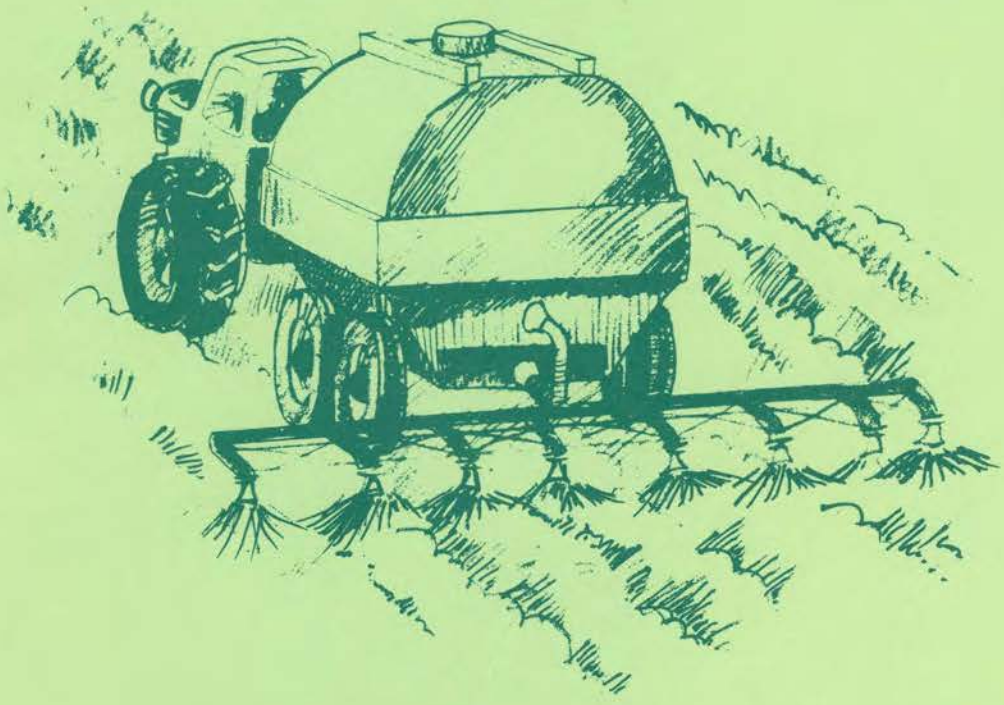
NIOSH

SELF-EVALUATION INSTRUMENT-- FERTILIZER RETAIL and DISTRIBUTION INDUSTRY



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health

SELF-EVALUATION INSTRUMENT
RETAIL FERTILIZER DISTRIBUTION INDUSTRY

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FOREWORD

This document, designed for the retail fertilizer industry, is one of a series of industry self-evaluation instruments that provides an additional approach to promoting safety and health among employers and employees in industry.

The concept of voluntary self-evaluation is an adjunct to existing regulatory procedures and is intended to improve awareness of the need to develop comprehensive occupational safety and health programs.

The development of this concept in cooperation with the industry and employees involved is another means by which NIOSH attempts to fulfill its responsibilities under the Occupational Safety and Health Act of 1970.

Anthony Robbins

Anthony Robbins, M.D.
Director, National Institute for
Occupational Safety and Health

PREFACE

Good work practice or proper procedure, is the application of an accumulated body of knowledge which may be defined to include those tasks, skills, and instincts recognized by labor groups and industry as being practical and necessary to protect the safety and health of workers, where no standards exist or where they are desirable as a supplement to existing standards. Through voluntary self-evaluation, management and labor can participate in a coordinated procedure to accomplish the goal of a safe and healthful work environment.

This "Self-Evaluation Instrument (SEI) Retail Fertilizer Distribution and Transportation Industry" has been developed by professionals in occupational safety, industrial hygiene, and occupational medicine - persons well acquainted with the problems associated with Retail Fertilizer Distribution and Transportation Industry. This instrument has been designed to deal with the operations, good work practices, proper procedures, and regulations within the fertilizer industry and to provide management with guidelines to be implemented in cooperation with their workers.

Good work practices also may be based upon industry policy and negotiated work agreements rather than any legal requirement. Many accepted proper procedures are implemented for the purpose of complying with the general duty portion (Sec. 5) of the OSH Act (PL 91-596).

Each section begins with a brief explanation of the potential occupational safety and health hazards that may exist as the result of the operations or procedures covered by that section.

Following these explanatory paragraphs, questions are presented to establish the existing status of specific activity in terms of its potential to produce injury or illness. A "Yes" answer indicates appropriate controls are in place. A "No" answer indicates changes may be necessary or that controls are absent or ineffective; or that a safe work practice is being violated. Because of the broad scope of this manual, some sections may not be applicable to a particular work environment.

The SEI is designed so that those persons most familiar with a specific operation or procedure will be able to respond to questions relating to that particular situation. Each section of the SEI should be reproduced and given to the person responsible for the work to which it applies. The supervisor and employees doing the work can then complete their particular section.

The results of completing the SEI should be made available to all of the workers, and their help enlisted in correcting detected deficiencies.

After the results of the first use of the SEI are evaluated and acted upon, periodically repeating the self-evaluation procedure will afford management and employees the opportunity to judge the effectiveness of existing controls and to obtain a measure of assurance that their work environment continues to comply with State and Federal OSHA standards.

The SEI is intended to be used with a companion publication "Self-Evaluation of Occupational Safety and Health Programs" [DHEW(NIOSH) Publication No. 78-187] which will answer most of the questions that may arise in the process of completing the SEI. The publication presents a concept whereby management and labor can join together to recognize and prevent or control potential hazards. It presents a basic information core applicable to most industries, with a program for self-evaluation and steps needed for implementation.

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ABSTRACT

So that employers and employees within the retail fertilizer industry can more readily recognize potential occupational hazards, a series of comments and self-evaluation questions applicable to this industry has been prepared. This field-tested, systematic questionnaire approach addresses identifiable work areas and work situations within the retail fertilizer industry.

After responsible persons complete a walk-through investigation and answer the questions, and after the conditions of all work areas are further evaluated, those areas that need improving will be obvious. Because pertinent occupational safety and health standards for fertilizer substances are included, implementing corrective action should provide a measure of assurance that regulatory standards are being met.

A companion document "Self-Evaluation of Occupational Safety and Health Programs" gives basic information applicable to all industries and should be used with "Self-Evaluation Retail Fertilizer Distribution-Industry" to aid in implementing a comprehensive occupational safety and health program.

CONTENTS

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APPLICATION EQUIPMENT

Retail fertilizer plants have a variety of field application equipment depending upon the volume of product sold, plant location, and the crops serviced. The application equipment may include pull-type spreaders and truck spreaders.

The potential for personal injury is inherent in the use of spreader equipment as with any piece of powered machinery or equipment. The questions in this section are designed to identify potential hazards to employees resulting from operating this equipment and to evaluate the plant's program to protect employees from these potential hazards. This section covers the following:

- Dry pull-type and self-propelled spreaders
- Ammonia nurse tanks and pull-type and self-propelled applicators
- Liquid nurse tanks and pull-type and self-propelled applicators

Pull-type spreaders and applicators are used to apply fertilizer to the grower's fields. They are generally pulled with a four wheel drive truck or tractor by a dealer employee, or farmer, after being loaded with the desired product at the fertilizer plant.

Self-propelled spreaders are used to broadcast liquid and dry fertilizer on the fields. This type equipment consists basically of a liquid or dry container mounted on a truck chassis, designed for farm use, with heavy-duty springs, axles and frames.

