities.

IN A NUTSHELL	
Getting Started	15 min
Roll Call	5 min
A Road Map to Good Meetings	20 min
Ready For Action - Being Prepared	15 min
- Calling For Help	20 min
Before the Next Meeting	5 min
	<hr/>
	80 min
Optional: Digging Deeper	

ROLL CALL (5 minutes) page 5

The roll call is used as a way of introducing members and encouraging them to participate in the discussions at each meeting. Timid members in particular should be given the opportunity to speak up during roll call.

A ROAD MAP TO GOOD MEETINGS (20 minutes)

At the first meeting, it is important for everyone to get to know each other and become familiar with the basics of running a good meeting.

The club president will chair the short business section at the beginning of each meeting. Helping members to understand and use the basics of running a meeting will help them to become familiar with the process.

KEEPING YOUR CLUB GOING (5 minutes)

Prior to encouraging club members to take an executive position, they should have a good understanding of each position.

READY FOR ACTION (35 minutes) page 5

This section is made up of two parts. The first is Being Prepared, and the second is Calling for Help.

BEING PREPARED (15 minutes) page 5

The aim of this section is to emphasize the importance of Being Prepared for an emergency. Some people think that by ignoring a dangerous situation, it will go away. Your members should understand that this is not the case. Accidents and emergencies can and do happen. Our best defence is to:

- learn how to avoid danger, and
- learn what can be done to prepare for an emergency.

FIRST AID TRAINING

If you have investigated information on first aid programs available in your area, you may present this information. Discuss such things as:

- length of course,
- minimum age for participants,
- cost of course, and
- place and dates when it is held.

Your club might consider participating in a course as a group project.

FIRST AID KIT

Information on a first aid kit is included in this part. You should have a well-equipped kit on hand for viewing and discussion. Discuss how many kits are needed and where they might be placed - house, barn, machinery shed.

EMERGENCY INJURY PACK

This section discusses an idea for an emergency injury pack - discuss how this could be used - and good places where such a pack could be kept for emergency use.

CALLING FOR HELP (20 minutes) page 6

Discuss personal safety when providing help. If you become the emergency you can't help. Examples of people becoming the emergency include attempting silo rescues, attempting to remove power lines etc.

Discuss emergency telephone systems in your area. Remember that if members are from different townships, they may use different systems.

For example: One township might be included in a "911" system while another requires telephone numbers to call police, ambulance, poison control, environmental spills, or fire department services.

Be sure that each member is familiar with the system in use in his or her own area. A drawing is included in this section. It has spaces to write down telephone numbers of emergency services. Using the local telephone directory, have your group find the correct numbers.

Discuss why you would want to post these numbers wherever a telephone is located.

- you might not be able to remember the numbers when an emergency happens
- you might not be able to find a telephone book
- you might have trouble finding the number quickly even with the telephone book

Make sure the numbers are large and easy to read in dim light.

ACTIVITY (requires 1 or 2 telephones)

- Have two members at a time demonstrate how a telephone emergency call might take place. One member will be a person reporting an emergency call - the other will be the emergency service operator.

The "operator" will ask the following questions.

1. What is the emergency?
2. Has anyone been injured?
3. Where are you calling from?
Place: address, include any special directions, cross roads or prominent landmarks, name on mailbox, etc.
Telephone number, Your name
4. The help required.
5. Treatment being administered.
6. If someone is injured, can you describe the type of injury?
7. Is there any information that might help our emergency response teams.

You may find it helpful to give this page to the "operator" when it is their turn to ask questions.

As each person has a turn, suggest an emergency that he or she can report. A fire, a tractor overturned in a ditch down the road from your farm, a person overcome by silo gas, a person who is unconscious after falling from a hay wagon, a person having trouble breathing after mixing pesticides, etc...

The object of this activity is to:

- Have members decide how they would quickly report an accident or emergency,
- Practice giving directions to their homes - especially if their township does not have an official property numbering system (Some townships have given a specific number to properties with rural route addresses so they can be easily located in an emergency.)
- Learn which information is important to rescuers. If a person is trapped underneath an overturned tractor, the emergency service must know this so that rescuers will have the right equipment with them. A person overcome by silo gas in a silo will also require specialized rescue teams and equipment.

BEFORE THE NEXT MEETING (5 minutes) page 7

Members are asked to post emergency telephone numbers on or next to each telephone.

AFTER MEETING ONE

To prevent dropping out, take time with new members to make sure that they know what is expected of them. Make them feel welcome and offer to help them in any way you can.

FOR MEETINGS TWO TO SIX

The president chairs the meeting from the opening (with the 4-H pledge) and directs the secretary to read the minutes of the previous meeting and take roll call. Discuss any further business (e.g. next meeting, special 4-H or club activities, Achievement Program). The meeting is then turned over to the leaders (or youth leader) to lead the discussion of the meeting information.

MEETING TWO

READY FOR WORK

OBJECTIVES

1. To review some of the information learned in the previous meeting.
2. To learn about Personal Protective Equipment and its use in preventing injury to our bodies.
3. To practice the hand signals used by heavy equipment operators and farmers.

PREPARATION AND EQUIPMENT

1. Come To Your Senses - Use Personal Protection Equipment. To demonstrate the loss of our senses due to injury, you may wish to have members wear a blindfold or soundproof ear muffs. Two or three blindfolds and one or two pairs of ear muffs would probably be sufficient.
2. For the Come To Your Senses - Use Personal Protection Equipment, display as many of the items as possible from the clothing or equipment described in this section. You may have some of these items at home, or you may be able to borrow them from someone who farms or has a well-equipped workshop. It may also be possible to borrow many of the items from a hardware store, farm dealership, or safety supply store that sells these kinds of items.
3. Hand Signals - At least one set of ear muff style ear protectors, used to demonstrate why hand signals and not voice commands are used.

GUEST SPEAKERS

Safety topics: A public health nurse, occupational health nurse, safety supply salesperson, member of a local Farm Safety Association, farmer or tradesperson interested in safety concerns.

IN A NUTSHELL	
Roll Call	5 min
Come to Your Senses - Use Personal Protection Equipment	25 min
Hand Signals	15 min
Before the Next Meeting	5 min
	50 min
Optional:	Digging Deeper

ROLL CALL (5 minutes) page 9

The roll call asks each member to answer by suggesting an object that might be useful in a first aid kit so it can be used as a quick review of what to include in a kit.

COME TO YOUR SENSES - USE PERSONAL PROTECTION EQUIPMENT

(25 minutes) page 9

To reinforce the value of our senses, distribute a few blindfolds and soundproof ear muffs to the members and ask them to take turns wearing one or the other of these to prevent them from seeing or hearing part of the meeting. Ask them to remember how they felt as they watched or listened to the meeting without the sense of sight or hearing - you can discuss their observations at the end of this section. Each person should wear the blindfold or ear muffs for at least a minute or two. Also, emphasize the fact that many people must live without sight or hearing, and that this presents a whole new set of challenges to those people.

Begin this section by talking about the importance of protecting our bodies from harm while we work. Discuss some of the greatest dangers that threaten us as we go about doing daily work on the farm (other places of work can also be discussed if of interest to your members). Use the diagram on page 10 as a basis for discussion.

Continue by discussing ways of minimizing injuries through the use of Personal Protection Equipment. A two-page chart (pages 12-13) has been included in the Members' Manual. Each part of the body is listed along with the type of equipment or clothing that should be used or worn to help minimize the danger of injury. Rather than go over this chart in detail, your members may use the chart to work on the four "hazardous job" examples on page 14. Work on the examples as a group, OR break up into four groups and have each group decide how to minimize dangers in one of the situations. Each group can then present its findings for the whole group.

ANSWERS

- Joe (Arc-welding) - should be wearing - welder's face shield, leather gloves, leather apron or jacket, steel-toed workboots, safety glasses

- Kate (Chainsaw) - should be wearing - a hard hat with a full face shield, steel-toed workboots, leather gloves. For best protection...she should wear the new ballistic nylon leggings, chest and neck protector, ear protectors, and kevlar gloves.

- Bob (Tractor driving in July) - should be wearing a straw hat (or other cool hat), sunglasses, a long sleeved shirt, sunscreen on exposed skin, ear protectors, seat belt

Ken (Mixing
herbicide)

- should be wearing a hard hat (a non-porous hat), splash-proof goggles or eye shield, appropriate cartridge respirator, long sleeved workshirt and jacket or coveralls, long gauntlet style gloves (neoprene for chemical resistance). Rubber boots or other chemical resistant boots should be worn inside of pant cuffs (so that spilled chemicals cannot pour into tops of boots). A rubber apron or overalls or tyvek coveralls should be worn over clothing.

HAND SIGNALS (15 minutes) page 15

These hand signals are used by farmers and heavy equipment operators. Have members practice these by one of the following methods.

1. Ask members (together or one at a time) to make the hand signal that goes with each of the following messages:
Start the engine; This far to go; Stop the engine; Move out; Move toward me - follow me; Come to me; Decrease speed; Raise equipment; Increase speed; Lower equipment; Stop.
2. Ask members to look at the illustrations of hand signals and choose a sign and remember its meaning. Have everyone close their manuals. Have each member take a turn doing their chosen hand signal while the other members try to guess its meaning.
3. Have members work in pairs. One person will be the "signal sender" while the other is the farm equipment operator. The "signal sender" will make signals to the "operator" while he or she acts out the message that is being communicated by the signal.

To emphasize the importance of hand signals, you may also do either of the following.

1. Have a member take his or her manual and move to a place at some distance from the rest of the members. Have them make signals to the group while everyone guesses what message is being given. (To demonstrate how signals are useful when working at a distance from others).
2. If you have sound protective ear muffs, have some of the members put these on. First, tell them one of the messages illustrated by the hand signals. Have everyone repeat the verbal message. Is everyone able to understand the verbal command without being able to hear? Were there any mistakes? Now, make the hand signal for the message. Did those with ear muffs understand this time. (This demonstrates the usefulness of hand signals when there is a great deal of noise in the work area).

BEFORE THE NEXT MEETING (5 minutes) page 16

Members have been asked to think of a job that they might do around the farm. Now that they know more about safety equipment, what type of Personal Protection Equipment would they use to minimize risk? Members have been asked to make a few notes about their ideas and bring them to the next meeting for discussion.

MEETING THREE

AIR + HEAT + FUEL = FIRE

OBJECTIVES

1. To review the Before The Next Meeting activity from the previous meeting.
2. To learn about the three things that are needed to create fire (air, heat, fuel).
3. To learn about fire extinguishers.
4. To learn about the symbols that warn us of dangerous places and hazardous products.

PREPARATION AND EQUIPMENT

1. "What Makes a Fire Burn?"

Telephone book to look up fire department number. Large piece of blank paper and marker, OR a small slate with chalk to draw with. Assemble a variety of fuels that could feed a fire (very small samples are adequate).

- * Class A Fire: paper, wood, cloth, sawdust, straw, hay, leaves.
- * Class B Fire: cooking oil, automotive oil, paint, spray paints, solvents.
- * Class C Fire: any small electric motor, electric heater, electric appliance, "octopus" electrical connector.

2. "Fire Extinguishers" section. A Fire Extinguisher
3. "Signs of Safety". Bring a collection of products marked with hazard symbols to this meeting. These could include: spray paint, liquid dishwasher detergent, glues, household or dairy cleansers, pesticides, etc...

GUEST SPEAKERS

Safety: A representative of the fire department could talk about fire prevention. He or she may also give a demonstration on how to use a fire extinguisher.

ALTERNATIVE IDEA FOR MEETING

Plan a visit to a local fire station if they are willing to give a tour to your group. Arrange to have a member of the fire department talk to your group about fires, fire prevention, fire extinguishers, etc...

IN A NUTSHELL

Roll Call	10 min
What Makes A Fire Burn	20 min
Fire Extinguisher Demonstration	10 min
Signs of Safety	20 min
Before the Next Meeting	5 min
	<hr/>
	65 min
Optional: Digging Deeper	

ROLL CALL (10 minutes) page 17

The last "Before the Next Meeting Activity" was to think of a job that could be done around the home or farm and to decide what protective equipment would make the job safer to do. Members answer the Roll Call by stating which job and then telling which equipment would be required.

WHAT MAKES A FIRE BURN? (20 minutes) page 17

Begin by telling about the three parts of the fire: air, heat, and fuel.

These can be thought of as three pieces to a triangle. Cut out a large triangle and split it into three pieces. As you discuss each part put it up on the wall to rebuild the triangle shape.

Ask members to think of some ways of making up the three parts of the fire. Air (oxygen) will always be one of the three parts.

Have members think of what other two things might create a type of dangerous fire. A triangle has been supplied in the Members' Manual. Members can mark their two parts in the "fuel" and "heat" sections of the triangle.

Draw a few fires on a slate or sheet of paper and ask members to think of how they might be able to prevent these fires. The drawings and suggested answers on the next page may be of use.

1.

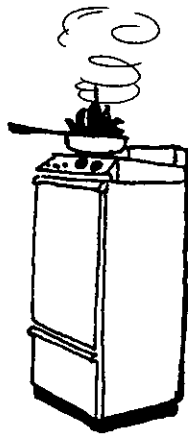




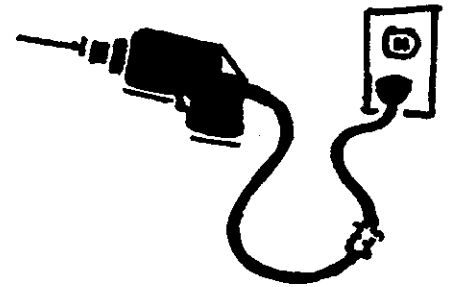
3.



4.



5.



SUGGESTED ANSWERS

1. Don't allow smoking in barns. Sweep loose straw out of barn aisles (in case someone does smoke around the barn **EVEN THOUGH THEY AREN'T SUPPOSED TO!**)
2. Be sure that large barns have properly installed lightning rods. They should be rods that are approved according to the Ontario Lightning Rod Act.
3. Engine oil leaks should be repaired. Engine should be properly washed after repairs to clean up leaked oil. Also clean up any oil from the floor.
4. Don't let oils get too hot or they will break into flames.
5. Make sure that all electrical appliances, electrical cords, and wiring are in good repair. Do not leave flammable objects close to electrical appliances.

KINDS OF FIRES

If you have brought a selection of "fuels" for fires, have members try to group these according to the description of A, B, or C class fuels.

Explain the importance of fuel classes. They determine the method used to extinguish a fire. For example, water can put out an A class fire, but it may spread a B class fire by washing flammable chemicals or oil over a larger area, or cause an electric shock by conducting electricity from a C class electrical fire.

FIRE EXTINGUISHERS (10 minutes) page 19

Show a fire extinguisher. Show where it is marked with the class of fire that it is made for. Show and explain all the parts of the fire extinguisher. If practical, you may demonstrate the use of a fire extinguisher. (NOTE: This would be a good presentation to be given by a guest speaker from the local fire department).

SIGNS OF SAFETY (20 minutes) page 21

SIGNS AND SYMBOLS

These signs and symbols warn us about safety hazards. The Members' Manual has a collection of common symbols, their meanings and the products they are usually associated with. Review section with your members. - **OR** - Have members break into four groups to read the information next to one of the symbols, the group can then report about that symbol. - **AND/OR** - Give each member a hazardous product to examine and report on using these questions.

- What is the product?
- What is the symbol (symbols) on the label?
- What warnings are written on the label in addition to the symbols?
- Under what conditions would this product be dangerous?
(example: - near a fire
 - in an unventilated area)

BEFORE THE NEXT MEETING page 24

Discuss the "Before the Next Meeting" activity. Members have been asked to look for a product with a hazardous symbol on the label. They should decide what the symbol means and think of how the product could be used safely.

MEETING FOUR

TILLAGE BASICS

OBJECTIVES

1. To introduce the subject of tillage equipment.
2. To consider soil conservation and the effect of tillage machinery on soil.
3. To learn about the various pieces of (primary and secondary) tillage equipment.
4. Digging Deeper: To learn about packing a bearing (as maintenance of tillage equipment).

PREPARATION AND EQUIPMENT

1. Try to hold meeting where there is access to several pieces of tillage equipment. Possibilities include farm machinery dealership, conservation demonstration day and a farm show.
2. If none of the above are possible - or in addition to above, visit a farm equipment dealer for brochures picturing tillage equipment. Many tractor brochures contain photos of various pieces of tillage equipment in action.
3. You may wish to have a member of a Soil and Crop Improvement Association speak at your meeting.
4. Digging Deeper: If you wish to include this information have someone demonstrate packing a bearing. (This would be a good way of incorporating a member's project into the meeting.)
5. What is Conservation Tillage section.
- 2-3 tape measures to assess the percent of soil covered with crop residue. If more than 20% coverage then conservation tillage is being used.

