



## Hazard Communication Program for Agricultural Employers

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**S-780**

last updated

July 2010

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This publication provides practical loss control and safety information to assist you in making your workplace safer. It is not legal advice. SAIF Corporation has made every effort to bring significant Oregon Occupational Safety and Health Administration (OR-OSHA) regulations to your attention. Nonetheless, compliance with OR-OSHA remains your responsibility. You should read and understand all relevant OR-OSHA regulations that apply to your job site(s). You may want to consult with your own attorney regarding aspects of OR-OSHA that may affect you.

**Note:** The information in this publication is time sensitive. Do not rely upon this document if its publication date is more than three years old. Please check the Employer Guide "Safety" section of our web site at [www.saif.com/employer](http://www.saif.com/employer) for a more recent, printable copy. You'll also find a variety of other valuable safety information designed to help your business prevent injuries and control costs.

## Introduction

Oregon employers are required by law to develop a program that communicates information concerning the chemical hazard of materials used in the workplace.

The program is required by the Oregon Occupational Safety and Health Division (OR-OSHA), Oregon Administrative Rules 437, Division 4, Hazard Communication.

To help you develop a hazard communication program, the enclosed materials provide:

1. A **step-by-step approach** in developing a comprehensive Hazard Communication Program.
2. A **summary outline of the requirements** useful for training employees.
3. An **example of a written hazard communication program** which can be used to model your own plan.
4. An **example of an employee training module** for informing employees of the rules and a general approach in training employees regarding the chemical hazards in their workplace.
5. An employee **training certificate** for tracking which of your employees have completed your training program.

All of these materials will need to be specifically adapted to your agricultural operation. It is important that the materials provide clear structure and directions for those employees following the plans. For further or additional information, please contact your local **SAIF Safety Management Consultant** or SAIF's Service Center at 800.285.8525.

## Step-By-Step Approach

Employer hazard communication programs are to be designed to ensure that you and your employees know the hazards of the chemicals at your operations. The following information provides a step-by-step process that may be helpful in developing a comprehensive hazard communication program.

1. Review the Hazard Communication Rules.
2. Clearly identify the person(s) responsible for developing, implementing and monitoring the program. When identifying the person(s) responsible use their name or job title. It is often better to say "farm manager" rather than "John Doe," as a change of personnel would not obsolete the written program.
3. Develop a list of the chemicals used in the work areas or processes. This master list will be useful in ensuring that all the appropriate Material Safety Data Sheets (MSDS) are obtained and employee training is complete.
4. Ensure that current MSDSs are available for all the hazardous chemicals used in the workplace.
5. Monitor on a regular basis to ensure all chemical containers are properly labeled.
6. Conduct employee training which pulls together the information found on container labels and Material Safety Data Sheets (MSDSs) to ensure employees understand needed personal protective equipment and the hazards of the chemical.
7. Develop a plan for your ongoing hazard communication program which ensures that:
  - ✓ New employees are trained.
  - ✓ New chemicals are received with proper labels and Material Safety Data Sheets (MSDSs).
  - ✓ Current employees are retrained when new hazardous chemicals are introduced into the workplace.
  - ✓ Outside contractors with exposed employees are informed about the hazardous chemicals your operations are using and that MSDSs are available.

## Agricultural Hazard Communication Rules

This SAIF document is designed to provide a summary of the Oregon Agriculture Hazard Communication Rules (Division 4) to aid in developing an understanding of the rules and how to comply with the standards.

### **Summary outline of the rules**

#### **I. Scope**

- A. The rules apply to all Oregon Agricultural employers.  
Agricultural employers are defined as any person, corporation, association, or other legal entity that:
  1. Owns or operates an agricultural establishment (farm, ranch, nursery, or greenhouse)
  2. Contracts with the owner or operator of an agricultural establishment in advance of production for the purchase of a crop and exercises substantial control over production; or
  3. Recruits and supervises employees or is responsible for the management and condition of an agricultural establishment.
- B. All hazardous chemicals found in the workplace under normal or foreseeable emergency conditions are included. This includes pesticide products AND other hazardous materials such as fuel, shop supplies, etc.
- C. Exclusions:
  1. The following materials are exempt from the rules:
    - Hazardous wastes
    - Tobacco products
    - Wood and wood products (Note: this exemption does not include wood dust created as a byproduct during manufacturing operations involving sawing, sanding or shaping of wood.)
    - Articles (manufactured items)
    - Food, drugs and cosmetics used by the employees
  2. Hazardous consumer products do not need to be included in your Hazard Communication Program if employees use the product(s) in the same manner as normal consumer use, and which use results in a duration and frequency of exposure no greater than exposures experienced by a consumer. When an employer is uncertain whether the duration and frequency of exposure to these products is comparable to consumer use, then the employer should include the product in their program.