Some of the hazards associated with this equipment include injuries due to moving parts, conveying mechanisms, brakes and rotating power take-off shafts, and accidental exposure to toxic chemicals. Therefore, it is necessary to develop and follow safe procedures to control potential hazards. An effective safety program for fertilizer spreader operation includes:

- Adequate guarding of the moving parts of the spreaders.
- Periodic inspection and preventive maintenance of each spreader.
- Formal training for spreader operators and maintenance personnel.
- Water tank (15-20 gal) mounted on spreader for emergency wash.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

Dry Pull-Type and Self-Propelled Spreaders

1.	Are safety chains and hitch pins in good condition?	Yes ( ) No ( )
2.	Is spreader identified with recommended maximum towing speed?	Yes ( ) No ( )
3.	Is identification of owner placed on spreader?	Yes ( ) No ( )
4.	Are all safety shields and guards in place? (e.g., belt drive guards)	Yes ( ) No ( )
5.	Is PTO (power-take-off) shaft regularly inspected and properly guarded?	Yes ( ) No ( )
6.	Are tires regularly inspected and properly maintained?	Yes ( ) No ( )
7.	Are wheel bearings inspected and greased regularly?	Yes ( ) No ( )
8.	Are brakes and brake lines inspected regularly and properly maintained?	Yes ( ) No ( )
9.	Are lights inspected regularly and properly maintained?	Yes ( ) No ( )
10.	Are hazardous material placards properly placed when required? (e.g., when handling Ammonium Nitrate)	Yes ( ) No ( )
11.	Is a regular maintenance schedule required to be followed?	Yes ( ) No ( )
12.	Is all power shut off before performing any maintenance?	Yes ( ) No ( )
13.	Are precautions taken to prevent injury when checking for leaks in high pressure hydraulic fluid lines?	Yes ( ) No ( )
14.	Have operators and maintenance personnel been trained?	Yes ( ) No ( )

15. Do all spreaders which may use public roads have the slow moving vehicle emblem properly displayed? Yes ( ) No ( )

16. Are spinner fans, spinner mounting frames spinner fan nuts and screws periodically inspected? Yes ( ) No ( )

17. Are spreaders, when fully loaded with material, at or below the Gross Axle Weight Rating (GAWR) and/or the Gross Vehicle Weight Rating (GVWR)? Yes ( ) No ( )

Ammonia (NH_3) Nurse Tanks, Pull-Type and Self-Propelled
(OSHA Standards 29 CFR 1910.111)

1. Are the nurse tanks and applicator vessels identified as meeting ASME requirements for NH_3? Yes ( ) No ( )

2. Are ammonia vessels properly placarded and marked to meet Federal, State, and local requirements? Yes ( ) No ( )

3. Are pull-type ammonia vehicles equipped with safety chains? Yes ( ) No ( )

4. Are ammonia vehicles equipped with safety water? Yes ( ) No ( )

5. Are operators required to wear safety gloves, safety glggles, and respirators, where appropriate? Yes ( ) No ( )

6. Are vehicle operators trained in handling hazardous materials, driving, etc.? Yes ( ) No ( )

7. Are ammonia hoses and hose-end valves inspected regularly? Yes ( ) No ( )

8. Are ammonia vessels painted white or silver? Yes ( ) No ( )

9. Are proper warning and first-aid decals prominently displayed? Yes ( ) No ( )

10. Is the customer who applies the ammonia himself trained in the appropriate safety procedures and precautions? Yes ( ) No ( )

11. Are vapor relief valves covered at all times (dust cap)? Yes ( ) No ( )

12. Are relief valves replaced on a regular basis or earlier if corroded or full of dirt? Yes ( ) No ( )

13. Do all nurse tanks which may use public roads have the slow moving vehicle emblem properly displayed? Yes ( ) No ( )

14. Are all bulk carrying vehicles equipped with at least five gallons of water and with a full face mask? Yes ( ) No ( )

15. Is the applicator's flow-control devices inspected on a regular basis and repaired or replaced as needed? Yes ( ) No ( )

16. Are the screens cleaned frequently? Yes ( ) No ( )

17. Is the wearing of contact lenses prohibited while handling ammonia? Yes ( ) No ( )

Liquid Nurse Tanks, Pull-Type and Self-Propelled Applicators

1. Are nurse tanks and applicator tanks identified as meeting ASME requirements? Yes ( ) No ( )

2. Are personnel trained in technique of transferring liquid fertilizer? Yes ( ) No ( )

3. Are pull-type vehicles equipped with safety chains and hitch pin? Yes ( ) No ( )

4. Are all vehicles identified with recommended maximum towing speed? Yes ( ) No ( )

5. Are all moving parts guarded? Yes ( ) No ( )

6. Are pull-type and self-propelled vehicles operated within Federal and State rules? Yes ( ) No ( )

7. Are pull-type and self-propelled vehicles constructed and maintained in conformance with Federal and State rules? Yes ( ) No ( )

8. Are operators required to wear appropriate personal protective equipment? Yes ( ) No ( )

FIRE PREVENTION - FIRE PROTECTION
(OSHA STANDARDS 29 CFR 1910.155-165)

Employees must be thoroughly familiar with all fire prevention measures and must be capable of effectively fighting fires. Fire protection equipment must be readily accessible at all times and in ready-to-use condition.

An effective program for the prevention and control of fire in fertilizer plants includes.

-- Periodic training of employees who fight fires in methods of fire prevention and use of fire-fighting equipment.
-- Proper storage and handling of combustible and flammable residues and wastes.
-- Good housekeeping practices.
-- Electrical facilities suitable for hazard areas.
-- An emergency action plan, including emergency egress, in case of fire.
-- Regular inspection and maintenance of fire-fighting equipment, systems, and protective equipment.
-- Well maintained, accessibly and frequently inspected fire signalling system.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are properly classified fire extinguishers readily accessible in all work areas? Yes ( ) No ( )

2. Are fire extinguishers maintained in a fully charged and operable condition? Yes ( ) No ( )

3. Are fire extinguishers kept at their designated locations when not in use? Yes ( ) No ( )

4. Are fire extinguishers mounted near the hazard against which they are designed to protect? Yes ( ) No ( )

5. If located in an area where visual obstruction, may occur are extinguisher locations designated by signs or other markings? Yes ( ) No ( )

6. When required are fire extinguisher inspections and maintenance properly recorded? Yes ( ) No ( )

7. Are fire extinguishers marked for the types of fires for which they should be used? Yes ( ) No ( )

8. Are employees given instructions on how to choose (and use) the right type of extinguisher for a particular fire? Yes ( ) No ( )

9. Are fire hoses when required always connected and ready for immediate use? Yes ( ) No ( )

10. If there is a fixed CO_2 extinguishing system required by OSHA: (If not, go to question 11).

    a. Are there provisions to ensure prompt evacuation of all employees in the CO_2 discharge areas? Yes ( ) No ( )

    b. Are there provisions to carry out the prompt rescue of employees trapped in a CO_2 discharge area? Yes ( ) No ( )

    c. Is the CO_2 system thoroughly inspected and tested at least annually? Yes ( ) No ( )

    d. Are inspection and maintenance records maintained? Yes ( ) No ( )

11. If there is a fixed dry chemical extinguishing system: (If not, go to question 12).

    a. Is the system inspected at least annually? Yes ( ) No ( )

    b. Are controls tested at least annually? Yes ( ) No ( )

    c. Are inspection and maintenance records maintained? Yes ( ) No ( )

12. Is there a local fire-alarm signaling system? Yes ( ) No ( )

13. Is more than one person on each shift assigned the responsibility of notifying the fire department during emergencies? (even when an automatic fire alarm system is installed?) Yes ( ) No ( )

14. Are there selected personnel to investigate and possibly begin fire-fighting operations before the fire department arrives? Yes ( ) No ( )

15. Are there selected personnel to safely direct firemen to the fire location and inform them of any other hazards in the vicinity that might develop due to the fire? Yes ( ) No ( )

16. Are recommended periodic fire drills held? Yes ( ) No ( )

17. Does the plant have a pre-written fire and emergency plan? Yes ( ) No ( )

18. Are routes of emergency egress well marked and are employees required to maintain familiarity with means of exiting? Yes ( ) No ( )

FLAMMABLE AND COMBUSTIBLE LIQUIDS
(OSHA STANDARDS 29 CFR 1910.106)

Improper storage, handling, and use of flammable and combustible liquids have resulted in numerous expensive fires and many serious injuries and deaths. Proper storage must be provided for such materials and employees must be trained in approved methods of handling and using them.

Due to the great number and variety of flammable and combustible liquids with widespread use in the retail fertilizer and distribution industry, many persons are unfamiliar with the variety of varying properties of these liquids. Before using any material, employees should be encouraged to read the labels on all containers and make sure that each container is properly identified and labeled, before using. The storage and use of agricultural products is seasonal. Employees should be made aware of any seasonal modification of the standards.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. If flammable or combustible liquids are kept in an outside storage room or area: (If not, go to Question 2).

   a. Are all containers in a secure position to prevent tipping or spilling? Yes ( ) No ( )
   b. Is proper drainage provided? Yes ( ) No ( )
   c. Are weeds and other vegetation kept clear of the area? Yes ( ) No ( )
   d. Are all sources of ignition prohibited in area? Yes ( ) No ( )
   e. Are quantities stored in accordance to 29CFR 1910.106 (6)? Yes ( ) No ( )

2. If flammable or combustible liquids are kept in an inside storage room: (If not, go to question 3).

   a. Does the room conform to National Fire Protection Association requirements, and OSHA? Yes ( ) No ( )
   b. Are all containers and drums properly grounded where required and where this will not create a hazard? Yes ( ) No ( )
   c. Are containers of over 30-gallon capacity stacked no more than two high? Yes ( ) No ( )
   d. Is fire protection provided? Yes ( ) No ( )
   e. Are "No Smoking" signs posted? Yes ( ) No ( )
   f. Are quantities stored in accordance to 29CFR 1910.106 (5)? Yes ( ) No ( )

3. Are safety cans used for dispensing liquids at the point of use where not bulk handling? Yes ( ) No ( )

4. Are all containers and tanks properly labeled? Yes ( ) No ( )

5. Are large storage containers of flammable and combustible liquids sufficiently diked or curbed to collect or direct leakage, including water added for fire protection? Yes ( ) No ( )

HAND AND PORTABLE TOOLS
(OSHA Standards 29 CFR 1910.241-7

This section is intended to evaluate the effectiveness of your small tool program. Included in this section are:

-- Hand tools (non-powered screwdrivers, hammers, chisels, knives, picks, axes, cutters, etc.).
-- Portable power tools (electric, gasoline, pneumatic, (air) and hydraulic).

