



# INdiana Labor

IN Focus—Spring 2010

Advancing the safety, health and prosperity of Hoosiers in the workplace

Insider

Mitchell E. Daniels Jr., Governor

Lori A. Torres, Commissioner of Labor

## Indiana Farms Sustain Hoosier Families

In 2009, a year that presented many challenges, Indiana farmers rose to the occasion and continue to do so each day.



Lori A. Torres  
Commissioner of Labor

Hoosier farmers and workers employed in the agriculture industry have one of the most demanding jobs—feeding fellow Hoosiers, not to mention, the rest of the world.

All things considered, including dangerous machinery and long hours, farming is arduous work. But without our Hoosier farmers, we'd be in a real pickle. For many families that work in this industry, farming is a "round the clock job," as animals must be tended to and fed daily, and the soil must also be worked to ensure a fruitful growing and harvesting season.

It may not come as a shock to individuals well-versed in the agriculture industry that occupational-related fatalities in this industry triple during the growing season (April through October). Hence, the spring and summer months are the riskiest months for agriculture workers.

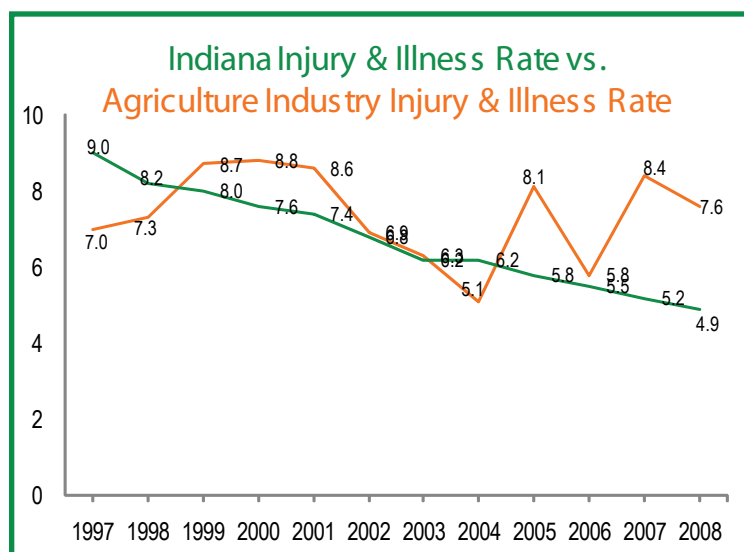
As we enter the 2010 growing season, I ask you to stop and consider the occupational risks to which our farmers and their employees are exposed. From the environment—extreme temperatures and the unpredictable nature of farm animals—to man-made machines like tractors and combines, to structures routinely found on farms (i.e. grain bins and silos), work in this industry is dangerous. Additionally, to Hoosier motorists that encounter farm equipment on the roadways, simply pay attention and slow down. Hoosier roadways must be shared with these workers.

Whether you yourself are farming, your loved ones or neighbors—please share in our advocacy for worker safety and health. Please exercise the necessary precautions to ensure the safety of yourself and others.

To a safe and bountiful growing season,

Lori A. Torres  
Commissioner

## Agriculture Industry Workplace Injuries and Illnesses



Source: Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII). Injury and Illness rate is calculated per 100 workers.

Indiana is known as an agriculture state even though farmers represent a small population of the Hoosier workforce. In contrast, the Hoosier agriculture industry was responsible for **22 work-related fatalities** in 2008—the highest of any other industry in Indiana.

Not only did the agriculture industry have the highest number of fatalities of any other Hoosier industry, it also had the **highest rate** of injuries and illnesses (7.6) of any other industry in the state in 2008. The graph to the left provides a comparison of the **Indiana Injury and Illness Rate** and the **Agriculture Industry Injury and Illness Rate** for 1997-2008. While over time, the Indiana Injury and Illness Rate is trending down, the 2008 Hoosier Agriculture Industry Injury and Illness Rate is **greater** than it was in 1997. Additional information about injuries and illnesses in the agriculture industry is available by clicking [here](#).