IN A NUTSHELL

Roll Call	10 min
Tillage Basics	10 min
What is Conservation Tillage?	15 min
A Look at Tillage Equipment	30 min
	<hr/>
	65 min
Optional: Digging Deeper	

ROLL CALL (10 minutes) page 25

Members can report on the "Before the Next Meeting" activity of finding a hazardous warning label and how the product can be safely used.

TILLAGE BASICS (10 minutes) page 25

- Discuss meaning of the words till and tillage equipment.
- Discuss the meaning of primary tillage and secondary tillage.

A section has been included on crop residue and the importance of leaving residue on fields.

WHAT IS CONSERVATION TILLAGE? (15 minutes) page 26

Discuss the growing interest and importance of conservation tillage.

Residue Estimation

When making decisions about field operations for erosion control it is important to know the amount of residue cover present. Residue cover is normally expressed as a percentage. If a field has more than 20% residue cover, the landowner is using a conservation tillage program.

The following describes a simple and accurate way of measuring residue lying in a field (will not work with standing residue). The only equipment that you require is a tape measure or rope with 100 equally marked points, 3-9" apart.

Step 1: Find two or three areas that are representative of the whole field (avoid areas of reduced yield, flooding, drought etc.).

Step 2: Anchor one end of the tape and stretch diagonally across the crop rows, making sure to cross at least one pass of the implements used. Do not spread the tape parallel or perpendicular to the rows as this will not give an accurate measure of residue. Anchor second end.

Step 3: Any piece of residue larger than 3/32" and crossing one of the 100 marks on the tape will be counted.

Points to keep in mind when counting:

- don't move the tape and keep it well anchored
- choose one side of the tape and to look at the marks and residue from
- stand straight above the mark, don't lean when counting
- to help in determining whether to count or not you can use a dowel or rod 3/32" in diameter. Place the rod at the mark - if the sides of the residue extend beyond the rod then it will be counted.
- don't count if questionable
- you can use a hand-held click counter to keep track of the number counted.

Step 4: The percent residue cover is taken directly from the number counted if 100 marks were used (ie if 37 were counted then the field has 37% residue cover).

Step 5: Repeat this process in 2-3 places in the field and average the results to get a more accurate estimate of residue cover in the field.

Discuss soil erosion as another way in which soil can be damaged.

A LOOK AT TILLAGE EQUIPMENT (30 minutes) page 28

Members have been supplied with a chart describing various pieces of tillage equipment, their uses, and special safety notes on each piece.

You may discuss each piece on the chart.

OR

If you are having a meeting at a location where actual equipment is available - look at these pieces and consult the chart to see how these pieces might be used.

OR

Have members work in 2 or 4 groups. Assign each group 1 or 2 of the following questions. Have each group decide which equipment it might use to solve the problems in the questions. Then have each group present their answers to the others. Members should find the tillage chart useful when working on these questions.

1. A farmer has a field which he/she has rented. It has been fallow for a few years. He/she wishes to cultivate the field to put in a grain crop. What equipment might be used and why?
2. A farmer has a corn field which is ready to be cultivated for next year's crop. For the past two years, crops have been very stunted on the headland areas. What might be the problem? How would you recommend that he/she solve the problem?
3. A farmer has a soybean crop planted in a field. This spring, during dry weather, wind blew large amounts of soil away. What recommendations can you make for prevention of this problem in coming years?
4. A farmer has a pasture which he/she does not want to plow down, but wants to try to upgrade with seed and fertilizer. How might this be done?

POSSIBLE SOLUTIONS

1. Would probably use a moldboard plow to plow fields in fall. In spring, once soil is dry, disc or cultivate fields to cut up soil in preparation for seeding. Discing would help to eliminate problems that could be caused by large pieces of sod in the soil, but may cause compaction on damp soils.
2. The farmer might use a Deep Till-Subsoil Plow to work the field up and shatter compacted soil. The farmer should try to avoid numerous passes over the field. Use tillage equipment such as a Disc-chisel Plow, Chisel Plow or Field Cultivator when possible in place of conventional plowing. This would leave more crop residue on the soil surface to break down and improve soil structure. Deep till subsoiling should be considered only when soil is dry at the depth of the tillage.
3. The farmer should try to allow crop residue from this year's crop to remain on the surface of soil. Also, the field should not be overworked until soil loses its ability to form larger particles. This could be done by using a chisel plow, discs-chisel plow, or a field cultivator to work up soil and crop residue on the soil surface. A no-till drill should be considered, especially on very sandy fields. Avoid overworking soil with too many passes of equipment.

4. To accomplish this without working the soil the farmer could use frost seeding - broadcasting of seeds on the sod in early spring - the frost action helps bury the seeds in the soil. Another possibility is to feed the seeds of hard-seeded legumes to cattle or planting islands of legumes for the cattle to feed from - the cattle spread the seeds throughout the pasture in their manure.

This guide contains a section (page 34) referencing the Best Management Practices: Field Crop Production book on tillage equipment and practices to give you additional background information. You might like to discuss some of these details with senior members but it may be too in-depth for the younger members.

BEFORE THE NEXT MEETING page 30

Do one of the following:

- * Speak to a farmer in your area. What pieces of tillage equipment does he/she like to use for field work?
- * Do an inventory at your farm. What pieces of tillage equipment are used on your farm? Be ready to discuss your findings at the next meeting.

SUPPLEMENTARY INFORMATION

Supplementary information for this meeting can be found on page 34 of this Guide. It contains information on a few of the most common pieces of tillage equipment with a brief explanation of their use.

MEETING FIVE

MACHINERY SAFETY

OBJECTIVES

1. To review "Before the Next Meeting" activity from previous meeting.
2. To consider safe farm machinery operation
3. To learn about safety precautions around PTO shafts and hydraulic equipment.
4. Digging Deeper - To learn more about PTO equipment.

PREPARATION AND EQUIPMENT

1. Hold the meeting where there would be access to at least one piece of farm machinery. This piece of machinery will be inspected by members to look for possible hazards that might be encountered when operating the piece of equipment. If possible, try to have the operator's manual for the piece of equipment on hand for examination by members. (NOTE: You may find it helpful to spend some time reading the operator's manual before the meeting so that you will be familiar with the equipment).

OR

Make arrangements to hold the meeting at a farm dealership if it is possible to have a company representative present to talk about the safe use of one or more pieces of equipment.

2. Have a representative of a local branch of the Farm Safety Association talk to your members about safe equipment operation.
3. For PTO equipment, it would be useful to have access to a piece of equipment such as a baler, manure spreader, forage harvester, etc. to discuss the parts of the PTO shaft and proper use of such equipment.

PROJECT COMPLETION

Read the note on page 30, this Guide. If you want members and parents/guardians to complete the Project Summary sheet, copies should be given out at this meeting.

IN A NUTSHELL	
Roll Call	5 min
Review of Before the Next Meeting Activity	10 min
Machinery Safety - The Basics	20 min
PTO Equipment - Treat It With Respect	10 min
Hydraulic Equipment	5 min
Time for Observation	20 min
	<hr/>
	70 min
Optional: Digging Deeper	

ROLL CALL (5 minutes) page 31

Members are asked to name a piece of farm equipment that can be dangerous to work around if you aren't careful. There are no wrong answers to this one!

REVIEW OF BEFORE THE NEXT MEETING ACTIVITY (10 minutes)

Members were asked to do a brief survey or inventory of tillage equipment on his or her own farm or on that of a neighboring farm. Members should discuss their findings. The following questions might help with discussion:

- what type of equipment is used?
- what kind of crops are being grown?
- is conservation tillage being used at this time?

MACHINERY SAFETY - THE BASICS (20 minutes) page 31

This section is about general safety precautions when working around mechanized farm equipment. This part of the meeting will be most effective if carried out in a location where farm machinery and/or a tractor are present for members to inspect. Discuss the basic points. This will be followed up with some observation work later in the meeting.

PTO EQUIPMENT - TREAT IT WITH RESPECT (10 minutes) page 34

Explain the basics of how power take-off equipment works. What are its moving parts? What are its dangers? If possible, have a piece of power take-off equipment on hand. Show how the PTO shaft is able to telescope (become longer and shorter as required). This makes the shaft able to extend or contract as the tractor moves with the equipment. But this also presents a danger because the shaft can become over-extended or compressed if improperly attached or operated

Ask members to think of times when they have been caught by a turning object such as a bicycle chain, its spokes, etc.. This would be nothing when compared to the strength and power of the PTO shaft.

Talk about the dangers of a shaft that becomes disconnected. It can be flung out to its full length at tremendous force.

Senior members may want to look at the Digging Deeper section if they want to learn a little more about hazards of PTO equipment.

HYDRAULIC EQUIPMENT (5 minutes) page 35

Hydraulic equipment also deserves special attention. It is also very powerful. Hydraulic equipment offers the dangers of malfunctioning or dropping unexpectedly. Members should be aware of this, especially in relation to tillage equipment which is often hydraulic. Remember, all hydraulic equipment should be left in the lowered position when the equipment is parked.

ALSO, mention the dangers of hydraulic fluids under pressure. They may be under tremendous pressure. A very tiny pinhole leak of fluid from a hydraulic line can cut skin and inject hydraulic fluid into the human body. This fluid can cause serious injury. For this reason, the hands should never be used to feel for a fluid leak.

TIME FOR OBSERVATION (20 minutes)

Have members examine one or more pieces of equipment. They should try to figure out how each piece of equipment works. What are its moving parts? What parts could be dangerous to work around? Are there any special precautions that should be taken when working around the equipment? Where are "pinch points", "crush points" where parts come together in a way that could crush or catch onto the unwary operator?

If more than one piece of equipment is available, have members work in two or more groups to "evaluate" each machine. Have all groups spend about 5 minutes looking over the piece of machinery. Have each group take a turn at telling the other groups about their observations.

When discussing the dangers of loose clothing around farm equipment, ask members to think about whether or not the clothing that they have on at that moment would be appropriate for wear if they were around working farm equipment. Why or why not?

BEFORE THE NEXT MEETING page 36

Members have been asked to examine a piece of farm equipment and try to find its hazards, etc... This could be done during the meeting if preferred.

MEETING SIX

ON THE ROAD

OBJECTIVES

1. To review "Before the Next Meeting Activity" from last meeting.
2. To learn about safe hitching techniques for farm equipment.
3. To learn about safe road travel practices for farm equipment.

PREPARATION AND EQUIPMENT

1. "Getting Hitched" section. For all of this material, a few pieces of toy farm equipment would be very useful (especially larger-size equipment). A piece of string (about 1 meter long) to illustrate tractor roll-overs if you decide to use the demonstration in the "Digging Deeper" section with your members.
2. "On the Road" - Toy farm machinery and a few toy cars would be useful to discuss various dangerous traffic situations that can occur when travelling on public roads with farm equipment. Masking tape or string to make roads on the floor or table top for demonstration of traffic situations.

The pamphlet "Farm Vehicles on Ontario Highways" is available from the Ministry of Transportation. It contains many details about road travel that may be useful in answering members' questions that are beyond the scope of this section in the manual.

3. "Pre-flight Inspection" - It would be useful to have a tractor and/or some piece of equipment for members to develop a "pre-flight inspection" chart for. Have a few sheets of paper on hand to record points for "pre-flight inspection".

IN A NUTSHELL	
Roll Call	5 min
Before the Next Meeting Review	10 min
Getting Hitched	15 min
On the Road	15 min
The Pre-flight Inspection	20 min
	<hr/>
	65 min
Optional:	Digging Deeper

ROLL CALL (5 minutes) page 37

Members are asked to name a piece of equipment that is often pulled behind a tractor on the highway or in the field.

BEFORE THE NEXT MEETING REVIEW (10 minutes)

Members were asked to try to examine a piece of farm machinery and answer a few questions about safety around that equipment. Ask everyone to report on their findings.

GETTING HITCHED (15 minutes) page 37

Try to have a selection of farm equipment toys on hand - the bigger, the better. As you discuss the various points suggested in the Members' Manual, have members use the toys to illustrate some of the problems that might occur. You may wish to incorporate the experiment from the "Digging Deeper" section in this part of the meeting (concerning tractor roll-overs).

ON THE ROAD (15 minutes) page 38

Stress to the members that the law prohibits anyone under 16 years of age from driving farm equipment on public roads.

Again, try to have a selection of toy farm equipment along with some toy automobiles. Have members set up different types of traffic situations using tape or string to make road outlines. Discuss various dangerous traffic situations - how to avoid them, why they are dangerous, etc...

A few drawings have been included on page 30 of this Guide, as suggestions of hazardous traffic situations. You may wish to have members take turns explaining the situation that they think is being portrayed in each picture - or have the members demonstrate the danger of each situation using toy cars and tractors, etc. Suggested answers are on page 31 of this Guide.

THE PRE-FLIGHT INSPECTION (20 minutes) page 40

This section includes some pointers for developing a "pre-flight inspection" for tasks that require equipment, protective clothing, etc. on the farm. Making use of a tractor and some piece of farm machinery, have members work out a "pre-flight inspection" that should be done each time the equipment is used.

PROJECT COMPLETION

A Certificate of Completion and a Project Summary have been included in this Guide, pages 45-46. Your signature on either of these indicates you feel the member has completed the project to the best of his/her ability. Space is provided for you to add some individual comments to offer encouragement to the member. The Project Summary sheet also asks for written feedback from the member and his/her parents/guardians. (The questions on this sheet have been selected from the informal evaluation sentences, listed below.) Select whichever sheet best meets your needs and make copies for the members.

It is recommended that the certificates not be awarded until the Achievement Program. If you give them out before this time, some members mistakenly assume that they don't need to participate in the program.

Your experience in leading this club would be helpful to another leader in your area. You are encouraged to make some comments about the project, what resources you discovered locally and the members' feelings about the project and pass this information on to your 4-H Association. The Resource Development Subcommittee of the Ontario 4-H Council is interested in your comments too. Their address is in this Guide, page 5.

INFORMAL EVALUATION

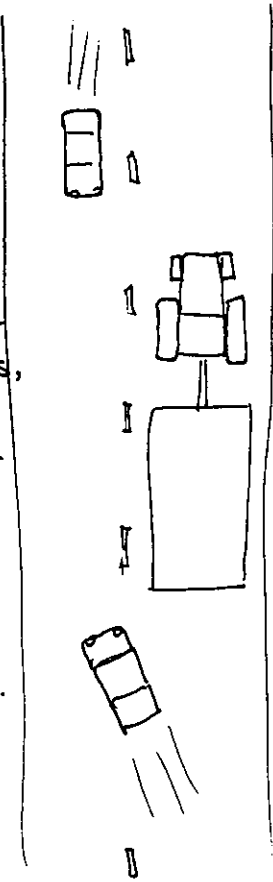
If your members are not completing the project summary sheet, take a few minutes at the last meeting to do an informal evaluation with members. One way to do this is to ask them to complete one/all of the following sentences.

- I joined this club because ...
- I really enjoyed ...
- I didn't enjoy ...
- I had a hard time ...
- My favourite meeting activity was ...
- My least favourite meeting activity was ...
- If I was to take this project again, I would change ...
- I learned ...
- I've changed ...
- I'm glad ...

<p>THANK YOU FOR BEING A VOLUNTEER 4-H LEADER!</p>

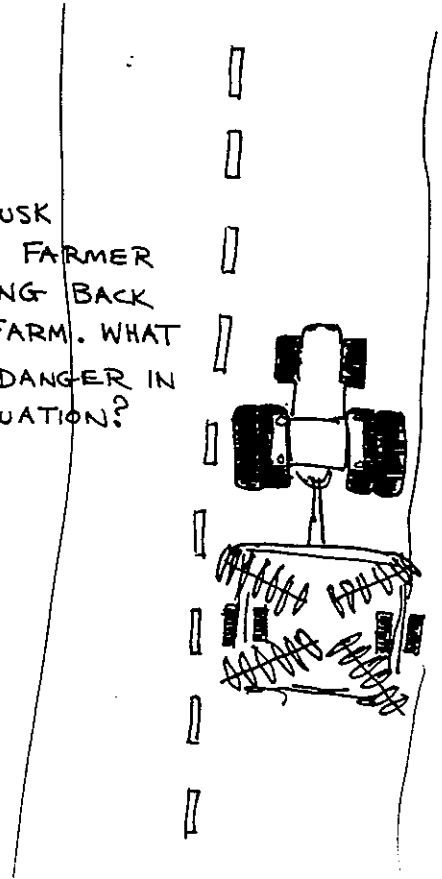
A

AN IMPATIENT DRIVER PASSES, EVEN THOUGH HE HAS POOR VISIBILITY BECAUSE OF LARGE LOAD ON WAGON THAT HE IS FOLLOWING.