## II. Material Safety Data Sheets (MSDSs)

- A. Chemical manufacturers are required to develop MSDSs for each hazardous chemical or mixtures based on the information they developed from the Hazard Determination information.
- B. Employers should receive MSDSs from the chemical manufacturers or distributors upon the initial purchase of hazardous chemicals.
- C. The MSDSs need to be immediately available at the workplace for employee review and use. The only exception is where employees must travel between workplaces during a work shift. In this case, the MSDSs may be kept at a central location at the primary workplace facility, if the employer ensures that employees have immediate access to the required information in an emergency.
- D. The MSDS must be in English (you can maintain copies in other languages if desired) and should cover 12 major elements, or it should be stated on the MSDS if there is no relevant or applicable information. The mandatory items for inclusion are:
  - 1. **Identity** of the chemical(s) presenting physical or health hazards.
  - 2. The **physical and chemical characteristics**, such as vapor pressure, flashpoint and solubility of the chemicals.
  - 3. The **physical hazards**, such as reactivity and fire and explosion potential.
  - 4. The **health hazards**, including the signs and symptoms of illness and medical conditions, which might be aggravated by exposure.
  - 5. The **primary routes of entry** of the chemical into the body.
  - 6. The **permissible exposure limits** published and/or recommended limits for the chemical.
  - 7. If the chemical is listed as a **carcinogen**.
  - 8. The **precautions** necessary for safe use.
  - 9. The **known control measures**, including engineering, work practices and personal protective equipment necessary to protect against the hazards.
  - 10. **Emergency and first-aid** procedures.
  - 11. The **date of preparation** of the MSDS or the date of last change in contents.
  - 12. The name, address and phone number of the **chemical manufacturer, distributor or person responsible** for the MSDS.
- E. The chemical manufacturers are required to update the MSDS within three months of learning that new hazard data is available which affects the MSDS information.

### **III. Labels**

- A. When the employer receives containers of hazardous materials, the containers should have a label providing the following information:
1. Identity of the hazardous chemical(s).
  2. Appropriate hazard warnings, words, pictures, symbols, or combinations of them, that provide at least general information about the hazards of the chemicals, and which, with other information immediately available to employees, will provide employees the specific information regarding the physical and health hazards of the hazardous chemicals.
- B. As hazardous chemicals are transferred from the original containers to portable or stationary containers, the employer needs to ensure that these secondary containers are labeled with the same information as that found on the original container. The only labeling exception is for portable containers intended only for use during the work shift by the employee who fills them and the employee maintains control of the container.
- As an example, if an employee fills his/her own secondary container from a primary container and uses it all up, then the secondary container is exempt from the label rule. However, if an employee fills up a group of back pack sprayers and then send a crew out to use them, then the sprayers DO need to be labeled.
- C. Alternative posting, signs or placards may be used in lieu of labels directly affixed on stationary containers.
- D. Labels for solid metal, solid wood or plastic items may be forwarded to the customer at the time of the initial shipment and need not come with subsequent shipments unless the information changes.
- E. Piping systems are exempt from labeling under the Hazard Communication Rules but need to be labeled in accordance with OAR 437, Division 4, Pipe Labeling.

### **IV. Written Hazard Communication Program**

*A written hazard communication program is required by the rules. The plan should be concise, understandable, accurate, and must contain the following elements:*

- A. A statement organizing how the employer will meet the rule obligations on: labeling, Material Safety Data Sheets, and employee information and training.
- B. A list of the hazardous chemicals used in the workplace. This list can serve as a checkpoint to ensure that all chemicals in the workplace have all the appropriate information. The chemical names used on the list may be developed for each individual work area or the whole workplace.
- C. A plan of how to make employees aware of hazards they may encounter while performing non-routine tasks and working on pipe systems containing hazardous chemicals.

