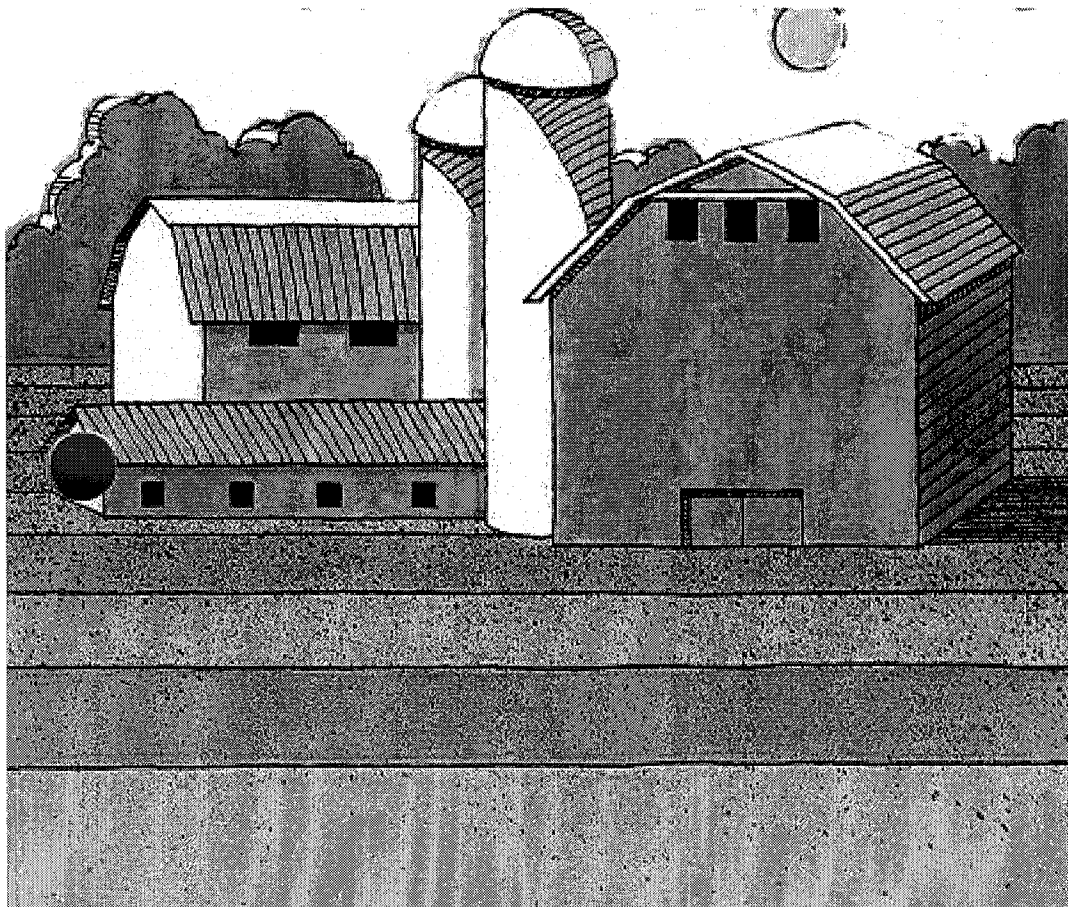


**FARM  
CHEMICAL  
SAFETY  
IS IN  
YOUR HANDS**

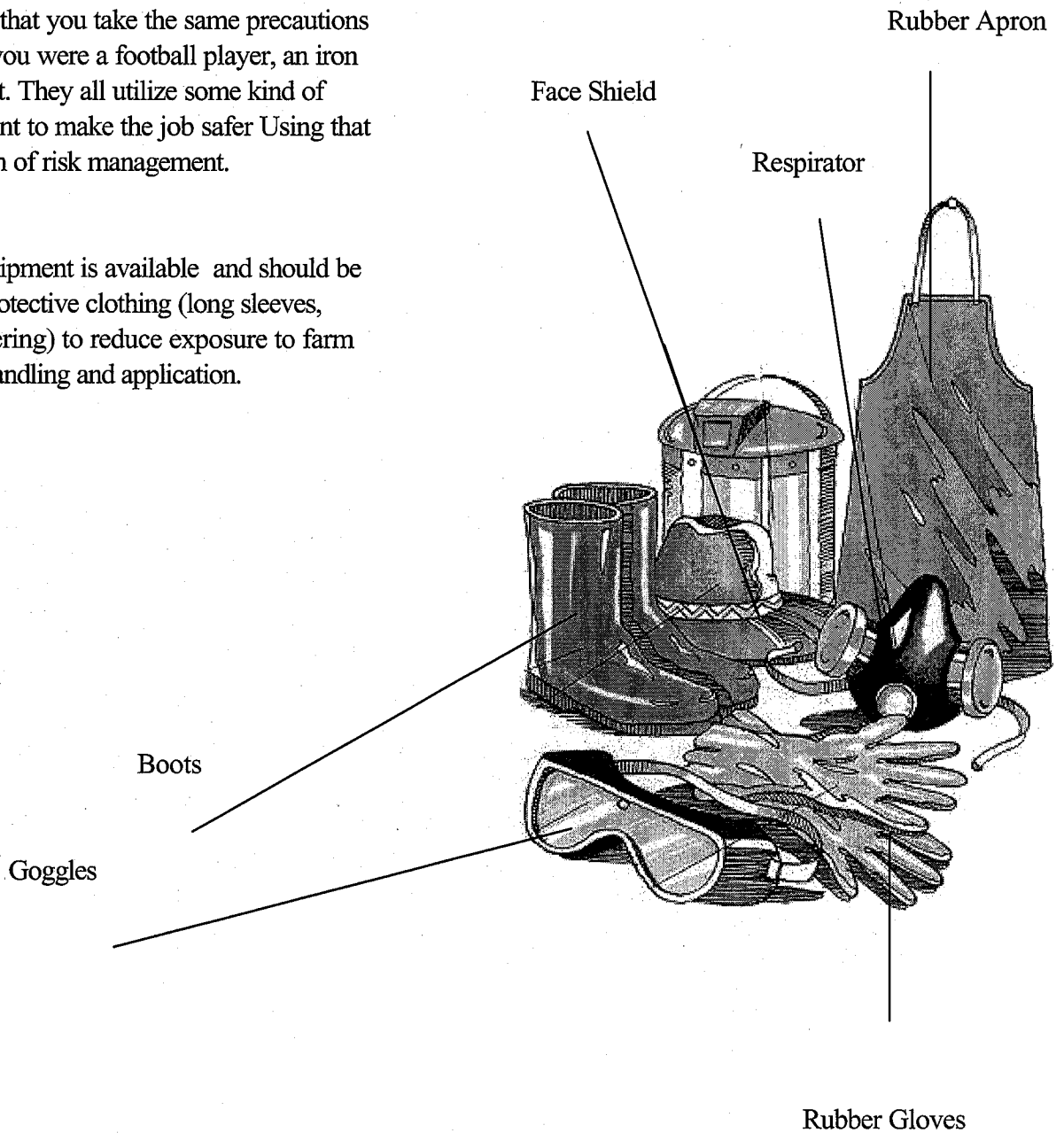


Farm chemicals are valuable tools to modern agriculture, and like any tool, they must be used carefully and responsibly. Protecting yourself is the first step.

Wearing protective clothing and equipment such as a respirator or goggles can be uncomfortable. Rubber gloves may seem to be a nuisance; a rubber apron takes time to put on, but there is just one reason why you should tolerate discomfort and inconvenience... **TO PROTECT YOURSELF.**

There is some risk in anything you do. Like any other line of work, managing risks involved with farm chemicals requires that you take the same precautions you would take if you were a football player, an iron worker or a jet pilot. They all utilize some kind of protective equipment to make the job safer. Using that equipment is a form of risk management.

Safety equipment is available and should be worn along with protective clothing (long sleeves, trousers, head covering) to reduce exposure to farm chemicals during handling and application.



## Managing Your Risk

You face certain risks when mixing, loading or applying farm chemicals. But you can reduce those risks by simply reducing exposure. It goes by a simple formula:

$$\text{RISK} = \text{TOXICITY} \times \text{EXPOSURE}$$

Having knowledge about the toxicity of a product and the potential for personal exposure, permits risk on the job to be lowered. How toxic a material is does not by itself determine how much risk there may be in handling it. Gasoline, for example, is extremely toxic when ingested, but it can be handled safely. No matter how toxic a substance may be, if the degree of exposure is kept low enough, risk can be kept at an acceptable level. The toxicity of materials can't be changed, but the risk can be managed.