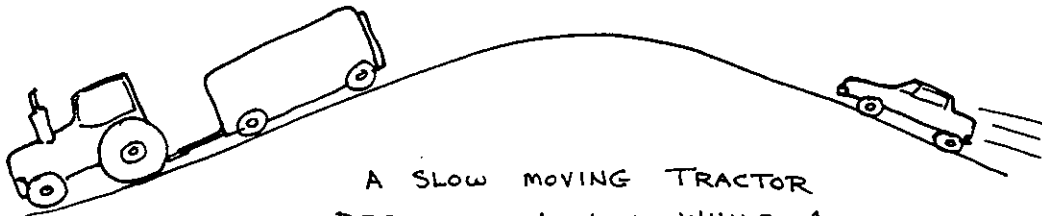


B

IT'S DUSK AND THIS FARMER IS DRIVING BACK TO HIS FARM. WHAT IS THE DANGER IN THIS SITUATION?



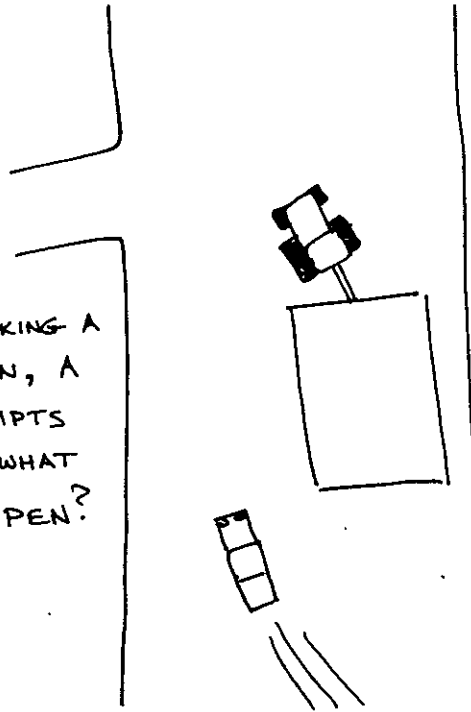
C



A SLOW MOVING TRACTOR DESCENDS A HILL WHILE A FAST-MOVING CAR OVERTAKES IT. WHAT IS THE DANGER?

D

WHILE MAKING A
LEFT TURN, A
CAR ATTEMPTS
TO PASS. WHAT
WILL HAPPEN?



WHAT CAN BE DONE TO PREVENT THESE ACCIDENT SITUATIONS?

- A. Be sure to pull off to the side of the road occasionally when it is safe to do so — and no oncoming traffic is present. This will allow motorists to pass if they wish to do so. It is not a good idea to pull to the far right when there is oncoming traffic — the motorist following you may mistakenly see this as a signal that it is all clear to pass — (result - he may pull out to pass and have a collision with oncoming traffic). Always use caution when pulling off to the side of the road. The shoulder may not be able to support the weight of your equipment which could result in rolling over into the ditch.
- B. If possible, very large equipment (long and/or wide) should avoid travel before dawn or at or after dusk. If it is necessary to travel at these times:
- Be sure all lights and reflectors are working,
 - Keep tractor and all parts of machinery to the right of painted divider lines on roadways, and
 - Have a vehicle escort with hazard lights flashing.
- C. Keep well to the right side of the road when descending hills. When going downhill the hill may hide the tractor from the view of traffic coming from behind. A fast moving vehicle might break the crest of the hill with the driver unprepared to slow down for farm equipment. For this reason you should also never stop farm equipment on a hill.
- D. When hauling a large load which you can't see around or over, pull over to the right side of the road to look back behind to watch for approaching traffic. If road is very long and straight, you may be able to see traffic well before it reaches you. This is one of the most dangerous traffic situations. Exercise extreme caution when making a left turn on a public road.

PROJECT SUMMARY - Safety and Tillage Equipment

(complete at the end of the project)

A. Member Comments:

1. I joined this club because ... _____

2. I really enjoyed ... _____

I didn't enjoy ... _____

3. If I was to take this project again, I would change ... _____

4. I learned ... _____

5. I'm glad ... _____

B. Parent/Guardian Comments: _____

C. Leader Comments: _____

This project has been completed satisfactorily.

Member _____ Leader _____

Date _____ Leader _____

4H Ontario



SAFETY AND FARM MACHINERY Safety and Tillage Equipment

Congratulations on successfully completing
this 4-H project.

Date

Club Leader's Signature

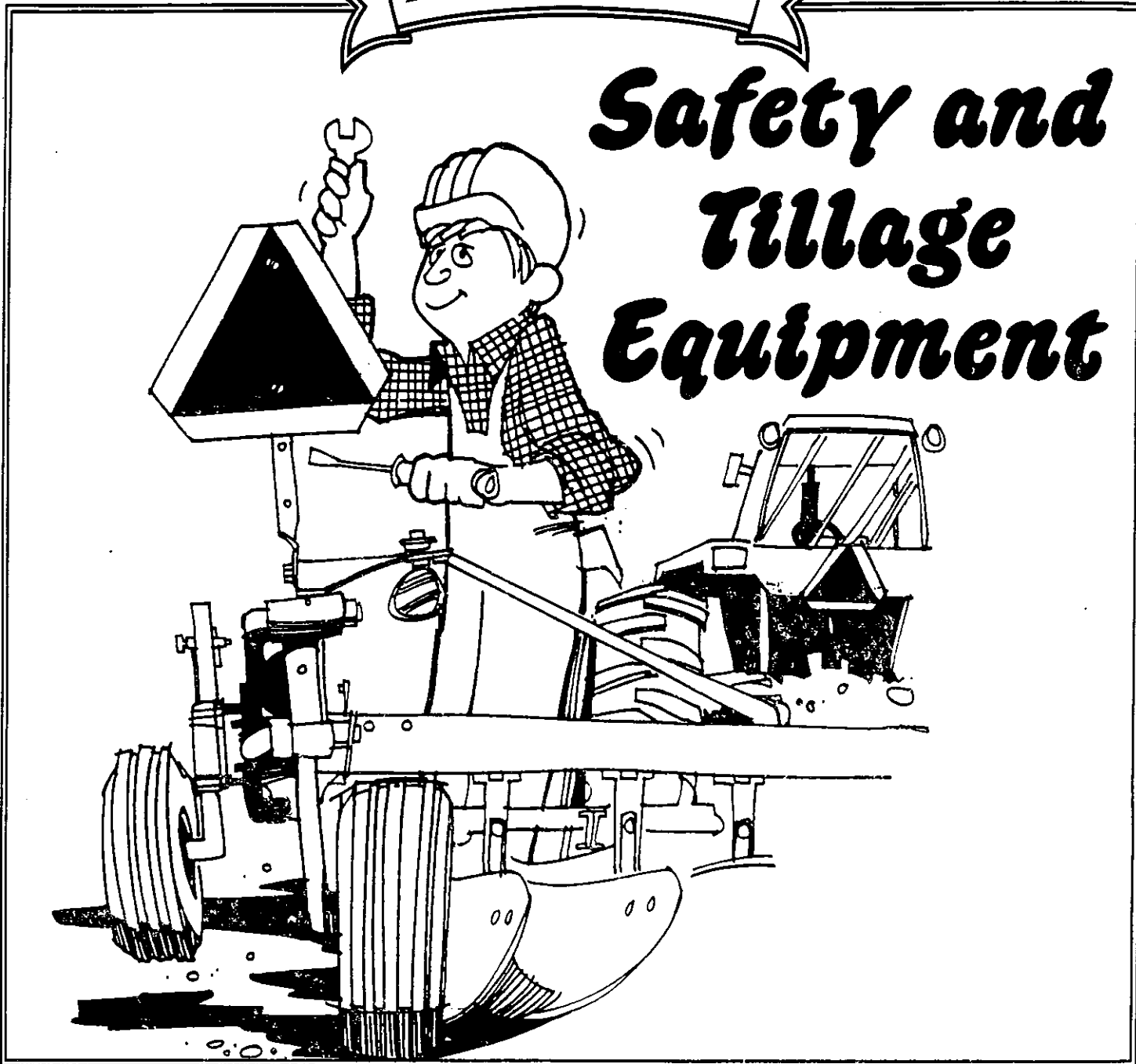
For additional information on tillage and conservation tillage consult the following references in the attached Best Management Practices on Field Crop Production.

The Moldboard Plow	46
Discs	49,64
Field Cultivators.....	50
Rotary Hoe	50
Harrows.....	50
Deep tillage - Subsoilers	50
Reduced Tillage, Mulch Tillage	54
Residue Management	55
Discs Chisel Plow, Chisel Plow	60
Ridge Tillage.....	74
No Till	74



LEARN TO DO BY DOING

Safety and Tillage Equipment



NAME

AGE

CLUB

NUMBER OF CLUBS



Ontario
4-H Council



Ministry of Agriculture,
Food and Rural Affairs

4-H 600 98 ME

The Ontario 4-H Program provides opportunities
for the personal development of youth.

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

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This project was originally prepared by
Bev Wigney, Osgoode, for the Ontario 4-H Council
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Special thanks to the original advisory committee which included
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FMSF98M

 **KIDS HELP PHONE**
JEUNESSE, J'ECOUTE
1-800-668-6868

ISBN 0-7778-6604-8

<http://kidshelp.sympatico.ca>

INTRODUCTION

Welcome to the 4-H Safety and Farm Machinery project. This project will cover two important topics - safety and tillage equipment. You will learn how to recognize a hazardous situation, and how to protect yourself and others from injury. You will also learn about the different types of tillage equipment and their use and maintenance.

This project will be of interest to Farm Machinery and Safety 4-H clubs. The basic safety information is suitable for the entire 4-H membership. Much of the tillage equipment information is as well, but junior members are not encouraged to operate the equipment.

OBJECTIVES

As a member you will:

1. Discover how to protect yourself and others by looking out for problems and by using protective clothing and equipment.
2. Learn how to identify different types of tillage equipment and find out about their uses.
3. Learn how to properly maintain tillage equipment.
4. Develop leadership and cooperation skills through participation in club activities.
5. Have fun.

GENERAL REQUIREMENTS

A member will complete a project satisfactorily by:

1. participating in at least 2/3 of his/her own club meeting time;
2. completing the project requirements to the satisfaction of the club leader(s);
3. taking part in an Achievement Program.

SPECIAL ACTIVITIES

Individual clubs will decide if junior and/or senior members will be required to complete a special activity. **The emphasis is not on the report or on the final results, but on the activity and learning experience itself.** If you will be doing a special activity here are some suggestions to get you thinking. If you have another idea that's great - just get it approved by your leader(s). Whatever the choice; display, present or share in some way the results of your activity. This could be done at a club meeting, the Achievement Program or another 4-H event.

1. Make a poster about some aspect of safety and bring it to a meeting, or enter it in a poster competition at a local fair (if they hold one - many fairs have poster competitions sponsored by the local Farm Safety Association). Your poster could be about: fire prevention, safe operation of farm equipment, protective clothing and equipment, or any other subject regarding safety.
2. Complete a first aid training course and report about your experience during a club meeting.

3. Do a presentation to your club on any topic relevant to the material covered in the project. Here are a few suggestions.
 - Assemble a collection of safety clothing and equipment and explain or demonstrate its use.
 - Tell about fire prevention, the different types of fires, and the proper use of a fire extinguisher.
 - Demonstrate how to set a plow properly in the field.
 - Demonstrate the proper procedure for packing a wheel bearing on tillage equipment.
 - Demonstrate how to measure crop residue levels and explain the difference between a conservation tillage system and a conventional system.

4. Senior members may be interested in taking a pesticide handling course given by the Ontario Ministry of Agriculture and Food. Give a report on your experience to the members of your club.

MEETING SCHEDULE

	DATE	TIME	PLACE
MEETING ONE			
MEETING TWO			
MEETING THREE			
MEETING FOUR			
MEETING FIVE			
MEETING SIX			
ACHIEVEMENT PROGRAM			

FEEDBACK

The 4-H Resource Development Subcommittee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address:

4-H Resource Development Subcommittee
Ontario 4-H Council
R.R. #1 Thornloe, Ontario P0J 1S0
1-800-937-5161.
E-mail: lduke@ntl.sympatico.ca
<http://www.4-Hontario.ca>

Be willing to let your name stand for an executive position. It is a rewarding and fun experience. Following your club's elections, complete this club executive chart.

CLUB EXECUTIVE:

<u>Office</u>	<u>Name</u>	<u>Phone</u>
PRESIDENT	_____	_____
VICE-PRESIDENT	_____	_____
SECRETARY	_____	_____
TREASURER	_____	_____
PRESS REPORTER	_____	_____
OTHER	_____	_____

CLUB MEMBERSHIP:

<u>Members</u>	<u>Phone</u>	<u>Members</u>	<u>Phone</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____



<u>Leaders</u>	<u>Phone</u>	<u>Leaders</u>	<u>Phone</u>
_____	_____	_____	_____
_____	_____	_____	_____

<u>OMAFRA Contact, Phone</u>	<u>4-H Association Contact, Phone</u>
_____	_____

Ready for Action

ROLL CALL

How many years have you been involved with 4-H clubs?

BEING PREPARED

It is especially important to be prepared for a possible accident when working on the farm or around the home. This is because:

- The farm and home can be hazardous workplaces,
- Medical help may not be located nearby, and
- There are often few people at the accident site to help with a problem.

You can be prepared for an accident by:

- Taking a course in first aid from St. John Ambulance or the Red Cross,
- Keeping a well-stocked first aid kit on hand,
- Having emergency telephone numbers posted at all telephones, and
- Being sure that everyone knows what to do if an emergency happens.

FIRST AID TRAINING

First aid training is available through several different agencies such as St. John Ambulance and the Red Cross. Courses are often organized at high schools and community colleges as part of their continuing education department.

Those who go on a training course will receive a certificate after successfully completing the course. This certificate is valid for a set number of years and then a "retraining course" should be taken.

FIRST AID KIT

The first aid kit should be kept inside of a container that is:

- waterproof,
- lightweight,
- easy to carry,
- opens and closes easily, and
- well marked so that it is easy to find.

The Workers' Compensation Board regulations list the following items for a first aid kit that will be used by farm workers.

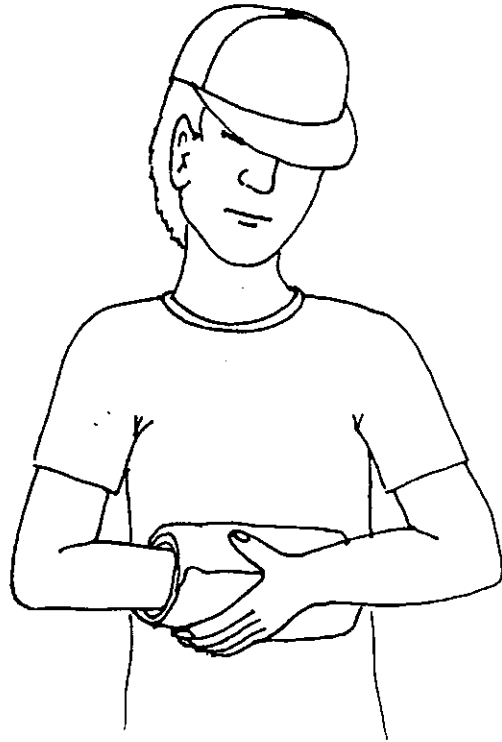
- a current edition of a standard St. John Ambulance First Aid Manual
- one card of safety pins
- dressings
 - 16 adhesive dressings, individually wrapped
 - 6 sterile gauze pads, 3-inch square
 - 4 rolls of 3-inch gauze bandage
 - 2 sterile surgical pads suitable for pressure dressings, individually wrapped
 - 4 triangular bandages

Remember to replace any items that get used.

EMERGENCY INJURY PACK

If you or someone else is bleeding, and a first aid kit isn't nearby, a baby's disposable diaper could be used. Wrap the injured area with the diaper - then go for help.

A well-stocked first aid kit is best but if space is tight (such as in a tractor tool box) at least find room for a disposable diaper stored in a plastic bag to keep it clean.



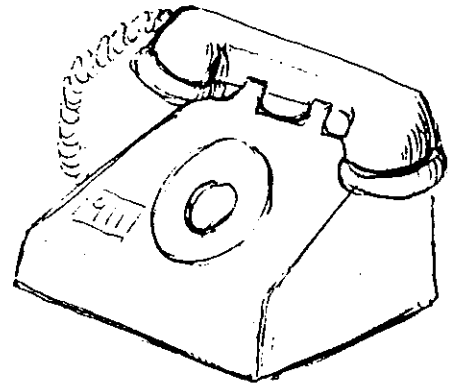
CALLING FOR HELP

If an emergency happened at your home, would you know how to call for help?

When an emergency happens, it is important to get help as quickly as possible.