# Simple Safety Keys: Tractor Safety



Tractors are some of the most useful equipment found on a farm, but they also have the potential to be some of the most dangerous pieces of equipment if they are not operated properly. All too often, agriculture workers are killed or seriously injured by falling from moving tractors or being crushed when tractors tip over sideways or roll over backwards. In Indiana in 2008, **11 fatal injuries in the agriculture industry involved the use of a tractor.**

Following some simple guidelines, like those found in the checklist below, will help ensure that safety features on the machinery and equipment are used to their full potential. Use the checklist below as a guide to help you identify potential safety concerns. For additional safety-related questions or concerns, be sure to contact the equipment or machinery manufacturer and review the operator's manual.

## A Dozen (+1) Tips for Tractor Safety\*

**1. Know Your Tractor** - Ensure that each tractor operator is familiar with the safe operational procedures of the tractor he or she will be using. Operators should review the tractor's operator manual at regular intervals thereafter as well.

**2. Know Your Terrain** - Be familiar with the terrain on which you will operate your tractor. Exercise caution on slopes, slow down for all turns and when possible, stay off of the highway.

**3. Do Not Allow Extra Riders** - Never allow "extra" riders on the tractor. Obey the rule, "One rider per seat." Extra riders can easily fall from the tractor and into the path of trailing equipment and be severely injured or killed.

**4. Rollover Protection Structure (ROPS) and Safety Belt** - Every tractor, every time. Each tractor should have a roll-over protection structure (ROPS) —either a roll bar on an open tractor or cab with a built in ROPS. The ROPS was developed to protect the tractor operator from death and serious injury by providing a protective zone for an operator in the event of a tractor overturn. Seatbelts must be worn while operating a tractor. Other than ensuring *you and your employees* are following correct operating procedures, proper use of an ROPS and wearing your seatbelt is the most important thing you can do.

**5. Power Take Off (PTO) Shields** - The PTO shaft, as well as all universal joints and shafts on all implements should be properly guarded or shielded. The PTO is said to rotate with the strength of 500 men. Missing or damaged guards should be fixed or replaced immediately.

**6. Lighting, Marking and Slow-Moving Vehicle Emblem (SMV)** - A Slow-Moving Vehicle Emblem (SMV), visible lighting and markings should be mounted properly in place on the tractor. Emblems should be cleaned or replaced as necessary to ensure that they are clearly visible and undamaged. Lighting should be in place and working. It is very important to ensure that the load does not obscure the tractor's SMV or lighting in order to remain visible to fellow workers and motorists.

**7. Balance Your Tractor's Load** - When it comes to balancing a load, weight is a very *BIG* deal. Review your tractor's usage and manufacturer's recommendations to ensure you have the rear-wheel and front-end weights that can be mounted as needed. Front-end weights should be used for counter-balancing heavy,

rear-mounted loads, as well as towed loads in hilly or rough terrain. This will greatly reduce the risk of tractor overturns. Rear-wheel weights can assist in the stability and balancing of front-end loads.

**8. Hitches** - Regularly check hitches for damage. Carefully select the hitching point to a tractor. Do not alter the drawbar by raising or shortening it. Never attach a load directly to an axle. Never use a three-point hitch as a single-point hitch instead of a drawbar. If the load attaches by a single-point, attach it only to a drawbar. A properly hitched load helps to keep the tractor's front wheels on the ground.

**9. Operating Systems** - The tractor's steering, braking and neutral-start systems, gauges and lights should be checked prior to each use to ensure they are working properly. Ensure that your tractor receives the appropriate preventative maintenance and repair.

**10. Tractor Platform and Steps** - Tractor operators should make sure all steps are in place, clean and not worn or damaged. It is also necessary to remove items, like hand tools or other equipment, and clear debris, like mud, from the operator's platform or steps to prevent slips, trips and falls from the tractor's steps.

**11. First-Aid Kits** - A First-Aid Kit is essential to take care of minor injuries. Once one has been installed on the tractor, it should be checked routinely to ensure it is well stocked.