Since accidents can occur while using hand and portable tools, special consideration should be given to the condition and use of these tools. Hand and portable tools are often abused by being improperly stored and by being used for a job for which they are not designed. An effective small tool program includes:

-- Inspection and preventive maintenance procedures for tools being used.
-- Training users in proper use and storage of each type of hand and portable tool.
-- Safeguarding rotating or moving parts (points of operation).
-- Use of personal protective equipment as needed.

Read all of the questions in this section, discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are employees who use hand tools instructed in their safe usage? Yes ( ) No ( )

2. Is there a program for periodic inspection of hand and power tools? Yes ( ) No ( )

3. Are poorly maintained or damaged tools taken out of service before or at the time of inspection? Yes ( ) No ( )

4. Is personal protective equipment required to be worn such as safety goggles, face shields, respirators when persons use tools on materials producing flying chips or dust? Yes ( ) No ( )

5. Is hand protection required when persons use tools on materials likely to produce splinters, burrs, or sharp edges? Yes ( ) No ( )

6. When portable electric power tools are used in grounding hazard locations, is power provided from an approved isolated power source or a 12-volt system, as a good work practice? Yes ( ) No ( )

7. Are hand held electric powered tools equipped with a constant pressure switch or control? Yes ( ) No ( )

8. Are portable abrasive wheel grinders equipped with:
   a. Throat guards or spark arrestors used to protect against pieces of broken wheel? Yes ( ) No ( )
   b. Are these guards adjusted to within 1/4 inch of the wheel? Yes ( ) No ( )
   c. Are tool retainers used on pneumatic powered tools? Yes ( ) No ( )

9. Is compressed air used for cleaning reduced to less than 30 p.s.i., and only when effective chip guarding and personal protection equipment is in place? Yes ( ) No ( )

HAZARDOUS MATERIALS

General

Certain fertilizers, pesticides and other agriculturally related chemicals are potentially hazardous. This means they have been determined by various Federal and State regulatory agencies (i.e., OSHA, EPA, DOT, etc.) to be capable of posing an unreasonable health hazard to people and/or property. As a fertilizer dealer, or distributor, it is imperative that the physical and chemical characteristics of the various hazardous material products handled are known. How these products behave or react under certain conditions and the precautions that must be taken in handling them should be understood by all employees. Equally important is compliance with the governmental regulations pertaining to hazardous materials.

There are different lists and definitions of hazardous materials. For example, the Department of Transportation, the Environmental Protection Agency and many State agencies have published their own definitions and lists of materials considered hazardous, such as: explosives, corrosives, flammable liquids, oxidizers, poisons, and others.

To acquire necessary safety and health information, a dealer should ask his supplier of fertilizer and other chemical products to provide safety data and shipping requirements for every product purchased, stored, and handled at the facility. These data should be readily available at all times. From this safety information, one can quickly determine if a hazardous material is being handled, and if so, what the recommended safe handling and emergency procedures are for that particular material.

Department of Transportation (DOT) Regulations

The Department of Transportation has established regulations for handling shipments of hazardous materials. Regulations set forth in Title 49, Parts 100-199 cover preparation and transportation of hazardous materials by rail, air, vessel, and public highway, including detailed packaging specifications. Title 49 should be reviewed. It is suggested that the dealer consult with his supplier of fertilizer and chemicals for information needed concerning storing, handling, and shipping of hazardous materials.

Department of Transportation (DOT) Reports

Dealers involved in commerce are responsible for reporting accidental release of hazardous materials resulting from transportation related accidents or incidents.

Dealers should check with local and State agencies to determine if they also require reporting of spills and accidental releases.

The Department of Transportation requires that accidents and incidents involving hazardous materials and any accidental release of hazardous materials from a package or shipment, be reported to the Secretary, Hazardous Materials Regulations Board, 400 Sixth Street, S.W., Washington, D.C. 20590. A written report must be made within 15 days of occurrence. Telephone notice must be made if hazardous materials are involved in any of the following:

Death of a person.
Injury requiring hospitalization of one or more persons.
Damage of $50,000 or more to carrier and/or any other property.
A critical situation such as continuing danger to life or property.

EPA Regulations

At this writing, only a few EPA regulations apply specifically to retail fertilizer plants. Dealers should take appropriate pre-cautionary measures that will prevent product spills and excessive discharges from around their plant. These measures include the proper selection and maintenance of plant and field equipment, training employees, and pre-planning for potential emergencies.

In the event of a spill of a hazardous substance, the dealer is responsible for reporting the spill to the proper local, State, and Federal agencies and for cleaning up the spill as quickly as possible.

CHEMTREC

CHEMTREC is the acronym for Chemical Transportation Emergency Center, a public service of the Chemical Manufacturers Association (CMA) at its offices in Washington, D.C.: CMA, 1825 Connecticut Avenue, N.W., Washington, D.C. 20009.

CHEMTREC provides immediate advice for those at the scene of transportation emergencies, then promptly contacts the shipper of the chemicals involved for more detailed assistance and appropriate follow-up.

CHEMTREC OPERATES 24 HOURS A DAY, SEVEN DAYS A WEEK. TO RECEIVE DIRECT-DIAL TOLL-FREE INFORMATION FROM ANY POINT IN THE CONTINENTAL UNITED STATES, TELEPHONE: 800-424-9300 (483-7616 FOR CALLS ORIGINATING WITHIN THE DISTRICT OF COLUMBIA).

Because chemicals have so many uses and have such a wide range of characteristics, there is need for wide dissemination of information about them. It is important to understand that CHEMTREC is not intended and is not prepared to function as a general information source, but by design is an information disseminator and assistance locator for emergencies involving hazardous chemical cargo. This telephone number should be posted at appropriate locations.

JOB PLANNING-JOB BRIEFING

Safety and health planning meetings with concerned personnel should be conducted before beginning a major new job. These meetings should include representative(s) from all affected areas, including any contract personnel.

On-site job briefing is equally as important to safety as job planning. Each employee should understand the general purpose of the job and his particular work assignment as well as that of those fellow workers.

Read all of the questions in this section; discuss the question with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Is each immediate supervisor required to conduct briefing sessions before beginning all jobs for all affected members under his supervision? Yes ( ) No ( )

2. Are crew members encouraged to ask questions and make comments during these meetings? Yes ( ) No ( )

3. Are records kept of job planning, briefing, and training sessions? Yes ( ) No ( )

4. Are job assignments made on the basis of compatability with the person's known capabilities? Yes ( ) No ( )

5. Are employees informed of work environments that may aggravate previous health conditions? Yes ( ) No ( )

MACHINERY AND MACHINE GUARDING
(OSHA Standards 29 CFR 1910.211-219)

The potential for personal injury is inherent in the use of almost any powered machinery or equipment. Therefore, it is necessary to develop and follow safe procedures to control potential hazards. An effective safety program for machine operation in fertilizer plants include:

-- Adequate guarding of the moving parts of all machines.
-- Periodic inspection and formal preventive maintenance of each machine.
-- Formal training for machine operators and maintenance personnel.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Is there a regular program of safety inspections of machinery and equipment? Yes ( ) No ( )

2. Are manually operated valves and switches controlling the operation of equipment and machines clearly identified and readily accessible? Yes ( ) No ( )

3. Are all pulleys, sprockets, gears, chains, and belts that are within 7 feet of the floor or working level properly guarded? Yes ( ) No ( )

4. Are safety glasses, face shields, or other eye protective equipment required to be worn? Yes ( ) No ( )

5. Before new abrasive wheels are mounted, are they visually inspected and "ring" tested? Yes ( ) No ( )

6. Are employees who operate revolving or reciprocating tools or equipment required to remove or secure loose clothing, jewelry, and long hair? Yes ( ) No ( )

7. Are methods provided to protect the operator and other employees in the machine area from hazards created at point of operation, nip points, rotating parts, flying chips, and sparks? Yes ( ) No ( )

8. Do guards have openings no larger than 1/2 inch? Yes ( ) No ( )

9. Are defective guards repaired or replaced promptly and absent guards installed? Yes ( ) No ( )

PROCESSING PROCEDURES

The basic manufacturing process in a bulk fertilizer plant is mixing. Mixing is simply the physical blending of basic fertilizer materials, either dry or liquid. Although the types of mixers vary, there are inherent potential safety hazards common to each.
All mixers use some electrical powered and/or potential mechanical type equipment that requires grounding, guarding of belts and chains, etc. Conveyors and/or pumps requiring safety precautions are used to feed and unload mixers. Therefore, as with other powered machinery and equipment, it is necessary to develop and follow safe procedures to control the potential hazards.

