SUBJECT: Regional Emphasis Program for Fertilizer Grade Ammonium Nitrate (FGAN) and Agricultural Anhydrous Ammonia Facilities

REGIONAL IDENTIFIER: Region VII

ABSTRACT

Purpose: The purpose of this Notice is to establish a Regional Emphasis Program (REP) to reduce injuries, illnesses and fatalities related to workers’ exposures in fertilizer grade ammonium nitrate (FGAN) and agricultural anhydrous ammonia mixing/blending, storage, and distribution facilities.

Scope: This Notice applies to all worksites in Kansas, Missouri, and Nebraska, and those worksites in Iowa that are under Federal Jurisdiction.

References:
- OSHA Instruction CPL 02-00-160, Field Operations Manual (FOM)
- OSHA Instruction CPL 04-00-001, Procedures for Approval of Local Emphasis Programs (LEPs)
- OSHA Instruction CPL 02-00-051, Enforcement Exemptions and Limitations under the Appropriations Act

Cancellations: None

State Plan Impact: Region VII 21(d) Consultation Project Offices in Iowa will provide outreach, consultation services, and training to affected employers as requested. State Plans are strongly encouraged to adopt this program.

Action Offices: Region VII Area Offices
- Region VII Consultation Project Offices
- Kansas City Regional Office

Originating Office: Kansas City Regional Office – Enforcement Programs
Contact: Assistant Regional Administrator for Enforcement Programs
2300 Main Street, Suite 1010
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(816) 283-8745

By and Under the Authority of:

Kimberly A. Stille
Regional Administrator
EXECUTIVE SUMMARY

Workers employed in the fertilizer storage, mix/blend, and distribution industry face many hazards that can lead to serious injury, illness, and death, including fire, explosions, and hazardous chemicals.

The intent of this Regional Emphasis Program is to encourage employers to take steps to address hazards, evaluate facilities to determine if the employer is in compliance with all relevant OSHA requirements, and to help employers correct hazards, thereby reducing potential worker injuries, illnesses, and deaths.

OSHA in Region VII proposes to accomplish this through outreach and enforcement activities. Outreach activities will include letters to employers, training sessions with stakeholders, electronic information-sharing activities, public service announcements, and news release broadcasts. Enforcement activities will begin not earlier than three months after outreach is initiated and will include, but not be limited to, the inspection and review of production operations, and working conditions; injury and illness records; safety and health programs; and chemical handling and use, to identify and obtain corrections of workplace hazards at all applicable inspection sites.
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I. **Purpose.** The purpose of this Notice is to establish a Regional Emphasis Program (REP) to reduce injuries, illnesses, and fatalities related to workers’ exposures in fertilizer grade ammonium nitrate (FGAN) and agricultural anhydrous ammonia facilities. This REP will provide the authority to evaluate the employers’ workplace(s) at all programmed, unprogrammed, or other limited-scope inspections pertaining to fertilizer grade ammonium nitrate and agricultural anhydrous ammonia operations to assure that employees are being properly protected. Area Offices will normally conduct inspections for all complaints, formal or non-formal, which contain allegations of potential worker exposure to hazards associated with FGAN and agricultural anhydrous ammonia unless there are significant resource implications. In addition, and where applicable, all unprogrammed inspections will be expanded to include all potential hazard areas addressed by this emphasis program.

II. **Scope.** This Notice applies to all worksites in Kansas, Missouri, and Nebraska that are under Federal Jurisdiction, and those worksites in Iowa that are under Federal Jurisdiction.