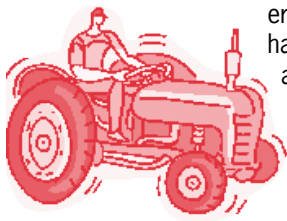
**12. Fire Extinguishers** - Every tractor (or other mobile equipment) should be equipped with a multi-use (ABC) fire extinguisher. The extinguisher should be inspected regularly to ensure it is in proper working order should it need to be used.

**13. Stop the Engine** - Do not leave the tractor seat while the machine is in operation. Be sure to stop the tractor before refueling, servicing or greasing. When possible, wait until the engine is cooled before refueling. Never start an engine indoors (i.e. garage, shed or other structure). Carbon monoxide is odorless, colorless and deadly.

*\*This is not an all-inclusive list, please be sure to consult the equipment or machinery manufacturer's recommendations for safe operational procedures. For more tractor safety tips, please also visit the NIOSH Science Blog available online [here](#).*

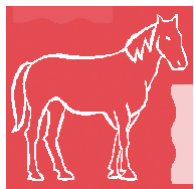
# Farm Safety Tips from Indiana Farm Bureau

## Machinery



Pinch points should be shielded on farm machinery. If they are not they can pull hands, hair and clothing into the pinch point and the person can be injured. Always replace damaged or missing guards and shields.

Slips and falls are responsible for many farm workplace injuries. They become immensely more dangerous around equipment. The potential for slips and falls can be greatly reduced by using good judgment and practicing good housekeeping on and around equipment. Children should not drive machinery or equipment.

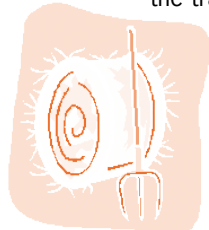


## Horse Safety

Most serious injuries to equestrians are caused by being separated from (propelled from or falling off) the horse while riding or by falling with the horse.

## Hay

When transporting large round bales, try to keep the bale on the up-side of the tractor. This will provide the best stability for the tractor, in order to prevent an overturn.



Never try to stop a rolling bale, even with a tractor. A hay bale gains momentum as it moves. You wouldn't try to stop a car free-wheeling down a hill, likewise, don't try to stop a large round bale.

Stack bales on the wagon in alternate layers to give more stability to the stack. Don't permit anyone to ride on top of the

bales.

Keep the bales low to maintain balance. Traveling over rough ground, stumps or ruts can cause a tractor carrying a large round bale to overturn.

## Hot Day Safety



Giving off excess body heat becomes more difficult when the humidity is high. Sweating does not cool the body unless the moisture evaporates. High humidity retards evaporation, because humid air contains a high percentage of moisture and it cannot easily absorb more. Wiping sweat with a cloth also prevents cooling from evaporation.

Accidents are more frequent in the heat

because physical performance and mental alertness are lowered. Increased body temperature and physical discomfort promote irritability, anger, and other emotional states which could cause workers to act rash, careless or distract them while performing hazardous tasks. A worker's psychological state usually will have a substantial effect on safe performance.



## Lawnmowing

Cut grass on slopes carefully so you don't slip, fall or overturn the mower and come in contact with the spinning blade. This means you should push a walk-behind mower across slopes.



## Designate a Play Area

Please have a designated area for children to play in that is away from machinery, livestock and chemicals. Playing on the farm should be both fun and safe!

## Traffic Safety



Just as motorists are entitled to operate their vehicles on public roadways, farmers are legally allowed to operate farm equipment on these same roadways.

Indiana law requires that farmers place a slow moving vehicle reflector on any machine that travels the road slower than 25 miles per hour. For added protection, farm workers should steer clear of moving equipment during

rush hours, before or after sunset and during bad weather.

In 2008, an estimated **seven of every 100** agriculture workers experienced a work-related injury or illness that required medical attention. Taking some simple safety precautions can have a positive impact on the frequency and severity of agriculture-related injuries and illnesses. For farm safety brochures and more information on Indiana Farm Bureau's Farm Safety initiative, please click [here](#). Other agriculture industry safety and health information is available on the Indiana Department of Labor's Agriculture Safety website online by clicking [here](#).