The questions in the following sections are designed to identify potential hazards to employees resulting from unsafe process procedures or poor work practices and to evaluate the plant's program to protect employees.

Read all of the questions in this section, discuss the questions with those workers at your plant who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are chemical goggles or full face shields required to be worn in designated areas? Yes ( ) No ( )

2. Are vessels and equipment constructed of a suitable material to withstand the corrosive action of the material being mixed? Yes ( ) No ( )

3. Are safe ladders and platforms provided for climbing around mixers? Yes ( ) No ( )

4. Is the blending operation discontinued before inspections or repairs are attempted? Yes ( ) No ( )

5. Have operators been trained in proper operating procedures for blending equipment? Yes ( ) No ( )

6. Are guards placed over moving parts before beginning blending operations? Yes ( ) No ( )

MATERIAL HANDING AND STORAGE
(OSHA Standards 29 CFR 1910.176-190)

Material is moved, either by hand or mechanical means, in every business and industry. Accidents involving material handling account for 20-30% of all occupational injuries. The questions in this section are designed to identify potential hazards resulting from methods of handling and storing material and to evaluate the establishments program to protect employees from these hazards. An effective material handling and storage program includes:

-- Training in safe work practices.
-- Proper use of equipment, tools, and protective equipment to reduce injury and illness.

Read all of the questions in this section; discuss the question with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Is there a recommended limit on the maximum weight a worker is permitted to lift by himself without equipment? Yes ( ) No ( )

2. Are workers employed in manual material handling trained in proper lifting techniques? Yes ( ) No ( )

3. Is all stored material kept from under or adjacent to overhead electric transmission lines? Yes ( ) No ( )

4. Is all material kept at least 2 feet from a fire door? Yes ( ) No ( )

5. Are employees familiarized with proceedings to follow in cleaning up and disposing of spills? Yes ( ) No ( )

MEDICAL AND FIRST AID

Medical recommendations must be appropriate for worksite conditions and potential hazards. They must also be consistent with the goals of management and the requirements of labor. Medical recommendations must not be so lax that the safety and health of workers are compromised, nor so stringent that employment and retention of an individual are unfairly limited.

Medical or first-aid stations at each facility should have readily available industry safety data sheets on all potentially harmful chemicals. These provide useful information and should be available through the purchasing office of the products' manufacturer. Some companies place this requirement on their purchase order forms.

Qualifications of occupational medical personnel including physicians, nurses, and first aiders vary widely throughout the industry. It is important that supervisors make sure that the medical personnel, whether salaried or contracted, whether full or part-time service, visit the plant sites to thoroughly familiarize themselves with the potential for harm. The National Institute for Occupational Safety and Health (NIOSH) provides informative materials useful for this purpose. (NIOSH, 4676 Columbia Parkway, Cincinnati, Ohio 45226.)

NIOSH has available a Health Hazard Evaluation program, whereby an employer or employee may request an on-site visit to determine whether a health hazard exists. Application should be made through the NIOSH Regional Office (see appendix). OSHA has a consultation program available to assist in improving work-site safety and health. Application should be made through the OSHA Regional Office (see appendix). These services are useful where there is a potential in health effects from chronic exposure, as well as acute toxic exposure.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, preferably with a physician and nurse, complete this section with their help.

1. Are appropriate medical facilities (relevant to the number of employees and types of potential exposed) available for all employees? Yes ( ) No ( )

2. Have the first-aiders in each section on each shift received training by the American Red Cross or equivalent? Yes ( ) No ( )

3. Are the names, addresses, and phone numbers of advisory physicians or alternate medical facilities posted or readily available to all supervisors and first-aiders? Yes ( ) No ( )

4. Is an eye-wash fountain (with sufficient water for 15 minutes of copious flow) available at all sites where hazardous substances may be splashed in the eye? Yes ( ) No ( )

5. Are all supervisors and workers trained to recognize the early symptoms of overexposure to pesticides and hazardous substances that may be present? Yes ( ) No ( )

6. Are emergency people and medical personnel in the community familiar with the pesticides and other hazardous materials which are used? Yes ( ) No ( )

NOISE
(OSHA Standards 29 CFR 1910.95)

Ill-effects of noise in general, and industrial noise in particular, can be prevented by controlling noise at its source, or by protecting the employee against the ill effects of noise. Measurement, control, and protection from hazardous noise is a solvable technical problem. Identification of potentially hazardous noise sources is the first step. After identifying the sources of noise, the establishment can design a noise survey that will measure noise intensity, frequency distribution, and duration, and whether continuous or impact noise results. In addition, the level of noise exposure that employees experience can be evaluated to determine possible threat of noise-induced hearing loss, as well as other ill effects resulting from excessive noise exposure.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Have work areas where noise levels make voice communication between employees difficult, been identified? Yes ( ) No ( )

2. Is approved hearing protective equipment (noise attenuating devices) available to every employee working in these areas and is it required that it be worn? Yes ( ) No ( )

PERSONAL PROTECTIVE EQUIPMENT
(OSHA Standards 29 CFR 1910.132 - 137)

Personal protective equipment is required whenever toxic or other substances can do bodily harm through absorption, inhalation, or physical contact. Various potential environments, chemicals, and mechanical irritants constitute hazards for which protective clothing and respiratory devices, are required. Personal protective equipment is no substitute for engineering and administrative controls, and good work practices. However, where processes make engineering controls impossible or until they can be accomplished, where administrative controls are subject to labor negotiations or until they can be implemented, then appropriate personal protective equipment is required. It is required whenever there is a potential for harm such as a blown or leaky valve, fire, welding tank or vessel entry, danger of falling objects and similar potential hazards.

All personal protective equipment must be properly designed and sufficiently well constructed with proper fitting to provide the protection for which it is intended. It must be maintained in a sanitary and reliable condition. Damaged or improperly labeled devices must be reported, replaced or repaired before use.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Do hard hats used by employees meet the requirements of American National Standards Institute (ANSI) standard? Yes ( ) No ( )

2. Is wearing approved industrial eye protection required at all times when exposed to potential eye hazards? Yes ( ) No ( )

3. Are employees who use respiratory equipment properly fitted and instructed in their proper use, and required to clean, inspect, and sanitize them? Yes ( ) No ( )

4. Does all safety toe footwear conform to the ANSI standard? Yes ( ) No ( )

5. Are the following items available at the ammonia bulk plant:

a.	Gas mask?	Yes ( ) No ( )
b.	Two respirator ammonia canisters?	Yes ( ) No ( )
c.	Safety water: deluge shower?	Yes ( ) No ( )
	safety water tank?	Yes ( ) No ( )
	eye wash showers?	Yes ( ) No ( )
d.	Appropriate chemical splash-proof goggles?	Yes ( ) No ( )
e.	Ammonia resistant safety gloves?	Yes ( ) No ( )
f.	Slicker or rain suit?	Yes ( ) No ( )
g.	Boots?	Yes ( ) No ( )

PLANT EQUIPMENT

Powered machinery and equipment are found in every fertilizer plant. It is used to unload, to load, to convey, and mix fertilizers. Typical types of equipment include bucket elevators, conveyors, end loaders, pumps, and mixers.

Work around fertilizer plants is quite varied and an employee may use different pieces of equipment while performing his/her job. The questions in this section are designed to identify potential hazards resulting from use of unsafe plant equipment or unsafe work procedures, and to evaluate the plant's program to protect the employees. The questions cover basic physical inspections and evaluations that should be regularly made of plant equipment.

Electrical

Electrical wiring and equipment can be sources of sparks and unwanted heat and for that reason equipment used in fertilizer plants must be carefully selected and installed to operate without being a fire hazard. Employees can also be exposed to a variety of serious electrical shocks unless proper precautions are taken.