III. **References.**

- OSHA Instruction CPL 02-00-160, Field Operations Manual (FOM).
- OSHA Instruction CPL 04-00-001, Procedures for Approval of Local Emphasis Programs (LEPs).
- OSHA Instruction CPL 02-00-051, Enforcement Exemptions and Limitations under the Appropriations Act.
- **CPL 02-00-025** - CPL 2.25I - Scheduling System for Programmed Inspections, January 4, 1995.
- OSHA Instruction CPL 02-00-094 (CPL 2.94), OSHA Response to Significant Events of Potentially Catastrophic Consequences, July 22, 1991.
- The Fertilizer Institute, 425 Third Street, SW, Suite 950 Washington, D.C. 20024 [https://www.tfi.org](https://www.tfi.org/)
- Institute of Makers of Explosives, 1120 19th St NW #310, Washington, DC 20036 [https://www.ime.org/](https://www.ime.org/)

IV. **Cancellations.** None

V. **Action.** OSHA compliance personnel shall follow the procedures contained in this Notice when conducting outreach and enforcement activities.

VI. **Effective Dates.** This Notice becomes effective (TBD)
VII. **Expiration.** This Notice expires one year after the effective date, unless extended.

VIII. **Background.** Workers employed in the fertilizer storage, mixing/blending, and distribution industry face many hazards that can lead to serious injury, illness, and death, including fire, explosions, and hazardous chemicals.

Ammonium nitrate (AN) in its pure form is a solid, stable material and is usually not sensitive to mild shock and other sources of ignition or detonation. However, AN has both oxidizer and unstable reactive properties that can make it extremely hazardous under certain circumstances including fire exposure and when contaminated with combustible materials.

As an oxidizer, AN promotes the combustion of other materials. In turn, heating due to fire exposure can cause AN to thermally decompose, releasing toxic gaseous ammonia (NH₃), Nitric Acid (HNO₃), nitrogen oxides (NO and NO₂), and nitrous oxide (N₂O). Decomposing and/or molten AN can detonate when confined or exposed to a strong impact or shock. When AN contains combustible contaminants such as grain dusts, fuel oils, or metal flakes, the likelihood and intensity of detonation is increased.

Over the past century, there have been several catastrophic events involving FGAN both in the United States and abroad. The most recent of these occurred at the West Fertilizer company in West, Texas. On April 17, 2013, a fire, followed by an explosion, killed 15 and injured over 200. Additional incidents have occurred, including a fire in a Bryan, Texas, facility in 2009 that processed AN into fertilizer, causing the evacuation of over 80,000 residents. On September 21, 2001, in Toulouse, France, a pile of off-specification granular AN exploded due to unknown causes, killing 31 and causing billions of euros in damage. The greatest loss of life in a catastrophic event involving AN in the United States took place in Texas City in 1947, when a cargo ship loaded with 2600 metric tons of bagged AN caught fire, then exploded, killing 581 and setting fire to another ship also loaded with AN, which subsequently also exploded.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) and OSHA responded to and investigated the West Fertilizer Company incident. The CSB identified several key findings with associated recommendations. The CSB found that the employer failed to conduct safety inspections and had shortcomings in emergency response planning and training. The CSB also identified facility siting and land use planning, among others, as contributing factors. Included in the CSB’s recommendations was the development of OSHA REPs for the inspection of FGAN facilities and the establishment of a minimum number of inspections for each region.

Section (i) of the Explosives and Blasting Agents standard, 29 CFR1910.109, applies to any employer storing AN or any mixture containing more than 60 percent AN by weight. NFPA 400 - 2016 *Hazardous Materials Code* is also recognized as a consensus standard that includes useful guidance on the safe storage of AN.

In addition, agricultural anhydrous ammonia storage and dispensing potentially exposes
employees to airborne concentrations of toxic gas. Storage and Handling of Anhydrous Ammonia, 29 CFR 1910.111, addresses all anhydrous ammonia systems except for ammonia manufacturing plants and refrigeration plants where ammonia is used solely as a refrigerant. Anhydrous ammonia, a toxic gas stored under pressure as a liquid, is involved in many releases each year including an incident in Stewardson, Illinois in April 2016 that forced the evacuation of most of the town.

