

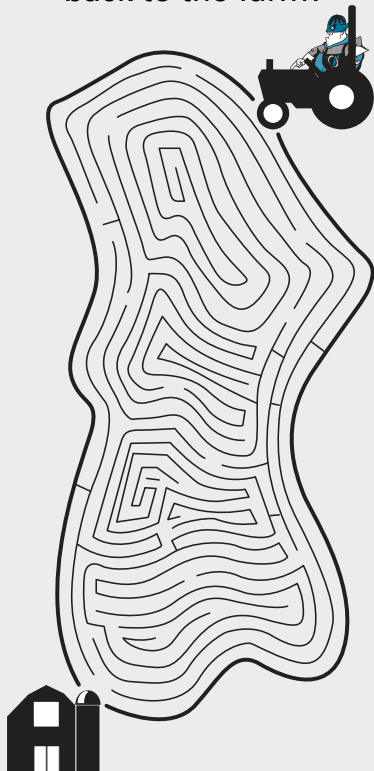
# The MYSTERY CLUB

brought to you by *Captain Overalls*, the Safety Crusader



## MAZE CRAZE

Can you help Captain Overalls find his way safely back to the farm?



## ON TRACK WITH TRACTOR SAFETY

### From horsepower to diesel power

Personal computers have changed our lives, but an even bigger change began 150 years ago with the invention of the steam engine. The internal combustion engine, developed in 1889 in Chicago, was the forerunner to the modern-day tractor. From 1920 to 1950, this invention would replace 18.2 million draft horses used on almost every farm in the United States.

Draft horses pulling an implement or carrying a load used to be a familiar sight on American farms. Today we see draft horses in parades, at living history museums, or at historical reenactments such as old threshers' days or harvest festivals. We still measure engine size in horsepower, which is the ability of a horse to lift 3,300 pounds to a height of 10 feet in 1 minute.

This process of replacing animals by machines is called mechanization. Although mechanization occurred in many other areas of our lives such as manufacturing and travel, it has forever changed agriculture. With a horse-drawn plow, a farmer could cultivate one acre in about eight hours, compared to 64 acres using a modern tractor and equipment.

### The dark side

But these powerful and useful machines have a dark side. As long as farmers have been using tractors they have been injured and killed by them. The National Safety Council has been recording the number of tractor fatalities for years. In 1990, they estimated that 460 people in the United States died from tractor injuries.

There are four types of tractor fatalities. **Overturns** happen when the tractor flips or rolls on top of the operator. **Runovers** happen when the tractor wheel runs over someone who either falls off the tractor or happens to be in the area. Deaths that occur when someone gets caught in the tractor's **power take-off unit** also are considered tractor fatalities. The fourth type are deaths from a tractor **collision** on a road or highway.

In any given year, about half of the tractor fatalities are overturns. Almost one-fourth of the tractor fatalities are runovers. The rest are divided between other types of injuries from power-off units and road collisions. **About three of every four tractor fatalities actually involve the operator or driver of the tractor.** Other deaths are bystanders or extra riders on the tractor.

IOWA STATE UNIVERSITY  
University Extension

## 1 2 3 4 5 6 7 8 9 BY THE NUMBERS

3,800,000 ..... The number of farm tractors in the United States

1 ..... The number of extra rider tractor deaths that is considered too many for one year.

24 ..... The percentage of tractor fatalities caused by a runover.

9,000 ..... The average weight of a 75-horsepower tractor, in pounds.

# Dangerous traditions, dangerous beliefs

In the past, families have had a dangerous tradition of allowing children to ride on tractors. Riders are never safe on tractors for these reasons:

1. Riders that fall off the tractor immediately face a second hazard, being run over by a tractor wheel.
2. On uneven terrain, riders are first to bounce off the tractor (this is especially true for children because of their light body weight).
3. Riders can distract the driver or bump into controls.
4. Rollover protective structures are not designed to protect riders, only the operator of the tractor.

Many people also believe that tractor cabs can keep riders safe. **This is not true!** A cab is designed to protect only the tractor operator; it does not prevent a rider from being thrown from the cab and run over. Doors might not latch, windows pop open. And if the tractor overturns, the rider can be thrown or crushed against the tractor frame: there is no protection for a rider.

## Four magic words

Four magic words can prevent almost all injuries and deaths of extra riders on tractors:

### NO SEAT NO RIDER

Judging by the number of deaths caused by extra riders, this may be the most important safety rule for agricultural operations today.