Electrical installations and equipment must comply with the National Electrical Code. Equipment selection, grounding, tagging and lock out procedures are particularly important areas of concern in fertilizer plants, retail and distribution centers

An effective electrical safety program includes:

-- Education and training of employees in proper switching, use of equipment and tag/lock out procedures.
-- Regular inspection and maintenance of electrical equipment.
-- Adherence to various classifications for electrical wiring in hazardous locations.
-- Appropriate fire extinguishers in electrical fires available.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1. Are only qualified and authorized persons allowed to work for electrical equipment? Yes ( ) No ( )

2. Before working on electrical equipment, are switches opened, and tagged, blocked, or locked out? Yes ( ) No ( )

3. Are all electrical controls and switches marked as to their use? Yes ( ) No ( )

4. Are transformers, control boards, switches, motor starters and other equipment installed in such a way as to avoid accidental energizing and that the possibility of accidental contact with energized conductors is reduced to a minimum? Yes ( ) No ( )

5. Are motors of the type and size required for the load and conditions provided? Yes ( ) No ( )

6. Are metal parts of all electric equipment including transformers, control boards, and motors, as well as metal framework of buildings, effectively grounded? Yes ( ) No ( )

7. Are fuses provided of the right capacity to protect equipment and workers? Yes ( ) No ( )

8. Are fuse block and switches installed with the fuse on the "dead side" when the switch is pulled? Are fuse pullers required to be used to remove fuses? Yes ( ) No ( )

9. Are circuit breakers regularly checked to see that moving parts do not stick? Yes ( ) No ( )

10. Are permanent installations fitted with permanent wiring? Yes ( ) No ( )

11. Are flexible cords and cables prohibited as a substitute for permanent wiring? Yes ( ) No ( )

12. Is all electrical equipment approved for its intended use? Yes ( ) No ( )

Hoists, Cables, Chains, Cranes

Ropes, chains, cables, overhead cranes, mobile cranes, lifting and other hoisting devices are very commonly used in bulk fertilizer plants. There are inherent potential hazards in using these devices. These hazards must be recognized and safe work practices followed to accomplish the goal of preventing accidents during the use of the equipment.

Read all the questions in this section; discuss the questions with those workers at your plant who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are ropes, cables, slings, chains, and hooks used within the working range specified? Yes ( ) No ( )

2. Are defective slings removed from service immediately? Yes ( ) No ( )

3. Is all hoisting equipment (chain or rope hoists, "come-alongs", winch trucks, etc.) thoroughly checked periodically? Yes ( ) No ( )

4. Are there at least two full wraps of cable on the drum of hoists at all times of operation? Yes ( ) No ( )

5. Are knots prohibited in wire rope? Yes ( ) No ( )

6. Are persons prohibited from standing or passing under a load on the hook? Yes ( ) No ( )

7. Are weighted hooks left on the ground at the end of a work period? Yes ( ) No ( )

Bucket Elevators

Many retail fertilizer plants and distribution centers use bucket elevators to fill buildings, hoppers, mixers and free-standing bins with product. Elevators are also used to remove product from storage or the mixer for loading into spreaders and applicators. The most common injuries involving bucket elevators result from falls and entanglement of body or clothing in belts, chains and other drive components. These injuries are preventable.

Elevator maintenance should always be handled by qualified and experienced personnel. Maintenance should not be performed when equipment is in operation.

An effective safety program for bucket elevator operation includes:

-- Adequate guarding of moving parts.
-- Periodic inspection and formal preventive maintenance program of elevator.
-- Formal training for operators and maintenance personnel.

Read all of the questions in this section; discuss the questions with those workers at your plant who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Is the opening to the elevator boot covered with a suitable grate and are access plates kept in place to protect against contact with moving machinery? Yes ( ) No ( )

2. Where stationary work platforms are not practical, is a mobile crane and boom used to perform maintenance work at elevated heights? Yes ( ) No ( )

3. Are provisions made to use lifelines and safety belts where necessitated by high work conditions? Yes ( ) No ( )

4. Are lockout and blocking precautions strictly enforced anytime a cover plate has to be removed? Yes ( ) No ( )

5. When digging out a stalled elevator, are buckets blocked to prevent shifting? Yes ( ) No ( )

6. Is a lockout procedure in effect? Yes ( ) No ( )

7. If the elevator handles sulfur or ammonium nitrate, have vents been installed? Yes ( ) No ( )

8. Is the elevator chain or metal casing (if applicable) properly grounded? Yes ( ) No ( )

9. Are worn out and damaged buckets replaced with non-metallic buckets? Yes ( ) No ( )

10. Are belt alignment indicators used to keep belt tracking properly? Yes ( ) No ( )

11. Are speed indicator devices used on bucket elevator belts to indicate slow down? Yes ( ) No ( )

Conveyors

Conveyors are found at almost all fertilizer retail plants and distribution centers. They aretypically used to unload rail cars and trucks, feed product into storage bins, move product from bins to blenders, load out spreader equipment, etc. Types of conveyors include normal fixed belts, shuttle belts, screw conveyors, paddle and other drag flight conveyors.

Accidents involving conveyors most frequently result from entanglement in a moving belt or roller. Serious injuries can occur when employees fail to follow safe maintenance and operating practices. Maintenance work should only be performed by qualified and experienced personnel with prior approval being obtained from the supervisor or operator.

An effective safety program for conveyor operation in fertilizer plants includes:

-- Adequate guarding of moving parts and pinch points of conveyors.
-- Adequate and safe stairs, ladders, and walkways.
-- Periodic inspection and formal preventive maintenance of each conveyor.
-- Formal training for operators and maintenance personnel.

Read all of the questions in this section; discuss the questions with those workers at your plant who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are pinch points between in-running belt and end rollers, head and tail pulleys, and powered rollers, properly guarded? Yes ( ) No ( )

2. Are all skate type or movable conveyors properly placed, braced and secured prior to use? Yes ( ) No ( )

3. Are employees prohibited from riding conveyors? Yes ( ) No ( )

4. Are emergency conveyor stop cords tested periodically to assure proper operation, proper cord tension, and proper electrical switch mechanisms? Yes ( ) No ( )

Forklifts/End Loaders

Almost every bulk fertilizer plant has front-end loaders and/or forklifts. They are used to lift, move, and stack all kinds of materials including bags, drums, pallets and bulk fertilizer products. Front-end loaders and forklifts are not difficult to operate. They reduce or completely eliminate manual handling, thus minimizing the chances of personal injury.

All forklift and front-end loader operators should be trained thoroughly in operating techniques and machine characteristics prior to being allowed to operate the vehicle.

Since most forklift and front-end loader accidents are due to either unsafe driving and work practices or poor equipment maintenance, an effective vehicle safety program should include the following areas of concern:

-- Systematic inspection and formalized preventive maintenance of each vehicle.
-- Formalized training and selection of operators and maintenance personnel.
-- Thorough investigation of each vehicle accident.
-- Appropriate operator safety shielding.

Operators should be aware of the overall height and width of the vehicle when loaded, as well as unloaded. They should also be aware of the rated capacity of the vehicle. Operators should be constantly alert to avoid striking overhead projections (doorways, entrances, electrical wires, etc.). They should know the whereabouts of all persons working in the area.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are only trained and authorized persons permitted to operate front-end loaders and forklifts? Yes ( ) No ( )

2. Is a complete safety check made of the vehicle at the beginning of each shift? Yes ( ) No ( )

3. When loading or unloading railway cars, are the wheels clinched or brake set, and are dock boards secured in place? Yes ( ) No ( )

4. Are vehicles fitted with a reverse signal alarm and lights or is an observer present to signal the operator when it is safe to back? Yes ( ) No ( )

5. Have operators been instructed to never undercut a pile of fertilizer? Yes ( ) No ( )

6. Are operators prohibited from moving rail cars with end loaders or forklifts? Yes ( ) No ( )

Pumps/Compressors

Liquid fertilizer and ammonia utilize various types of pumps to transfer product into the plant, the mixer and to lead vehicles. Even though liquid fertilizer poses less of a hazard to employees than anhydrous ammonia; yet, both products are transferred under pressure and employees must be trained in the proper handling and safety precautions associated with the particular product.

The questions below are intended to be utilized for both liquid pumps, ammonia pumps and compressors. There are problems of personal safety surrounding these devices and at the same time, there are hazards associated with the product itself that is being transferred.

1. Are pumps of a design and materials of construction generally acceptable as suitable to withstand the working pressure and corrosive action of material being pumped? Yes ( ) No ( )

2. Are pumps located clear of operating area and with ample room for maintenance? Yes ( ) No ( )

3. Are pump vents and drains directed away from operators? Yes ( ) No ( )

4. Are relief valves kept operable? Yes ( ) No ( )

5. Is pump maintenance undertaken periodically? Yes ( ) No ( )

6. Are all lines and compartments depressurized prior to maintenance or repairs? Yes ( ) No ( )

7. Are moving parts guarded? Yes ( ) No ( )

8. Is associated piping properly sized for the pumps function and capacity? Yes ( ) No ( )

9. Are hoses properly sized, installed and inspected to insure safe use? Yes ( ) No ( )

PLANT FACILITIES

Buildings/Warehouses

Dry fertilizer is most commonly stored in horizontal wooden buildings that are subdivided by partition walls into various numbers and sizes of bins. Fertilizer is loaded into the building by conveyors, bucket elevators and blower trucks; it is generally removed by end-loaders. Many plants also have warehouses for storing bagged fertilizer and other packaged material such as pesticides, seeds, etc.