IX. Scheduling. This REP targets worksites in NAICS 424510, Grain and Field Bean Merchant Wholesalers; NAICS 424590, Other Farm Products Raw Material Merchant Wholesalers; NAICS 424910, Farm Supplies Merchant Wholesalers.

A. The Area Office will develop a list of establishments following the protocol provided in CPL 02-00-025, paragraph B.1.a.(2)(c), which states that when no establishment list is provided by the National Office, the Area Director shall compile a complete list considering all establishments within the coverage of the office and using the best available information (e.g., commerce directories, commercial telephone listings, local permits, local knowledge, internet, etc.).

B. Adjustments to the list for additions and deletions will follow guidelines in CPL 02-00-025, paragraph B.1.b.(1)(b)(6).

C. After the establishment list for the Area Office has been adjusted, per paragraph B. above, establishments on the list shall be alphabetized and numbered consecutively beginning with the number one, skipping deletions. Using a random number method and following the guidelines in CPL 02-00-025, Appendix C, and the Area Office will develop an REP inspection list. Establishments will be selected in the order prescribed by the inspection list until the total of establishments selected equals the number of projected inspections for the year. The resulting list shall constitute the program inspection register.

D. Establishments may be selected from the inspection register for inspection in any order that makes efficient use of available resources. If any establishment on the inspection register is documented to be unavailable for inspection, the next establishment according to inspection list shall replace it on the inspection register.

E. Since employees are subject to multiple hazards at industries covered by the REP, at all inspections performed under this REP, the injury and illness records, for the past five years shall be reviewed for trends that may identify a common hazard at the workplace. Where injury and illness trends are identified to have occurred and the CSHO has the expertise (such as equipment familiarity and training) to address the hazards, the inspection shall be expanded to address these hazards. When the CSHO needs additional technical assistance/support to evaluate the specific hazards (such as engineering hazards), a referral shall be made to the appropriate personnel (e.g., safety engineer) for investigating the hazards.
F. All inspections conducted at facilities where FGAN or agricultural anhydrous ammonia is handled, stored, or distributed are covered by this instruction.

G. In accordance with the FOM, Chapter 9, Complaint and Referral Processing, Area Offices will normally conduct an inspection for all complaints, formal or non-formal, which contain allegations of employee exposure to hazards associated with FGAN or agricultural anhydrous ammonia unless there are significant resource implications.

H. If an employer refuses to allow the compliance officer to perform an inspection under this program to cover FGAN or agricultural anhydrous ammonia operations, the Area Office will follow the procedures in the current FOM for handling such refusals, including seeking a warrant.

I. Area Directors shall insure that compliance officers are sufficiently qualified/trained to conduct this type of inspection.

J. Assignments will be generated through fatalities, accidents, complaints, referrals, and general industry schedule criteria. The assignments have priority based upon the schedule in FOM Chapter 2 (Program Planning, IV - Enforcement Program Scheduling).

X. Inspection Procedures.

A. Any inspection activity performed under this emphasis program will be conducted as a partial safety inspection to include all areas where FGAN or agricultural anhydrous ammonia is handled, stored or distributed in the facility based on the procedures listed in FOM Chapter 3 (Inspection Procedures) and any relevant regional notices.

B. CSHOs assigned to conduct an inspection under this emphasis program must:

1. Review the inspection history for the specific site.
   - If the site has received a programmed, comprehensive safety or health inspection within the preceding three years, the expansion under this emphasis program may not be required. The CSHO will review the inspection file for the earlier inspection and confer with the Area Office managers to determine if an unprogrammed inspection is to be expanded. The history of the prior programmed inspection must be documented in the OSHA-1 Narrative for the current inspection.
   - If the site has received a comprehensive inspection within the past three years and all required elements were addressed in that inspection, the CSHO will conduct the assigned unprogrammed (complaint/referral) inspection but will not expand the current inspection unless plain-view hazards demonstrate the need to expand.
Considerations for expanding the current inspection must be discussed with and approved by Area Office management. The history of the prior unprogrammed inspection must be documented in the OSHA-1 Narrative for the current inspection.