## What you can do

You need to say “no” when adults offer rides on a tractor. If you do not already have the “no seat no rider” rule in your family, talk to your parents. There are decals you can get from organizations, such as Farm Safety 4 Just Kids, to put on tractors as a reminder. It might not always be easy to say “no,” especially when that request comes from a grandparent or a friend who drives a tractor.

You also can stay out of an area where tractors are being operated. It is not safe for bystanders, children or visitors to be in an area where people are working with tractors and other equipment.



The high injury and death rate associated with tractors hasn't gone unnoticed. In 1970, the high number of children being hurt in agriculture prompted a national campaign to change child labor laws. As a result, the United States Secretary of Labor identified some agricultural tasks as “hazardous” to youth.

Hazardous farm tasks include operating a tractor larger than 20 horsepower, and connecting or disconnecting implements. People under age 16 may not be employed at any time doing these tasks, unless they have a certificate of safety training or some other special exemption. These laws apply whether or not the youth is paid for the work.

If you are under age 16 and you want to operate an agricultural tractor, you need to find a tractor and machinery certification program in your community. Most programs are open to kids once they are 14 years old, and most include 24 hours of training. To receive a certificate, participants also must pass a written exam and demonstrate their ability to drive a tractor with an implement through a special course.

A tractor's most important safety feature is rollover protection. Since 1985, all new tractors have rollover protection (or ROPS) as part of the tractor design to keep the operator safe in case the tractor overturns. Seatbelts also are recommended because they keep the operator within the safety zone or protective frame.



## Ways to Say “No” to a Tractor Ride

1. “Duh! Our family rule is no seat, no rider.”
2. “I would rather be safe than be an extra rider.”
3. “You might think it’s fun, but I know what can happen to extra riders.”
4. “No thanks. I’ll get plenty of practice riding a tractor as soon as I’m old enough to drive one.”
5. “Nah, one bump and I’m gone.”
6. “I’ll wait for a ride in the truck or car.”
7. “It sure looks cool but tractors are for work not fun.”
8. “No thanks. I learned at camp that it isn’t smart to be an extra rider.”
9. “I don’t wanna be a UFO (unidentified flat object).”
10. “NOT!”

# Wacky Science



Kids under age 14 have no business driving a car or a tractor. Here are three science facts that explain why.

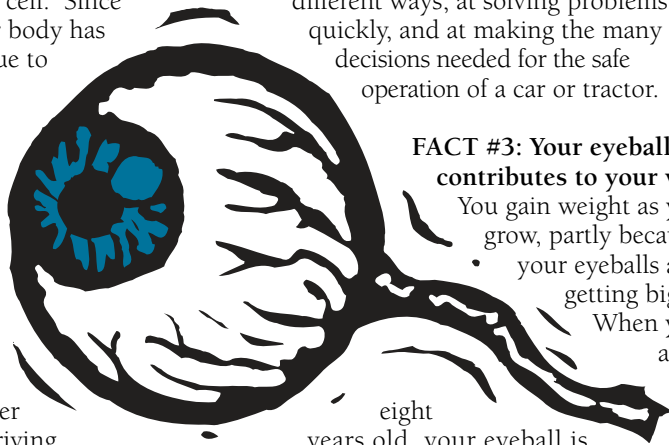
**FACT #1: Your brain needs fat.**

Electrical wires are covered so that electrical currents can go straight to their connection. Without this covering, or insulation, currents travel much slower and some do not even reach a connection. The same thing happens in your brain. Messages travel along axons of one cell to dendrites of another cell. Since you were born, your body has been using fatty tissue to build the covering around your brain's axons. But the job is only about half done. Your brain can successfully send more messages now than when you were younger. And as you get older, you will be able to think faster and better than you do now. Driving a car or tractor requires a lot of messages, and you need to make sure they all get where they need to go, so you safely can get where you need to go.

**FACT #2: The two halves of your brain interact.**

If you are over the age of six or seven, congratulations! The two sides, or hemispheres, of your brain are finally and fully connected! A bridge, or corpus callosum, between your brain's two hemispheres now sends messages back and forth. This is important because each

side of your brain thinks and reacts in different ways. When you were little, you could react only to how things "seemed" to appear. You did not know that stepping in front of a car could hurt you. Now you are starting to think more logically, and know that one thing can cause another thing to happen. But your bridge is new and you still need a few years of practice to become a great thinker, sort of like riding a bike. As you exercise your corpus callosum, you'll get better at thinking in different ways, at solving problems more quickly, and at making the many decisions needed for the safe operation of a car or tractor.