- D. The plan must also include the methods you, as the employer, will use to inform contractors with employees of any hazardous chemicals to which they may be exposed. Also, include any suggestions for appropriate protection measures to be taken by the contractor's employees. The measures will vary with the products involved.

## **V. Employee Information And Training**

Employee training includes the following:

- A. **All** agricultural employees must be informed of the location and availability of the Hazard Communication program and the MSD Sheets. The OR-OSHA publication, "Safe Practices When Working Around Hazardous Agricultural Chemicals" (form 440-1951) must be provided, and all employees must review the booklet or certify in writing that they have previously done so.
- B. For workers other than hand laborer:

Any employee other than a hand laborer must receive **additional** health and safety training including the material outlined below:

1. An overview of the requirements contained in the Hazard Communication rules for Oregon Agricultural employers.
2. Any operations in their work area where hazardous chemicals are present.
3. The details of the hazard communication program including an explanation of the labeling system and the material safety data sheets, and how employees can obtain and use the correct hazard information.
4. Physical and health effects of these hazardous chemicals.
5. How to determine the presence or release of these hazardous chemicals in the workplace.
6. Steps the company takes to reduce employee exposure, including work practices and the use of personal protective equipment if applicable.
7. Emergency procedures and first aid measures appropriate for the materials used by this company.

NOTE: It is recommended that written documentation of employee training be maintained.

## Written Hazard Communication Program – Example

### Introduction:

\_\_\_\_\_ (Company Name) is committed to the safety and health of its employee and to the goal of zero accidents. Providing information on the safe use of potentially hazardous chemicals is an important part of our safety and health program. The following written program for Hazard Communication has been established to help provide information to our employees and to comply with OR-OSHA regulations. This written program is available to all employees and is located \_\_\_\_\_(provide location).

The program will consist of the following major components:

### 1) Container Labeling

\_\_\_\_\_ (person in charge) will verify that all containers of hazardous materials received for use are labeled, tagged or marked with the following information:

- A. The identity of the contents.
- B. Appropriate hazard warnings, words, pictures, symbols, or combinations of them, that provide at least general information about the hazards of the chemicals, and which, with other information immediately available to employees, will provide employees the specific information regarding the physical and health hazards of the hazardous chemicals.

No container shall be released for use until the above data has been verified. If hazardous materials are transferred to a secondary container, the secondary container must also be labeled with the required information.

\_\_\_\_\_ (Person responsible) is responsible to assure that secondary containers are properly labeled.

### 2) Material Safety Data Sheets (MSDS)

Copies of the MSD Sheets for hazardous chemicals to which employees may be exposed are available for review at \_\_\_\_\_ (provide location). If unable to locate a MSD Sheet for any reason, immediately contact your supervisor.

### 3) Employee Information and Training

\_\_\_\_\_ (Person responsible) is responsible for employee training, and can be contacted with any questions or concerns regarding this training. Training will be structured as follows:

- A. **All** agricultural employees must be informed of the location and availability of the Hazard Communication program and the MSD Sheets. The OR-OSHA publication, "Safe Practices When Working Around Hazardous Agricultural

Chemicals" (form 440-1951) must be provided, and all employees must review the booklet or certify that they have previously done so.

B. For workers other than hand laborers:

Any employee other than a hand laborer must receive **additional** health and safety training including the material outlined below:

1. An overview of the requirements contained in the Hazard Communication rules for Oregon Agricultural employers (OAR 437, Division 4).
2. Any operations in their work area where hazardous chemicals are present.
3. The details of the hazard communication program including an explanation of the labeling system and the material safety data sheets, and how employees can obtain and use the correct hazard information.
4. Physical and health effects of these hazardous chemicals.
5. How to determine the presence or release of these hazardous chemicals in the workplace.
6. Steps which the company takes to reduce employee exposure, including work practices and the use of personal protective equipment if applicable.
7. Emergency procedures and first aid measures which are appropriate for the materials used by this company.