2. Determine if any appropriations riders apply to the facility.

3. Familiarize themselves with the following documents as appropriate:
   - CPL 02-00-147 – The Control of Hazardous Energy – Enforcement Policy and Inspection Procedures.
   - CPL 02-00-135 – Recordkeeping Policies and Procedures.
   - CPL 02-00-100 (CPL 2.100) – Application of the Permit-Required Confined Spaces (PRCS) Standard, 29 CFR 1910.146.
   - CPL 03-00-008 – NEP: Combustible Dust Explosion Prevention Program.

XI. Program Elements. CSHOs will evaluate the following safety and health program elements and issues during all compliance inspections conducted at the targeted NAICS sites under this REP. The compliance inspections cover all portions of the employer’s operations at the site.

Storage of Ammonium Nitrate under 29 CFR 1910.109(i). The standard applies to establishments storing, having, or keeping AN, including fertilizer grade, and other mixtures containing 60 percent or more AN by weight.

- CSHOs shall determine the means and manner that FGAN is stored and handled at the facility.
- CSHOs shall determine the adequacy of ventilation and the construction of the building to allow for self-ventilation during a fire event.
- CSHOs shall evaluate the flooring in storage and handling areas. Flooring shall be of noncombustible material and protected against impregnation by AN and without open drains, traps, tunnels, pits, or pockets into which molten AN could flow and be confined in the event of fire.
CSHOs shall evaluate the potential for contamination of AN with galvanized iron, copper, lead, and zinc used in the construction of bins and partitions dividing storage areas. Partitions dividing AN shall be of tight construction.

CSHOs shall evaluate height or depth of AN piles to ensure they are not higher than 36 inches below the roof or supporting structure of the storage-building roof.

CSHOs shall evaluate the adequacy of sprinkler systems in the storage building or structure and the suitability and availability of water supplies, fire hydrants, fire control devices, and fire extinguishers.

Storage and Handling of Anhydrous Ammonia under 29 CFR 1910.111. This standard applies to all facilities storing, handling, and dispensing anhydrous ammonia except those facilities where anhydrous ammonia is used for refrigeration or those facilities where anhydrous ammonia is manufactured.

CSHOs shall evaluate the storage vessel integrity, operation, and maintenance.

CSHOs shall ensure the storage vessel is approved for the service and appropriately marked.

CSHOs shall determine that all piping, tubing, and hoses are appropriate for the service.

CSHOs shall evaluate suitability of emergency relief from the storage vessel.

Hazard Communication. CSHOs will evaluate the employer’s use of chemicals in the work environment for compliance with 29 CFR 1910.1200 – Hazard Communication. CSHOs will use CPL 02-02-079, Inspection Procedures for the Hazard Communication Standard (HCS 2012), as guidance. CSHOs will determine compliance with OSHA’s HCS requirements for safety data sheets (SDSs), labeling and worker training.

Other Hazards. The CSHO will review the injury and illness records, including first aid and nursing logs, for the past five years for trends that may identify a common hazard at the workplace. Conditions and hazards may vary from plant to plant depending on process design. However, a variety of hazards may be common industry-wide, including noise, chemicals, thermal, electrical, and struck-by hazards. In addition to any hazards identified in the injury and illness records review, CSHOs will:

- Identify and evaluate operations performed in permit-required confined spaces including but not limited to fertilizer storage structures.
- Identify and evaluate employee contact with or entrapment in moving machine parts both during normal operations and preventive maintenance/periodic self-inspection of production, facility, and shop machinery.
• Evaluate the condition of electrical equipment such as panels, cabinets, motor control centers, conduits, etc.

XII. **Recording in OIS.** Current instructions for completing Inspection, Complaint, Fatality, and Referral Forms shall be applied when recording inspections under this REP.

A. The Inspection Report for any inspection expanded or scheduled under this REP shall be marked as “**FGAN7**” under local emphasis.