# SAFETY ALERT:

## Indiana Agriculture Fatalities

There are many indicators that spring is near. These include blooming flowers, warm weather and farmers in

the fields. At the Indiana Department of Labor (IDOL), a sign of spring is the increase in the number of reported occupational fatalities in the agriculture industry. An in depth look at fatalities in the agriculture industry in Indiana between 2003 and 2008 shows that the number of **farmers killed between April and October is nearly triple** the number of agriculture fatalities in the winter months (November through March).

More than 60% of farmers are killed by the **large machinery** used to cultivate crops in the field. Most often, they are **crushed or asphyxiated** when trapped underneath tractors or other large agriculture related vehicles (such as combines and mowers). These types of fatalities can be reduced by employing **Rollover Protection Structures (ROPS)** equipment, or simple acts such as turning off machinery when leaving it unattended and properly supporting equipment when working underneath it. OSHA standards require **ROPS** on corporate farm equipment, but family farms are exempt from following this safety regulation. While exempt from **ROPS** requirements, family farms may wish to utilize **ROPS** equipment to enhance the safety of their operations.

Safe work practices can reduce the chance of a rollover, but not completely eliminate it. **ROPS** are most effective when used in conjunction with a seatbelt, which keeps the operator inside the protective zone during an overturn. The National Institute for Occupational Safety and Health (NIOSH) has estimated that fatality rates due to tractor

overturns could be reduced by at least 71% if all tractors in the United States were equipped with **ROPS**.

However, not all agriculture fatalities occur in the field. A number of fatalities also occur as a result of work with **silos**. **Silo-related fatalities** can occur when farmers and other farm employees **fall from** silos or **fall into** the grain and are asphyxiated.

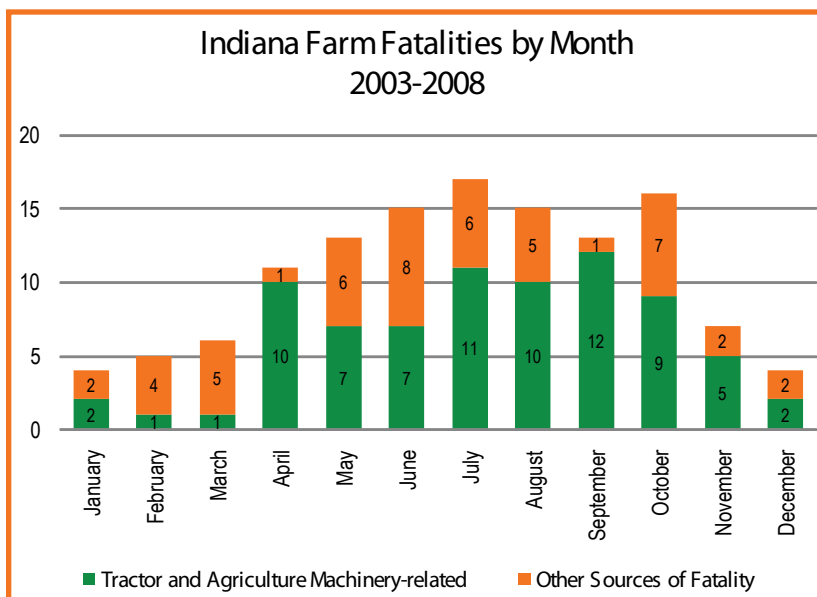
**Falls**, even ones that seem fairly short in distance, 12 to 20 feet, can kill a person. Falls can occur as workers move from the vertical exterior ladders on grain bins to the bin roof or through a bin entrance. Handrails extending 3<sup>1</sup>/<sub>2</sub> feet above the end of ladders will help workers get onto and off the ladders. Each handrail should be able to support the weight of one worker. To prevent falls while accessing the center roof openings on grain bins, consider installing guardrails

along the roof ladder and around the center roof cover. Ideally, guardrails should have top, middle and toeboards, with the top board 3<sup>1</sup>/<sub>2</sub> feet high. Equipment is also available to prevent serious injuries in case a fall does occur. Most of this equipment uses a body harness and a lanyard, which is a short rope or strap, to limit the distance a worker can fall.