*NOTE: It is critically important that all of our employees understand the training. If you have any additional questions, please contact \_\_\_\_\_ (owner, manager or safety coordinator). After attending this training each employee will sign a form verifying that they received the training, written materials and understand our company's Hazard Communication Program.*

#### **4) Hazardous Chemicals List**

The hazardous chemicals list is a list of all known hazardous chemicals used at \_\_\_\_\_ (farm name or work area). The list may be found at the front of the MSDS binder (a sample list is included on the following page.). Further information on each noted chemical can be obtained by reviewing the Material Safety Data Sheets.

## Sample Hazard Communication Chemical List

<b>Chemical/Trade Name</b>	<b>Chemical Usage</b>
Fertilizers	Field Applications
Fuels	Addition to vehicles and equipment
- diesel	
- gasoline	
- propane	
Hydraulic Fluid	Addition to equipment
Lubricants	Addition to equipment
- 2-cycle oil	
- Chain oil	
- Greases	
- Motor oil	
Paint	Painting/finishing
Pesticides	Field Applications
- Insecticides	
- Fungicides	
- Herbicides	
Welding Materials	Repair/Construction
- Rods	
- Flux	
- Gas	

### 5) Hazardous Non-Routine Tasks

On rare occasions, some employees may perform non-routine tasks which may involve exposure to hazardous chemicals. Before starting work on such projects, each affected employee will be instructed about the hazardous chemicals to which they may be exposed during such activity. This instruction will include:

- a. Specific chemical hazards.
- b. Measures the company has taken to reduce risk.
- c. Additional safety and protective measures which employees can take.

## **6) Contractors**

In the event that contractors and/or their employees are working on our premises, it is the responsibility of \_\_\_\_\_ (responsible person) to provide information about the hazardous chemicals to which they may be exposed, and how to protect themselves from these materials while working with us. If contractors bring hazardous materials into our workplace, they are required to provide the necessary safety and health information to us.

## **7) General**

No employee is to begin working on any task which involves potentially harmful chemical exposures until that employee has the knowledge and protective equipment needed to assure their personal health and safety. If you have any questions about our program, please contact \_\_\_\_\_ (responsible person).

## Hazard Communication Training Program Elements

The following information is intended to assist you in training your employees on your Hazard Communication program. The Material Safety Data Sheets (MSDSs) must be reviewed for specific hazard information on each formulation of material your operations use.

The training should provide information to **all** employees on:

1. A review of the Oregon Occupational Safety and Health Division's publication, "Safe Practices When Working Around Hazardous Agricultural Chemicals."
2. Location and availability of your written hazard program.

For all employees other than hand laborers the following information must be provided:

1. An overview of the Hazard Communication Rules for Oregon Agricultural employers (OAR 437, Division 4).
2. Review of the chemicals used in your workplace.
3. How to access, read and understand the labels and MSDS to obtain the hazard information.
4. The physical and health effects of the materials used.
5. How to detect the release of hazardous chemicals in your work area.
6. How to lessen or prevent exposure to the chemicals through the use of assigned personal protective equipment; use of the exhaust system and proper work procedures. You should also review the specific steps you have taken to reduce hazardous chemical exposure.
7. Emergency and first aid procedures.

### **Overview of the Hazard Communication Rules**

The Hazard Communication Rules are intended to ensure that both employers and employees are aware of the dangers associated with hazardous materials in their workplaces. The enclosed rule outline provides a review of the specific requirements, including container labeling, MSDS and training.

### **Written Hazard Communication Program**

Employers must have a written program that outlines how you will provide information and control your exposure to hazardous chemicals. Let your employees know where the program is located during their work shifts.

## **Chemicals Used in Our Workplace**

You probably use a variety of products. Most of these products do contain one or more hazardous chemicals. Most of the products you use can be grouped by their basic function or use. You then can discuss which of the products fit in each group and what kinds of hazards these chemicals represent, how to control, and how to detect the presence of these materials. At this point, you want to review the chemical inventory list for your work area.

## **How to Read Labels and Material Safety Data Sheets (MSDS)**

**Labels:** A product label on both the original or secondary containers should be reviewed prior to working with the material. Each label will have two important pieces of information that you and your employees should be familiar with:

1. The identity of the hazardous chemical.
2. The hazard warning.

Original container labels will also state the name and address of the manufacturer.

The label should act as a visual reminder of the information you will be presenting in this training session and of the information found in more detail on the MSDS.

It is important that you read the hazard warning and use the chemical as prescribed by the label.