B. The Unprogrammed Activity (UPA)/Fatality for any accident related FGAN mixing/blending hazards shall be marked as “**FGAN7**” in the appropriate field.

C. The UPA/Complaint for any complaint related FGAN mixing/blending hazards shall be marked as “**FGAN7**” in the appropriate field.

D. The UPA/Referral for any referral related FGAN mixing/blending hazards shall be marked as “**FGAN7**” in the appropriate field.

E. All other applicable OIS codes shall be applied, as appropriate.

XIII. **Evaluation.** The Area Director shall submit a written evaluation report of the implementation of this REP to the Regional Administrator, which will include activity and impact measures. The reports shall be submitted no later than October 31 for each fiscal year the REP is in effect. The Regional Office will then submit a report, as appropriate, to the National Office. This evaluation will include a brief description of program activities and results, analysis of factors listed in CPL 04-00-001 (formerly CPL 2.102), Appendix A, as well as recommendations regarding the continuation of this Regional Emphasis Program. In addition, the following factors should also be included.

A. The number of inspections where fertilizer grade ammonium nitrate and agricultural anhydrous ammonia was evaluated and total number and percent of violations that are serious, willful, or repeat.

B. The number of serious or other-than-serious violations for the following unique hazards to the industry:
   - Lockout/Tagout
   - Machine guarding
   - Electrical
   - Confined space
   - Hazard Communication

C. The number of hazard alert letters (EHAL) issued.
D. Annual number of fatalities, hospitalizations, amputations, and serious incidents at fertilizer grade ammonium nitrate and agriculture anhydrous ammonia facilities.

E. The number of unprogrammed activities concerning fertilizer grade ammonium nitrate and agricultural anhydrous ammonia facilities conducted annually.

F. The number of employees covered during enforcement and outreach activities.

G. Narrative that describes the impact that outreach activities may have had for employers and employees.

H. Abatement measures implemented, if novel and innovative.

XIV. **Outreach.** The Regional and Area Office will conduct outreach activities intended to reach as many employers and stakeholders as is practicable. Outreach activities will be conducted to raise awareness of the hazards associated in the FGAN and agricultural anhydrous ammonia facilities industry to inform stakeholders and employers of the elements of the REP.

**Enhancing Compliance Assistance and Outreach Activities**

Each Area Director will develop an outreach plan and programs that will support their enforcement efforts, by working with compliance assistance specialists (CAS) and regional labor liaison, when available, to suggest relevant outreach materials and targeted audiences, provide guidance for how to best implement current and new outreach activities, and continue successful outreach strategies implemented in the past and/or currently being implemented.

Outreach activities will utilize OSHA’s already established compliance assistance workshops, tools, and resources, as well as other mediums, such as news releases, information packets, seminars, etc. In order to maximize and expand the scope, reach, and effectiveness of outreach efforts, each Area Office should determine relationships to be established with local organizations, interested parties, stakeholders, and community groups, as well as foster already existing relationships. Emphasis will be placed on reaching out to organizations such as consulates and faith-based and community groups to assist in reaching limited English proficiency workers.

The Area Office should consider having these stakeholders participate in training, assist in the dissemination of information from this REP, and participate in any other outreach activity where their participation would benefit the program. Stakeholders may include actual physical mixing/blending facilities, manufacturers’ representatives, industry periodical publishers, safety and health consultants, insurance companies, local and national associations, safety councils, and unions.
The method of outreach is at the Area Director’s discretion; however, efforts shall begin at least three months before the initiation of inspections. A detailed description of outreach activities will be included in each Area Office’s Regional notice of LEPs/REPs, as well as in their subsequent evaluations. Below are examples for outreach activities and other compliance assistance to be incorporated into LEP/REP procedures.