When providing help make sure that you keep your personal safety in mind - you can't help if you become the victim.

Minutes can often mean the difference between life and death.



DO YOU KNOW WHO TO CALL?

Some areas of Ontario now have a 911 system to handle all emergency telephone calls. You need only dial "911" and wait for the emergency operator to answer your call. Find out whether or not your area has a 911 system.

IN ALL OTHER AREAS, you may have to choose the emergency service you wish to call and dial that number. For example, for fires or emergency rescue, you may have to call your local fire department. For injuries, you would call the area ambulance service. For help with an

emergency, or to report a crime, you might call the regional or provincial police headquarters nearest you.

You should become familiar with emergency services in your area. Emergency telephone numbers are usually found in the front of the telephone directory. Clearly post these numbers at all telephones.

Don't depend on your memory for emergency telephone numbers. It is not unusual for people to be unable to remember a telephone number when an emergency happens. You may even be unable to remember your own telephone number or address. Write them down! Directions to your home should also be posted at all telephones.

When you call for help, give

- the reason for your call
- the location of the accident, fire, or other emergency situation,
- the condition of anyone who has been injured, and
- what first aid, if any, has been given.

When you are speaking to the emergency operator:

- remain calm,
- keep your explanation of the emergency brief,
- try to supply any information that might be important to the emergency rescuers (i.e. the building on fire is where pesticides are stored), and
- stay on the telephone line unless directed to do otherwise.

BEFORE THE NEXT MEETING

Fill out the In Case of Emergency form on the next page.

Find out whether or not you are in an area which has a 911 emergency telephone system. If not, find out the telephone numbers of emergency services in your area.

Make a small sign to put up next to your telephone and record either "911" or your local emergency numbers on it. Also include directions to your home.

Ready For Work

ROLL CALL

What is one item that might be useful in a first aid kit?

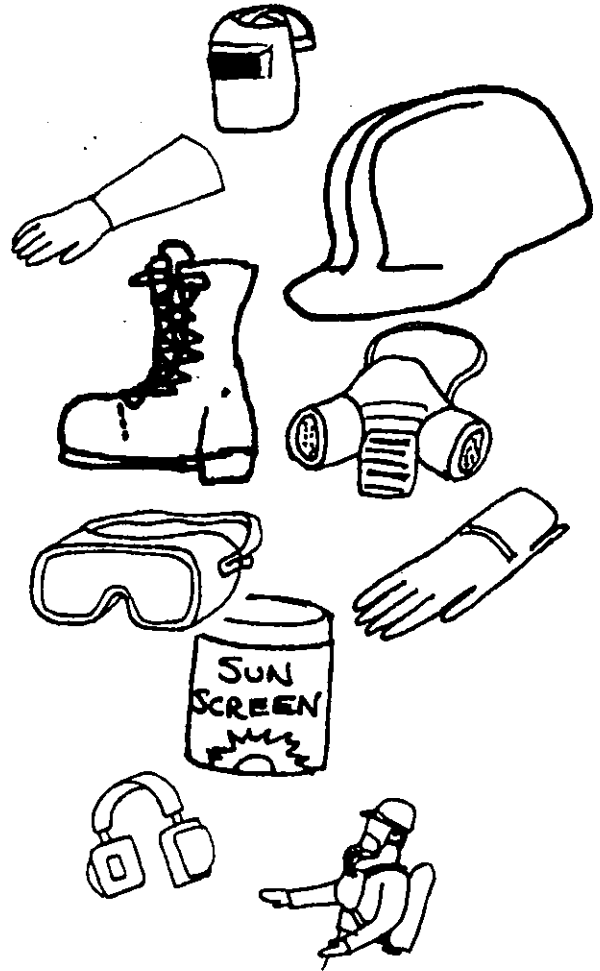
In this meeting you will be learning about protective clothing and equipment for use when working around the home and farm. Also, you will learn about the hand signals used by heavy equipment operators and farmers when operating tractors and other machinery.

COME TO YOUR SENSES - USE "PERSONAL PROTECTION EQUIPMENT"

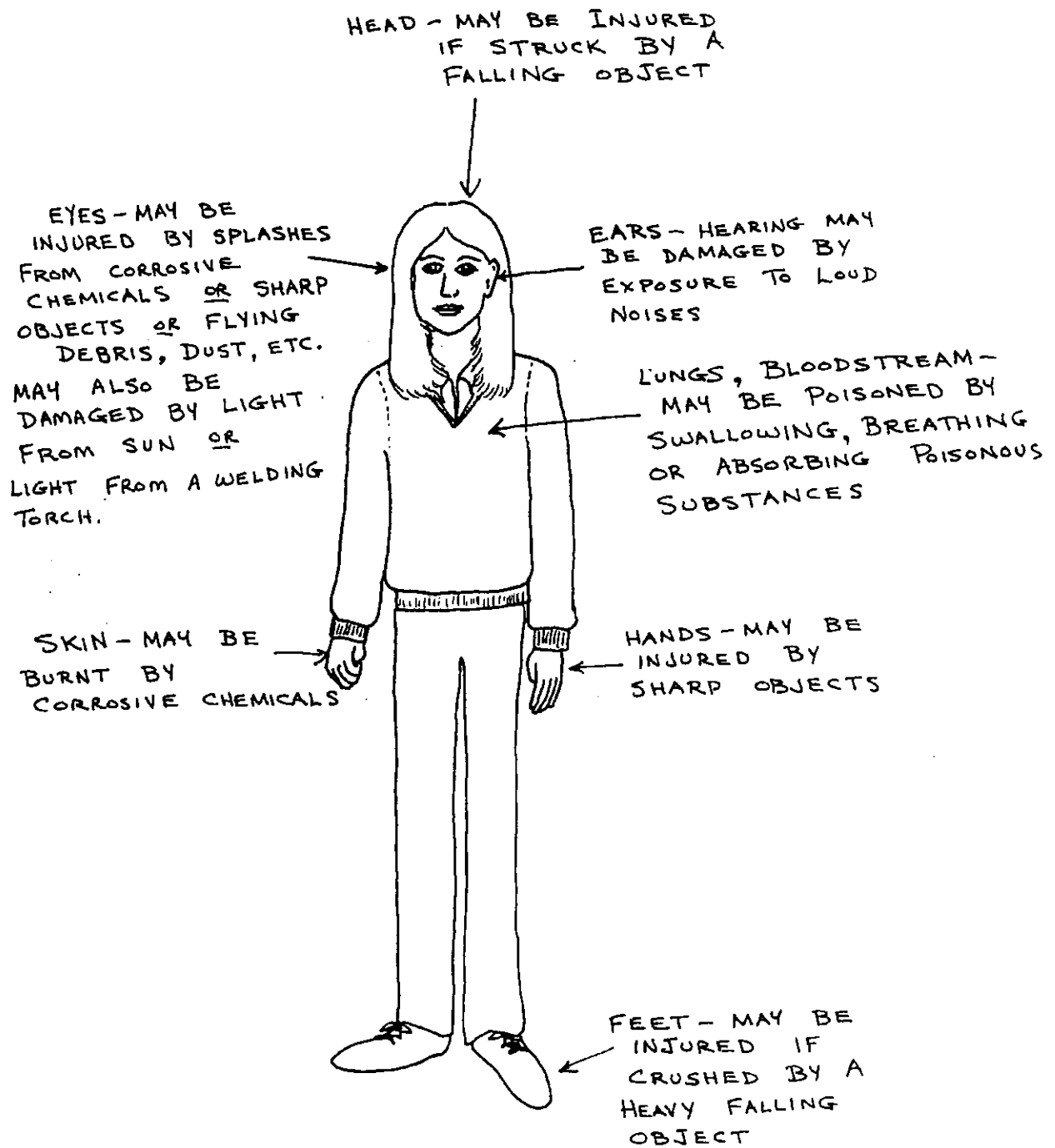
When we do any kind of work around the home or farm, there is some risk of injury to our bodies. To minimize the chance of injury, we may use Personal Protection Equipment (PPE) to protect ourselves.

What is Personal Protection Equipment?

It is clothing and equipment that can be worn to prevent or minimize injuries during an accident. BUT since injury is possible, prevention of an accident is still the best way of staying safe!



A LOOK AT THE MAIN THREATS TO OUR BODIES



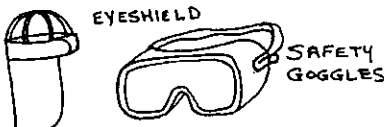

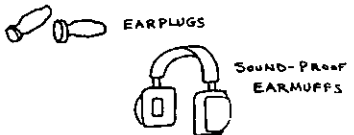



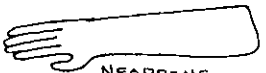
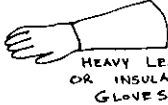

HOW CAN WE PROTECT OURSELVES?







The best way to avoid all injuries is by **BEING CAREFUL!** If we prevent an accident, we don't have to deal with it later. Also, we should remember that many injuries happen through exposure rather than an accident.

For example, hearing loss is often caused by long-term exposure to loud noises. Noise is measured in decibels. Normal conversation is 65 decibels. Noise in excess of 120 decibels can cause acute pain in the ear. Did you know that squealing pigs at feeding time, and amplified music can reach 120 decibels? Pretty scary!



We can't always prevent exposure to certain dangers or damaging situations, **BUT** we can use personal protective equipment to minimize the dangers. The following chart will help you to find out how to protect yourself from dangers such as falling bricks or squealing pigs!

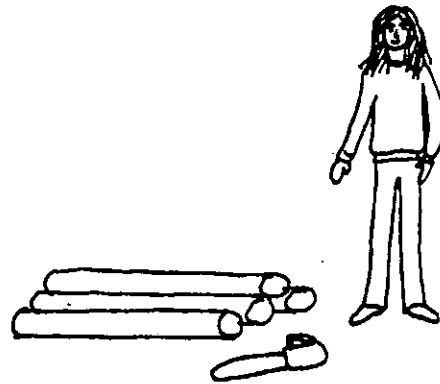
Part of Body	Type of Danger	Use This P.P.E.
Eyes	<ul style="list-style-type: none"> - injury from dust, flying debris, sharp objects - splashes from corrosive liquids 	 <p>EYESHIELD SAFETY GOGGLES</p>
Eyes	<ul style="list-style-type: none"> - injury from light rays of a gas or arc-welding unit 	 <p>WELDER'S FACE MASK</p>
Ears	<ul style="list-style-type: none"> - loss of hearing from exposure to loud noises 	 <p>EARPLUGS SOUND-PROOF EARMUFFS</p>
Head	<ul style="list-style-type: none"> - injuries from being struck by heavy, sharp, or falling objects - chemical splashes on head 	 <p>HARD HAT</p>
Head	<ul style="list-style-type: none"> - sunstroke from hot sun - a straw hat is best, but any hat with a wide brim may be worn 	 <p>STRAW HAT OR OTHER COOL HAT WITH WIDE BRIM</p>
Hands	<ul style="list-style-type: none"> - cuts from sharp objects such as fence wire or baler twine 	 <p>LEATHER WORK GLOVE</p>
Hands	<ul style="list-style-type: none"> - poisoning by absorption of chemicals through skin 	 <p>NEOPRENE GLOVES</p>
Hands	<ul style="list-style-type: none"> - burns when welding - heatproof - non-flammable gloves are best 	 <p>HEAVY LEATHER OR INSULATED GLOVES</p>
Feet	<ul style="list-style-type: none"> - injury from being crushed by falling object or heavy object - puncture from sharp object...i.e. stepping on a nail 	 <p>STEEL-TOED, STEEL-SOLED WORK BOOTS</p>

Part of Body	Type of Danger	Use This P.P.E.
Feet	- absorption of chemicals	 <p>RUBBER BOOTS</p>
Body	- chemical absorption	 <p>RUBBER OVERALLS OR APRON</p>
Body	<ul style="list-style-type: none"> - injury from sharp objects i.e. chainsaw cuts, etc. - sparks from welders, etc. 	<p>several types of aprons, leggings, etc. made <u>BUT</u> they only provide limited protection in a dangerous situation</p>
Lungs	- lung damage from dust inhalation	 <p>DUST-PROOF MASK</p>
Lungs	- poisoning through respiratory system	 <p>CARTRIDGE RESPIRATOR</p>
Lungs	- suffocation due to lack of oxygen in a place such as a silo or manure pit	 <p>S.C.B.A. SELF-CONTAINED BREATHING APPARATUS</p>
Skin	<ul style="list-style-type: none"> - danger from exposure to sun - sunburn also can lead to skin cancer 	 <p>SUN SCREEN</p>

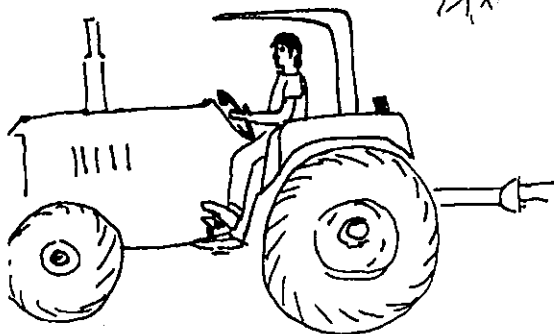
JOE WANTS TO DO SOME
ARC-WELDING. WHAT SHOULD
HE BE WEARING?



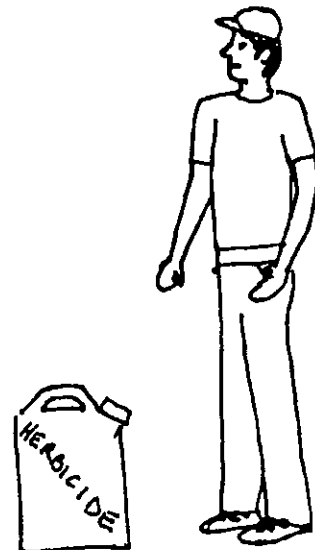
KATE WANTS TO CUT SOME
FIREWOOD WITH HER CHAINSAW.
WHAT SHOULD SHE BE WEARING?



BOB WILL BE WORKING
ON THE TRACTOR ALL
DAY. WHAT SHOULD HE
BE WEARING?



KEN WILL BE MIXING A
BATCH OF HERBICIDE.
WHAT SHOULD HE BE
WEARING?



HAND SIGNALS FOR SAFE EQUIPMENT OPERATION

COME TO ME



Can also be come to me because I need assistance. Lift your arm vertically over your head with the back of your hand to the rear and turn your arm in large, horizontal circles.

DECREASE SPEED



Put your arm out horizontally with the back of your hand up and then move your arm down about 45 degrees many times. Keep your arm straight and do not move your arm above your shoulder.

RAISE EQUIPMENT



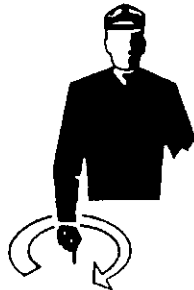
Point up with one finger and at the same time, move your hand in a circle at head level.

INCREASE SPEED



Lift your hand to shoulder level with your fingers closed. Move your closed hand fully up and then return to shoulder level. Do this fast many times.

LOWER EQUIPMENT



Point to the ground with one finger and at the same time move your hand in a circle.

STOP



Raise your arm fully up with the back of your hand to the rear. Keep this position until the signal is understood.

START THE ENGINE



Move arm in a circle at arm level.

STOP THE ENGINE



Move your right arm across your neck from left to right.

MOVE TOWARD ME - FOLLOW ME



Look toward person or vehicle you need to move. Hold one hand in front of you with the back of the hand toward the vehicle and move your arm from the elbow to the fingers backward and forward.

BEFORE THE NEXT MEETING

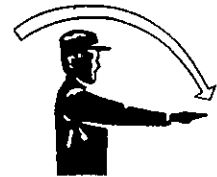
Choose a job that you might do around the home or farm. Think about the dangers that you might encounter. Think about what protective gear you would need to help you do the job and prevent injuries. Jot down a few notes here and share this at the next meeting.

THIS FAR TO GO



Put your hands in the front of your face with the backs of your hands outward. Move your hands in or out as an indication of how far to go.

MOVE OUT



Face in the needed direction of movement. Put your arm straight out behind you. Then, swing your arm over your head and forward until your arm is straight out in front of you with the back of your hand up.

Air + Heat + Fuel = Fire

ROLL CALL

Name a job or task that needs to be done around a house or farm and the personal protective equipment needed to do it safely.

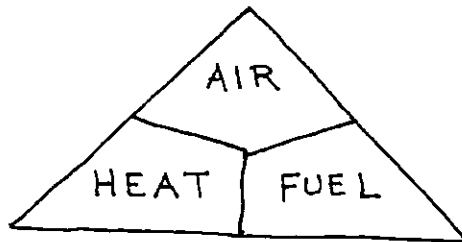
WHAT MAKES A FIRE BURN?