**FACT #3: Your eyeball contributes to your weight.**

You gain weight as you grow, partly because your eyeballs also are getting bigger. When you are about

eight years old, your eyeball is done growing and weighs more than it did a few years ago. Until late teens, the visual area of your brain and the connections to your eye continue to grow and develop. When you were younger, you used to trip and run into things, and you couldn't catch or throw a ball as well as you do now. This is partly because your eyesight wasn't as good as it is now. Fully developed eyes will help you more accurately judge distance and time—skills that are very important to safely operate tractors and other vehicles.

**Q. Why did the chicken cross the road?**

**A. It didn't want to be an extra rider!!**

Written by **Charles V. Schwab**, associate professor and extension safety specialist; **Laura J. Miller**, Safe Farm communications specialist; and **Lynn Graham**, associate professor, Department of Human Development and Family Studies. Designed by **Juls Design**, Ankeny, Iowa.

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Jeers – for the 12-year-old who brags about operating a 75-horsepower tractor.



Cheers – for the 14-year-old who enrolls in a tractor and machinery certification class.



Jeers – for the farmer who lets his 13-year-old son drive a 125-horsepower tractor without any training or instruction.



Cheers – for your neighbor, who asks to see your tractor training certificate before hiring you to mow hay.



Jeers – for the tractor operator who doesn't wear a seat belt in a ROPS cab.



Cheers – for the United States Secretary of Labor to recognize that tractor operation is hazardous for youth.

# The **MYSTERY** of "The Sick Sister"

Chris knew that his little sister wasn't kidding this time. "My tummy hurts and I want Mommy!" Susie yelled from the TV room. Chris peeked in and there she was, hanging her head over the couch, her usually rosy cheeks pale and white. She wasn't in an arguing mood.

"You stay right there and don't move," Chris told Susie with a sudden sense of authority. "I'll get Mom. She's helping Dad mix cattle feed."

Chris knew that Mom and Dad couldn't hear him over the roar of the tractor and feeder-grinder. They would not even see him because they were busy. He also knew that when his parents were outside they trusted him to keep tabs on his younger sister, and that kids should not be in a work area. But he remembered his family's special trouble signal, and it was time to use it. He flicked the porch light on and off several times, then stood underneath the apple tree where he knew his Mom could spot him.

It worked. Within a few minutes, Mom was inside calling the emergency room. "They think she could be having an appendicitis attack," Mom told him as she hurriedly got ready to leave with Susie. "I'm so glad you knew what to do."

## Your Challenge:

What dangers did Chris avoid by not going out to the area where his mother was working?

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What did he do instead?

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What does your family do in an emergency?

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## Word Find



Can you help Captain Overalls find these key words?

D	A	N	G	E	R	O	U	S
E	J	N	I	M	I	P	C	E
W	H	T	A	E	D	Y	Z	A
F	A	R	M	R	E	R	T	T
M	Z	C	T	G	R	U	R	X
Y	A	H	K	E	Q	J	A	S
S	R	J	U	N	E	N	C	N
T	D	G	E	C	W	I	T	O
E	M	R	N	Y	E	X	O	I
R	X	U	B	N	K	M	R	T
Y	O	Y	C	U	R	W	Y	I
B	T	E	J	Q	L	O	P	D
S	A	F	E	T	Y	C	K	A
W	R	E	V	O	L	L	O	R
O	P	E	R	A	T	O	R	T

BOUNCE  
CLUB  
DANGEROUS  
DEATH  
EMERGENCY  
FARM  
HAZARD  
INJURY  
MYSTERY

OPERATOR  
RIDER  
ROLLOVER  
SAFETY  
SCIENCE  
SEAT  
TRACTOR  
TRADITIONS

## USE YOUR



## NOGGIN

Three kids from the Mystery Club are each asked to be an extra rider by a different person. Using the chart below, can you figure out who asked each child and what the child said? (Each person only had one reason, and no two kids gave the same reason.)

HINT: When you put a \* in a box, put a "0" in the other boxes in that column and row.

- Maria said, "No thank you, I'd rather be safe." (Put a star under "be safe" across from Maria.)
- Alex did NOT say, "It's against family rules." (Put a zero under "rules" across from Alex.)
- Jake was at his Grandpa's farm. (Put a star under "Grandpa" across from Jake.)
- Maria does NOT have an older brother. (Put a zero under "brother" across from Maria.)

Who said no?	Whom did they say no to?			Why did they say no?		
	Grandpa	Neighbor	Brother	Rules	Be Safe	Dangerous
Maria						
Alex						
Jake						

ANSWERS: Maria told her neighbor she wanted to "be safe." Alex told his brother it was "dangerous." Jake told his Grandpa that it was "against the rules."