**Suffocation** in grain bins usually occurs when a person is buried while the grain is being emptied. A suffocation hazard can be eliminated by never entering

a silage- or grain-storage structure when it is being loaded or unloaded. A suffocation hazard also exists from gases given off from spoiling grain. Carbon dioxide (CO<sub>2</sub>) emitted from grain is heavier than air and will collect above the grain surface. CO<sub>2</sub> cannot be smelled, seen or tasted. If enough gas has collected to decrease oxygen concentration from the normal 21% to less than 19.5%, workers will think less clearly, become drowsy, lose consciousness and possibly die.

A number of farmers have also been killed by **augers** in and outside of grain silos. Augers move grain with ease, but



Indiana Farm Fatalities by Month (2003-2008): Number of agriculture industry fatalities by month for six year period (Source: Bureau of Labor Statistics' Census of Fatal Occupational Injuries).

they can damage and amputate body parts that inadvertently get caught. Arms, hands, legs and feet must be kept free of augers. Workers should not attempt to redirect the flow of grain into the auger or elevator with their hands or feet. Silo-related fatalities account for about 6% of agriculture fatalities.

Another source of fatal injuries is **animals on farms**. About 5% of farm-related fatalities result from farmers being **kicked, trampled** or **attacked by animals**. Because of the unpredictable nature of farm animals, they may occasionally attack workers even if unprovoked. Regardless of the situation or apparent temperament, caution should be adequately exercised when working with or near farm animals.

While the causes of occupational fatalities in the agriculture industry vary, the numbers are very clear—**spring and summer months are the riskiest months for agriculture employees**. In order to ensure the safety of those working on farms, those in charge of farm operations should take a proactive approach to safety and health on the farm. Auditing the facilities and machinery and ensuring that workers are aware of the risks associated with their jobs, and the appropriate safety precautions, are important in order to reduce fatalities.

Additional information from OSHA about agriculture safety is available online at [www.osha.gov](http://www.osha.gov), by clicking on the letter “A” on the “A to Z” Index located at the top of the page.



## It Happened Here: Madison County

**Background:** Between 2003 and 2008, nationally there were 103 fatalities in the agriculture industry from workers being asphyxiated by grain or another cash crop.

**Event:** On the morning of August 9, 2009, in **Madison County, Indiana**, a 50 year old agriculture employee was loading soybeans from a grain bin into a truck, using a conveyor and auger system, when the flow of the soybeans unexpectedly stopped. The employee and his supervisor entered the grain bin at approximately 243 feet above ground level. The bin contained approximately 15,000 bushels of soybeans. He and his supervisor were attempting to clear the obstructions to the flow of soybeans. The supervisor left the victim unattended in the bin, with no fall protection. After an hour, his co-workers became concerned when they were unable to locate the victim, and they contacted local law enforcement. The victim had become engulfed in the soybeans, and **died of asphyxiation**.

**Lessons Learned:** To reduce the likelihood and prevent similar incidents from occurring in the future, employers and employees should take the following steps:

- ▶ Employers should work to foster a culture of workplace safety and health, and hold themselves accountable for their employees understanding and following all written safety and health policies, rules, procedures and regulations.
- ▶ Whenever possible, do not enter a grain bin.

- ▶ If you or another employee must enter a grain bin, have an established form of nonverbal communication for emergency situations, as it can often be difficult to hear over equipment noise.

- ▶ Develop and utilize a lockout/tagout system for conveyors and augers before entering a bin.

- ▶ Require and supply personal protective equipment (PPE), such as a body harness with a lifeline secured to the outside of the bin.

- ▶ Have one or multiple people, also equipped with PPE, observing the employee during bin entry, in the case that rescue is required.

- ▶ Employees should be trained on the dangers of stored materials, and the potential for engulfment and suffocation associated with stored grain and other loose materials; such training should include information on safe work practices and rescue.

- ▶ Safety signs should be posted to warn workers of the hazards

of working with stored grains and other loose materials. While safety signs alone are not sufficient to provide the information needed to prevent fatalities, they can be a valuable component to a comprehensive safety program.

- ▶ Employers should provide employees with the appropriate level of supervision.