THE THREE PARTS OF A FIRE

Fire can be good when it is used to keep us warm or to cook food. BUT, it can be bad when it is out of control and burning fields, trees and buildings.

There is little difference between a useful fire and a dangerous fire. Both fires need the same three things to happen so that they can burn. The only difference between the fires is that one fire is doing what we want it to, while the other is out of our control.

This triangle shows the three things needed to make a fire.



If any one of these three parts is missing, the fire cannot continue to burn. This is an important thing to remember when trying to extinguish (put out) a fire.

AIR

Because a fire cannot burn without AIR, it is often possible to extinguish it by covering it with something that will cut off its air supply.

- A burning pot of oil can often be extinguished by setting a tight fitting lid on top of it.
- A burning piece of wood can often be extinguished by covering it with sand (like a campfire).

FUEL

A fire can also be extinguished by removing the source of fuel. This is how a propane torch is turned off. The fuel control is shut off back up the line from the actual flame.

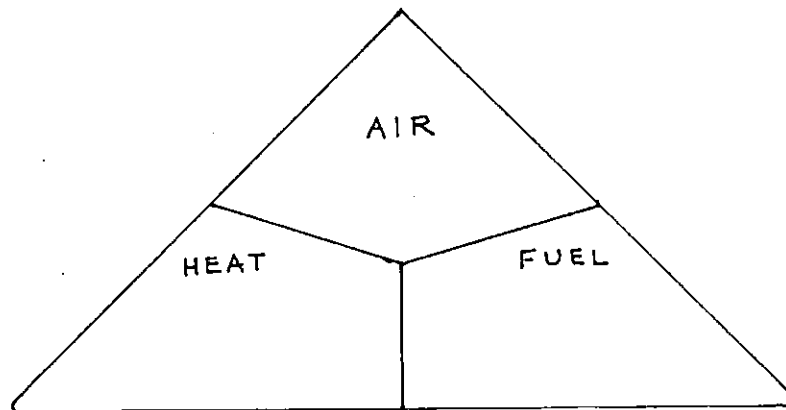
- Forest fires are often controlled by bulldozing, cutting down, or purposely burning a section of forest to make a fire break so that the forest fire runs out of fuel to burn. This usually works unless a strong wind carries sparks and burning debris into an unburned section of forest.

HEAT

A fire can also be extinguished by reducing the heat. This can be done by soaking the burning object with water, **BUT WATER CAN BE VERY DANGEROUS IF USED ON SOME KINDS OF FIRES.**

DRAW A FIRE

This triangle represents a fire. AIR is marked on one of the triangle's three parts. If this were a dangerous fire, what might make up the other two parts of the triangle. Remember that one must be a type of FUEL, while the other is a source of HEAT. Write in your answer, OR draw a small picture in each of the two blank sections.



How would you put out your fire?

KINDS OF FIRES

Fires are grouped according to the fuel that feeds them. Each group is known as a class. There are four classes of fire - each is named after a letter of the alphabet.

- Class A - ordinary combustibles, wood, paper, etc...
- Class B - flammable liquids, gasoline, fats, oils, etc...
- Class C - live electrical wiring, motors, appliances, etc...
- Class D - combustible metals, magnesium, potassium, etc...

An easy way to remember the first three classes of fire is as follows:

- A "A" looks like an A-frame cabin made of wood, paper cloth, etc.
- B "B" stands for barrels of oil or grease.
- C "C" stands for current in electricity.

FIRE EXTINGUISHERS

The class of fire is important because it identifies the fuel being burned by the fire. By knowing the class of fire, we know what type of fire extinguisher to use to put out the fire. Fire extinguisher types are divided according to the class of fire that they put out.

For example: A fire extinguisher rated for "A" class fires would be used to put out a fire which was fed by burning papers (paper is a class "A" fuel).

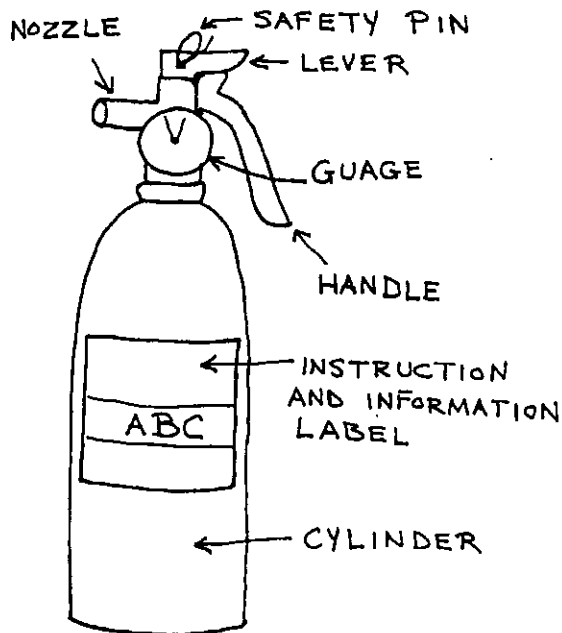
On a farm, A, B, and C class fires are common. For this reason, the best fire extinguisher for the farm is usually an all-purpose ABC rated extinguisher.

On the farm, several portable fire extinguishers may be necessary for adequate safety. These should be strategically located in buildings where threat of fire exists, OR near machinery or equipment that could generate enough heat to start a fire. Tractors, combines, welders, or anything with an electric motor will all generate heat. It is also a good idea to keep a fire extinguisher IN vehicles such as cars, trucks, tractors and combines.

Usually, fire extinguishers should be placed near the exits of buildings so that it is not necessary to go far into a building to find the fire extinguisher during a fire emergency.

USING A FIRE EXTINGUISHER

The fire extinguisher has seven main parts that you should know about.

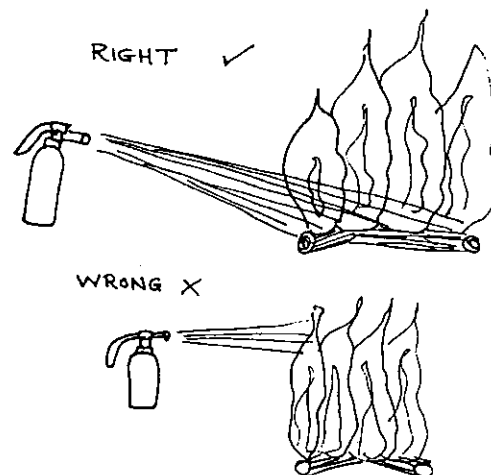


1. The cylinder: Holds the chemical that is used to put out the fire.
2. The gauge: Shows how much of the chemical is in the cylinder.
3. The instruction and information label: Gives you information about the fire extinguisher — what class of fires it may be used on, how to read the gauge, when to recharge.
4. The handle: Used to carry the fire extinguisher.
5. The safety pin: Must be removed before operating the fire extinguisher (the safety pin prevents accidental release of chemicals).
6. The lever: Must be pushed down to spray out the chemicals.
7. The nozzle: Must be aimed at the fire.

When using the fire extinguisher, remember the following.

- Do not get too close to the fire.
- Be sure that you know how to use the extinguisher before you approach the fire.
- Discharge the contents of the fire extinguisher at the base of the fire where the fuel is.

DO NOT aim up at the actual flame. This won't do anything!



WARNINGS

- Do not put yourself in danger at any time.
- Never approach a fire of oil or gasoline that could explode at any time.
- Do not attempt to put out a large fire all alone! Call the fire department! Most fire extinguishers only contain enough chemicals to extinguish a small fire.
- Do not spray water onto a class "B" or "C" fire. Water may spread burning oil or chemicals of a Class "B" fire. It may conduct dangerous electrical currents in a Class "C" fire.

Everyone in your home should be trained in the safe use of a fire extinguisher.

SIGNS OF SAFETY

What are signs, symbols and signals?

They are easily recognized pictures, words or body movements that communicate an important message. They may be used for several reasons.

1. At a glance, a sign, symbol or signal will communicate an important message to one or more people.
2. Most symbols have the same meaning in many languages - so anyone can understand their meaning regardless of the language that they speak.
3. Many symbols, signs and signals do not use written words - so that almost anyone can understand the message even if they cannot read.

If you are concerned about safety, you should become familiar with the signs that are commonly used to warn us about dangers.

SIGNS AND SYMBOLS

Here are some of the most common signs and symbols found on hazardous products (products that may be dangerous when handled improperly).

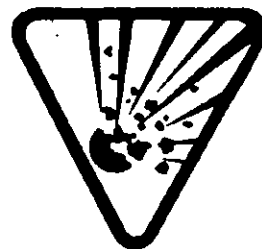
FLAMMABLE

This symbol is used to identify products that could be set on fire very easily. Some examples of flammable products are aerosol paints and lacquers, engine starting fluid, and spray lubricants. Flammable products should be used in a well-ventilated place away from open flames or other sources of extreme heat.



MAY EXPLODE

This symbol is used to identify products that could explode if heated or crushed. Some examples of explosive products are most aerosol products. These products contain propellant gases under pressure (these gases carry the product out of the can in a spray - such as spray paint). Aerosol containers may explode if heated, crushed or punctured. Keep them away from heat sources such as open flames, heating ductwork, heaters, or furnaces. Do not throw or drop them, or crush them in any way.



CORROSIVE

This symbol is used to identify products that may corrode metals OR burn skin, eyes, or respiratory membranes (the tissue of the lungs, throat and nose). They may burn on contact, or it may take a few minutes before a burning sensation is felt. These products are especially dangerous if splashed into the eyes. They may also be dangerous if the fumes are breathed. Common corrosive products are many cleaning fluids and compounds, as well as lime dust in concrete mix. The product label will usually give detailed information about the safe use of the product, as well as the proper precautions to be taken when handling the product (e.g. wearing goggles, rubber gloves, etc...).



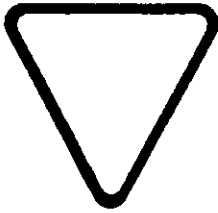
POISONOUS

The skull and crossbones symbol tells us that a product is poisonous. This means that the product may cause serious health problems, or even death, if it is swallowed, breathed, or absorbed through the skin. Examples of poisonous materials are: many pesticides (used to kill living organisms such as insects, plants, animals), rodenticides (used to kill rats and mice), as well as many cleaning fluids, paints, glues and paint removers. When using these products, instructions should be followed very carefully. Poisonous products should be carefully stored out of the reach of children or animals.



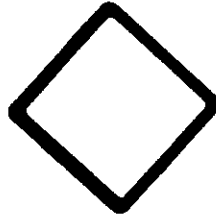
All four of these symbols may be found on hazardous product labels. The degree of danger of a product is indicated by the shape of the border surrounding the symbol.

These are the borders with their meanings.



CAUTION

- the least degree of danger (but still a danger)



WARNING

- greater degree of danger than caution



DANGER

- greatest degree of danger

On a hazardous product, the symbol for the type of danger will be combined with the border shape showing its degree of danger.

OTHER SAFETY SYMBOLS

Besides hazardous products symbols, there are other safety symbols which are commonly seen in the workplace.

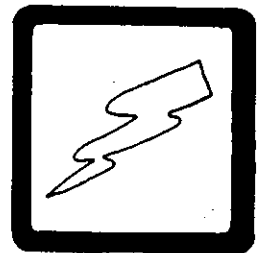
NO SMOKING

This symbol is used anywhere that smoking is not allowed. This could be because the smoke will bother others, OR because the flame could ignite flammable gases or other materials. A common place to see a "NO SMOKING" sign is at the fuel pump at a gas station.



ELECTRIC SHOCK HAZARD

This symbol warns us that there is a risk of electric shock if a product or tool is used incorrectly. It may also warn of electricity in the area (e.g. a high voltage powerline, buried electric cable, electric fencing unit). If you don't know where the danger is located, ask someone who does. Do not tamper with equipment or products that are marked with this sign. Many can give an electric shock - even when unplugged from a wall socket.



STOP - READ INSTRUCTIONS

This symbol is used as a warning to read instructions before proceeding with the use of a product or a piece of equipment. This is to alert us to possible dangers that could exist if we do not fully understand how to use the product or equipment.



GENERAL TIPS ABOUT PRODUCT SAFETY

1. Be sure that all products are properly labelled. **STORE THEM ONLY IN THEIR ORIGINAL CONTAINERS.** **NEVER** store dangerous products in any type of container that might suggest the product is a food or beverage.
2. Store all products
 - away from sources of heat and spark,
 - where children and animals cannot reach them,
 - away from food and drinking water, and
 - away from products that might create a dangerous substance if mixed together.
3. Read instructions before each use. Follow all safety precautions.
4. Wear protective clothing if recommended.
5. **NEVER** mix two products together. You may create a very dangerous mixture. For example, if you mix cleaning products containing chlorine and ammonia, you will create a very poisonous and explosive gas.

BEFORE THE NEXT MEETING

Find a product with a hazardous warning label on it.

What is the product? _____

What kind of warning symbols does it have (which symbol and degree of danger)?

What safety steps should be taken before, during and after use of this product?

Discuss your findings at the next meeting.

Tillage Basics

ROLL CALL

What hazardous product symbol did you find for the "Before the Next Meeting" activity? How would the product be safely used?

TILLAGE BASICS

The word "till" means to work at soil by breaking it up, turning it over, or moving it in some way. Tilling

- prepares the soil for seeding by covering up previous crops,
- removes or destroys unwanted weeds, and
- allows air and nutrients to enter the soil to help plants grow.

We refer to all equipment used for tilling the soil as tillage equipment.

Tillage equipment is usually divided into two categories.

1 Primary Tillage Equipment

This heavy duty equipment is used to do the heavy work of turning under crop residue or sod from one crop in preparation for the next crop. The moldboard plow and the disk cultivator are examples.

2 Secondary Tillage Equipment

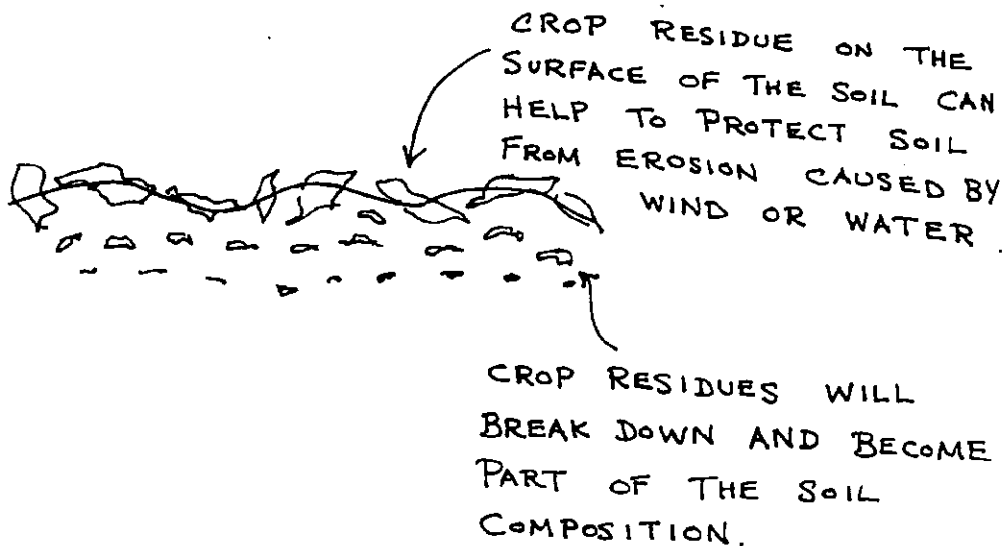
This is equipment which is usually a little lighter than primary tillage equipment. It is used to continue the work of cultivating a field in preparation for seeding OR for removing unwanted weeds and loosening soil. Cultivators and harrows are examples.

You will also hear the term conservation tillage equipment. This refers to equipment which is used to work the soil in a way that will help to improve soil conditions by preventing soil compaction and soil erosion (more about these terms later). Conservation tillage equipment can belong to either the primary or secondary tillage equipment group depending upon which job it is used for. When no-till equipment is used a narrow seedbed is prepared to allow adequate seed and fertilizer placement. Ridge-till equipment forms a ridge during early summer into which the next years crop is planted. This will be discussed later in the meeting under the topic of "Conservation Tillage".

Many pieces of tillage equipment can belong to either the primary or secondary tillage category, depending upon the way in which they are being used. Also, many pieces of secondary tillage equipment can be used in place of primary tillage equipment in certain situations. This can be done:

- When soil is already loose enough to allow lighter duty equipment to begin cultivation without requiring previous work with heavier duty equipment, or
- When it is desirable to leave a certain amount of crop residue on top of the soil being prepared for the new crop.

Crop residue or "trash" is what is left after a crop is harvested. This could be the cornstalks left over when grain corn is harvested, or the bean plants remaining after soybeans are harvested, or the stubble left over from grains such as oats or barley.