The questions in this section are designed to identify potential hazards to employees resulting from working in dry bulk buildings and to evaluate the plant's program to protect employees from these hazards. An effective safety program includes:

-- Systematic inspection and formal preventive maintenance of the warehouse and related equipment.
-- Formal training of operators and maintenance personnel.
-- Appropriate fire fighting equipment.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1. Are floors and platforms kept clean and in good repair? Yes ( ) No ( )

2. Are aisle ways, passageways and exits clean and clear? Yes ( ) No ( )

3. Are all exits so marked and at least 22 inches wide? Yes ( ) No ( )

4. Are all gas cylinders secured or chained in a manner to prevent their falling or being knocked over? Yes ( ) No ( )

5. Is the direction of exits, when not immediately apparent, marked with visible signs and illuminated when necessary? Yes ( ) No ( )

6. Have damaged, old, and deteriorated air hoses been replaced? Yes ( ) No ( )

7. Is stored material stable and secure? Yes ( ) No ( )

8. Are broken packages covered and promptly cleaned up? Yes ( ) No ( )

9. Are racks and platforms loaded within the posted limits of their capacity? Yes ( ) No ( )

10. Are drums or other containers that can roll, chocked at the base? Yes ( ) No ( )

11. Are floor weight capacities identified where necessary? Yes ( ) No ( )

Plant Yard

A clean, orderly, and well-kept yard indicates the interest of the responsible manager and workers in maintaining a plant that is an asset to the community in which it functions. It also is a reflection that the business conducted here will be handled in a safe and efficient manner.

Read all of the questions in the section; discuss the questions with those workers at your estahlishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1. Are fences and gates maintained in good condition for plant security? Yes ( ) No ( )

2. Are vehicles and associated equipment stored safely? Yes ( ) No ( )

3. Are there emergency notification signs posted at the entrance to the premises? Yes ( ) No ( )

Tankage

This section is intended to provide an insight into the potential hazards of liquid fertilizer storage. It includes storage, equipment, and procedures. This section should enable you to evaluate your safety and health program, and help you determine areas that may need improvement.

Storage tanks containing various types of fertilizers and raw materials present several potential hazards to personnel, if safe procedures are not followed. Several general procedures should be followed before entry into any storage tank.

-- Preparation of the tank:
  Conditioning the tank.
  Ventilating the tank.
  Mobilizing powered equipment.
  Testing the tank atmosphere.
  Insuring adequate oxygen for workers.
-- Safety requirements for entry.
-- Emergency rescue procedures.

The primary cause of accidents and deaths are improper tank entries and violations of safety procedures. Additionally, many accidents have occurred during routine maintenance because of failure to follow safety procedures that have resulted in loss of life, sight, and limbs as well as in burns, cuts, and severe bodily injury.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

A. Liquid storage (low and non-pressure solution):

1. Are tanks of design and materials of construction to withstand the working pressure and corrosive action of material stored? Yes ( ) No ( )

2. In air compressor system, is a backflow check valve provided to prevent liquid from entering the compressor? Yes ( ) No ( )

3. Is the piping vent directed down, or away from operators? Yes ( ) No ( )

4. Is piping free of strain and supported so as to avoid strains on pump? Yes ( ) No ( )

5. Is all piping, including tubing, hose, fittings gaskets, packing, etc., made of materials suitable for use with materials being transported and designed for the maximum pressure to which they may be subjected? Yes ( ) No ( )

6. Has adequate protection been given all exposed piping from physical damage that might result from moving machinery, equipment, and vehicles? Yes ( ) No ( )

7. Are employees familiarized with procedures to be followed when a leak is discovered? Yes ( ) No ( )

B. Ammonia Storage

1. Is the proper identifying nameplate on the tank? Yes ( ) No ( )

2. Are the main operating valves identified? Yes ( ) No ( )

3. Are the appurtenances made from materials impervious to ammonia and recommended by the manufacturer for ammonia service? Yes ( ) No ( )

4. Are the 2000-30,000 gallon capacity storage tanks located properly? Yes ( ) No ( )

5. Are relief valves, back check valves and/or excess flow valves properly located? Yes ( ) No ( )

RECEIVING AND SHIPPING PROCEDURES

All fertilizer plants and distribution center receive products from suppliers by truck and/or rail. Retail plants ship products usually by self-propelled or pull type vehicles; however, some also ship by tractor/trailer, and in rare instances, by rail. Mobile equipment (i.e., end-loaders) and material handling equipment (i.e., bucket elevators and piping) are used to load or unload the trucks, applicators and rail cars.

Work around a fertilizer plant is quite varied and employees may be exposed to different pieces of equipment while performing their job. The questions in this section are designed to identify potential hazards to employees resulting from unsafe procedures during receiving and shipping and to evaluate the plant's program to protect employees.

Railroad Cars

Most fertilizer plants receive some products by rail car and occasionally a plant may be equipped to load box cars, tank cars, and/or hopper cars. Employees can be exposed to several potentially hazardous situations while unloading/loading rail cars; however, these hazards can be minimized through proper safety precautions. This section is intended to evaluate the safety procedures and operating practices for protecting employees from these hazards.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. When the rail car is spotted at the load-out station, are the brakes set and wheels chocked? Yes ( ) No ( )

2. Are employees prohibited from standing on top of rail cars while they are being moved or coupled? Yes ( ) No ( )

3. Are employees prohibited from climbing over the coupler of connected cars and from walking between closely spotted uncoupled cars? Yes ( ) No ( )

4. When an employee enters a hopper car is he/she required to wear a safety harness and is a standby person present? Yes ( ) No ( )

5. Are employees involved in acid and solution car unloading operations provided with protective goggles, rubber gloves and are they required to wear them? Yes ( ) No ( )

6. Are approved car movers used and are employees prohibited from using forklifts or end loaders to move cars? Yes ( ) No ( )

7. Are proper tools used to open bottom hopper doors and piping? Yes ( ) No ( )

8. Are respirators required during unloading/loading operations? Yes ( ) No ( )

Anhydrous Ammonia

1. Are hoses, gaskets, Acme threads, etc. inspected before connection? Yes ( ) No ( )

2. Are all persons trained to handle hoses by the hose-to-valve coupling and not by the valve handwheel or lever? Yes ( ) No ( )

3. Are all valves opened slowly to avoid snapping the excess flow valve? Yes ( ) No ( )

4. Is pressure bled from the hose coupling devices before disconnection? Yes ( ) No ( )

5. Are liquid hoses connected to liquid valves and vapor hoses to vapor valves? Yes ( ) No ( )

6. Is one or more trained person stationed at the site continuously from the time connections are made until disconnection? Yes ( ) No ( )

7. Are bleeders closed after disconnection? Yes ( ) No ( )

Self-Propelled Vehicles

Depending upon the operation, employees may be involved in working with various pieces of transportation equipment. Application equipment may be loaded at the plant and/or field. Employees can be exposed to several potentially hazardous situations; however, these hazards can be minimized through proper safety precautions and proper training. This section is intended to evaluate the safety procedures and operating practices for protecting employees from these hazards.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. When a truck is spotted at the load out station, are the brakes set to prevent truck from rolling? Yes ( ) No ( )

2. Are trucks valves and moving parts inspected before use? Yes ( ) No ( )

3. Is maximum pulling speed and/or driving speed required to be observed? Yes ( ) No ( )

End Loader, Forklift, and Hand Truck Operation

Almost every plant has a front end loader and/or a forklift and/or a hand truck. They are used to lift, move and stack all kinds of materials. This mobile equipment is not difficult to operate. It can reduce or eliminate manual handling, thus minimizing the chances of personal injury.

All forklift and front-end loader operators should be trained in operating techniques and machine characteristics prior to being permitted to operate the vehicle.

Most mobile equipment accidents are due to either unsafe driving practices or poor equipment maintenance. An effective vehicle safety program should include the following:

-- Systematic inspection and formalized preventive maintenance of each vehicle.
-- Formalized training and selection of operators and maintenance personnel.
-- Thorough investigation of each vehicle accident.