**Material Safety Data Sheets (MSDS):** The MSDS is the primary means used to convey the necessary information about the hazards of the chemicals used. The chemical manufacturers are responsible for providing you with the MSDS. The chemical manufacturer must include twelve different items about their product that provide you with adequate information to use the chemical safely.

*\* Please note that there are many commercially available training programs which will describe how to read labels, and Material Safety Data Sheets. A listing of audio-visual materials is attached at the end of this document for your information.*

### **Physical and Health Hazards of the Chemicals Used**

Employees are to be trained specifically about the hazards of the chemicals in their work areas. This may be done by specific chemical or by categories of hazards, but in any case, the employee is to be aware that information is available on the specific hazards of individual chemicals through Material Safety Data Sheets (MSDS).

Employees may be trained about the chemicals using the common type or generic chemical group or by reviewing the specific MSDS, as long as the training includes the following information:

1. The measures employees can take to protect themselves from the hazards.
2. The specific procedures implemented by you, the employer, to provide protection.
3. The basic physical and health effects of the chemical.
4. Detection of release of the chemical and general emergency and first aid procedures.

## Audio-Visual Training Aids for Hazard Communication

The following list has been prepared to aid you in obtaining additional training materials for implementing your hazard communication program. The list does not constitute an endorsement for these specific products, nor does it contain all programs that are available.

### **Name of Program**

### **Vendor**

"MSDS – Key to Chemical Hazards."  
"HazCom"

CORE Media Development, Inc.  
Safety Training Programs  
710 SW 9th Ave.  
Portland, OR 97205  
800.537.8352  
[www.cmts.com](http://www.cmts.com)

Variety of videos on Hazard Communication  
Services and Material Safety Data  
Sheets (MSDS)

Dept of Consumer & Business  
OR-OSHA AV Library  
350 Winter St. NE  
Salem, OR 97301-3882  
800.922.2689  
Phone: 503.947.7453  
Fax: 503.947.7463  
[www.orosha.org](http://www.orosha.org)

WPS and Hazard Communication Training  
Videos in Spanish and English

Gempler's, Inc.  
100 Countryside Dr.  
P.O. Box 270  
Belleville, WI 53508  
800.382.8473  
[www.gemplers.com](http://www.gemplers.com)

Where to Find MSDSs on the Internet

[www.ilpi.com/msds/](http://www.ilpi.com/msds/)  
Various search engines such as:  
[www.dogpile.com](http://www.dogpile.com)  
[www.google.com](http://www.google.com)  
Example search: MSDS for Gasoline,  
MSDS for Gramoxone, etc.

Additional programs for training pesticide mixer/loader/applicators are also available. Some of these programs are listed below:

**Program**

**Source**

Various videos in English and Spanish on chemical exposures, WPS training and other safety and health topics.

SAIF Corporation  
Video Lending Library  
800.285.8570  
Email: [videolibrary@saif.com](mailto:videolibrary@saif.com)

Bilingual slide tape program, "Playing it Safe,"  
And training pamphlets for pesticides  
applicators and farm workers

U.S. EPA Region 10  
Environmental Protection Agency  
1200 Sixth Ave.  
Seattle, WA 98101  
800.424.4EPA  
206.553.1200  
[www.epa.gov/r10earth/index.htm](http://www.epa.gov/r10earth/index.htm)

Variety of Pesticide Information and  
Training Materials

US Environmental  
Protection Agency  
Office of Pesticide Programs  
Ariel Rios Building  
1200 Pennsylvania Ave. NW  
Washington, D.C. 20460  
[www.epa.gov/pesticides/](http://www.epa.gov/pesticides/)

Information for Agricultural Workers  
on Pesticides

American Crop Protection Association  
1156 Fifteenth St. NW  
Suite 400  
Washington, DC 20005  
Phone: 202.296.1585  
Fax: 202.463.0474  
[www.acpa.org/public/steward/index.html](http://www.acpa.org/public/steward/index.html)

Variety of Training Videos, Brochures  
and On-Site Training for Farm Employers  
Employees

Farm Employers Labor Service and  
2300 River Plaza Drive  
Sacramento, CA 95833  
Phone: 800.753.9073  
Fax: 916.561.5696  
[www.fels.org](http://www.fels.org)



## Training: Grouping Chemical Hazards – Example

**Product/Chemical Group:** Copper Fungicides

### **General Information on Copper Compounds**

A great many commercial copper-containing fungicides are available. Some are mixtures of copper compounds. Others include, lime, other metals, and other fungicides. Compositions of specific products can usually be provided by manufacturers or by poison control centers.