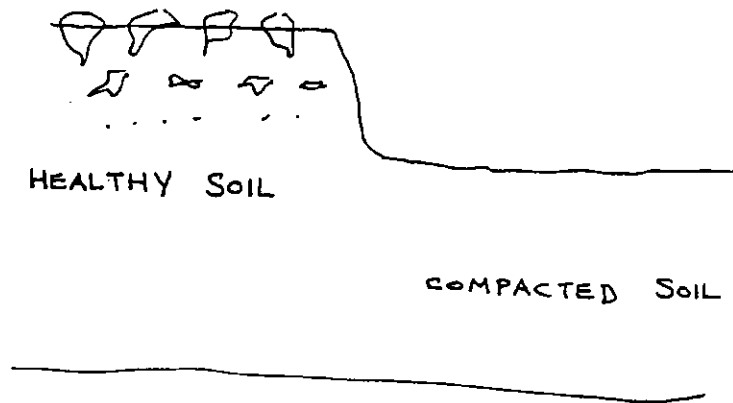


WHAT IS CONSERVATION TILLAGE?

Conservation tillage refers to tillage practices which will benefit the soil. Conservation tillage attempts to prevent soil compaction, and soil erosion.

SOIL COMPACTION

This is a condition that occurs when soil particles become pressed together until they are almost as hard as stone. When this happens, seeds have a hard time growing up through the soil after germinating, plant roots cannot spread out into the soil, and water, air and other nutrients cannot get to plant roots. Soil compaction can be caused by overworking of a field with heavy equipment. The weight of the equipment can eventually compact soil until it is as hard as a dirt road. This can sometimes be seen in the headland of a field that may be travelled over three or more times. The plants in the headland may be short and stunted compared to the rest of the field. Working on the soil when it is too wet can also cause the soil to compact.



HEALTHY SOIL

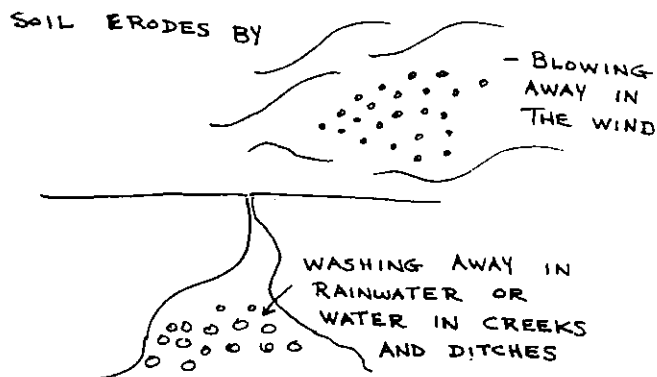
- is loose and easily cultivated
- contains composted organic materials such as leaves, plant stalks
- usually has a high population of earthworms
- will produce healthy plant growth

COMPACTED SOIL

- is very hard even to a depth of up to one metre (or more)
- does not contain much composted organic material
- usually does not contain large populations of earthworms
- often produces stunted, weak plant growth

SOIL EROSION

This occurs when soils are worked up too finely and can then be blown or washed away.



CONSERVATION TILLAGE EQUIPMENT

This equipment

- allows a large amount of organic plant materials (leaves, plant stalks) to remain in the soil to add nutrients, improve the texture and hold in moisture,
- does not overwork the soil into small particles which are easily compacted, blown or washed away, and
- attempts to reduce the number of passes made by heavy equipment over the soil.

The chisel plow and disc chisel plow are examples.

A LOOK AT TILLAGE EQUIPMENT

The chart below and on the following pages gives a few details about some of the basic tillage equipment.

EQUIPMENT	USE AND DESCRIPTION	SPECIAL SAFETY NOTES
MOLDBOARD PLOW	<p>USE:</p> <ul style="list-style-type: none"> - primary tillage - turns previous crop under soil in preparation for further cultivation <p>DESCRIPTION:</p> <ul style="list-style-type: none"> - 3 types <ul style="list-style-type: none"> • 3-point hitch mounted • semi-mounted - part 3-point hitch, part trail • trail, total weight of plow is carried on its wheels 	<ul style="list-style-type: none"> - may be sharp around plow bottom and coulter - semi-mounted type or trail type can upset or overturn on steep hills or ditch banks - snagging on large obstructions - may drop suddenly if hydraulics fail, support if working on plow
DISCS	<p>USE:</p> <ul style="list-style-type: none"> - primary tillage on fields which may be easily cultivated - secondary tillage after plowing to cut up crop residue and pulverise soil <p>DESCRIPTION:</p> <ul style="list-style-type: none"> - offset type, mainly primary tillage - tandem opposed, mainly secondary tillage 	<ul style="list-style-type: none"> - discs may be very sharp - hydraulics may allow discs to drop while operator attempts to remove stones or other debris from discs - snagging on large obstructions

<p>DEEP TILL - SUB-SOIL PLOW</p>	<p>USE:</p> <ul style="list-style-type: none"> - primary tillage - shatters hardened soil below the depth of normal cultivation <p>DESCRIPTION:</p> <ul style="list-style-type: none"> - 3 types of shanks <ul style="list-style-type: none"> • rigid • shear-bolt • spring loaded 	<ul style="list-style-type: none"> - rigid shank style could be dangerous if it strikes a very large buried obstruction - may drop suddenly if hydraulics fail
<p>DISC CHISEL PLOW</p>	<p>USE:</p> <ul style="list-style-type: none"> - primary tillage - works up fields, leaves some residue <p>DESCRIPTION:</p> <ul style="list-style-type: none"> - a chisel plow with various kinds of tools i.e. sweeps, twisted shovel; and with disc gangs across front 	<ul style="list-style-type: none"> - usual safety notes for most tillage equipment listed above - may drop suddenly if hydraulics fail
<p>CHISEL PLOW</p>	<ul style="list-style-type: none"> - primary or secondary tillage - for weed control or to incorporate fertilizer - most crop residue remains on soil surface - roughens field surface to help water enter, and reduce erosion 	<ul style="list-style-type: none"> - sharp tines - possible entanglement in obstructions - may drop suddenly if hydraulics fail
<p>ROTARY HOE</p>	<ul style="list-style-type: none"> - secondary tillage - hoe wheels cultivate areas between crop rows to break crusted soil (helps air and water to enter soil), removes small weeds 	<ul style="list-style-type: none"> - very sharp tined wheels - be on the lookout for flying stones and debris
<p>RIDGE CULTIVATOR</p>	<ul style="list-style-type: none"> - specialized equipment for row crops - turns soil to build supportive ridge where crop plants grow - reduces soil erosion 	<ul style="list-style-type: none"> - may drop suddenly if hydraulics fail - sharp tines - possible entanglement in obstructions

<p>FIELD CULTIVATOR</p>	<ul style="list-style-type: none"> - secondary and primary tillage - levels field - controls weed growth - incorporates fertilizer <p>DESCRIPTION:</p> <ul style="list-style-type: none"> - similar to conservation tillage plow, but weighs less - shanks dig into soil as cultivator is pulled - tines may be "S" or "C"-shaped - various "teeth" to attach to shank ends 	<ul style="list-style-type: none"> - very sharp points on shanks - may drop suddenly if hydraulics fail, support if changing teeth - possible entanglement in obstructions
<p>CULTIVATING HARROWS</p>	<ul style="list-style-type: none"> - secondary tillage - smoothing seedbed - covering seed, works in manure or fertilizer - many different styles - use alone, or pull behind other equipment to "finish" seeding 	<ul style="list-style-type: none"> - sharp pointed tines - these can be dangerous if stored in an area where people or animals walk

BEFORE THE NEXT MEETING

Attempt to do a brief survey of tillage equipment being used on your farm or a neighboring farm. These questions might help you as you gather information.

- What type of equipment is used for tillage work?
- What kind of crops are grown?
- Is conservation tillage in use?

Discuss your findings at the next meeting.

Machinery Safety

ROLL CALL

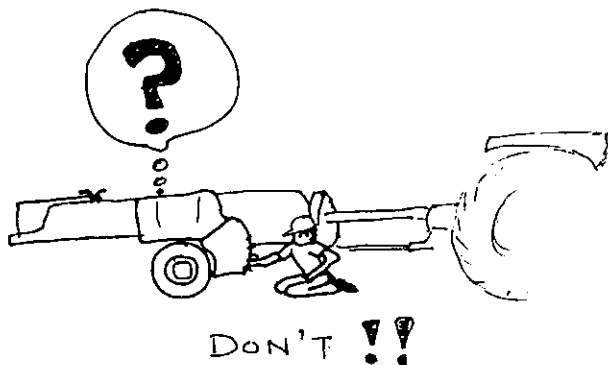
Name a piece of farm machinery that can be very dangerous to work around if you aren't careful.

MACHINERY SAFETY - THE BASICS

Mechanization has brought great changes to the agriculture industry in this century. It has helped to reduce the amount of manual labor required to operate most farms. It has made it possible for one farmer to produce enough food to feed many people. But farm machinery has also added many hazards to the farm's working environment. Farm machinery accidents are responsible for a great many injuries and deaths on farms in Canada each year. However, when used properly, farm equipment is safe and useful.

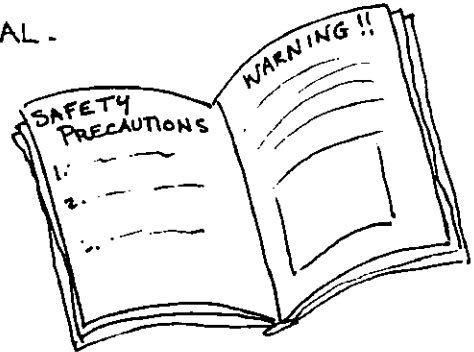
There are many ways in which we can protect ourselves from accidents involving farm machinery. Each piece of equipment is different and requires different safety precautions, but these are some of the main rules that can be followed to prevent accidents.

1. Take responsibility for your safety. Farm machinery is not capable of thinking. It doesn't know right from wrong. A hay baler can't tell the difference between a clump of hay and somebody's arm. Don't expect it to! It doesn't know when it is making a big mistake.

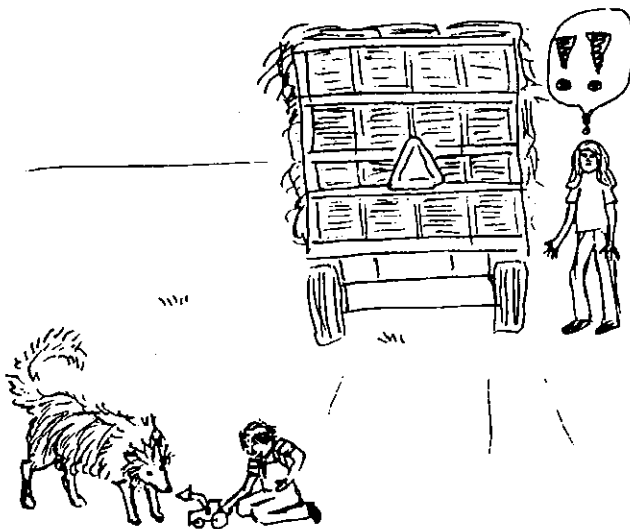


2. Know how a piece of farm machinery works. Before you work with a piece of equipment, learn all about it. Before the machine is running, spend some time studying it. What parts will move? Which parts could be dangerous or cause an accident? What is the correct way to operate the machine? How would you stop the machine in an emergency? The operator's manual is a big help in answering these questions.

READ THE
OPERATOR'S
MANUAL.



3. Show some respect for the power of machinery. Even a very small electric motor such as that on a power saw or drill can cause serious injury. Think what a 60 horsepower tractor with an implement is capable of doing.
4. Watch out for others. Not only are you responsible for your own safety — but also for that of others in the workplace. Don't take chances with people's lives. Be aware of where other people are when using equipment. If you don't know where someone is, stop what you're doing and find out. Never back up without a spotter. Don't be responsible for an accident.



BE AWARE OF
OTHER PEOPLE
AROUND THE
WORKPLACE...

AND

DON'T ALLOW
CHILDREN TO
PLAY AROUND
FARM EQUIPMENT.

5. Dress for work. Wear protective clothing when needed. Avoid dangerous clothes like loose fitting sweaters, shirt-tails not tucked in, or dangling scarves (or anything else that can become caught in the moving parts of a machine).



6. Make sure that equipment is in good repair. Machinery break-downs can be dangerous. Faulty brakes or steering can cause a tractor accident. The sudden breakage of a belt or chain on a machine can cause loss of control, flying parts, sudden acceleration or deceleration. All of these situations can be dangerous if a person is caught in the middle of a machinery break-down.
7. Make sure that **you** are in good repair. Don't operate equipment if you are tired, over-worked, or angry. Eat well so that you won't feel weak from hunger when working. Don't work if you are extremely hot, or extremely cold — this can make you unable to react quickly. If your mind is not entirely clear, you are looking for trouble (and very likely to find it).

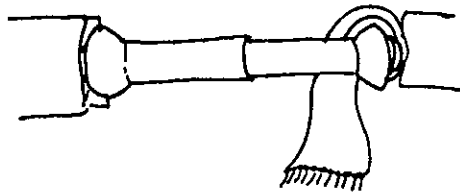
POWER TAKE-OFF EQUIPMENT — TREAT IT WITH RESPECT

Power take-off driven equipment is very common on the farm. These pieces of equipment make use of the tremendous power of the tractor. The equipment is powered by a power take-off shaft that carries the power from the tractor to the implement. This shaft is known as the PTO shaft. It is very much like the driveshaft that connects the engine and transmission of a car or truck to the drive axle assembly.

The PTO shaft transfers the tremendous power of the tractor. When in operation, it is turning at great speed. If anything comes in close contact with the PTO mechanism, it can become entangled very easily. For this reason, modern PTO shafts are equipped with safety shields to minimize possible hazards.

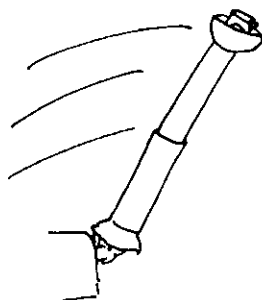
All shielding should be in good repair. It should not be removed for any reason. **REMEMBER** - although many machines are equipped with safety shields, it is still better to avoid any contact with a dangerous mechanism rather than relying on safety shields for protection. If safety shields become encrusted with manure or other dirt, they can snag clothing too - OR they could malfunction.

EVEN WITH SAFETY SHIELDS, IT MAY
BE POSSIBLE FOR CLOTHING TO
BECOME ENTANGLED ON THE SHAFT
OR COUPLINGS...



A PTO shaft can also come disconnected under some circumstances. This may be because the shaft is faulty and in need of repair, OR because it has not been properly connected, OR because the shaft has become extended past its normal safe length. If a shaft comes loose after it has begun turning, it can be flung to one side with tremendous force. Needless to say, this can be extremely dangerous for anyone nearby.

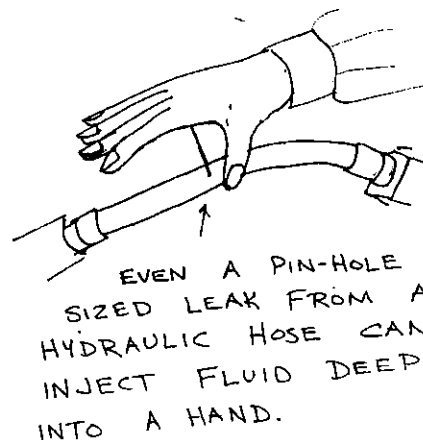
A P.T.O. SHAFT CAN
BE VERY DANGEROUS
IF IT COMES APART
WHILE IN USE



HYDRAULIC EQUIPMENT

Hydraulic powered equipment can also be dangerous. This equipment is powered by fluids that are forced through equipment under tremendous pressure. There are several things to keep in mind when working around hydraulic powered equipment.

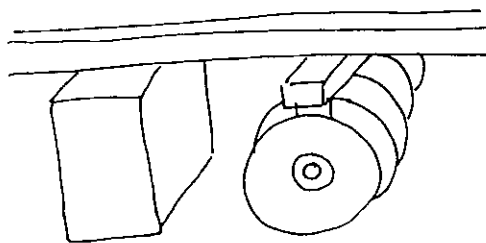
The fluids in hydraulic hoses are under very great pressure. If a leak develops in a hydraulic pressure hose, the fluid within can be projected out in a small but powerful stream. This stream of fluid can actually penetrate your skin. Even a stream of fluid almost too small to see can be extremely harmful. If the fluid does penetrate the skin, it must be surgically removed to prevent serious infection.