Operators should be aware of the overall height and width of the vehicle when loaded as well as unloaded. They should also be aware of the rated capacity of the vehicle. Operators should be constantly alert to avoid striking overhead projections (doorways, entrances, electrical wires, etc.). Operators should be aware of the whereabouts of all persons working the area.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are only trained and authorized persons permitted to operate front-end loaders and forklifts? Yes ( ) No ( )

2. Is a complete safety check made of the vehicle periodically? Yes ( ) No ( )

3. Do all front-end loaders and forklifts have an overhead guard and roll over protection? Yes ( ) No ( )

4. Is the vehicle properly secured and controls neutralized when left when left unattended? Yes ( ) No ( )

5. Are vehicles refueled out-of-doors and with engine shut off? Yes ( ) No ( )

6. Are operators instructed to back down ramps when carrying loads? Yes ( ) No ( )

7. To avoid being buried, have operators been instructed to never undercut a pile of fertilizer? Yes ( ) No ( )

RECORDKEEPING

Recordkeeping requirements under the Department of Labor and OSHA Act provide the statistical basis from which rates of occupational injury and illness are determined. These records provide employers with a measure for evaluating the high-risk areas of their business to which special attention should be directed. Employers must report to OSHA within 48 hours (or a State agency in States which have operational safety and health plans) any incident or accident which results in a fatality or hospitalization of five or more employees.

Federal regulations require employers with 11 or more employees at any time during the preceding calendar year to complete OSHA Form 200 (or an equivalent), and kept for five years. Information to be recorded includes: every occupational death; every occupational non-fatal illness; and those involving loss of consiousness, restriction of work or motion, job transfer and medical treatment, other than first-aid, including days away from work or on restricted work. Definitions are provided on the form itself.

OSHA recordkeeping forms must be maintained for five years beyond the current calendar year.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Is an employee poster (OSHA or equivalent State poster) prominently displayed in employee areas? Yes ( ) No ( )

2. Have occupational injuries and illnesses (except minor injuries requiring only first aid) been recorded on OSHA Form #200? Yes ( ) No ( )

3. Has a summary of all occupational injuries and illnesses been compiled at the conclusion of each calendar year, and been recorded on OSHA Form #200? Yes ( ) No ( )

4. Have all training sessions been recorded? Yes ( ) No ( )

5. Are records of attendance and topics discussed at safety meetings maintained? Yes ( ) No ( )

SANITATION
(OSHA Standards 29 CFR 1910.141)

Sanitation and good housekeeping are essential parts of any effective occupational safety and health program. This section is designed to identify potential sources of illness and injury and to evaluate the establishment's program to prevent unsanitary conditions. An effective sanitation program includes:

-- Regular inspection of facilities to identify unsanitary conditions.
-- A frequent, regular, and assigned program of housekeeping.
-- Review of records to determine any connection between poor sanitation and employee illness or absence.
-- Education of employees in personal hygiene.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the areas covered; and while conducting a survey, complete this section with their help.

1. Is housekeeping a regularly scheduled and assigned activity at this establishment? Yes ( ) No ( )

2. Are floors and walkways kept dry and clean? Yes ( ) No ( )

3. Are work areas kept clean? Yes ( ) No ( )

4. Are exits kept clear? Yes ( ) No ( )

STORAGE PROCEDURES

Ammonium Nitrate

Ammonium nitrate fertilizer is an oxidizing material and will support combustion if involved in a fire. With simple precautions, ammonium nitrate fertilizer can be stored safely at a plant, in warehouses, or on the farm. As in the case of any oxidizing agent (stimulates the burning of combustible materials), ammonium nitrate fertilizer requires common-sense treatment during transportation, storage, and use. A review of the experience in handling millions of tons of the material, by rail, truck, ship, and in warehousing, has demonstrated that this product can be handled with complete safety.

The questions in this section are designed to identify potential hazards resulting from storing ammonium nitrate and to evaluate the plant's program to protect employees.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1. Are storage buildings adequately ventilated or of construction that will be self-ventilating in event of a fire? Yes ( ) No ( )

2. Is flooring in storage and handling areas constructed of non-combustible materials or protected against ammonium nitrate impregnation? Yes ( ) No ( )

3. Have floor drains, pits, etc. been plugged to prevent molten ammonium nitrate from entering? Yes ( ) No ( )

4. Are all points of entry to warehouses where ammonium nitrate is stored labeled with "Ammonium Nitrate"? Yes ( ) No ( )

5. Are internal combustion vehicles prohibited from being left unattended in ammonium nitrate storage buildings, as a good work practice? Yes( ) No ( )

6. Are automatic sprinkler systems installed in warehouses when storage exceeds 2500 tons of ammonium nitrate? Yes ( ) No ( )

7. Have suitable fire control devices such as hose, portable extinguishers and/or fire hydrants been provided? Yes ( ) No ( )

8. Are bags of ammonium nitrate prohibited from being stored closer than 30" from walls or partitions? Yes ( ) No ( )

9. Are bags of ammonium nitrate prohibited from being stored closer than 36" below the roof? Yes ( ) No ( )

10. Are aisles in bag storage areas 3' in width? Yes ( ) No ( )

11. Are main aisles in bag storage areas at least 4' wide? Yes ( ) No ( )

12. Is bulk storage prohibited from being stacked closer than 36" from the roof? Yes ( ) No ( )

13. Are ammonium nitrate storage bins clearly identified by signs reading "Ammonium Nitrate" with letters at least 2" high? Yes ( ) No ( )

14. Are explosives such as dynamite and blasting agents prohibited from being stored in the same building with ammonium nitrate? Yes ( ) No ( )

15. Are bins clean and free of materials which may contaminate ammonium nitrate? Yes ( ) No ( )

16. Are respirators required to be worn in ammonium nitrate areas? Yes ( ) No ( )

Sulfur

Solid sulfur is used as an ingredient in mixed fertilizers. Even if sulfur is used in liquid form, it is often stored and shipped as a solid.

Solid sulfur exposed to air and moisture rapidly becomes acid and corrodes carbon steel, plain or galvanized steel. Wood and concrete are attacked, but more slowly.

The questions in this section are designed to identify potential hazards resulting from storing solid sulfur and to evaluate the plant's program to protect employees from these hazards.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1.	Is sulfur stored in a cool, well-ventilated place away from open flames?	Yes ( ) No ( )
2.	Is sulfur stored separately from chlorate, nitrates and other oxidizing materials?	Yes ( ) No ( )
3.	Are spills cleaned up at once?	Yes ( ) No ( )
4.	Is the production and accumulation of fine sulfur dust minimized?	Yes ( ) No ( )
5.	Are employees provided with and required to wear dust-tight eye goggles and respirators?	Yes ( ) No ( )
6.	Have employees been trained to fight sulfur fires?	Yes ( ) No ( )
7.	Are "No Smoking" signs posted?	Yes ( ) No ( )
8.	Is the wearing of contact lens prohibited?	Yes ( ) No ( )

WALKING AND WORKING SURFACES
(OSHA Standards 29 CFR 1910.22-30)

All places of employment, passageways, storerooms, and service rooms must be kept clean and orderly and, as much as possible, in a dry condition. Where mechanical handling equipment is used, safe clearances must be allowed for aisles, at loading docks, through doorways, and wherever turns or passages must be made. Aisles and passageways must be kept clear and appropriately marked.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

1. Are all walkways provided with sufficient lighting? Yes ( ) No ( )

2. Are all holes and openings provided with guardrails, or fitted with a flush cover of sufficient strength for the anticipated load? Yes ( ) No ( )

3. Are signs showing floor load capacity present? Yes ( ) No ( )

4. If no cage, well, or ladder safety device is provided on a fixed ladder, is there a landing platform for each 20 feet of vertical climb or fraction thereof? Yes ( ) No ( )

5. Are walkways kept clear of possible safety hazartds? Yes ( ) No ( )

6. Are floors and steps made with a slip resistant surface, where dampness may create a problem? Yes ( ) No ( )

WELDING, CUTTING, AND BRAZING
(OSHA Standards 29 CFR 1910.251-252)

The use of welding, cutting, and brazing equipment, especially by occasional users, poses potentially hazardous problems. All persons authorized to use such equipment must be trained in the proper safeguards. Observers, if allowed, must be as well protected as the operator.

Read all of the questions in this section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a survey, complete this section with their help.