*Tests conducted with laboratory animals determine toxicity of farm chemicals.*

## So, What is Toxicity?

Toxicity is a property of all matter... everything from vitamin A to parathion is toxic to some degree, in some form, or by some route of exposure.

Scientists classify exposure to toxicity according to the way a material gets into your system. Dermal Toxicity measures skin effects and the extent that it can be absorbed into your body through the skin. Oral toxicity relates to what happens if you swallow the material, inhalation toxicity is concerned with breathing it, and eye irritation indicates the potential effects from eye exposure. Toxicity is typically classified as acute or chronic.

Acute toxicity generally describes the immediate effects of a single, short term, exposure to a material. This is determined by exposing test animals to different amounts of the material and observing the results.

Chronic toxicity describes delayed effects from repeated exposures. This is determined by exposing test animals, usually rats or mice, to varying amounts of a material over a life span, or often several generations, and observing those results. Effects evaluated in this way include potential tumors, birth defects and reproductive effects.

## Exposed, How?

Think about the four routes of exposure; dermal; oral, eye, and inhalation. Then think about the things you do when you handle, mix, load or apply farm chemicals. Chemicals can get on your skin from handling and opening packages; adjusting nozzles, from spray mist, spills, or broken hoses. Chemicals find their way into your mouth from your hands, from foods eaten with unwashed hands, from use of tobacco products or even from splashes when something goes wrong. One can inhale fumes, dust or fine mist. These are a few examples of ways that you can be exposed to chemicals. The idea is to cut exposures. For that, a guide is needed... the product label.

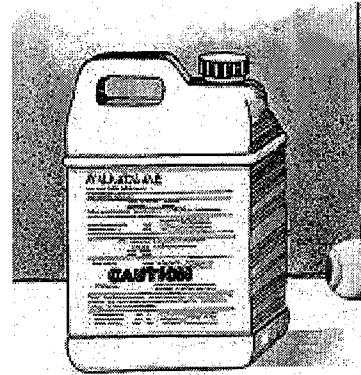


*Chemical residues can easily get into the mouth and eyes from unwashed hands and forearms when eating, smoking or rubbing the face and eyes.*

## The Label Isn't Just a Piece Of Paper...

Every pesticide container has a label. It is required reading. It is not just fine print on a piece of paper. It is a legal document. It provides directions needed for mixing and application and other product information. More importantly, it tells you how you must protect yourself.

There are SIGNAL words on every pesticide label that tell us the level of toxicity of the chemical. Those words are important. We must learn to recognize them and know what they mean.



*EPA registered pesticide container labels prominently display signal words which indicate level of toxicity.*

## The Signals

The word CAUTION appears on pesticide products with a relatively low level of toxicity. The word WARNING generally indicates a product that is moderately toxic by one or more routes of exposure.

Product labels carrying the words DANGER or DANGER - POISON imply highly toxic products, and require very specific protective measures.

## Not Designed for Style

The protective clothes worn when working with farm chemicals are not designed for style, but for protection. The right kind of clothing can help reduce exposure. A long sleeved shirt, long pants or coveralls, and chemical resistant gloves are basic.

Wear shoes (high tops or boots) with socks... never sandals or sneakers. Remember, leather shoes and gloves can absorb chemicals. It is almost impossible to decontaminate them. In some cases, rubber boots or rubber shoe covers are needed

Change to clean work clothes every day. Spilling just a little of a farm chemical on your clothes today may be insignificant, but wearing the same clothing for several days without laundering prolongs your exposure and increases risk

### **CLOTHING AND EQUIPMENT TYPICALLY USED TO REDUCE EXPOSURE (REFER TO PRODUCT LABEL FOR SPECIFIC SAFETY REQUIREMENTS).**

<b><u>Route of Exposure</u></b>	<b><u>Clothing and Equipment</u></b>
Ingestion (Mouth)	None
Dermal (skin)	Garments such as: head covering (cap or wide-brim hat), protective suit, long sleeved shirt, trousers, chemical resistant gloves, apron, shoe coverings or boots.
Eyes	Goggles or face shield
Inhalation	Pesticide approved (NIOSH/ MSHA) respirators.