Hydraulic leaks can cause other problems. Often, a piece of hydraulic equipment will not operate smoothly or evenly. This can be dangerous when working around a hydraulic powered mechanism such as a tractor loader. A raised loader bucket can gradually slip downwards. This could be dangerous if it goes unnoticed as the tractor is being driven. The loader can lower to the point of digging into the ground ahead of the tractor. When working around a raised loader:

- be careful that it isn't accidentally lowered hitting someone nearby, and
- don't walk or work beneath it in case it gradually (or rapidly) begins to slip downwards to pin you beneath it.

The same points are true of equipment that is mounted on the 3-point hitch of a tractor.



WHEN SERVICING RAISED HYDRAULIC-POWERED EQUIPMENT, ALWAYS PLACE BLOCKS BENEATH TO SUPPORT THE EQUIPMENT IN CASE HYDRAULICS FAIL WHILE YOU ARE WORKING.

BEFORE THE NEXT MEETING

Do a safety inspection of a piece of farm machinery. Use the following space to record the following pieces of information.

- Name of piece of farm machinery.
- What does it do?
- What kinds of moving parts does it have?
- What type of hazards might you encounter when working with this piece of machinery?
- How would you stop this piece of machinery in an emergency situation?

Be prepared to discuss your findings at the next meeting.

On The Road

ROLL CALL

Name a piece of equipment that is often pulled behind a tractor on the highway or in the field.

GETTING HITCHED

Many pieces of farm machinery must be hitched to the back of a tractor in order to operate. For this reason, much time is spent hitching and connecting equipment. Also, it is necessary for a farmer to take the equipment onto public roads in order to move from field to field, or farm to farm. All farmers should be familiar with proper ways to hitch equipment. They should also know about road travel safety.

Here are some points that will help with safe hitching of equipment.

1. When tractor is aligned with the hitch, the safest procedure is to put the tractor in park, put parking brake on, and shut off tractor. Then proceed to hitch and connect equipment.

When it is necessary to have a person help with the hitching of equipment, use the following procedure to avoid injury.

- Carry out all hitching procedures on smooth, level ground where equipment will be unable to roll backwards or forwards.
 - Back tractor into position required for hitching.
 - Put tractor into a **forward** gear, but keep tractor stopped by stepping on clutch and brakes.
 - Allow helper to put hitch in place.
 - Helper leaves area between tractor and equipment after hitching is completed.
2. Never put your fingers into the holes of the hitch where pins are meant to go. They are only for pins - not for fingers!
 3. Use proper hitch pins when hitching equipment. Old bolts or pieces of steel, are not adequate. All pins should be equipped with cotter pins or clevis pins to keep them from bouncing out if the equipment goes over a bump. A hitch pin coming out of a hitch while equipment is moving can be dangerous. It can also cause serious damage to equipment (broken hydraulic hose, bent parts, etc.). Take time to hitch right!

4. For road travel, the law requires you to use two separate methods to attach the equipment to the towing vehicle. Safety chains from the hitch to the tractor are required in case the hitch pin comes undone.
5. Be sure that all heavy pieces of equipment are properly jacked up or supported before attempting to hitch to tractor. They should be on solid ground. If they were to fall off a brace or jack, they could crush the person hitching them to the tractor.
6. When hitching heavy rolling equipment (i.e. hay wagons), wheels should be blocked so that the wagon cannot roll forward when the tongue is lifted for hitching.
7. Always hitch equipment to the drawbar. Hitching to a higher position on the tractor is dangerous because it upsets the tractor's center of gravity which may cause it to flip backwards and overturn.
8. Never hitch a load that is too heavy for the tractor. The torque created when the tractor is trying to pull may cause it to slip, spin or flip backwards.
9. Always start forward SLOWLY after hitching to equipment. This will give the load time to start forward and will prevent possible overturning of the tractor if it is unable to move the load.
10. Always lock wheel brakes so that straight stops are possible.

ON THE ROAD

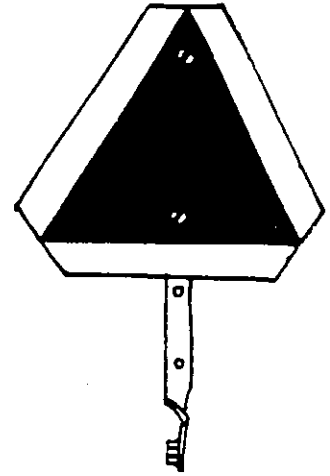
Public road travel is always hazardous for the farm equipment operator. Because of the slow speed of most farm machinery, automobile drivers become impatient and attempt to pass. Often, the farm machinery will obstruct a proper view of the road for drivers wanting to pass. This can lead to some very dangerous situations.

As a farmer, you must remember that many drivers are not sure what to do when they encounter farm equipment on the road. For this reason, you have to be **extra careful** to protect yourself and others from accidents when travelling on public roads.

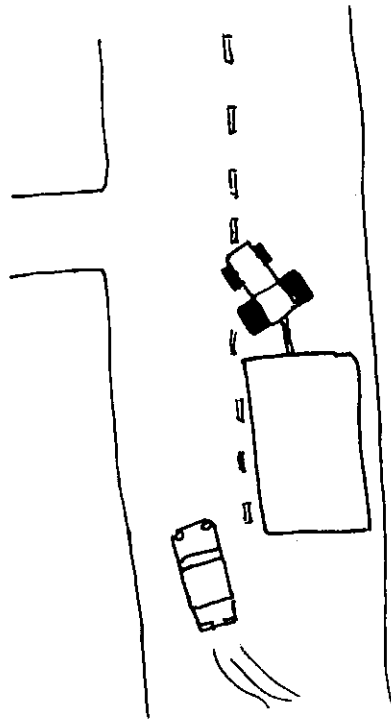
Operators under 16 years of age are, by law, prohibited from driving farm equipment on public roads. Many of you will be too young to drive equipment on the road but here are a few things that you can share with those at home who are old enough.

1. Get a copy of the Ontario Ministry of Transportation rules for farm equipment operators and read it.

2. Be sure that all equipment is in good working order. All headlights, brake lights, marker lamps, and warning lamps should be working properly before setting out on the road. Make sure that all equipment carries a Slow Moving Vehicle sign. The point of the triangle should be pointed to the top. For very wide equipment, be sure that the parts closest to the centerline of the road are visible to traffic. i.e. tines on raised arms of cultivators, etc.



3. Lock brake pedals together before road travel.
4. Keep headlights and running lights on at all times, even if it is a sunny day. This will help to make the equipment more visible to motorists.
5. Be sure that all equipment is hitched securely. Wide equipment that has raised wings should be secured properly. Any load (such as hay) should be secured so that it cannot fall off in front of traffic. When pulling wide equipment, be sure to keep well to the right to keep oncoming lane clear.
6. Avoid travelling on roads at peak traffic times (when people are travelling to and from work and school). Also avoid dawn, dusk and night time travel. Visibility is poor at these times. This is very important when travelling on the road with large, wide equipment. Lights are required on a tractor travelling on the road at any time from one-half hour before sunset to one-half hour after sunrise and at anytime when it is difficult to see. If you are travelling in poor light, it is also best to have a car or truck escort you. That vehicle should follow with hazard lights flashing.
7. On busy roads, be sure to pull over occasionally to let people by when traffic builds up behind you. If drivers have to wait too long to pass, they may take dangerous risks to get by.
8. When pulling over to the side of the road, make sure that the shoulder of the road is wide. Don't pull onto narrow, soft, or steep shoulders where your tractor and load can overturn.
9. Don't drive too fast. Watch your speed coming down hills. Heavy loads can gain speed and get going faster than the tractor resulting in jackknifing or overturning.



A LEFT TURN INTO
A FIELD OR DRIVEWAY
FROM A PUBLIC ROAD
CAN BE HAZARDOUS.
A MOTORIST MAY
CHOOSE THAT MOMENT
TO PASS — NOT REALIZING
THAT YOU ARE MAKING
A LEFT TURN.
RESULT: SERIOUS COLLISION.

10. When making a left turn into a field or driveway, exercise **EXTREME CAUTION**. If you have a large load and cannot see the traffic behind you, pull over and get into a position where you can check the road before starting across. Otherwise, your tractor may be struck by a car that is attempting to pass on your left.
11. Obey all traffic laws of the road. They exist for all moving vehicles, automobile and farm equipment alike.

THE PRE-FLIGHT INSPECTION

The aim of this project has been to show ways in which farmers can remove hazardous situations from their workplace. This can be done by:

- knowing the hazards,
- using "Personal Protective Equipment" when needed,
- learning how to operate equipment safely,
- knowing the hazards of road travel, and
- maintaining equipment properly.

Before going out into the workplace, the farmer should take a minute to use his or her knowledge to do a "pre-flight inspection".

Every job requires its own "pre-flight inspection". Some inspections will be short and take no more than a few seconds — others may take the better part of an hour — BUT the time is well spent if it prevents an injury or damage to machinery. Inspect equipment and clothing to see if they are ready for work.

Here are some pointers for a "pre-flight inspection". Use them as a starting point for a pre-flight inspection program for a job that you do at home.

OPERATOR

- Well rested.
- Not too hot or too cold.
- Not hungry from skipping meals.
- Not angry, frustrated, or tired.
- Clear thinking.

OPERATOR'S CLOTHING

- Suitable for the job.
- "Personal Protective Equipment" is correct for the job.
- Warm enough or cool enough.

EMERGENCY EQUIPMENT

- First aid kit handy.
- All fire extinguishing equipment fully-charged and where it should be.
- Emergency telephone numbers posted.

EQUIPMENT

- Equipment is in good order C develop a checklist of maintenance points to inspect.
- All repairs have been made.
- All lights, signals are working.
- Slow-moving sign is in place.
- Engine is fueled.
- Coolant levels are OK.
- Oil, power-steering, brake and transmission fluid levels are OK.
- Tires properly inflated.
- Equipment properly set-up or adjusted to begin work.
- Electrical equipment is in good repair (cords not cut or frayed).
- Electrical outlets properly grounded, etc.

Using these points, you may be able to develop a personalized "pre-flight inspection".

BEFORE THE ACHIEVEMENT PROGRAM

Share the information in the "On the Road" section with someone at home who drives equipment on the road.

SAFETY AND TILLAGE EQUIPMENT DIGGING DEEPER

Optional Information For Senior Members

Ready for Action

Here are some basic steps to take when an emergency occurs. **Do not attempt anything that requires special training.** Taking an approved first aid course will help you to know what to do and what not to do in an emergency.

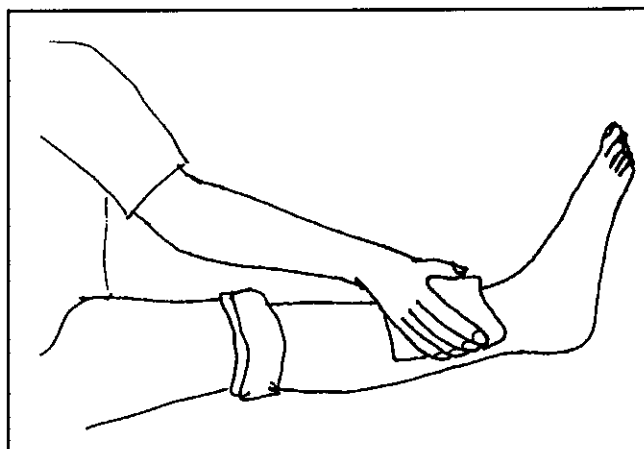
CUTS AND PUNCTURES

When caring for cuts and puncture wounds, the main points to remember are:

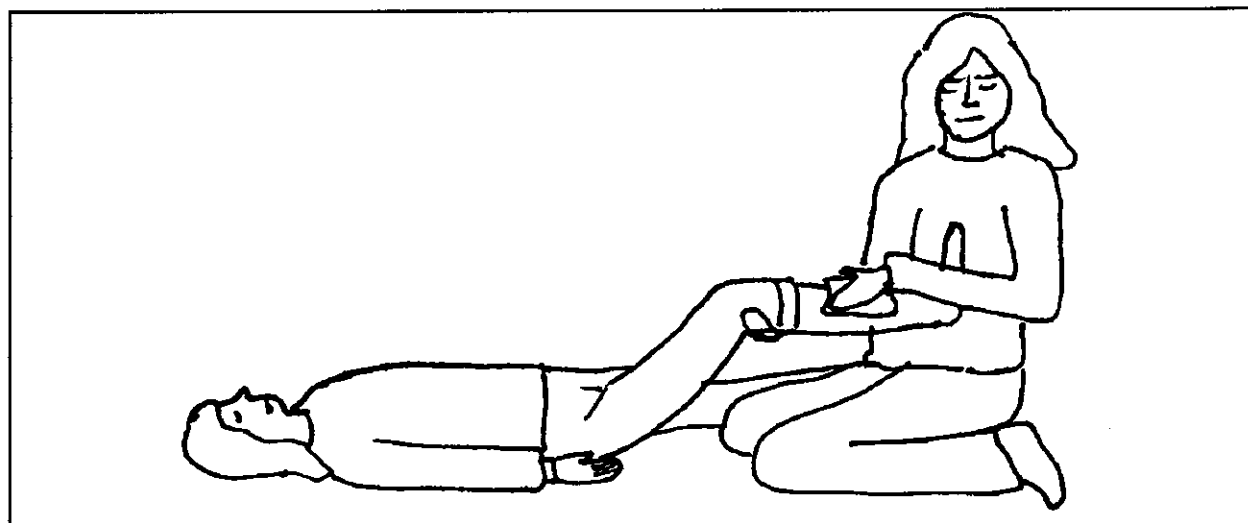
- to minimize bleeding,
- to keep the wound clean, and
- avoid applying bandages too tightly, preventing lack of circulation and damage to a limb.

TO CONTROL BLEEDING

1. Apply absorbent dressing to the wound. Using firm and gentle hand pressure, hold dressing in place until bleeding stops.



2. Elevate the injured limb above heart level. This will slow down blood flow to the limb.



3. If the dressing becomes saturated (cannot absorb any more blood), do not remove it. Cover the soaked dressing with a dry one.
4. When bleeding appears to have stopped, use a bandage cloth to tie the dressings into place over the wound. Tie firmly, **but not too tight** or you might cause a loss of circulation to the limb.
5. If there is an object in the wound, such as a nail or piece of glass, do not pull it out. Cover lightly and apply pressure around the wound without touching the object.
6. Get medical help.

SHOCK — THE SILENT KILLER

In any accident situation, you should be aware of the dangers of shock. An injured person may easily slip into shock because of:

- | | |
|-------------|----------------------------------|
| - bleeding, | - spinal cord or nerve injuries, |
| - fright, | - fractures, |
| - burns, | - heart attack, |
| - pain, | - breathing problems. |

When a person goes into shock one of the first signs you will see is restlessness and anxiety. Other signs include —

- pale or blue-grey skin color,
- cold, clammy skin,
- weak and rapid pulse,
- shallow and rapid breathing,
- nausea and vomiting.

Here are some things you can do to help prevent shock.

- Get medical help as soon as possible
- Stay with the injured person. Talk to and reassure him or her. Pay attention to the person's mental state — is he or she becoming confused or disoriented?
- Cover the person with a warm blanket or coat.
- Keep the person semisitting or lying in a comfortable position — do not allow him or her to walk around. If a neck or back injury is suspected, do not attempt to move the victim.

SEVERED LIMBS, FINGERS, TOES

Nobody wants to think about having to deal with a serious injury such as an amputated limb. **BUT**, it is important to know that severed body tissues can often be reattached **IF** they are properly cared for and transported to the hospital with the accident victim.

If a limb has been severed do the following.

1. Locate it as rapidly as possible.
2. Wrap it in a clean, damp dressing and put inside a clean, watertight plastic bag.
3. Place in another plastic bag or container partially filled with ice.
4. Transport **immediately** to the hospital with the victim.

Ready for Work

OUR BODIES AND UNSEEN DANGERS

HEARING

In each of your inner ears there are 20,000 hearing cells. As sound waves come into your ears, the microscopic hairs on each cell vibrate and transmit signals to your brain. Some cells react to high pitch sounds and some to low. The total pattern that is transmitted to your brain makes up words, music or whatever the sound might be that you are listening to.

Noise can damage your hearing permanently. And that's not all it does. It makes you feel tired and irritable, even after you've left the noisy area. It's also suspected - though not proven - that noise is responsible for other stress symptoms like headaches, muscle tension and high blood pressure.

Noise levels are measured in units called decibels. The softest sound humans can hear is zero decibels: normal conversation measures approximately 65 decibels. Noise in excess of 120 decibels can cause acute pain in the ear.

Here are the decibel levels of some common sounds.