Oxygen-Fuel Gas Welding and Cutting

1. Are precautions taken to prevent the mixture of air or oxygen with flammable gases except at the burner or in a standard torch? Yes ( ) No ( )

2. Is the use of liquid acetylene prohibited? Yes ( ) No ( )

3. Are flashback arrestors used? Yes ( ) No ( )

4. Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used? Yes ( ) No ( )

5. When inside buildings, are cylinders secured and stored in a well-ventilated, dry location at least 20 feet from combustible materials? Yes ( ) No ( )

6. Do empty cylinders have their valves closed? Yes ( ) No ( )

7. Are all cylinders stored valve-end up? Yes ( ) No ( )

8. Is care taken not to drop or strike cylinders? Yes ( ) No ( )

9. Is it prohibited to lift or pry up cylinders by valve-protection caps? Yes ( ) No ( )

10. If trouble is experienced with a cylinder valve, is the supplier notified and are his instructions followed? Yes ( ) No ( )

11. Before a regulator is removed, is the valve closed and gas released from the regulator? Yes ( ) No ( )

12. Are eyes protected (by eye/face protectors) from ultraviolet (UV) radiation? Yes ( ) No ( )

13. Is adequate ventilation provided during welding? Yes ( ) No ( )

14. Is it prohibited to open the acetylene cylinder valve more than 1-1/2 turns of the spindle? Yes ( ) No ( )

15. If a special wrench is required, is it left in position? Yes ( ) No ( )

Arc Welding and Cutting

1. Does the apparatus comply with "Requirements for Electrical Arc Welding Apparatus," NEMA EW-1-1962, National Electrical Manufacturers Association, or with "Safety Standard for Transformer-Type Arc Welding Machines," laboratories? Yes ( ) No ( )

2. Are workers assigned to operate or maintain arc welding equipment required to be familiar with OSHA requirements? Yes ( ) No ( )

3. Are all connections checked before starting welding or cutting operations? Yes ( ) No ( )

4. Is grounding of the machine frame and safety ground connections checked? Yes ( ) No ( )

5. Are manufacturer's printed rules and instructions required to be followed? Yes ( ) No ( )

6. Is the electric power to the machines shut off when no one is in attendance? Yes ( ) No ( )

7. Is it prohibited to use cables with splices within 10 feet of the holder? Yes ( ) No ( )

8. Is the welder forbidden to coil or loop welding electrode cable around his/her body? Yes ( ) No ( )

9. Are eyes protected (by eye/face protection) from ultraviolet (UV) radiation? Yes ( ) No ( )

10. Is adequate ventilation provided during welding? Yes ( ) No ( )

11. Are trained workers assigned to perform welding and cutting? Yes ( ) No ( )

APPENDIX A

PESTICIDES
HEALTH HAZARDS, LABELING, AND FIRST AID

Although pesticides are not necessarily a part of the retail fertilizer distribution industry; a discussion appears in the appendix as many retailers and distributors also handle pesticides.

Even a small amount of some pesticides entering the body can cause serious illness or death. Harmful amounts can enter the body by: (1) absorption through the skin; (2) inhalation; or (3) accidental ingestion, through smoking, eating, or consuming beverages on the job.

Before handling any pesticide, the labels should always be read and understood. Product labels will show that great care has been used to correctly describe the product, the potential hazards involved, handling methods and what to do in case of poisoning or overexposure. Generally, there will be a list of warning statements headed by the word "Danger" which describe the primary hazards and what should be done to avoid them.

The labels on all "Poison" category products should contain the basic information needed to handle the product safely. Pesticides should be stored in a dry, well-ventilated, separate room, building or covered area, dedicated exclusively to pesticides storage and where appropriate fire protection is provided.

With increased pesticides use, the problems associated with the safe and proper handling and disposal of pesticides and pesticide containers have also increased. Studies are underway in the development of disposal methods. Both the pesticide industry and the Environmental Protection Agency are working toward the promulgation of specific and definitive disposal procedures. Until these efforts are available, it is recommended that the guidelines established by the Environmental Protection Agency as outlined in their publication, "Pesticides and Pesticide Containers, Regulations for Acceptance and Recommended Procedures for Disposal and Storage", be followed.

Where large amounts of pesticides are stored, the local fire department should be informed of the potential hazards that such pesticides may present if there is a fire. A floor plan of the storage area, including current inventory of the pesticides, by classification, should be provided. Telephone numbers of those responsible for the pesticide storage should be given to fire personnel. Inspections by the fire department are encouraged. Emergency plans for fires or spills should be prepared and reviewed frequently.

Read all of the questions in the section; discuss the questions with those workers at your establishment who know the most about the areas covered; and while conducting a walk-through survey, complete this section with their help.

1. Are physicians and medical emergency services telephone numbers posted for convenient reference? Yes ( ) No ( )

2. Are employees supplied with all the necessary protective clothing and required to wear them when necessary? Yes ( ) No ( )

3. Are employees familiar with and made aware of recommended first aid for pesticide poisoning or overexposure? Yes ( ) No ( )

4. Is the telephone number of one or more Poison Control Centers posted? (Nearby large general hospital, pharmacies, and emergency facilities should be able to provide these telephone numbers.) Yes ( ) No ( )

5. Has a disaster plan for emergency action been written, posted, and drills held? Yes ( ) No ( )

6. Are community physicians trainedin the main procedures to treat all types of pesticide related illness? Yes ( ) No ( )

7. Are the manufacturer's handling and storage recommendations followed? Yes ( ) No ( )

8. Is information concerning the health effects, other than acute poisoning, of the pesticides available to employee? Yes ( ) No ( )

APPENDIX B

NIOSH REGIONAL OFFICES

The following NIOSH and OSHA regional offices which can provide information on the OCCUPATIONAL SAFETY AND HEALTH ACT including questions on standards interpretations, voluntary compliance information, copies of the OSHA Standards, OSHA Act, Employee Rights Posting notice, and publications.

DHEW, Region I
Government Center
(JFK Fed. Bldg.)
Boston, Massachusetts 02203
Tel.: 617/223-6668/9

DHEW, Region II
26 Federal Plaza
New York, New York 10007
Tel.: 212/264-2485/8

DHEW, Region III
3525 Market Street
P.O. Box 13716
Philadelphia, Pennsylvania 19101
Tel.: 215/596-6716

DHEW, Region IV
50 Seventh Street, N.E.
Atlanta, Georgia 30323
Tel.:404/881-4474

DHEW, Region V
300 South Wacker Drive
Chicago, Illinois 60607
Tel.: 312/886-3881

DHEW, Region VI
1200 Main Tower Building
Room 1700-A
Dallas, Texas 75245
Tel.: 214/655-3081

DHEW, Region VII
601 East 12th Street
Kamsas City, Missouri 64106
Tel.: 816/374-5332

DHEW, Region VIII
19th & Stout Streets
9017 Federal Building
Denver, Colorado 80202
Tel.: 303/837-3979

DHEW, Region IX
50 Fulton Street (223 FOB)
San Francisco, California 94102
Tel.: 415/556-3781

DHEW, Region X
1321 Second Avenue
(Arcade Bldg.)
Seattle, Washington 98101
Tel. :206/442-0530

APPENDIX C

OSHA REGIONAL OFFICES

NOTE: For an office close to you, check your telephone directory under United States Government or dial 800-555-1212 and ask for the toll-free number of the OSHA office nearest you.

Region I
U.S. Department of Labor
Occupational Safety and Health Administration
JFK Building, Room 1804
Boston, Massachusettsa 02203.....Telephone: 617/223-6712/3

Region II
U.S. Department of Labor
Occupational Safety and Health Administration
1515 Broadway (1 Astor Plaza), Room 3445
New York, New York 10036.....Telephone: 212/971-5941/2

Region III
U.S Department of Labor
Occupational Safety and Health Administration
15220 Gateway Center
3535 Market Street
Philadelphia, Pennsylvania 19104.....Telephone: 215/596-1201

Region IV
U.S. Department of Labor
Occupational Safety and Health Administration
1375 Peachtree Street, N.E., Suite 587
Atlanta, Georgia 30309.....Telephone: 404/526-3573/4 or 2281/2

Region V
U.S. Department of Labor
Occupational Safety and Health Administration
230 S. Dearborn, 32nd Floor
Chicago, Illinois 60604.....Telephone: 312/353-4716/7

Region VI
U.S. Department of Labor
Occupational Safety and Health Administration
555 Griffin Square Building, Room 602
Dallas, Texas 75202.....Telephone: 214/749-2477/8/9 or 2567

Region VII
U.S. Department of Labor
Occupational Safety and Health Administration
Federal Building, Room 3000,
911 Walnut Street
Kansas City, Missouri 64106.....Telephone: 816/374-5861

Region VIII
U.S. Department of Labor
Occupational Safety and Health Administration
Federal Building, Room 15010
1961 Stout Street
Denver, Colorado 80202.....Telephone: 303/837-3883

Region IX
U.S. Department of Labor
Occupational Safety and Health Administration
9470 Federal Building
450 Golden Gate Avenue
Post Office Box 36017
San Francisco, California 94105.....Telephone: 415/556-0584

Region X
U.S. Department of Labor
Occupational Safety and Health Administration
6048 Federal Office Building
909 First Avenue
Seattle, Washington 98174.....Telephone: 206/442-5930

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PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
ROBERT A. TAFT LABORATORIES
4676 COLUMBIA PARKWAY, CINCINNATI, OHIO 45226

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