**Outreach to Industry, Workers and other Stakeholders**

Outreach activities may include, but are not limited to:

- Encouraging employers to utilize OSHA’s free on-site consultation programs and providing educational and compliance assistance information relevant to the industry, along with other applicable outreach materials to appropriate stakeholders.
- Informing employers and other stakeholders that many new resources exist in many languages on hazard identification and prevention.
- Upon establishing a list of affected worksites, providing a letter to inform industry, employees, government and other stakeholders of hazards associated with that particular industry, and informing employers of your outreach and targeting plan prior to commencement of inspection activities. Furthermore, inform employers and workers of educational resources, such as these listed below, that give them information on potential hazards and how to prevent them:
  - Worker protection training, information and materials to specific groups, appropriate to the industry.
  - NFPA 400 - 2016 Hazardous Materials Code, which includes key practices for facility design and operation for safe storage of AN.

**Utilization of Existing OSHA resources and Outreach Tools**

- Conduct targeted training sessions for employers on the recognition, prevention, and abatement of safety and health hazards in the workplaces. Provide information to workers on regarding workers’ rights, job hazards, employer responsibilities, and how to file complaints.
- Conduct stakeholder meetings and disseminate information through speeches, training sessions and Area Office newsletters.

**Leveraging of Community Knowledge and Local Institutions**

- Outreach will be tailored to the FGAN and agricultural anhydrous ammonia industry and the communities of workers and stakeholders. Therefore, outreach
programs with employers and trade associations, unions, professional associations, advocacy groups, community and faith-based organizations and others, will be in conjunction with local resources, knowledge and relationships to involve employee and management stakeholders in the identification and elimination of worksite hazards.

- State Consultation Programs should be encouraged to participate in local outreach efforts performed by Area Offices.
Dear [Stakeholder]:

The United States Department of Labor/Occupational Safety and Health Administration (OSHA), Region VII, has developed a local outreach, education, prevention, and inspection program pertaining to employers who may have fertilizer grade ammonium nitrate and agriculture anhydrous ammonia facilities, located in Kansas, Missouri and Nebraska. We will be conducting outreach efforts to employers in order to raise awareness of the hazards related to fertilizer grade ammonium nitrate storage, mixing/blending, and distribution operations. We are writing to invite you to participate in our future outreach efforts and to begin evaluating your workplaces to identify and remove hazards.

The intent of this emphasis program is to encourage employers to take steps to address and correct these hazards in fertilizer grade ammonium nitrate facilities, thereby reducing potential worker injuries, illnesses, and deaths. Hazards associated with FGAN operations include fires, explosions, lockout-tagout, machine guardings, electrical and chemical hazards, and confined spaces, among others. OSHA in Region VII proposes to accomplish this through outreach and enforcement activities. Outreach activities will include letters to employers; training sessions; electronic information sharing activities; public service announcements; and other outreach with stakeholders. Enforcement activities will begin not sooner than three months after outreach begins and will include, but not be limited to, the on-site inspection and review of production operations; working conditions; records; safety and health programs; chemical handling and use; and safety management systems, to identify and obtain corrections of workplace hazards at all applicable inspections.

Small employers may contact the On-Site (State) Consultation Program for a free confidential safety and health consultative visit. The consultation program, funded primarily by Federal OSHA, provides safety and health consultative services to help employers establish and maintain a safe workplace by coming into compliance with OSHA’s regulations. Although the consultants’ findings are confidential, employers are required to correct any serious hazards they observe on their visit. Information related to the On-Site Consultation Program may be found at the OSHA website, www.OSHA.gov.

The mission of OSHA is to ensure that working men and women arrive home safely each night from their place of employment. Together, we can accomplish this task. OSHA shares each employer’s goal of reducing occupational injuries and illnesses to the maximum extent practicable. Should you wish to participate with us in our efforts or if you have any questions or
comments, please contact me at (xxx) xxx-xxxx. More information on hazards and means of control in the FGAN industry are available at http://www.osha.gov/dep/fertilizer_industry/index.html. We look forward to working with you toward this common objective.

Sincerely,

Area Director (xxxx)