***Table 1. Clothing and equipment typically used to reduce exposure (refer to product label for specific safety requirements.).***

### **The washing machine... An Applicator's Best Friend**

By wearing clean clothes every day, you cut down the chances for extended exposure... just one more way to protect yourself. Be sure that children don't handle dirty work clothes. Leaving clothes that may have pesticides on them around the house allows needless chemical exposure to your family. Wash your clothes as soon as possible after taking them off, Drop them into the washer yourself and then wash your hands. Pesticide contaminated work clothes should never be stored or washed with the "family load" of other clothing.

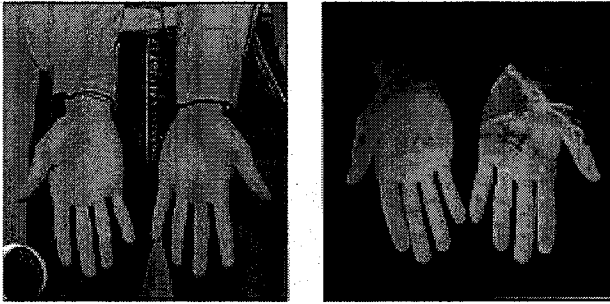
### **Farm Chemical Safety is in Your Hands**

Exposure studies show that when you work with farm chemicals, the greatest amount of measurable material can be accumulated on your forearms and hands. This isn't surprising when you think about what you do - you open containers with your hands, turn valves and fix nozzles and hoses with your hands and, sometimes, clean up spills with your hands. There are a lot of chances to get the chemical on your skin and hands.

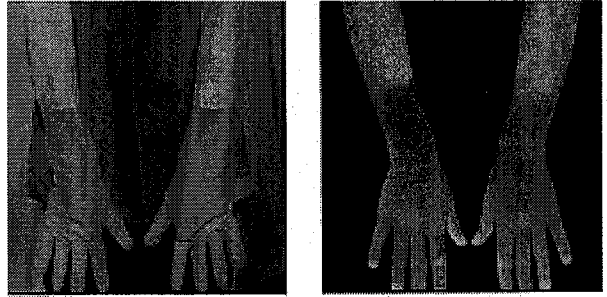


***Put pesticide-contaminated clothing into washer yourself, then wash hands Do not mix with other house bold laundry.***

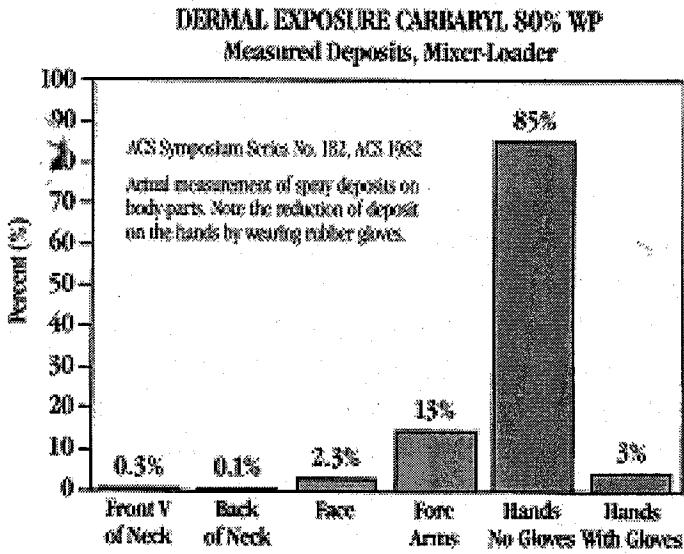
Then think of how often you touch your face or other parts of your body, how you handle your sandwiches at lunch and how you handled your cigarettes or other tobacco products. It shouldn't be a surprise to find that much of the oral chemical exposure you might receive comes from your hands. The published data on the next page shows where the greatest measurable chemical residue occurs during mixing and loading of farm chemicals. Note the difference on the hands when rubber gloves are worn.