- ▶ Employers should investigate all near-miss incidents to determine causality, as well as perform a root cause analysis (RCA).

- ▶ Employers should work with employees to complete and revise job hazard analyses (JHAs) as often as necessary.



Above Photo: Grain silo where the August 9, 2009, Madison County, Indiana fatality occurred. (Photo taken from IOSHA inspection file)



## Grain Bin Safety Becomes an Issue When Unloading Wet Grain\*

**Written By:** Jennifer Stewart, Purdue University

**Sources:** Matt Roberts, Purdue University & Richard Stroshine, Purdue University

In a year met with unique corn harvest and storage issues, paying extra attention to grain bin safety has become of utmost importance to farmers, said **Matt Roberts, Purdue Extension grain storage specialist**. “The biggest grain bin safety concerns this year are related to moldy corn,” Roberts said. “The molds we are concerned about develop when corn is stored too wet - above 15 percent moisture - and also can develop if moisture enters the storage structure through leaks or downspout condensation.

“Also, kernels of grain damaged by the field molds we experienced this year, along with the increased broken kernels and fine materials that resulted from this year’s high harvest moistures, are more susceptible to storage mold growth than are healthy, undamaged kernels.” Damaged and **moldy grain often clumps together and can cause clogs** or other in-bin issues that require farmers to find a solution, something Roberts said they should do from outside the bin, if at all possible.

“As moldy corn is drawn out of the bin, it can clump together and clog the center well, requiring farmers to find a way to break up the clumps,” Roberts said. “The danger here is that farmers may be tempted to enter the bin to try to rectify the situation.”

In addition to clogging center wells, molds also can cause corn to bridge across the top of a bin. “Often times **moldy corn crusts at the top of the bin**, and when a farmer goes to unload the bin, the crusted grain causes a bridging phenomenon,” Roberts said. “If the grain has been drawn out from under the crusted layer and a farmer walks on top of that grain, the bridge can collapse and the farmer can become entrapped under that grain.”

Another issue with corn molds is that they cause grain to **stick to the sides of the grain bins**. Roberts said the safety concern comes when farmers climb into the bin to try to probe the stuck grain from underneath. In this scenario, when grain does break loose, it can avalanche, also entrapping the farmer. “**We recommend that farmers try to probe clumps - both on the walls and in the center well - from the outside of the bin to avoid becoming entrapped,**” Roberts said. “However, if farmers do decide to enter bins they need to make sure all of the equipment, including augers, are not only turned off, but also locked out in case a contractor were to come and try to unload those bins without knowing someone is inside. “It’s also essential

to **have an observer on the outside of the bin** to pay attention to what’s going on outside and to keep an eye on the person inside the bin.”

**Purdue agricultural engineer Richard Stroshine** said that in the case of clogged bins, farmers also should **avoid opening side wells** for fear of bin collapse. “If a bin is plugged up, one thing farmers don’t want to do is open a side well,” he said. “What happens is that creates an unbalance of forces in the bin, and if farmers start drawing corn from the side well it can actually cause the bin to buckle.

“There is some equipment for loosening up bins if there is a problem. If farmers find themselves in a really difficult situation, contacting one of the companies that makes this sort of equipment can help them determine the best approach to solving the problem.”

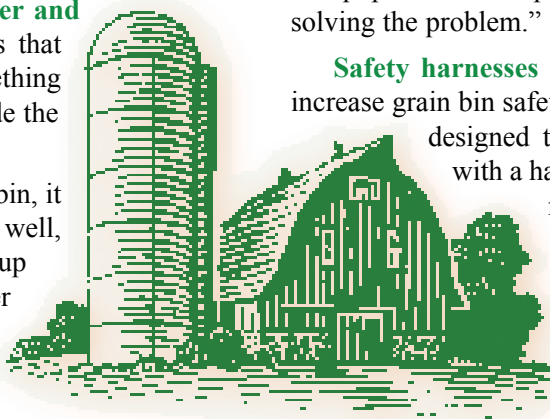
**Safety harnesses** are another way farmers may try to increase grain bin safety, but Roberts said most bins are not designed to hold farmers from inside the bin with a harness. “Farmers who have harnesses need to make sure they are approved for grain bin use, and they need to be aware that other than helping rescuers locate them in an emergency situation, harnesses don’t really help with entrapment,” he said. “Harnesses should definitely be used when farmers are working up high, outside the bins, however, to prevent falls.”