### **Toxicology**

The dust and powder preparations of copper compounds are irritating to the skin, respiratory tract, and particularly to the eyes. Soluble copper salts (such as the sulfate and acetate) are corrosive to mucous membranes and the cornea. Limited solubility and absorption probably account for the generally low systemic toxicity of most compounds. The more absorbable organic copper compounds exhibit the greatest systemic toxicity in laboratory animals. Irritant effects from occupational exposures to copper-containing fungicides have been fairly frequent. Most of what is known about mammalian toxicity of copper compounds has come from veterinary toxicology (livestock seem uniquely vulnerable) and poisonings in humans due to deliberate ingestion of copper sulfate or to consumption of water or food that had been contained in copper vessels.

Early signs and symptoms of copper poisoning include a metallic taste, nausea, vomiting, and epigastric pain. In more severe poisonings, the gastrointestinal irritation will worsen with hematemesis and melanic stools. Jaundice and hepatomegaly are common. Hemolysis can occur, resulting in circulatory collapse and shock. Acute renal failure with oliguria can also occur. Shock is a primary cause of death early in the course, and renal failure and hepatic failure contribute to death more than 24 hours after poisoning.<sup>1</sup>

### **Health Effects and Effects of Over Exposure:**

Direct contact may seriously damage eye tissue, cause conjunctivitis, ulceration, with possible irreversible corneal opacification.

Excessive exposure may cause cough, mucous production, shortness of breath or other medical conditions. Additionally, excessive exposure may produce skin irritation, which could lead to allergic contact dermatitis or itching eczema.

Each copper fungicide's long-term possible health effects will vary; however, excessive exposures are related to irritation of the upper respiratory tract leading to perforation of the nasal septum. Ingestion of copper fungicides may cause nausea and vomiting, abdominal pain and central nervous system depression. Repeated ingestion of copper salts may result in anemia, liver and kidney damage. (Note: The variety of copper fungicide type should be reviewed)

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<sup>1</sup> EPA Recognition and Management of Pesticide Poisonings, Fifth Edition, 1999

**Physical Hazards:**

These materials are stable under normal conditions. Copper fungicides should not be exposed to excessive heat. The materials are stable and will not react violently with water. Please review the MSDS sections on Fire and Explosion Hazard Information as well as potential reactivities and incompatibilities from various copper-containing products.

**Detection of Release:**

If the material is spilled or leaks on land, sweep up and place in suitable containers for later disposal. If the material spills in water follow the hazardous waste disposal procedures established or contact environmental regulatory agencies for guidance on acceptable disposal practices.

**Exposure Control:**

Protective clothing, engineering controls, and proper work practices.

**Protective Equipment:**

Wear long-sleeved shirts and long pants, waterproof gloves, shoes with socks, and protective eyewear when applying or handling this chemical.

**Work Practices/Engineering Controls:**

Keep containers closed when not in use. Do not handle or store near heat. Store in a cool, dry place. Do not contaminate water, food or feed by storage or disposal. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside and then wash thoroughly and put on clean clothing. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this material's concentrate. Follow the appropriate REI (restricted-entry interval) per the label.

**Appropriate Emergency and First Aid Procedures:**

**Eye contact** If material makes eye contact, hold eyelids open and flush with water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention.

**Skin contact** In case of skin contact, remove contaminated clothing and shoes. Wash skin thoroughly with soap and water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention.

**Inhalation** If overcome by vapors, remove from exposure and call a physician immediately. If breathing is irregular or has stopped, start resuscitation.

**Ingestion** If ingested, drink promptly a large quantity of milk, egg white, gelatin solution or if these are not available, large quantities of water. Unless extensive vomiting has occurred, empty the stomach by gastric lavage with water, milk, sodium bicarbonate solution of a 0.1% solution of potassium

Risk Management **Hazard Communication Program  
for Oregon Agricultural Employers**

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ferrocyanide. Administration of gastric lavage should be performed by qualified medical personnel.