***Stimulated Spray Exposure-*** Fluorescent dye was sprayed onto sleeved arm and bare hands (left), then photographed under ultraviolet light. Observe spray exposure on unprotected hands (right).



***Stimulated Spray Exposure-*** Fluorescent dye was sprayed onto bare arms and gloved hands (left), then photographed under ultraviolet light. Observe spray exposure on unprotected arms (right). Long sleeves and rubber gloves reduce potential dermal exposure to hands and arms.



***Chart 1-*** Percentage of measured spray deposits on various parts of the body. Note amount on hands with and without rubber gloves. Rubber gloves on hands reduced potential dermal exposure by over 95 percent.



## Chemical Resistant Gloves Are Key

Unlined chemical resistant gloves (commonly referred to as "rubber" gloves) can't prevent all of the exposure that occurs through our hands, but they will make a very big



*When working with hands in upward positions turn glove cuff up to form a cup to trap any liquid that can run down arm.*

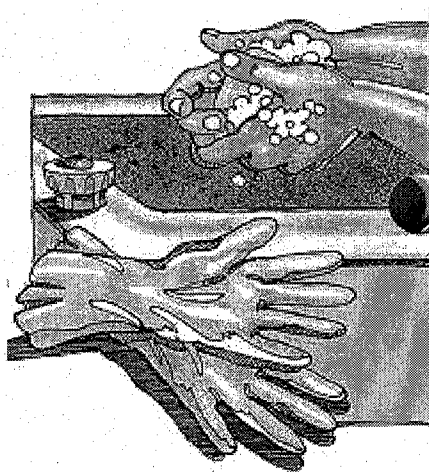
difference. They are absolutely required when working with some farm chemicals. But it makes good sense to wear them when you handle, mix or apply any farm chemical. If lined gloves are used, be aware that the lining can become contaminated and will add exposure.

Gloves should be long enough to protect your wrists. If you are working overhead, put your shirt

sleeves inside the gloves and turn up the cuff of the gloves to catch material that might run down your arms.

When finished, rinse gloves thoroughly before taking them off; wash your hands after their removal. Use lots of soap and water. Your best protection is a very good hand washing job before you eat, drink, use tobacco, touch your face or use the toilet.

Keep gloves handy ... on the tractor or in the applicator truck. Check your gloves often. Fill them with clean water and squeeze ... look for leaks and if you find some, throw the gloves away immediately.



*Wash hands and chemical resistant (rubber) gloves thoroughly after use to remove chemical residues.*

## Protect Your Eyes

Eyes are very sensitive to most pesticidal materials. Anytime there is a possibility of getting a chemical directly in your eyes, wear eye protection.

Face shields or chemical goggles should be worn to protect your eyes. If you wear glasses, a face shield is the preferred method

of protection. If a respirator is required (the label will tell you), then appropriate eye protection will have to be used. When mixing liquid pesticide formulations that carry WARNING or DANGER signal words on the label, always wear eye protection.

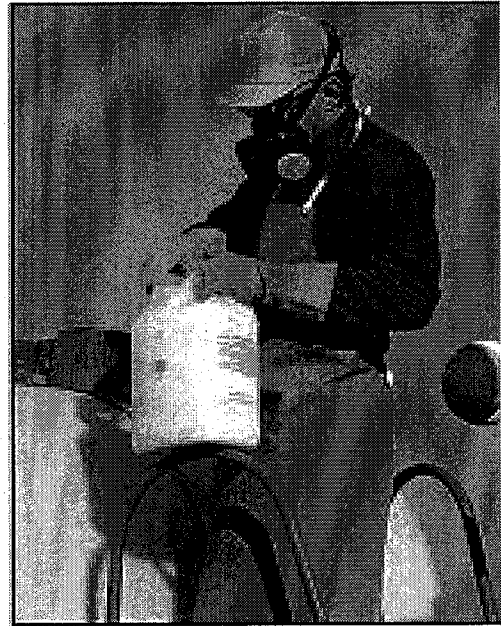


*Wear appropriate eye, face and body protection to guard against splashes and spills when pouring Or transferring chemicals.*

## Protect the Top and Front

The purpose of a hat is to protect your head. When applying chemicals overhead, wear a waterproof hat with a brim wide enough to protect the neck. Chemicals deposited in the hair and on the scalp are another source of dermal exposure that can be easily prevented. Wash hair and scalp thoroughly after using chemicals.