Roberts also said that **managing aeration correctly** and monitoring bin conditions can reduce some of the safety concerns. “Farmers should check their bins every two weeks,” he said. “We recommend they let the fans run for about five minutes, then climb up, open the door and smell for mold.”

“If farmers are warming grain as the outside temperatures come up, they should make sure not to come above 50 degrees Fahrenheit, because anything higher is going to promote mold and insect growth.”

More information about dealing with the fallout of this year’s wet harvest is available on the Purdue Extension “Managing Moldy Corn” website at [www.purdue.edu/cornmold](http://www.purdue.edu/cornmold).

*\*This article was reprinted with the permission of the author.*







# SAFETY TOOLS:

## Preparing Young Workers to Work Safely



The agriculture industry is one of the most dangerous industries in the nation. Each year many American teenagers are employed in this industry, and because child labor laws place very few restrictions on farm operations, young workers are at greater risk to be exposed to workplace hazards.

According to the federal Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI) report, between 2003 and 2008, 113 workers under the age of 18 were fatally injured in the agriculture industry. Nationally, nearly 65% (73) of those fatal injuries occurred among workers age 16 and younger. Overall, one-third of young worker fatalities in 2008 occurred in the agriculture industry. In order to reduce the likelihood that fatal workplace incidents occur, farm operators must take a proactive approach to youth safety, and young workers must be trained on safe work practices regarding the hazards present on their specific worksite.

Young workers tend to do what they see, so it is crucial for adults working in this industry to be role models. Adequate time should be spent educating youth on the farm environment, equipment and animal safety. For more topical information on farm safety, please visit the **National Institute for Occupational Safety and Health** online at [www.cdc.gov/niosh](http://www.cdc.gov/niosh) and search for "agriculture."

Because Child Labor laws place few restrictions on young workers in agriculture, and because there are many exceptions to the Child Labor laws in place, the **Marshfield Clinic Research Foundation** has developed the North American Guidelines for Children's Agricultural Tasks (NAGCAT). These guidelines propose assigning tasks and supervising youth based upon the workers development

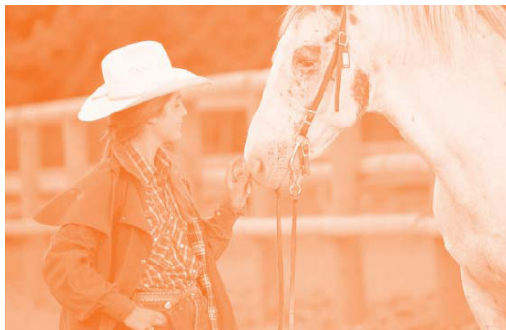
and skill levels. The **NAGCAT** tool can

assist parents and employers in determining whether or not children are ready to work on a farm and which tasks are age appropriate for the specific child's skills. The guidelines provide a "checklist" to help determine if the child's skills meet the requirements for a specific agriculture task.

The **Marshfield Clinic Research Foundation** has also developed **Safety Guidelines for Hired Adolescent Farm Workers**. These guidelines, which have been developed into informational posters, provide training tips, basic principles for training youth workers and responsibilities for supervisors. To download these posters, please click [here](#).

Depending on the type of farm and the types of work performed, Child Labor laws vary. To view a breakdown of Child Labor laws by state, please click [here](#). By learning the laws specific to your state and to your operations, and by utilizing proactive approaches to youth labor safety, such as those provided by the Marshfield Clinic, you can help to ensure the safety and health of your young workers.

Also, be sure to check out OSHA's **Agriculture Safety eTool** for Youth in Agriculture Safety.



## WATCH OUR Teen Worker Safety Video

[www.in.gov/dol/2366.htm](http://www.in.gov/dol/2366.htm)

Click on "Summer Safety Video"

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