0	acute threshold of hearing
15	average threshold of hearing
20	soft whisper
30	leaves rustling
65	normal conversation
70	inside an automobile at 100 k.p.h.
80	heavy traffic
90	maximum decibel level for 8 hour exposure
100	tractor under load, chain saw, snowmobile
120	pigs at feeding time, amplified music

RESPIRATION

Lungs are probably the main way toxic materials get inside the body while at work. Look at the possibilities. In a year on the job (2,000 hours), the average worker breathes in and out enough air to fill four 6 x 21 meter (20 x 70 foot) silos. At 0°C (32°F), this air weighs 3,175 kilograms (7,000 pounds) - a weight greater than what the worker annually eats and drinks. The surface of the lung tissue involved in oxygen transfer is nearly equivalent to the floor of a 6 x 9 meter (20 x 30 foot) room. In each minute a person breathes about 20 times and the blood makes a complete circuit. Therefore, airborne toxic materials can be quickly absorbed and spread throughout the body.

USE THE RIGHT EQUIPMENT FOR THE JOB

Many people are confused about which equipment is best for which job. We must be very sure that all protective equipment is adequate for the job that is intended. As an example, let's have a look at respirator masks and equipment.

A simple **mechanical filter respirator** or dust mask will filter out dust particles, but will not get rid of toxic gases!

A **chemical cartridge respirator** should be used for spraying and handling chemicals. Chemical cartridge respirators consist of a facepiece with 1 or 2 replaceable cartridges. These cartridges contain an absorbent material which helps to purify the air. Dust and other particles are trapped in a dust prefilter, with the harmful or toxic vapors absorbed by the chemical cartridge. Gas masks are heavy duty cartridge respirators.

Chemical cartridge respirators and gas masks only purify the air. They cannot be used in areas where there is a deficiency of oxygen.

The **Self Contained Breathing Apparatus** (SCBA) is used in places where there is a lack of oxygen because of the presence of other gases. Examples of places where an SCBA might be worn are in controlled atmosphere storage silos, and manure pits. These supplied air respirators have a facepiece with an air hose attached to an outside oxygen source.

Supplied air respirators must not be improvised. They must be approved and tested and **ONLY BE USED BY A PROPERLY TRAINED PERSON.**

Fire departments have this equipment, but it is not always available to the general public. Farmers should not hesitate to ask for help if they need to enter an area lacking oxygen.

Air + Heat + Fuel = Fire

HANDLING OF AGRICULTURAL PESTICIDES

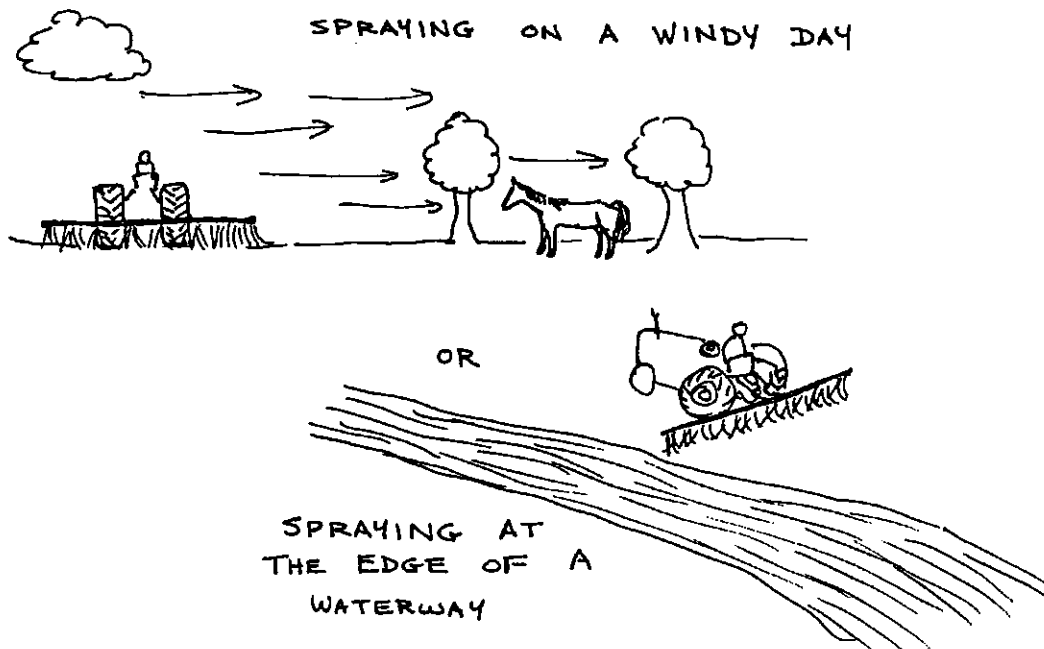
Did you know that Ontario has regulations governing the use of pesticides and other hazardous chemicals on the farm?

In Ontario, a permit is required in order to purchase or use many products that could be hazardous if improperly handled or stored.

To obtain a permit, the operator must take a short course given by the Ontario Ministry of Agriculture and Food. These pesticide safety courses are available through most local OMAFRA offices. They are usually given from time to time throughout the year.

During the course, participants learn about proper safety procedures for handling of hazardous products. Also, they learn about ways to protect themselves and the environment from being harmed by these products.

Here are two hazardous practices which could harm people, animals and the environment.



Another important part of the course concerns proper storage of chemicals. Improper storage of hazardous products may cause accidental poisoning.

For example, storing chemicals in an area near to human food or animal feeds is very dangerous.

Improper storage can also lead to fire hazards. Some pesticides are quite flammable if they come into contact with a heat source. Consider the danger of burning pesticides — the smoke from a pesticide fire may be lethal.

BURNING PESTICIDES...

A LETHAL FIRE!



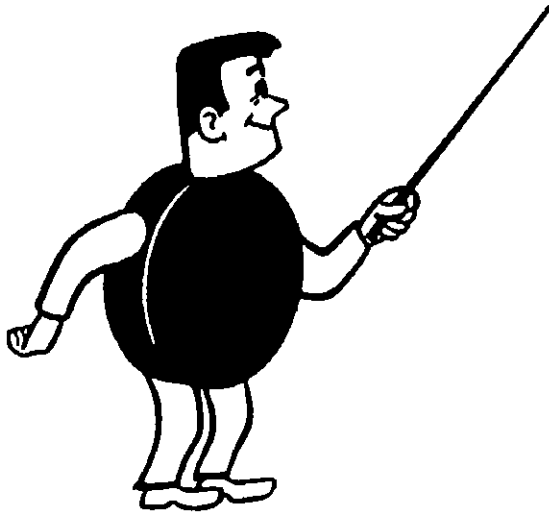
To find out more about courses in pesticide handling, contact your local Ontario Ministry of Agriculture, Food and Rural Affairs office.

You may wish to take this course as your special activity for the club.

Tillage Basics

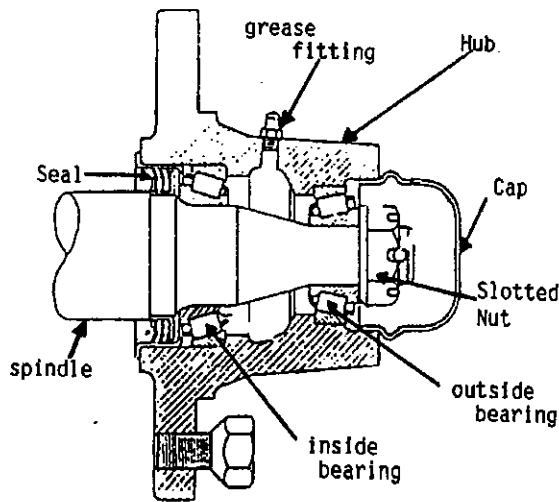
Many types of tillage equipment have bearings which must be properly maintained. You should be very familiar with lubrication and maintenance procedures to prevent damage to equipment.

PREVENTIVE MAINTENANCE (WHEEL BEARING HUBS)



1. Remove wheel hubs.
2. Place bearings, seals, caps, washers and nuts in clean container and clean them with kerosene or other solvents.
3. Inspect all parts and if they are not in satisfactory condition, replace them with new parts.
4. Clean the inside of hubs.
5. Pack the bearing cones with a grease recommended for that purpose.
6. Make sure no foreign material is allowed to get into the lubricant or bearings.
7. Reinstall the hub and bearings. Refer to the illustration for proper assembly.
8. Adjust the wheel bearing nut until there is a noticeable drag while turning the wheel. Do not back the nut off. Secure the nut with a cotter pin.

NOTE: When placing the hub on the spindle, care must be exercised to avoid damaging the seal.



Assembly of wheel bearing and hub on spindle.

Machinery Safety

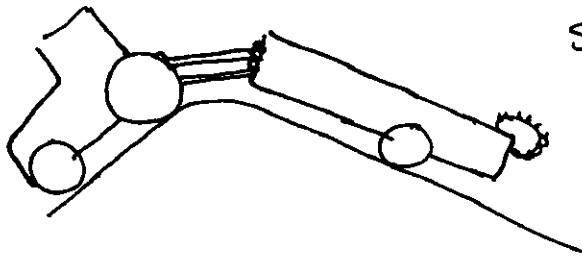
WHY PTO SHAFTS CAN BECOME SEPARATED

Under certain circumstances, the PTO shaft of a piece of equipment can become separated from the tractor shaft. This can be a very dangerous situation because the shaft may strike anyone standing within several feet of the equipment. How can this happen?

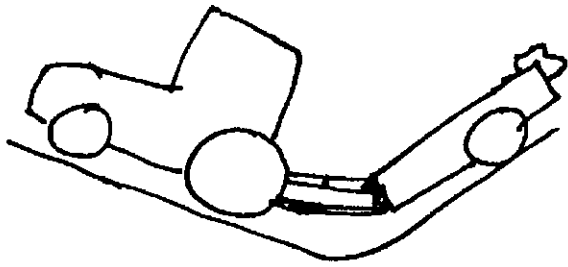
PTO shafts are made so that they have some telescoping capability. This means that the shaft has some ability to become shorter or longer when necessary. For example, when connecting the PTO shaft to the tractor, it may be pushed in shorter to position the coupler over the tractor shaft. Once in operation, the shaft has the ability to lengthen. This allows the shaft to stay connected as the tractor goes over bumps or around corners.

BUT, a PTO shaft can become damaged if the following happen.

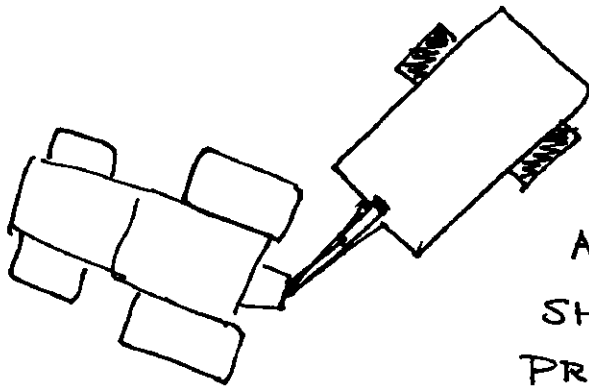
- The tractor goes over a large bump that pulls the shaft past its maximum extension length.
- The tractor goes through a deep hole that causes the shaft to become extremely compressed.
- The tractor makes far too sharp a turn causing knocking of C.V. joints.
- The coupler of the shaft is not properly connected to the tractor shaft and pulls apart as soon as the power is engaged.
- The hitch pin falls out and the equipment stops while the tractor continues.



TRAVELLING OVER
A LARGE BUMP
MAY CAUSE P.T.O.
SHAFT TO BECOME
OVER-EXTENDED.



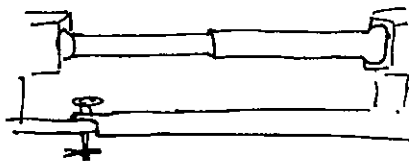
TRAVELLING THROUGH
A DEEP HOLE MAY
CAUSE P.T.O. SHAFT TO
BECOME COMPRESSED.



TOO TIGHT A
TURN MAY NOT
ALLOW P.T.O.
SHAFT TO EXTEND
PROPERLY.

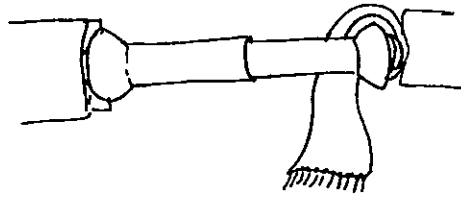
To prevent these problems:

- Don't drive tractor and equipment over very large bumps or through deep holes or ditches.
- Don't drive rapidly over rough, bumpy land.
- Don't make extremely tight turns.
- Be sure that the shaft is always properly connected. After connecting, pull back on the connected shaft to be sure that it doesn't slip back off of the tractor shaft.
- Be sure that the drawbar is at the right length for use with the PTO shaft when both are used together on the piece of equipment. If the drawbar is set too far in or too far out, it can effect the proper operation of the PTO shaft. Most equipment manuals will have information on the proper settings for the drawbar and PTO shaft.



IF DRAWBAR IS SET TOO LONG IN RELATION
TO THE P.T.O. SHAFT, THE SHAFT CAN BECOME
UNCOUPLED OR DAMAGED DURING USE.

EVEN WITH SAFETY SHIELDS, IT MAY BE POSSIBLE FOR CLOTHING TO BECOME ENTANGLED ON THE SHAFT OR COUPLINGS...



On The Road

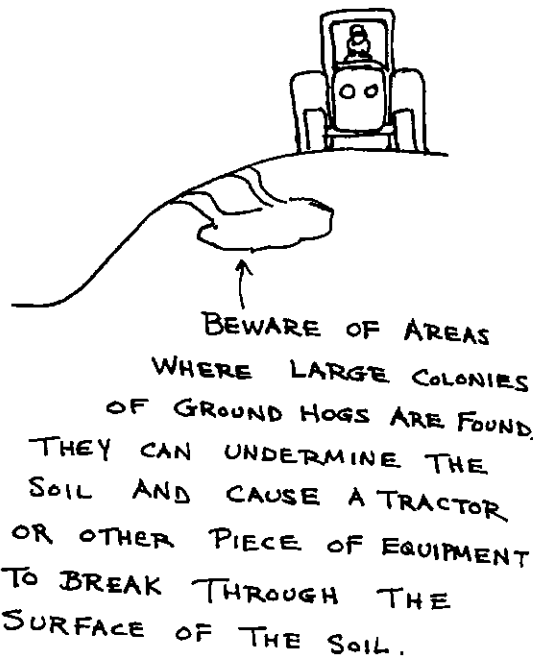
TRACTOR ROLL-OVERS — A VERY DANGEROUS SITUATION

Tractors seem so heavy that it would be impossible to turn one over. Nothing could be further from the truth. Because of the great power of the tractor, its own power can easily force it to overturn under certain conditions. ALSO, the great weight of the tractor often causes situations where it is over-turned into ditches or down hillsides which cannot support its weight. Tractor operators should be aware of the danger of overturning.

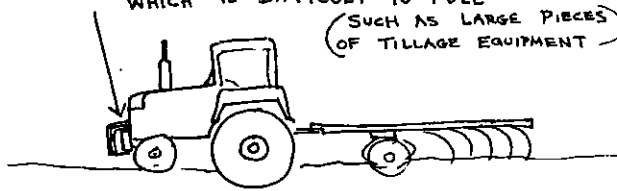
Be careful near the banks of ditches, or on the soft soil of hillsides. The weight of the tractor can cause the bank to break away. The tractor can then fall into the ditch. Another unexpected hazard is that of large colonies of ground hogs that can undermine sandy soil. The weight of heavy equipment can cause the soil to collapse, trapping the tractor. If these burrows are near a ditch, the result can be disastrous.

When pulling heavy mounted or semi-mounted equipment, tractors must often be equipped with extra weights on the front of the tractor or on the front wheels. This will help to hold the front of the tractor down when it encounters heavy weight or resistance when pulling equipment.

BE EXTRA CAREFUL WHEN WORKING NEAR DITCHES OR ON STEEP HILLS.



WEIGHTS MAY BE USED ON TRACTORS
PULLING HEAVY EQUIPMENT, OR EQUIPMENT
WHICH IS DIFFICULT TO PULL
(SUCH AS LARGE PIECES
OF TILLAGE EQUIPMENT)



Hitching should always be done with great care. A heavy piece of equipment can cause a tractor to flip backwards if too much weight is placed on the drawbar tongue. This is especially true when pulling a heavy load up or down a hill or through a steep ditch. Never hitch above the draw bar. This is one of the most common causes of flipping a tractor over. To demonstrate this point, try using a toy tractor and a piece of string to cause a roll-over.

Tie the string onto the tractor at its drawbar. Place the tractor against a flat piece of wood that will "brake" its back wheels. Slowly pull back on the string. You will find that it will be difficult to cause the tractor to raise up with its front wheels off the ground.

Now, tie the string up higher on the back of the tractor. Do the same experiment again. The center of balance will have changed and the tractor should be easier to upset or overturn.

A real tractor reacts in much the same way.