Wear a rubber apron when mixing and handling liquid formulations. It is very good insurance. When WARNING or DANGER appear on the label, the apron may be required. An apron is easy to put on and take off. It provides a lot of protection against spills, container leaks, broken hoses and other unexpected exposures.



*Use proper respirator when the chemical label calls for such protection.*

## The Respirator -When We Need It

Everybody agrees that wearing a respirator is unpleasant. But, when we need it, we can't without it. If the label specifies the use of a respirator, it means business. IT'S A MUST.

A dust mask is not a substitute for a pesticide respirator. Several types of respirators are available. Some are built into protective garments that even supply cool air.

Most common, however, are cartridge or canister respirators.

The key to your protection is to select the right kind of respirator, make sure that it is approved for pesticide use, and that it fits. Keep it clean. Change the filters as often as specified and then use it.

Fumigants require special precautions when it comes to selecting and using breathing equipment. Use a supplied air respirator or at least a canister respirator approved for pesticide use. The product label tells you what to do. But it is up to you to do it!

## Water is Cheap Insurance

Just about the best safety tool when working with farm chemicals is water...lots of water. Keep a supply of clean water handy where you mix chemicals. Keep a tank of water available in the field or on the equipment when applying pesticides. Use it for hand washing or in



*Water containers to supply wash or first aid water are available and can be easily attached to sprayer tanks and other equipment.*

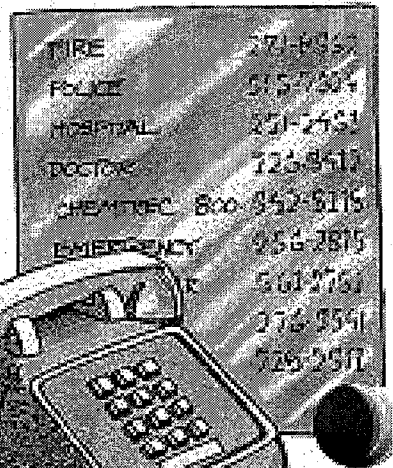


case of a spill or a splash. When chemicals get on your skin or in your eyes, don't hesitate, flush with water.

When the work day is done or when you finish the job with chemicals, water is still a key safety tool. Clean your protective equipment before storing. Shower with plenty of soap and do a good job. Wash your hair thoroughly, and under your fingernails too.

*Wash or shower thoroughly after each day's work. Wash hair and scalp. Clean under fingernails.*

*Prepare list of phone numbers for emergency use and post close to telephone.*



## Don't Be Modest Be Ready

Spills and splashes do happen. The action you take can mean the difference between an unfortunate incident and an injury. If you or anyone else gets chemicals spilled on them, don't wait. Grab for the water and flush the affected area. Pesticide soaked clothing should come off immediately and the wash down should be thorough. Then think about cleaning up spills or finishing your job. Better yet, go home and take a shower. NEVER put contaminated clothing back on.

Pesticide labels carry information about first aid. It is important to know the basic steps to take in an emergency. The label will also tell you the symptoms of overexposure. If those symptoms occur, don't wait. See a physician immediately.

Know where and how you can get medical help in case of an emergency. Keep a card or sign handy with phone numbers that can bring emergency help. Be sure that everyone on the job understands what to do in case of an accident.

If you are working at a remote location, plan ahead on how to get help if something goes wrong. Thinking ahead is protection. Arrange for some kind of periodic communication.

## There's No Magic

There is no magic that will help us protect ourselves while working with farm chemicals. We must use common sense and follow the rules that fit the materials we work with. The label contains basic information we need to know. The signal words CAUTION, WARNING, DANGER or DANGER - POISON tell a lot about the products we are using. Remember the formula: RISK=TOXICITY X EXPOSURE.

When we cut down exposure through the use of good personal hygiene, proper protective equipment and good workplace practices, we reduce our risk. It's that simple!

FARM CHEMICAL SAFETY IS  
IN YOUR HANDS



The "Rubber Glove Zone" Decal has been adopted by the NACA as a constant reminder to farm workers to wear rubber gloves, wash hands and gloves, and follow other safety procedures when handling farm chemicals.



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